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IMPACT ASSESSMENT

Accompanying the document

Proposal for a Directive of the European Parliament and of the Council on common rules for the internal market in electricity (recast)

Proposal for a Regulation of the European Parliament and of the Council on the electricity market (recast)

Proposal for a Regulation of the European Parliament and of the Council establishing a European Union Agency for the Cooperation of Energy Regulators (recast)

Proposal for a Regulation of the European Parliament and of the Council on risk preparedness in the electricity sector

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6. DETAILED MEASURES ASSESSED UNDER PROBLEM AREA III: A NEW LEGAL FRAMEWORK FOR PREVENTING AND MANAGING CRISES SITUATIONS

6.1.1. *Summary table*

	Objective: Ensure a common and coordinated approach to electricity crisis prevention and management across Member States, whilst avoiding undue government intervention				
	Option 0: Do nothing	**Option 0+: Non-regulatory approach**	**Option 1: Common minimum EU rules for prevention and crisis management**	**Option 2: Common minimum EU rules plus regional cooperation, building on Option 1**	**Option 3: Full harmonisation and full decision-making at regional level, building on Option 2**
Assessments	Rare/extreme risks and short-term risks related to security of supply are assessed from a national perspective. Risk identification & assessment methods differ across Member States.	This option was disregarded as no means for enhanced implementing of existing acquis nor for enhanced voluntary cooperation were identified	Member States to identify and assess rare/extreme risks based on common risk types.	ENTSO-E to identify cross-border electricity crisis scenarios caused by rare/extreme risks, in a regional context. Resulting crisis scenarios to be discussed in the Electricity Coordination Group. Common methodology to be followed for short-term risk assessments (ENTSO-E Seasonal Outlooks and week-ahead assessments of the RSCs).	All rare/extreme risks undermining security of supply assessed at the EU level, which would be prevailing over national assessment.
Plans	Member States take measures to prevent and prepare for electricity crisis situations focusing on national approach, and without sufficiently taking into account cross-border impacts. No common approach to risk prevention & preparation (e.g., no common rules on how to tackle cybersecurity risks).		Member States to develop mandatory national Risk Preparedness Plans setting out who does what to prevent and manage electricity crisis situations. Plans to be submitted to the Commission and other Member States for consultation. Plans need to respect common minimum requirements. As regards cybersecurity, specific guidance would be developed.	Mandatory Risk Preparedness Plans including a national and a regional part. The regional part should address cross-border issues (such as joint crisis simulations, and joint arrangements for how to deal with situations of simultaneous crisis) and needs to be agreed by Member States within a region. Plans to be consulted with other Member States in the relevant region and submitted for prior consultation and recommendations by the Electricity Coordination Group. Member States to designate a 'competent authority' as responsible body for coordination and cross-border cooperation in crisis situations. Development of a network code/guideline addressing specific rules to be followed for the cybersecurity. Extension of planning & cooperation obligations to Energy Community partners	Mandatory Regional Risk Preparedness Plans, subject to binding opinions from the European Commission. Detailed templates for the plans to be followed. A dedicated body would be created to deal with cybersecurity in the energy sector.

Crisis management	Each Member State takes measures in reaction to crisis situations based on its own national rules and technical TSO rules. No co-ordination of actions and measures beyond the technical (system operation) level. In particular, there are no rules on how to coordinate actions in simultaneous crisis situations between adjacent markets. No systematic information-sharing (beyond the technical level).		Minimum common rules on crisis prevention and management (including the management of simultaneous electricity crisis) requiring Member States to: (i) not to unduly interference with markets; (ii) to offer assistance to others where needed, subject to financial compensation, and to; (iii) inform neighbouring Member States and the Commission, as of the moment that there are serious indications of an upcoming crisis and during a crisis.	Minimum obligation as set out in Option 1. Cooperation and assistance in crisis between Member States, in particular simultaneous crisis situations, should be agreed ex-ante; also agreements needed regarding financial compensation. This also inclues agreements on where to shed load, when an to whom. Details of the cooperation and assistance agreements and resulting compensation should be described in the Risk Preparedness Plans.	Crisis is managed according to the regional plans, including regional load-shedding plans, rules on customer categorisation, a harmonized definition of 'protected customers' and a detailed 'emergency rulebook' set forth at the EU level.
Montoring	Monitoring of security of supply predominatly at the national level. ECG as a voluntary information exchange platform.		Systematic discussion of ENTSO-E Seasonal Outlooks in ECG and follow up of their results by Member States concerned.	Systematic monitoring of security of supply in Europe, on the basis of a fixed set of indicators and regular outlooks and reports produced by ENTSO-E, via the Electricity Coordination Group. Systematic reporting on electricity crisis events and development of best practices via the Electricity Coordination Group.	A European Standard (e.g. for EENS and LOLE) on Security of Supply could be developed to allow performance monitoring of Member States.

Pros			Minimum requirements for plans would ensure a minimum level of preparedness across EU taking into account cyber security. EU wide minimum common principles would ensure predictability in the triggers and actions taken by Member States.	Common methodology for assessments would allow comparability and ensure compatibility of SoS measures across Member States. Role of ENTSO-E and RSCs in assessment can take into account cross-border risks. Risk Preparedness Plans consisting of a national and regional part would ensure sufficient coordination while respecting national differences and competences. Minimum level of harmonization for cybersecurity throughout the EU. Designation of competent authority would lead to clear responsibilities and coordination in crsis. Common principles for crisis management and agreements regarding assistance and remuneration in simultaneous scarcity situations would provide a base for mutual trust and cooperation and prevent unjustified intervention into market operation. Enhanced role of ECG would provide adequate platform for discussion and exchange between Member States and regions.	Regional plans would ensure full coherence of actions taken in a crisis.
Cons	Lack of cooperation in risk preparedness and managing crisis may distort internal market and put at risk the security of supply of neighbouring countries.		Risk assessment and preparedness plans on national level do not take into account cross-border risks and crisis which make the plans less efficient and effective. Minimum principles of crisis management might not sufficiently adress simultaneous scarcity situations.	The coordination in the regional context requires administrative resources. Cybersecurity here only covers electricity, whereas the provisions should cover all energy sub-sectors including oil, gas and nuclear.	Regional risk preparedness plans and a detailed templates would have difficulties to fit in all national specificities. Detailed emergency rulebook might create overlaps with existing Network Codes and Guidelines.
	Most suitable option(s): Option 2, as it provides for sufficient regional coordination in preparation and managing crsis while respecting national differences and competences.				

6.1.2. *Description of the baseline*

In the area of risk prevention and management of crisis situations the current legislation is scattered over different legal acts.

Regarding **risk assessment and preparedness**, currently Article 4 of the Electricity Directive obliges Member States to ensure the monitoring of security of supply issues. Such monitoring should, in particular, cover the balance of supply and demand, the quality and level of maintenance of the networks, as well as the measures to cover peak demand and to deal with shortfalls of one or more suppliers. This also includes the obligation to publish every two years, by 31 July, a report outlining the findings resulting from the monitoring, as well as any measures taken or envisaged to address them. Member States should submit the report to the Commission.

Additionally, **ENTSO-E** has the obligation to carry out **seasonal outlooks** (6 month – summer & winter outlooks) as required by Article 8 of the Electricity Regulation. The assessments, which follow a probabilistic generation adequacy methodology, explore the main risks identified within a seasonal period and highlighting the possibilities for neighbouring countries to contribute to the generation/demand balance in critical situations.

In terms of coordination and exchange of information among Member States, the Commission created in 2012 the **Electricity Coordination Group**[1] in the aftermath of Fukushima crisis. The Group is a platform for the exchange of information and coordination of electricity policy measures having a cross-border impact. It also should facilitate the exchange of information and cooperation on security of electricity supply including the coordination of action in case of an emergency within the Union.

The legislation on **crisis management** is set by Directive 2005/89/EC (SoS Directive), Article 42 of the Electricity Directive and, as regards technical issues, the network codes, in particular by the Network Code on Emergency and Restoration ('NC ER') which is currently in comitology for approval. In addition, also the CACM Guideline and the Guideline on System Operation (SO Guideline) set out operational procedures during crisis situations, in particular on system operation to be implemented by TSOs.

The Electricity Directive contemplates in its Article 42 the possibility for Member States to take temporary safeguard measures in the event of a sudden crisis and where the physical safety or security of persons, apparatus or installation or system integrity is threatened. Member States are obligated to notify those measures without delay to the other Member States and the Commission. Any safeguard measures taken by Member States must "*cause the least possible disturbance in the functioning of the internal market and must not be wider in scope than is strictly necessary* [...]." In taking safeguard measures "*Member States shall not discriminate between cross-border contracts and national contracts*" according to Article 4(3) of the SoS Directive.

[1] Commission Decision of 15 November 2012 setting up the Electricity Coordination Group. OJ C353, 17.11.2012, p.2.

Table 2: Specific provisions in network codes and guidelines governing crisis prevention and management at the technical level

The **Network Code on Emergency and Restoration ('NC ER')** requires in preparation for emergency situations that the relevant Regional Security Coordinators (RSCs) ensure consistency of individual TSO System Defence Plans[2]. This includes inter-TSO information exchange, identification of threats within the capacity calculation region and identification of incompatibilities of planned measures. During emergency "*each TSO shall provide through interconnectors any possible assistance*" to its neighbours and to prepare automatic load-shedding plans to ensure stable system frequency[3]. Concerning suspension of (cross-border) market activities, TSOs can suspend the provision of cross-zonal capacity and the submission of balancing bids under the following circumstances[4]: (a) blackout state or imminent risk of a blackout state after market mechanisms are exhausted; (b) continuing market activities decreases effectiveness of restoration towards normal/alert state; (c) communication tools of TSO to facilitate market are not available. It also addresses recovery and settlement of costs related to emergency measures between TSOs and market participants, subject to assessment through NRAs[5]. The **Regulation on Capacity Allocation and Congestion Management (CACM)** addresses the firmness of cross-zonal allocated capacity in case of 'force majeure' or emergency situations. It defines 'force majeure' as unusual event which has happened, is objectively verifiable, is beyond the control of a TSO and makes it impossible for the TSOs to fulfil its obligations as set out by the CACM Guideline. According to Article 72, the event of 'force majeure' allows TSOs to curtail allocated cross-zonal capacity in coordination with other concerned TSOs. TSOs are further obliged to notify market participants which are concerned by curtailment, provide compensation and limit both consequences and duration of force majeure. The **Guideline on System Operation (SO Guideline)** defines the operational system states of 'normal', 'alert', 'emergency' and 'restoration' in its Article 18. This provides a framework for 'remedial actions' which are used by the TSOs to manage operational security violations (Art. 20 – 23) and as an example include manually controlled load-shedding (Art. 22, paragraph 1(j)). TSOs shall prepare and coordinate their remedial actions among each other and their RSCs (Art. 21, paragraph 1(b)) and prefer remedial actions which make available the largest cross-zonal capacity (Art 21, paragraph 2(d)). Moreover, they are obliged to jointly develop a procedure for sharing costs of remedial actions (Article 76, paragraph 1(b)(v)).

Source: EU legislation

Finally, on **cybersecurity,** NIS Directive provides the horizontal framework to boost the overall level of network and information security across the EU. It imposes a set of obligations on Member States as well as on essential service providers - including the electricity, oil and gas subsectors.

6.1.3. *Deficiencies of the current legislation*

The **evaluation of Directive 2005/89/EC** (SoS Directive) has revealed the existence of numerous deficiencies in the current legal framework[6]. In first place, the evaluation concludes in the **ineffectiveness** of the SoS Directive in achieving the objectives pursued, notably contributing to a better security of supply in Europe. Whilst some of its provisions have been overtaken by subsequent legislation (notably the Third Package and the TEN-E

2 See Article 6 of NC ER.
3 See Articles 14 & 15 of NC ER.
4 See Article 35 of NC ER.
5 See Article 8 and 39 of NC ER.
6 See Evaluation of the EU rules on measures to safeguard security of electricity supply and infrastructure investment (Directive 2005/89/EC).

Regulation), there are still regulatory gaps notably when it comes to preventing and managing crisis situations.

The evaluation also reveals that the SoS Directive intervention is no longer relevant today as **it does not match the current needs on security of supply**. As electricity systems are increasingly interlinked, purely national approaches to preventing and managing crisis situations can no longer be considered appropriate. It also concludes that its **added value has been very limited** as it created a general framework but left it by and large to Member States to define their own security of supply standard. Whilst electricity markets are increasingly intertwined within Europe, there is **still no common European framework governing the prevention and mitigation** of electricity crisis situations. National authorities tend to decide, one-sidedly, on the degree of security they deem desirable, on how to assess risks (including emerging ones, such as cyber-security) and on what measures to take to prevent or mitigate them.

The existing regulatory gap on preventing and managing crisis situations is described in detail below.

The existing obligations for the Member States on monitoring security of supply (Article 4 of the Electricity Directive and Article 7 of the SoS Directive) focus mainly on generation adequacy and **do not address the preparation for or dealing with crisis situations**. In practice, the reports submitted under Article 4 of the Electricity Directive are a mere compilation of information on supply and demand figures showing the evolution in a certain time horizon, while the lists of measures described cover mainly infrastructure projects on generation and cross-border interconnections.

There is **no legal** obligation for Member States **to carry out a risk assessment or to draw up a risk preparedness plan**[7]. All Member States set an explicit or implicit obligation to carry out an assessment of electricity security of supply risks; however, not all Member States describe the types of risks covered under the assessment[8]. The analysis shows that the risks to be assessed vary considerably[9]. Furthermore each Member State has designed its own "*risk preparedness*" or "*emergency plan*" to deal with stress situations, which has resulted in different national practices across Europe which tend to differ in nature, scope

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[7] Only ten Member States set clear obligations to draw up risk preparedness plans, whilst eighteen other Member States do not have such an obligation, but take risk preparedness considerations into account in reports, plans or measures (source: Risk Preparedness Study).
In addition, Directive 2008/114/EC on the identification and designation of European critical infrastructures defines the obligation that each identified European Critical Infrastructure needs an operator security plan (Art. 5) which will be also reflected in the coming System Operation Guideline (Art. 26). However, these plans focus only on each identified asset and not the electricity system as whole.

[8] Only nine Member States have direct obligations to carry out a risk assessment; other Member States are implicitly looking at risks when monitoring the security of electricity supply (source: *Risk Preparedness Study*).

[9] 23 Member States define risks to be addressed which vary considerably (source: *Risk Preparedness Study*).

and content and rarely take into account cross-border effects. Diverging perception of risks could lead to different levels of preparedness.

The evidence shows that national plans **do not look at the impacts beyond the national borders or simultaneous crisis situations**. There is close cooperation on the level of TSOs which is not matched by a cooperation of national authorities[10].

Uncoordinated national measures to ensure the supply in emergency situations may not be efficient or could have negative effects on neighbouring countries. The lack of cooperation on the level of national authorities could also lead to diverging actions on TSO and governmental level (e.g. decision on governmental level on export bans) which could have detrimental effect on security of electricity supply.

Regarding transparency and information exchange, implementation of **Article 42** of the Electricity Directive shows that up to now the Commission was only notified of such measures in few cases (e.g. Poland in 2015[11]), and only ex-post, where there was no possibility ex-ante to assess their suitability. The current wording of Article 42 is of rather **general nature** and does **not lead to sufficient cross-border coordination beforehand**.

The Electricity Coordination Group has **limited powers** beyond the exchange of information. There is no explicit obligation to convoke the group in case of a crisis or when at least two Member States are in emergency. It is purely a consultative body without powers to issue recommendations for example on the measures that Member States could put in place during an emergency.

On **managing crisis situations**, currently Member States predominantly resort to national measures without sufficient account being taken of their impact on their neighbours or synergies stemming from a coordinated approach. There are hardly any cross-border procedures on how Member States should act in crisis situations. However, with increasingly integrated markets, measures taken by one Member State are highly probable to affect its neighbours. The cross-border impact is particularly serious and immediate in case of an actual physical shortage in real time[12].

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10 There are examples of existing regional co-operation is some regions involving national authorities, e.g. among the Nordic countries in the framework of NordBER (Nordic Contingency Planning and Crisis Management Forum) or Pentalateral Energy Forum, however, currently this co-operation is mainly restricted to the exchange of best practice.

11 Poland activated a crisis protocol mid-August 2015 allowing TSO to restrict power supplies to large industrial consumers (load restrictions did not apply however to households and some sensitive institutions such as hospitals). However, Poland notified the adoption of these measures under Article 42 one month after (mid-September).

12 Physical shortage arises when it has not been possible to fulfil the given demand, neither by market transactions in day-ahead and intraday markets nor by balancing activities of the TSO. In this case, load shedding will be carried out by each TSO to remedy its deficit. After market closure there is no ambiguity regarding the deficit's allocation across affected countries – each TSO knows exactly the magnitude of its control area's deficit and consequently its 'scheduled curtailment'. For exporting Member States who strive to protect their customers from disconnection, two scenarios may arise: (i) closing down interconnectors to stop exports altogether or (ii) carry out less-than-scheduled load shedding in order to reduce export flows. In both cases the national action can have an impact on cross-border power flows, affecting the neighbours' supply.

In case of a **simultaneous scarcity situation** in two or more Member States, stopping or limiting exports to overcome national physical shortage before domestic demand has been curtailed would directly translate into aggravating supplies to customers in the neighbouring Member State. The management of interconnectors and the possible spill over effects of Member States' national actions become particularly relevant when a concurrent physical energy shortage remains over several days (e.g. due to a heat wave/cold spell causing a sustained demand spike or when a large number of generation units is put out of operation). This case of energy shortage is especially exposed to the risk of intervention with system operation or premature non-market measures by Member States.

The network codes, i.e. the **draft NC ER, the CACM Guideline and the SO Guideline** are an important step in the harmonisation of technical procedures and interoperatibility of rules in the EU. However, a **general legislative framework** setting out how Member States should act and co-operate with each other to prevent and manage electricity crisis situations **is still missing**. There is still no framework clarifying roles and responsibilities, aligning national rules, and prescribing co-operation between Member States to resolve political issues relating to crisis management. As a result, large-scale electricity crisis situations, as well as situations of a simultaneous crisis, cannot effectively be resolved (for instance, there is no framework for how to deal with crisis situations caused by extreme weather conditions, or a fuel shortage; there are no rules on which consumers should be protected most, how to communicate and intervene at a political level etc).

Article 4(3) of the SoS Directive does not define clear Dos and Don'ts at the Member State level even though electricity crisis situations, especially in situations of simultaneous scarcity, which require political decision and clear rules, roles and responsibilities. In such situations, the market should be allowed to function as long as possible and deliver power flows to countries with higher scarcity. Exporting Member States should not introduce exports bans without restricting national consumers in a proportionate manner as this would 'export' the scarcity across the borders. The treatment of interconnection capacity and consequently the way possible load-shedding measures could be shared across countries is not sufficiently defined. A few Member States explicitly foresee (potentially unproportioned) export bans in their national legislation[13] and a recent case of export bans in South-Eastern Europe has proven this risk in reality.

On **cybersecurity**, the fragmented approach of the NIS directive could be problematic for the energy sector, as energy infrastructure is arguably one of the most critical infrastructures that other sectors - like banking, health and mobility, depend upon to deliver essential services. Currently, the energy sector consists of both legacy and next generation technologies. New grid technologies are introducing millions of novel, intelligent components to the energy sector that communicate in much more advanced ways (two-way communications, dynamic optimization, and wired and wireless communications) than in the past. These new components will operate in conjunction with legacy equipment that may be several decades old, and provide little to no cybersecurity controls. In addition, with alternative energy sources such as solar power and wind, there is increased

[13] One Member State specifically includes a legal provision on export bans in its legislation; eleven more Member States include forms of export restrictions in national law, TSO regulations or multilateral agreements (Source: Risk Preparedness Study).

interconnection across organizations and systems. With the increase in the use of digital devices and more advanced communications, the overall risk has increased. For example, as substations are modernized, the new equipment is digital, rather than analogue. These new devices include commercially available operating systems, protocols, and applications rather than proprietary solutions. This increased digital functionality provides a larger incident surface for any potential adversary, such as nation-states, terrorists, malicious contractors, and disgruntled employees. This new technology increases the complexity of addressing cyber risks. Many of the commercially available solutions have known vulnerabilities that could be exploited when the solutions are installed in control system components. Potential impacts from a cyber-event include: billing errors, brownouts/blackouts, personal injury or loss of life, operational strain during a disaster recovery situation, or physical damage to power equipment. The current legislative framework does not prepare for these impacts.

6.1.4. *Presentation of the options*

Options to reinforce coordination between Member States for preventing and managing crisis situations (Problem Area III)

Table 3: Overview of the Options for Problem Area III

Option 0:	Baseline scenario
Option 0+:	Improved implementation of current legislation without regulatory action at EU level
Option 1:	Common minimum rules to be implemented by Member States
Option 2:	Common minimum rules to be implemented by Member States plus regional cooperation
Option 3:	Full harmonisation and full decision-making at regional level

Option 0: Baseline scenario

Under the baseline scenario, Member States would continue **identifying and addressing rare/extreme risks and possible crisis situations based on a national approach**, in accordance with their own national rules and requirements. As a consequence, neither risks originating across borders, nor possible synergies in preparation for crisis are sufficiently taken into account.

The recently adopted network codes and guidelines (i.e. The Network Code on Emergency and Restoration, the Regulation on Capacity Calculation and Congestion Management and the Guideline on System Operation) bring a certain degree of harmonisation on how to deal with electricity systems in different states (normal state, alert state, emergency state, black-out and restoration). This ensures more clarity as regards how TSOs should act in crisis siuations, and as to how they should co-operate with one another.

The innovative tools[14] developed for TSOs in the area of the system security in the last years, will also contribute to improve monitoring, prediction and managing secure interconnected power systems preventing, in particular, cascading failures[15].

However, the TSOs cooperation would be limited to technical-level decisions, and would be hampered in practice by the absence of a proper framework for national rules and decisions on how to prepare for and handle electricity crisis situations, in particular in situations of siumultaneous scarcity. Such political decisions continue to be taken at a purely national level, in an intransparent manner, without taking account of other Member States' interests, both in a preparatory phase, and when crisis situations kick in.

Monitoring results would be published bi-annualy without any requirement to coordinate among each other or develop any risk preparedness plan. Furthermore Member States would not be obliged to **exchange information** when a possible crisis approaches. A current mandate of the **Electricity Coordination Group** would also not be sufficient to act as information exchange platform in crisis situations. This could lead to inefficiencies when preventing and managing a crisis situation or have negative effects on neighbouring countries.

On **cybersecurity**, the NIS Directive, aiming at a high common level of network and information security across the Union, provides the horizontal framework to boost the overall level of network and information security across the EU on a cross-sectoral and generic level. However, as the NIS Directive is defining only very generic and high-level obligations, there is room for a more sectoral approach defining concrete modalities to ensure a minimum of coordination among Member States and resilience of the interconnected European electricity grid. Energy infrastructure is arguably one of the most critical infrastructures that other sectors - like banking, health and mobility- which depend upon to deliver essential electricity services. Thus it is essential to tackle the potential risks of a major blackout taking into account coordinated attacks to more than one Member State and the interconnectivity and the system complexity of the energy sector.

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[14] ITESLA project (which was financed under FP7) developed methods and tools for the coordinated operational planning of power transmission systems, to cope with increased uncertainties and variability of power flows, with fast fluctuations in the power system as a result of the increased share of resources connected through power electronics, and with increasing cross-border flows. The project shows that the reliance on risk-based approaches for corrective actions can avoid costly preventive measures such as re-dispatching or reduced the overall risk of failure.

[15] In addition the AFTER project (which was financed under FP7) also developed tools for TSOs to increase their capabilities in creating, monitoring and managing secure interconnected electrical power system infrastructures, being able to survive major failures and to efficiently restore service supply after major disruptions (http://www.after-project.eu/).

Table 4: R&D Results

The technical base to produce accurate prediction of rapid fluctuations and prevent cascading failures has been developed in **ITESLA** through a framework for the exchange dynamic models of power system elements. It showed that the reliance on risk-based approaches for corrective actions can avoid costly preventive measures such as re-dispatching or reduced while the overall risk of failure is decreased. This requires more and more formalised data exchange among TSO's to support the new methods and tools.

AFTER has developed a framework for electrical power systems vulnerability identification, defence and restoration. It uses a large set of data (big data) coming from on-line monitoring systems available at TSOs' control centres. A fundamental outcome of the tool consists in risk-based ranking list of contingencies, which can help operators decide where to deploy possible control actions.

SESAME, developed a comprehensive decision support system to help the main public actors in the power system, TSOs and Regulators, on their decision making in relation to network planning and investment, policies and legislation, to address and minimize the impacts (physical, security of supply, and economic) of power outages in the power system itself, and on all affected energy users, based on the identification, analysis and resolution of power system vulnerabilities.

Source: European Commission (DG ENER)

Table 5: Innovative Tools for Electrical System Security within Large Areas (ITESLA)

Project FP7-ITESLA

Innovative Tools for Electrical System Security within Large Areas

Addressing mainly: Co-optimisation of interconnection capacity, Regional operational centres

The project developed methods and tools for the coordinated operational planning of power transmission systems, to cope with increased uncertainties and variability of power flows, with fast fluctuations in the power system as a result of the increased share of resources connected through power electronics, and with increasing cross-border flows. The project aims at enhancing cross-border capacity and flexibility while ensuring a high level of operational security.

Fact Sheet: http://cordis.europa.eu/project/rcn/101320_en.html

Web Site: http://www.itesla-project.eu/

Important project outcomes include

- A platform of tools and methods to assist the cooperation of transmission system operators in dealing with operational planning from two days ahead to real time, particularly to ensure security of the system. These tools support the optimisation of security measures, in particular to consider corrective actions, which only need to be implemented in rare cases that a fault occurs, in addition to preventive actions which are implemented ahead of time to guarantee security in case of faults. The tools provide risk-based support for the coordination and optimisation of measures that transmission operators need to take to ensure system security. The platform also supports "defence and restoration plans" to deal with exceptional situation where the service is degraded, e.g. after storms, or to restore the service after a black-out. The platform has been made publicly available as open-source software.
- A clarification of the data and data exchanges that are necessary to enable the implementation of these coordination aspects.
- A framework to exchange dynamic models of power system elements including grids, generators and loads, and a library of such models covering a wide range of resources. These models are essential to produce accurate prediction of the rapid fluctuations that take place in the power grid after faults, and to prevent cascading failures.
- The tools and models allow reducing the amount of necessary preventive measures. The reliance on risk-based approaches can avoid or minimise costly preventive measures such as re-dispatching while the overall risk of failure is decreased.
- A set of recommendations to policymakers, regulators, transmission operators and their associations (jointly with the UMBRELLA project). These foster the harmonisation of legal, regulatory and operational framework to allow the exploitation of the newly developed methods and tools. They also

identify the need for increased formalised data exchange among TSO's to support the new methods and tools.

Source: European Commission (DG ENER)

Option 0+: Non-regulatory approach

As current legislative framework established by the SoS Directive set general principles rather than requires Member States to take concrete measures, better implementation and enforcement actions will be of no avail.

In fact, as the progress report of 2010 shows[16], the SoS Directive has been implemented across Europe, but such implementation did not result in better co-ordinated or clearer national policies regarding risk preparedness.

The recently adopted network codes and guidelines offer some improvements at the technical level, but do not address the main problems identified.

In addition, today voluntary cooperation in prevention and crisis management is scarce across Europe and where it takes place at all, it is often limited to cooperation at the level of TSOs. It is true that certain Member States collaborate on a voluntary basis in order to addresss certain of the problems identified (e.g. Nord-BER, PLEF). However, these initiatives have different levels of ambition and effectiveness, and they geografically cover only part of the EU electricity market. Therefore, voluntary cooperation will not be an effective tool to solve the problems identified timely and in the whole EU.

Option 1: Common minimum rules to be implemented by Member States

Assessments and plans

Under Option 1 Member States would be obliged to develop **national** Risk Preparedness Plans ('Plan') with the aim to prevent or better manage the electricity crisis. The Plan should respect minimum common requirements and include a **risk assessment** of the most relevant crisis scenarios originated by rare/extreme risks. For that purpose, at least the following types of risks could be considered: a) rare/extreme natural hazards[17], b)

[16] *Report on the progress concerning measures to safeguard security of electricity supply and infrastructure investment* COM (2010) 330 final.

[17] Extreme weather events are likely to affect the power supply in various ways: (i) thermal generation is threatened by lack of cooling water (as shown e.g. in summer 2015 at the French nuclear power stations Bugey, St. Alban and Golfech); (ii) heat waves cause high demand of air conditioning (which e.g. resulted in price peaks in Spain in late July 2015 when occurring in parallel with low wind output); (iii) heat waves affect grid performance in various ways, e.g. moisture accumulating in transformers (which e.g. lead to blackouts in France on June 30th 2015) or line overheating (leading to declaration of emergency state by the Czech grid operator CEPS on July 25th in 2006) (source: S&P Global, Platts: *European Power Daily,* Vol. 18, Issue 123).

accidental hazards which go beyond N-1, c) consequential hazards such as fuel shortage[18], d) malicious attacks (terrorist attacks, cyberattacks).

The Plans would need to respect a set of minimum requirements, namely how Member States **would prepare for crisis situations** and how they should **deal with the identified crisis** scenarios. Preparatory measures could include, e.g. training for all staff involved in crisis management and regular simulations of crisis. Risk preparedness plans should further include how to prevent and manage cyber-attack situations which would be one of the risks to be covered by the plans. This will be combined with a soft guidance on cybersecurity in the energy sector based on NIS Directive.

Plans should be adopted by relevant governments / ministries, following an inclusive process, and (at least some parts of the Plans) should be rendered public. Plans should be **updated on a regular basis** (e.g., every three years, unless major incidents or market developments require an earlier update). For the purpose of consultation, Plans should be submitted to other Member States and the Commission.

The main benefit this option would bring is better preparedness, due to the fact that a common approach is followed across Europe, thus excluding the risk that some Member States 'under-prepare'. In addition, better preparedness, transparency and clear rules on crisis management are likely to reduce the chances of premature market intervention.

Crisis management

To ensure transparency and information exchange, Member States would be obliged to inform **immediately in situations of "*early warning*" or "*crisis*"** their neighbours and the European Commission to provide them with all the necessary information, in particular on the actions they intend to take.

"*Early warning*" could be defined as the state where there is concrete, serious and reliable information that an event may occur which is likely to result in significant deterioration of the supply situation and is likely to lead to a crisis level. While "*crisis*" could be defined as the event of significant deterioration of electricity supply over a time span lasting long enough to give room for political action and when all relevant market measures have been implemented but the supply is insufficient to meet the remaining demand[19].

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[18] One example proving that such risks should be taken into account is the shortage of anthracite coal in Ukraine in June 2016. Due to the political situation in Ukraine affected the rail transport of coal. As several Ukrainian nuclear power units are offline for maintenance in parallel, the responsible ministry called for limiting power consumption. (Source: S&P Global, Platts: *European Power Daily*, Vol. 18, Issue 123).

[19] In most of the cases the declaration of "*crisis*" by the national authorities will coincide with the "*emergency state*" of the transmission system as severe technical problems could lead to the "*exceptional situation*". But in very extreme or rare cases where situations demand political decisions and are not solely limited to system operation in real time (e.g. fuel supply scarcity, energy shortage for longer time periods) the government could decide to declare emergency - without necessary being in "*emergency state*"- with the aim to take safeguard measures (non-market based measures).

Under this option, the Commission could also set out legal principles governing **crisis management**. This will replace the current Article 42 of the Electricity Directive, which allows Member States to take 'safeguard measures' in situations of a sudden crisis and when security of persons or equipment is threatened. When dealing with emergency Member States should respect three basic rules:

- *'Market comes first'*: Non-market measures should be introduced only once market measures cannot tackle the situation. Measures should not unduly distort functioning of the market. They should be introduced only temporary and on the basis of an objective trigger described in the Plans. In particular, market rules on cross-border trade need to be respected[20].

- *'Duty to offer assistance':* In case crisis arises, Member States should react in a spirit of good cooperation and solidarity[21]. Practical arrangements regarding cooperation and solidarity measures shall be established in advance by Member States and be reflected in the risk preparedness plans.

- *'Transparency and information exchange'*: Member States should ensure transparency of the actions taken from the moment that there are serious indications of a crisis and during a crisis. This should be ensured through the regional part of the risk preparedness plans and through informing neighbours and the Commission in case of declaration of 'early warning' or 'crisis'.

By imposing obligations to co-operate and lend assistance, Member States are also less likely to 'over-protect' themselves against possible crisis situations, which in turn will contribute to more security of supply at a lesser cost.

Monitoring

In order to anticipate and mitigate potential upcoming crisis, under Option 1 Member States would be obliged to take into account the **results of the ENTSO-E seasonal assessments** (winter & summer outlooks). Member States should take measures accordingly, if there are serious indications that they could be in a predefined crisis situation (i.e. in an 'early warning' situation), as well as in a situation of crisis.

Option 2: Common minimum rules to be implemented by Member States plus regional co-operation

Assessments and plans

Option 2 would be built on Option 1 adding rules and tools facilitating cross-border cooperation in a regional and Union wide context.

Under Option 2 Member States should also develop their Risk Preparedness Plans. However, the identification of the **crisis scenarios and the risk assessment** would be

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[20] Rules on cross-border capacity allocation are set out in the CACM Guideline. Its Article 72 allows TSOs to curtail allocated cross-zonal capacity in the event of 'force majeure'.

[21] At TSO level, providing cross-border assistance through the available interconnectors is provided for in Article 12 of the draft Network Code on Emergency and Restoration.

carried out by ENTSO-E. This approach would ensure that the risks originating across the borders, including scenarios of a possible simultaneous crisis, are taken into account. ENTSO-E would be required to develop a methodology for the identification of risk scenarios. Such methodology would need to include at least following elements:

- consider all relevant national and regional circumstances;
- the interaction and correlation of risks across the borders;
- running simulations of simultaneous crisis scenarios;
- ranking of risks according to their impact and probability.

To take account of all regional specificities ENTSO-E could delegate all or part of its tasks to the ROCs. The crisis scenarios identified by ENTSO-E would be discussed in the Electricity Coordination Group. The regional approach in the **identification of the crisis scenarios** ensures a common strategy to minimise impacts of possible crisis, focus in particular on correlated risks and on risks that could affect simultaneously several Member States. This would significantly improve level of preparedness at national, regional and EU level, as the cross-border considerations are duly taken into account since the beginning.

Table 6: Best practice examples of Member State cooperation

Nordic Contingency and Crisis Management Forum (NordBER) The Nordic (including Iceland) TSOs, regulators and energy authorities founded a Nordic cooperation body (NordBER) in order to improve crises management and preparedness. The cooperation focuses on the exchange of information and experiences on contingency planning and emergency exercises. Moreover, it requires a common contingency planning for the overall Nordic power sector as a supplement to the national emergency work and as an extension of operation and planning cooperation between the TSOs. *Pentalateral Energy Forum* The Pentalateral Energy Forum is the framework for regional cooperation of relevant ministries, NRAs, TSOs and market parties in Central-Western Europe (BENELUX-DE-FR-AT-CH). Its Support Group 2 gives guidance on regional cooperation in the field of security of supply and acts as "development center for new ideas" with the goal to reach specific recommendations.

Source: https://nordber.org/ and http://www.benelux.int/nl/kernthemas/energie/pentalateral-energy-forum/

The **Risk Preparedness Plans** under this option **would contain two parts** – a part reflecting national measures and a part reflecting measures to be pre-agreed in a regional context. The latter part includes particular preparatory measures such as simulations of simultaneous crisis situations in neighbouring Member States ("stress tests" organised by ENTSO-E in a regional context); procedures for cooperation with other Member States in different crisis scenarios, and rules for how to deal with simultanous crisis situations. In this context the Member States should, among others, agree in advance in which situations, what load and to whom will be curtailed in simultaneous crisis situations. In order to facilitate the extent of offered assistance, in particular in cases where no other agreement has been made for assistance in simultaneous crisis, it might be necessary to allign principles for priorization and the share of customers which is prioritized highly in order to avoid overprotection at the cost of neighbouring Member States.

The draft Plans should be consulted with other Member States in each region and submitted for prior consultation to the Electricity Coordination Group. Through regionally co-ordinated plans, Member States would be able to ensure that increased TSO cooperation is

matched by a more structured co-operation between Member States[22]. The regions for such cooperation should therefore be the same as the TSO regions developed for the RSCs. To ensure cooperation further, the obligation on coordinated planning should be extended to Energy Community Partners.

To facilitate the cross-border cooperation and to overcome the current situation of unclear roles and responsibilities, Member States should designate one **'competent authority'**, which would be the responsible body for coordination and cross-border cooperation in a crisis situation. The Competent Authority should belong either to the national administration or to the NRA.

In order to also adress specific rules to be followed to ensure **cybersecurity** a network code or guideline should be developed.The network code/guidelines should take into account at least the following elements: a) methodology to identify operators of essential services for the energy sector; b) risk classification scheme; c) minimum cyber-security prerequisites to ensure that the identified operators of essential services for the energy sector follow minimum rules to protect and respond to impacts on operational network security taking the identified risks into account. A harmonized procedure for incident reporting for the energy sector shall be part of the minimum prerequisites.

Crisis management

As described in Option 1, all measures taken by Member States to prepare to or deal with 'crisis' should be based on a **common framework** and the principles of 'market comes first', 'duty to offer assistance' and 'transparency and information exchange'.

The 'duty to offer assistance' should especially address simultaneous scarcity situations which would be set to further rise in the near future given the increasing interconnectivity of the European electricity systems and markets (see Graphs 1 and 2). In situations of concurrent energy shortage over several days[23], Member States should agree in advance, when and what loads would be curtailed in crisis situations with a cross-border impact[24]. Solidarity measures in simultaneous scarcity, including coordinated demand restrictions in various markets, could be subject to financial compensation ex-post, following agreements between Member States according to the principles set out in Article 39 of NC ER (avoiding market distortion, incentivizing balanced positions). In order to avoid 'exporting'

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22 For cases of crisis, in particular simultaneous scarcity, also ENTSO-E sees a need for "*not only on a technical level but political cooperation*" and plans which "should cover extreme crisis situations beyond the measures provided by e.g. network codes and RSCs services" (s. *ENTSO-E recommendations to the regulatory framework on risk preparedness (WS5)* (2016), ENTSO-E, document in the process of publication).

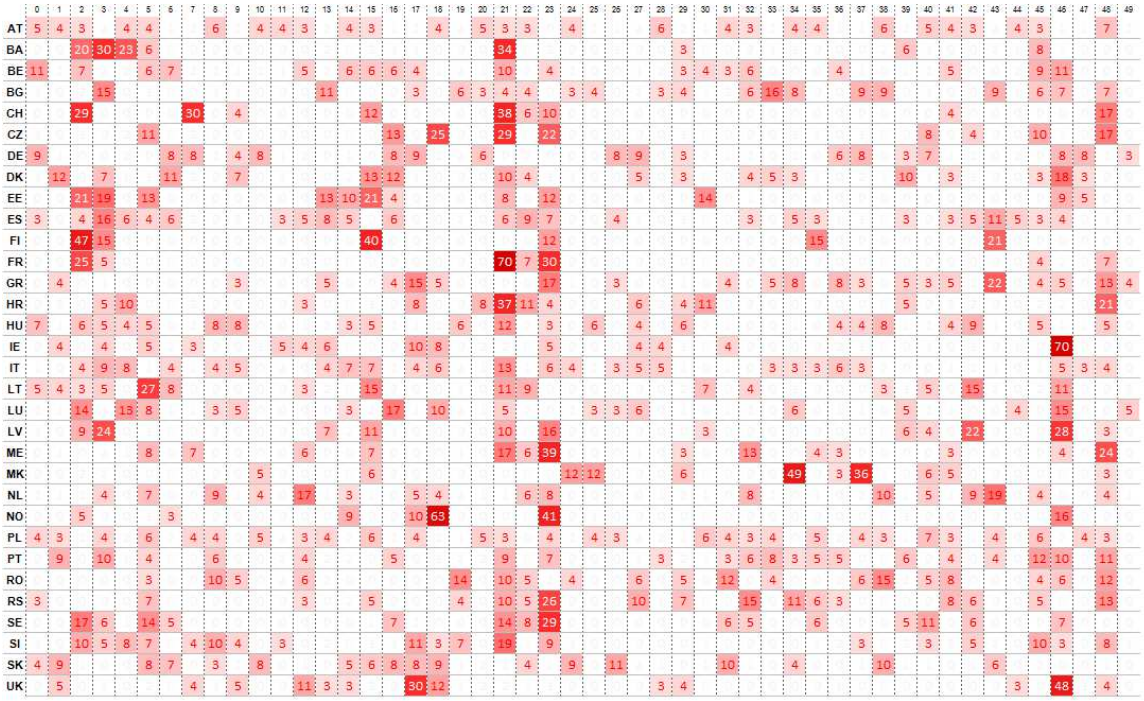
23 Unlike sudden power outages, an energy shortage could be (i) anticipated e.g. several days in advance and (ii) last over a period of several days. Therefore, decision making on customer disconnection, rota plans etc. is likely to not only affect TSOs, but also involve Member States. A good example of a rota plan is the "*Electricity Supply Emergency Code*" of the UK: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/396424/revised_esec_january_2015.pdf

24 One example of a load shedding plan prioritizing regions is the Belgian "*Plan de délestage en cas de pénurie d'électricité*" http://economie.fgov.be/fr/penurie_electricite/plan-delestage/#.VpTd2v7luUk

energy scarcity to neighbouring markets Member States should also allow for domestic load shedding to be carried out by their TSOs according to schedules. Any rules on protected customers should not lead to unjustified over-protection of a too high share of national customers[25].

[25] As already existing in many Member States today, Member States can introduce rules on customer categorization to prioritize customers in case of load shedding. Such rules on protected customers should take into account national and local specifics, but respect harmonized principles.

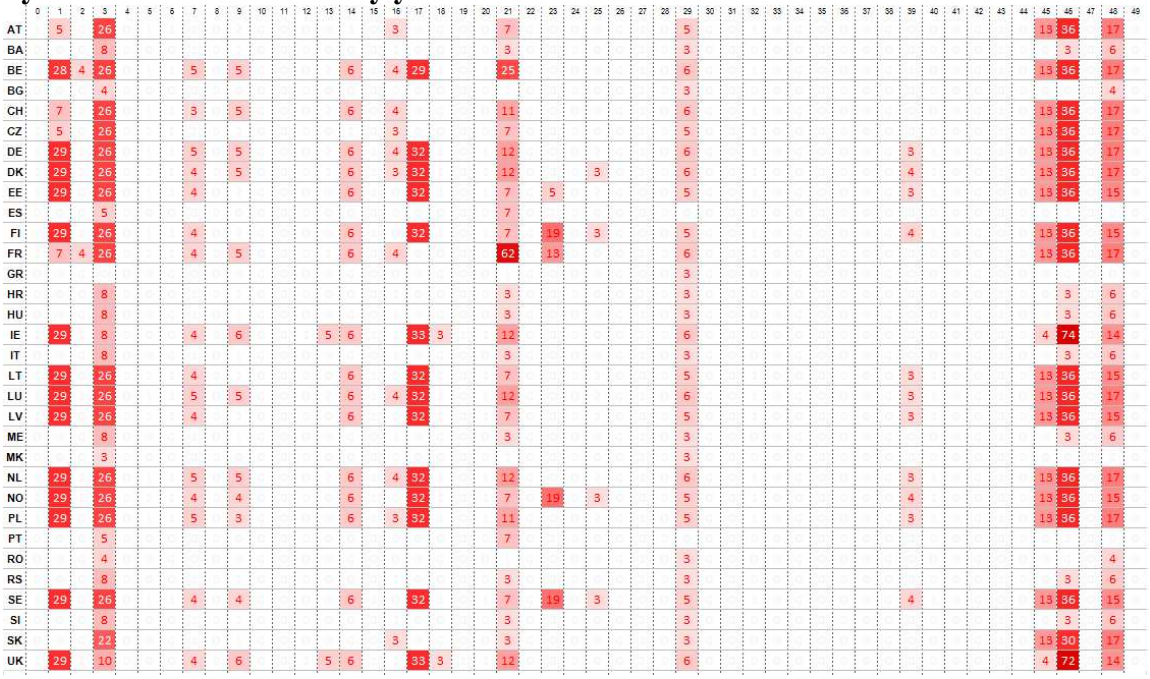
Graph 1: Distribution of system stress hours by Member States over fifty years of historical demand data



Stress hours are defined as hours of extremely high demand. The graph shows the 150 hours per Member State of the highest demand in the historical period of fifty years (1960-2010). The intensity of the colour indicates the intensity of demand (red means super peaks of demand). Rows indicate Member States. Columns indicate the respective historical years.

Source: METIS

Graph 2: Distribution of prices at VoLL in the context of a well-integrated market by Member States over fifty years of historical demand data



As result of better integration of the markets the stress hours would decrease and be concentrated in periods affecting simultaneously several Member States.

During these stress hours the price becomes equal to VoLL.

Source: METIS

Table 7: Best practice example of TSO agreements of Nordel

The Nordic TSOs pre-agreed on certain procedures to be taken in crisis situations (s. Apendix 9 of Nordel System Operation Agreement 3 (5)). In *Power Shortages*, it demands information of the other TSOs as quickly as possible and forbids that prearranged trading between players can be changed. In *Critical Power Shortages* and after all manual balancing reserve (i.e. available generation capacity) has been exhausted, it sets out a procedure for load shedding without a commercial agreement. After the subsystem with the greatest physical deficit has started load shedding and two or more subsistems have an equally large deficit, load shedding is distributed thereafter between those subsystems[26].

Source: Nordel System Operation Agreement 1 (5), Appendix 9

Monitoring

Building on Option 1, ENTSO-E would carry out seasonal assessments, which would need to be further improved via the introduction of a **common methodology**, to be developed by ENTSO-E on the basis of criteria set out in EU legislation. This could be a probabilistic methodology that should take into account uncertainties of input variables (e.g. probability of transmission capacity outage, of severe weather conditions, of unplanned outage of power plants, variability of demand, etc.). The methodology would also indicate the probability of a critical situation actually occuring and of low level of cross-border capacity. This methodology should be used not only for seasonal outlooks but also for weekly risk assessments by RSCs.

This option also contemplates the **reinforcement of tasks and powers of the Electricity Coordination Group** with a view to ensure transparency and wide discussion between Member States in the preventive phase and after declaration of early warning/crisis. In particular, the Group would be the forum for the discussion of the draft plans and the measures that Members States foresee to implement based on the results of the seasonal outlooks. The Group could also play a role in the assessment of measures adopted by Member States in early warning/crisis. More generally, the Group could be given concrete tasks to discuss policies in the area of security of supply, for instance, through regular discussions on the basis of ENTSO-E adequacy outlooks. It could issue recommendations and develop best practice. The reinforced role would enhance the coordination of measures and ensure more uniformity and coherent plans. Overall, the reinforcement of tasks and powers of the Electricity Coordination Group would contribute to enhance cooperation and to build trust and confidence among Member States.

In addition to the obligation to notify immediately the declaration of early warning or crisis and provide Member States concerned and the Commisison with all relevant information, under Option 2 Member States would be obligated to carry out **an ex-post evaluation**. The evaluation should be submitted to the Commission at the latest six weeks after the lifting of early warning or crisis. The assessments should be presented by the Member States concerned at the Electricity Coordination Group.

To allow for a precise monitoring of how well Member States' systems perform in the area of security of supply, **security of supply indicators** would be introduced. ENTSO-E would calculate for all Member States the following security of supply indicators: expected

[26] That agreements similar to the Nordic TSOs could be a best practice also for the system of continental Europe as it mentioned by the Dutch TSO TenneT to the public consultation. It recommends to have common rules and definitions and defining allowed measures on different levels of criticality, as security of electricity supply is becoming an issue of reginal rather than national importance.

energy non served (EENS) expressed in GWh/year and loss of load expectation (LOLE) expressed in hours/year. ENTSO-E would conduct the security of supply performance measurements based on the indicators on annual basis, at the occasion of the adequacy assessment outlook. The introduction of security of supply indicators to assess how well Member States perform in the area of security of supply would enhance comparability and mutual trust in neighbours.

Option 3: Full harmonisation and full decision-making at regional level

Assessments and plans

Built on Option 2, under Option 3 the assessment of rare and extreme risks would be carried out at EU level, which would prevail over national assessments.

The **risk preparedness plans** would be developed on **regional level**[27]. In each region the Member States would need to agree on one risk preparedness plan which would address the most relevant risks in each region. The list of measures to mitigate the risks should be developed on and co-ordinated at the regional level by the ROCs. This would allow a harmonised response to potential crisis situation in each region.

Even though the regional plans would ensure full coherence of actions ahead and in particular in a crisis, it would be difficult that all national specificities could be addressed through regional plans.

On **cybersecurity** Option 3 would go one step further and nominate a dedicated body (agency) to deal with cybersecurity in the energy sector. This would guarantee full harmonisation on risk preparedness, communication, coordination and a coordinated cross-border reaction on cyber-incidents.

Crisis management

Regarding **crisis management**, under Option 3 crisis would have to be managed according to the regional plans agreed among Member States. The Commission would determine the key elements of the regional plans such as: commonly agreed regional load-shedding plans, rules on customer categorisation, a harmonised definition of 'protected customers' (high priority grid users) at regional level or specific rules on crisis information exchanges in the region. Under Option 3, the Commission would also create a **detailed 'emergency rulebook'** with an exhaustive list of measures that can be taken by Member States and TSOs in crisis situations.

[27] The results of the public consultation showed that only few stakeholders were in favour of regional or EU wide plans. Some stakeholders mentioned the possibility to have plans on all three levels (national, regional and EU), e.g. see the answers of Latvian government, EDSO, GEODE, Europex.

Monitoring

The seasonal outlooks carried out by the ENTSO-E and ROCs would include a proposal of ROCs for each reagion of measures to mitigate the risks identified. Member States would be obligated to implement them.

In order to also harmonize monitoring practices on a European level and ensure full consistency, a European standard (e.g. for EENS and LOLE) on Security of Supply could be developed and fixed (e.g. determined value to be fulfilled by all Member States) which could be used to monitor the Member State performance.

6.1.5. *Comparison of the options*

Option 1 (Common minimum rules to be implemented by Member States)

Contribution to the policy objectives

Under this option, Member States would be required to draw up risk preparedness plans, built on common elements, and to respect certain common minimum rules when managing crisis situations.

The main benefit this option would bring is better preparedness, due to the fact that a common approach is followed across Europe, thus excluding the risk that some Member States 'under-prepare'. In addition, better preparedness, transparency and clear rules on crisis management are likely to reduce the chances of premature market intervention.

By imposing obligations to co-operate and lend assistance, Member States are also less likely to 'over-protect' themselves against possible crisis situations, which in turn will contribute to more security of supply at a lesser cost.

Economic Impacts

Overall, the policy tools proposed under this option should have positive effects. Putting in place a more common approach to crisis prevention and management would not entail additional costs for businesses and consumers. It would, by contrast, bring clear benefits to them.

First, a more common approach would help better prevent blackout situations, which are extremely costly. The immense costs of large-scale blackouts provide an indication of potential benefits of improved preparation and prevention[28].

[28] Previous blackouts in Europe had severe consequences. For example, the blackout in Italy in September 2003 resulted in a power disruption for several hours affecting about 55 million people in Italy and neighbouring countries and causing around 1.2 billion euros worth of damage. (source: *The costs of blackouts in Europe* (2016), EC CORDIS: http://cordis.europa.eu/news/rcn/132674_en.html).

Table 8: Overview over most severe blackouts in Europe

Country & year	Number of end-consumers interrupted	Duration, energy not served	Estimated costs to whole society
Sweden/Denmark, 2003	0.86 million (Sweden); 2.4 million (Denmark)	2.1 hours, 18 GWh	EUR 145 – 180 million
France, 1999	1.4 - 3.5 million	2 days–2 weeks, 400 GWh	EUR 11.5 billion
Italy/Switzerland, 2003	55 million	18 hours	
Sweden, 2005	0.7 million	1 day – 5 weeks, 11 GWh	EUR 400 million
Central Europe, 2006	45 million	Less than 2 hours	

Source: SESAME: Securing the European Electricity Supply Against Malicious and Accidental Threats

A more common approach to emergency handling, with an obligation for Member States to help each other, would help to avoid or limit the effects of potential blackouts. A more common approach, with clear obligations to e.g., follow up on the results of seasonal outlooks, would also reduce the costs of remedial actions TSOs have to face today[29]. This, in turn, should have a positive effect on costs overall.

In addition, improving transparency and information exchange would facilitate coordination, leading to a more efficient and less costly measures.

By ensuring that electricity markets operate as long as possible also in stress situations, cost-efficient measures to prevent and resolve crisis are prioritized.

The overall impact of the Commission Recommendations on cybersecurity for the energy sector can be very broad, given the voluntary nature of this approach. If fully followed by all Member States, the same impacts as in Option 2 should be considered. If only partially considered by Member States, the average administrative cost would be rather low.

Who should be affected and how

Option 1 is expected to have a positive effect on society at large and electricity consumers in particular, since it helps prevent crisis situations and avoid unnecessary cut-offs. Given the nature of the measures proposed, no major other impact on market participants and consumers is expected.

[29] The example of the Summer Outlook 2016 for Poland involves the following remedial actions to prevent emergency situations: (i) switching measures of the respective TSOs PSE and 50Hertz, as well as (ii) rescheduling of DC loop flows involving DE, DK, SE, PL, (iii) bilateral re-dispatch between DE and PL and (iv) multilateral re-dispatch additionally involving e.g. AT, CH. Out of those, (i) and (ii) are non-costly measures whereas re-dispatch induces significant costs.

On cybersecurity, given the voluntary approach of this option, several stakeholders (TSOs, DSOs, generators, suppliers and aggregators) could be affected. However, the impact is estimated limited as the costs of cybersecurity for regulated entities merely need to get considered and taken into account by the regulatory authority. Thus, the TSOs and DSOs affected could recover their costs via grid tariffs. In that case, the pass through of costs would have an impact on consumers that could see a slightly increased in the final prices of electricity.

Impact on business and public administration

The preparation of risk preparedness plans as well as the increased transparency and information exchange in crisis management imply a certain administrative effort[30]. However, the impact in terms of administrative impact would remain low, as currently Member States already assess risks relating to security of supply, and all have plans in place for dealing with electricity crisis situations[31].

In addition, it is foreseen to withdraw the current legal obligation for Member States to draw up reports monitoring security of supply[32], as such reporting obligation will no longer be necessary where national plans reflect a common approach and are made transparent. This would reduce administrative impacts.

Option 2 (Common minimum rules to be implemented by Member States plus regional co-operation)

Contribution to the policy objectives

Option 2 build on Option 1, but adds the dimension of regional (and some) EU-level co-operation. In particular, it requires Member States to pre-agree on certain aspects of the Risk Preparedness Plans (notably on how to deal with situations of a simultaneous electricity crisis). It also calls for a more systematic assessment of rare/ extreme risks at the regional level. Given the interlinked nature of EU's electricity systems, enhanced regional co-operation brings clear benefits when it comes to preventing and managing crisis situations.

The regional approach in the identification of the crisis scenarios ensures a common strategy to minimise impacts of possible crisis, focus in particular on correlated risks and on risks that could affect simultaneously several Member States. This would significantly improve level of preparedness at national, regional and EU level, as the cross-border considerations are duly taken into account since the beginning. The regional coordination of plans would build trust between Member States which is crucial in times of crisis. The harmonised approach via Network Codes/Guidelines would also ensure a minimum level of harmonization for cybersecurity in the energy sector throughout the EU.

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30 Administrative costs are defined as the costs incurred by enterprises, the voluntary sector, public authorities and citizens in meeting legal obligations to provide information on their action or production, either to public authorities or to private parties.

31 All twenty-eight Member States have a general obligation to monitor the security of electricity supply from which implicitly follows the obligation to assess electricity supply risks, while nine countries have a direct legal obligation to carry out an assessment of these risks. (Source: *Risk Preparedness Study*).

32 Article 4 of the Electricity Directive; Article 7 of the Electricity SoS Directive.

The agreement at **regional level of some aspects of the risk preparedness plan** would ensure that coordination and cooperation is agreed in advance. This is particularly relevant as regards situations of simultaneous crisis.

The regional approach for the **ENTSO-E's seasonal outlooks** would ensure a more granular and in-depth assessment of possible cross-border situations. This could give a better indication of the impacts of possible crisis situations and the possible solutions that cooperation could bring.

The introduction of **security of supply indicators** to assess how well Member States perform in the area of security of supply would enhance comparability and mutual trust in neighbours.

The reinforced role of the **Electricity Coordination Group** would ensure transparency and wide discussion in prevention and managing crisis. It would also facilitate the exchange of information in situations of early warning and crisis and the ex-post evaluation. In addition, it would enhance the coordination of measures and ensure more uniformity and coherent plans. Overall, the reinforcement of tasks and powers of ECG would contribute to enhance cooperation and to build trust and confidence among Member States.

Economic Impacts

This option would lead to better preparedness for crisis situations at a lesser cost through enhanced regional coordination. The results of METIS simulations[33] show that well integrated markets and regional coordination during periods of extreme weather conditions (i.e. very low temperature[34]) are crucial in addressing the hours of system stress hours (i.e. hours of extreme electricity demand), and minimizing the probability of loss of load (interruption of electricity supply).

Most importantly, while a national level approach to security of supply disregards the contribution of neighboring countries in resolving a crisis situation, a regional approach to security of supply results in a better utilization of power plants and more likely avoidance of loss of load. This is due to the combined effect of the following three factors: (i) the variability of renewable production is partly smoothed out when one considers large geographical scales, (ii) the demands of different countries tend to peak at different times, and (iii) the power supply mix of different countries can be quite different, leading to synergies in their utilization.

The following table compares the security of supply indicator "expected energy non-served" (EENS) assessed by METIS for the three levels of coordination (national, regional,

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33 "*METIS Study S16: Weather-driven revenue uncertainty for power producers and ways to mitigate it*", Artelys (2016).

34 Even though periods with very low temperature occur rarely (9C difference between the 50 year worst case and the 1% centile) countries can face high demand peaks (e.g. Nordic countries and France) mainly due to the high consumption for the electric heating. As example, the additional demand for the 50 years peak compared to the annual peak demand is 23% for France, 18% for Sweden and 17.3% for Finland.

European)[35]. It highlights an overestimation of the loss of load, when it is measured in a scenario of non-coordinated approach, which does not take into account the potential mutual assistance between countries.

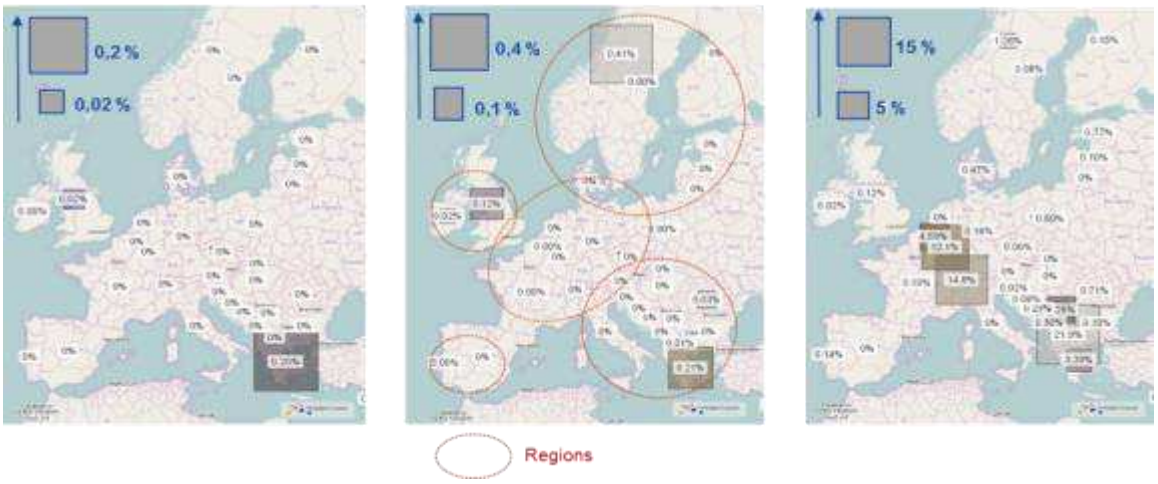
Table 9 - Global expected energy non-served as part of global demand within the three approaches

Level	EENS (% of annual load) – ENTSO-E V1[36] scenario
National level	0,36 %
Regional level	0,02 %
European level	0,01 %

Source: METIS

The EENS for the three levels of coordination are represented on the figure below. When the security of supply is assessed at the national level, many countries of central Europe seem to present substantial levels of loss of load. However, since these countries are interconnected, a regional assessment of security of supply (taking into account power exchanges within this region) significantly decreases the loss of load levels.

Figure 1 - EENS (%) estimation by country for scenario ENTSO-E 2030 v1 with CCGT/OCGT current generation capacities. From left to right: EENS estimated at European, regional and national levels



Source: METIS

METIS simulations also show that thanks to regional cooperation the stress situations would decrease and concentrate in a limited number of hours that may occur simultaneously. Therefore, it highlights the need for specific rules on how Member States should proceed in these particular circumstances, as proposed in this Option 2.

35 "*METIS Study S04: Stakes of a common approach for generation and system adequacy",* Artelys (2016).

36 *ENTSO-E 2030 v1: vision for 2030 "Slowest progress". The perspective of Vision 1 is a scenario where no common European decision regarding how to reach the CO2-emission reductions has been reached. Each country has its own policy and methodology for CO2, RES and system adequacy.*

As the overall cost of the system would decrease thanks to enhanced coordination this could have a positive impact on prices for consumers.

On the contrary, a lack of coordination on how to prevent and manage crisis situations would imply significant opportunity costs. A recent study also evidenced that the integration of the European electricity market could deliver significant benefits of 12.5 to 40 billion euro until 2030. However, this amount would be reduced by 3 to 7.5 billion euro when Member States pursue security of electricity supply objectives following going alone approaches[37].

Overall, the costs to develop and to follow a Network Code or Guidelines on cyber-security would be limited. Additionally, given the administrative nature of the Option, the impact could be estimated limited as it mostly requires harmonising existing practices available in most of Member States. In addition, some obligations specific for the energy sector would reinforce existing provisions on the NIS Directive such as the identification of operations of essential services and the reporting obligation of cyber-incidents. Security does in general not present a separate budget line; that is why it is very hard to estimate how much is already spent on cybersecurity expenditures. Some of the costs might also be hidden in other budget lines, like in human resources, securing buildings, etc. Thus there is very few evidence on cybersecurity expenses in the energy sector. As example, according to a US survey in a small sample of 21 utilities and energy companies, they spent an average of $45.8 million a year on computer security to prevent 69% of known cyber strikes against their systems in 2011[38]. On the contrary, the damages of cybersecurity breaches could be huge. Even though the range of costs varies on the incident, a recent study reveals a wide spectrum of costs ranging from $156,000 (very low end estimate) to $5.5 million per single event[39]. Additional costs may arise through losses in stock value. Overall, the costs of a blackout following a cyber-incident are the same as for a physical incident. Therefore, the overall impact of rules on cybersecurity would be limited while the benefits of preventing cyber-incidents could be high.

Who should be affected and how

As in the case for Option 1, Option 2 is expected to have a positive effect on society at large and electricity consumers in particular, since it helps prevent crisis situations and avoid unnecessary cut-offs. Given that, under Option 2, Member States would be required to effectively cooperate, and tools would be in place to monitor security of supply via the Electricity Coordination Group, such crisis prevention and management would be even more effective.

The measures would also have a positive effect on the business community, as there would be much more transparency and comparability as regards how Member States prepare for and intend to manage crisis situations. This will increase legal certainty for investors,

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37 *"Benefits of an Integrated European Energy Market (2013)"*, BOOZ&CO.

38 *Insurance as a risk management instrument for energy infrastructure security and resilience* (2013), U.S. Department of Energy: http://www.bloomberg.com/news/articles/2012-02-01/cyber-attack-on-u-s-power-grid-seen-leaving-millions-in-dark-for-months.

39 *Insurance as a risk management instrument for energy infrastructure security and resilience"* (2013), U.S. Department of Energy: http://www.bloomberg.com/news/articles/2012-02-01/cyber-attack-on-u-s-power-grid-seen-leaving-millions-in-dark-for-months.

power generators, power exchanges but also for TSOs when managing short-term crisis situations.

Among the stakeholders the most affected would be the competent authorities (e.g. Ministry, NRA) as actors responsible for the preparation of the risk preparedness plans (see below, assessment of impacts on public authorities).

Other actors, such as TSOs, could be also affected, given in particular the possibility for the Competent Authorities to delegate certain tasks (e.g. carry out the risk assessment). However, as the tasks delegated would be closely linked to the tasks attributed by law to the TSOs (e.g. ensuring the ability of the system to meet demand), the impact of the specific tasks delegated would be limited.

ENTSO-E could be affected as well as it has to identify the cross-border scenarios and improved the seasonal outlooks with more robust regional analysis. Given the possibility for ENTSO-E to delegate certain tasks to the ROCs, the national TSOs as members of the ROCs could be also affected. However, the impact would remain limited given the current experience of TSOs on risk analysis and the existing cooperation among the TSOs.

Impact on business and public authorities

The assessment of this option shows a limited increase in administrative impact, although it would be to some extent higher than Option 1, given that national authorities would be required to pre-agree part of their risk preparedness plans in a regional context.

However, existing experiences show that a more regional approach to risk assessment and risk preparedness is technically and legally feasible. Further, since the regional parts of the plans would in practice be prepared by regional co-ordination centres between TSOs, the overall impact on Member States' administrations in terms of 'extra burdens' would be limited, and be clearly offset by the advantages such co-operation would bring in practice.[40]

In addition, more regional cooperation would also allow Member States to create synergies, to learn from each other, and jointly develop best practices. This should, overtime, lead to a reduction in administrative impacts.

Finally, European actors such as the Commission and ENTSO-E would provide guidance and facilitate the process of risk preparation and management. This would also help reduce impacts on Member States.

It should be noted, that under Option 2 (as is the case for Option 1) no new body or new reporting obligation is being created, and that existing obligations are being streamlined. Thus, the Electricity Coordination Group is an existing body meeting regularly, for the future it is foreseen to make this group more effective by giving it concrete tasks. Further, national reporting obligations would be reduced (e.g. repealing the obligation of Article 4

[40] The Nordic TSOs, regulators and energy authorities cooperate through *NordBER*, the Nordic Contingency and Crisis Management Forum. This includes information exchange and joint working groups and contingency planning for the overall Nordic power sector as a supplement to the national emergency work and TSO cooperation (www.nordber.org).

of Electricity Directive) and EU-level reporting would take place within the context of existing reports and existing reporting obligations (e.g. ACER annual report Monitoring the Internal Electricity and Natural Gas Markets).

Option 3 (Full harmonisation and full decision-making at regional level)

Contribution to the policy objectives

The measures of this Option pursue the maximum level of harmonisation at EU level with the clear aim to increase the level of preparedness ahead of a crisis and the mitigation of the impact in the case of an unexpected event occurs.

The starting point for this option is the preparation of **risk preparedness plans at regional level**. Even though the regional plans would ensure full coherence of actions ahead and in particular in a crisis, it would be difficult that all national specificities could be addressed through regional plans.

The creation of a new EU agency dedicated to cybersecurity in the energy sector would ensure full harmonisation on risk preparedness, communication and coordination across Europe. Additionally, the agency would facility a quick and coordinated cross-border reaction on cyber-incidents.

Economic Impacts

The regional coordination through the regional plans would have a positive impact in term of cost as the number of plans would be necessary less than twenty-eight plans and limited to the number of regions. In addition, the coordination at European level would decrease slightly the loss of load level compared to the regional coordination (EENS 0,01% compared to 0,02%).

On the contrary, on cybersecurity, the creation of a dedicated agency at EU level would have important economic implications as this agency would be a new body that does not exist yet and which is also not foreseen in the NIS Directive. The costs of creating this new agency are not only limited to the creation of a new agency itself, but the costs would also have to include the roll-out of a whole security infrastructure. For example, the estimated costs of putting in place the necessary security infrastructure and related services to establish a comparable national body - cross-sectorial governmental Computer Emergency Response Team (CERT) with the similar duties and responsibilities at national level as the planned pan-European sector-specific agency - would be approximately 2.5 million EUR[41] per national body. This means that the costs for the security infrastructure would be manifold for a pan-European body. In terms of human resources, for the proper functioning of the new agency with minimum scope and tasks at EU level, it is estimated a staff of 168 full time equivalents (considering 6 full time equivalents per Member State sent to the EU agency). The representation from all Member States in the agency is essential in order to

[41] SWD(2013) 32 final.

ensure trust and confidence on the institution. However, the availability of network and information security experts who are also well-versed in the energy sector is limited.

Who should be affected and how

The obligation of regional plans would have important implications for the competent authorities as the coordination and agreement of common issues (e.g. load shedding plan, harmonised definition of protected customers) would be a lengthy and complex process.

On cybersecurity, the creation of the new agency at EU level would mobilize highly qualified human resources with skills in both energy and information and communication technologies (ICT). This could have a potential impact on national administrations and energy companies as long as some of the experts in the field could be recruited by the new institution. However, the impact would be limited as the representation for all Member States should be guaranteed. Therefore, a small number of experts (around 6) per country could be recruited.

Impact on business and public authorities

Overall Option 3 would imply significantly administrative impact in the preparation of the regional plans. It would require important efforts to gather information related to national and regional circumstances and contribute to the joint task of assessing the risks and identifying the measures to be included in the plans. In any case, it would seem difficult to coordinate within a region the national specificities and risks originate mostly in one Member State.

The creation of a new agency on cybersecurity would imply significant administrative impacts in the preparation and set-up of the agency, as well as in the communication structure with already existing cross-sectorial bodies of Member States (CERTs/CSIRTs).

<u>Conclusion</u>

From the point of view of impacts, particularly costs and administrative impact, Option 1 could in principle appear as preferred option. However, the performance in terms of effectiveness and efficiency is limited compared to Option 2 and 3. Additionally, impacts associated with Option 3 are neither proportionate nor fully justified by the effectiveness of the solutions, which makes Option 3 perform poorly in terms of efficiency compared to Option 2.

Overall, the more harmonized approach to security of supply through minimum rules pursued by Option 1 would not solve all the problems identified, in particular, the uncoordinated planning and preparation ahead of a crisis. As regards Option 1, the main drawback of this approach is that each Member State would be drafting and adoption the national risk preparedness plans under its own responsibility. Given the urgency to enhance the level of protection against cyber threats and vulnerabilities, it must be concluded that Option 1 regarding cybersecurity is not recommended, because it is not viable for reaching the policy objectives, given that the effectiveness would depend on whether the voluntary approach would actually deliver a sufficient level of security.

Option 2 addresses many of the shortcomings of Option 1 providing a more effective package of solutions. In particular, the regionally coordinated plans ensure the regional identification of risks and the consistency of the measures for prevention and managing crisis situations. For cybersecurity this option creates a harmonised level of preparedness

in the energy sector and ensures that all players have the same understanding of risks and that all operators of essential services follow the same selection criteria for the energy sector throughout Europe.

Overall, Option 3 represents a highly intrusive approach that tries to address possible risks by resorting to a full harmonisation of principles and the prescription of concrete solutions. The assessment of impacts in Option 3 shows that the estimated impact on cost is likely to be high and looking at the performance in terms of effectiveness, it makes Option 3 a disproportionate and not very efficient option.

In the light of the previous assessment, the preferred option would be Option 2. This option is the best in terms of effectiveness and, given its economic impacts, has been demonstrated to be the most efficient as well as consistent with other policy areas.

6.1.6. *Subsidiarity*

The necessity of EU action is based on the evidence that national approaches not only lead to sub-optimal measures, they also make the impacts of a crisis more acute. Additionally, the risk of a blackout is not confined to national boundaries and could directly or indirectly affect several Member States. Therefore, national actions in terms of preparedness and mitigation cannot only be defined nationally, given the potential impact on the level of security of supply of a neighbouring Member State and/or on the availability of measures to tackle scarcity situation.

The increasing interconnection of the EU electricity markets requires a coordination of measures. In the absence of such coordination, security of supply measures (including measures on cybersecurity) implemented at national level only are likely to jeopardize other Member States' or the security of supply at EU level. Situations like the cold spell of 2012 showed that coordination of action and solidarity are of vital importance. An action in one country can provoke risks of blackouts in neighbouring countries (e.g. electricity export limitations imposed by Bulgaria in February 2012 had an impact in the electricity and gas sectors in Greece). By contrary, coordination may offer a wider range of solutions.

So far, the potential for more efficient and less costly measures thanks to the regional coordination has not being fully exploited, which is detrimental to EU consumers.

However, the regional approach to security of supply also requires paying special attention to the divergences that between regions could appear. Therefore such coordinated approach requires action at the EU level. Action at EU level could be also needed under certain situations where the security of supply in the EU, cannot be sufficiently achieved by the Member States alone and can therefore, by reason of the scale or efforts of the action, be better achieved at Union level.

The EU action is framed under Article 194 of Treaty of the Functioning of the Energy Union (TFEU) which recognizes that certain level of coordination, transparency and cooperation of the EU Member states' policies on security of supply is necessary in order to ensure the functioning of the energy market and the security of supply in the Union.

6.1.7. *Stakeholders' Opinions*

The results of the *Public Consultation on Risk Preparedness in the area of Security of Electricity Supply* showed that the majority of respondents (companies, associations and

Governments) take the view that the current legal framework (the SoS Directive) is not sufficient to address the interdependencies of an integrated European electricity market.

Assessments and Plans

A majority of stakeholders is in favour of requiring Member States to draw up risk preparedness plans (see as example the answers from the Dutch and Latvian Governments, GEODE, CEDEC, EDF UK, TenneT, Eurelectric and Europex).

Stakeholders also see a need for regional coordination of the assessment and preparation for rare/extreme risks (see for example the anwers of the Estonian, Finish, French, Dutch, Swedish Governments as well as ENTSO-E and Eurelectric). However, there is no agreement on how to 'define' regions for planning and cooperation. Most stakeholders suggest to use existing (voluntary) systems for regional cooperation as a staring point (e.g. the Finish Government) and emphasize the role of the existing RSCs (e.g. the Czech Government). Also the European Parliament[42] takes the view that it makes sense to step up cooperation within and between regions under the coordination of ACER and with cooperation of ENTSO-E, particularly as regards evaluating cross-border impacts.

Stakeholders further make the case for a common methodology for assessing risks to ensure comparability of results (e.g. EDF). This could be achieved through common high-level templates (e.g. answers from the Finish, Dutch, Norwegian Governments and the German Association of Local Utilities). There is general acknowledgement of the importance of preventing risks related to cyber-attacks.

Many stakeholders stress the need for a definition/clarification on roles and responsibilities as well as operational procedures to be followed (e.g. who to contact in times of crisis). Stakeholders see the added value of designating one 'competent authority' per Member States, however there is no agreement on who this should be. Some argue that the choice should be left with the Member States (see for example the answers from the Norwegian Government or the German Association of Local Utilities) while others prefer a strong mandate of the TSOs (e.g. TenneT).

Crisis management

Stakeholders, in particular from the industry also request more transparency to reduce the scope for measures that unnecessarily distort markets. A majority of stakeholders sees a need for clear provisions on the suspension of market activities, "protected customers" and cost compensation (e.g. EDF).

Even though stakeholders point out that the draft Network Codes and current practice should be taken into account, they see a need for political discussion on regional level and the definition of clear principles for crisis management as e.g. curtailment in simultaneous

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[42] See: *Towards a New Energy Market Design* (June 2016), Werner Langen, European Parliament, paragraph 68.

scarcity situations requires political decision (e.g. ENTSO-E[43]). The need to develop a more common approach to managing crisis situations within the EU while taking into account the existing regional solutions is also seen by the Dutch Presidency of the European Council[44] and the Florence Forum[45].

Monitoring

In order to ensure adequate oversight, most stakeholders are in favour of a system of peer reviews to be conducted in a regional context or in the frame of the Electricity Coordination Group which could provide the interlinkage between technical and political/economical aspects. Monitoring could be further enhanced through more common and transparent approach to standards. Some stakeholders wish a stronger role for ACER/ENTSO-E and a rather facilitating role for the Commission (e.g. CEER, ENTSO-E)

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43 See for example *ENTSO-E's presentation on Capacity Mechanisms (TOP 2.4)* from the Florence Forum in June 2016, ENTSO-E (available: https://ec.europa.eu/energy/en/events/meeting-european-electricity-regulatory-forum-florence).

44 See *Note to the Permanent Representatives Committee/Council: Messages from the Presidency on electricity market design and regional cooperation*, paragraph 7.

45 See *Conclusions from Florence Forum*, March 2016, paragraph 10.

7. DETAILED MEASURES ASSESSED UNDER PROBLEM AREA 4: THE SLOW DEPLOYMENT OF NEW SERVICES, LOW LEVELS OF SERVICE AND POOR RETAIL MARKET PERFORMANCE

Fejl! Brug fanen Hjem til at anvende Heading 2 på teksten, der skal vises her.

7.1. Addressing energy poverty

7.1.1. *Summary table*

Objective: Better understanding of energy poverty and disconnection protection to all consumers				
	Option: 0	**Option: 0+**	**Option 1**	**Option 2**
	BAU: sharing of good practices.	BAU: sharing of good practices and increasing the efforts to correctly implement the legislation. Voluntary collaboration across Member States to agree on scope and measurement of energy poverty.	Setting an EU framework to monitor energy poverty.	Setting a uniform EU framework to monitor energy poverty, preventative measures to avoid disconnections and disconnection winter moratorium for vulnerable consumers.
Energy poverty		EU Observatory of Energy poverty (funded until 2030).	Option 0+: EU Observatory of Energy Poverty (funded until 2030). Generic description of the term energy poverty in the legislation. Transparency in relation to the meaning of energy poverty and the number of households in a situation of energy poverty Member States to measure energy poverty. Better implementation of the current provisions.	Option 0+: EU Observatory of Energy Poverty (funded until 2030). Specific definition of energy poverty based on a share of income spent on energy. Member States to measure energy poverty using required energy. Better implementation and transparency as in Option 1.
Disconnection safeguards		NRAs to monitor and report figures on disconnections.	NRAs to monitor and report figures on disconnections.	NRAs to monitor and report figures on disconnections. A minimum notification period before a disconnection. All customers to receive information on the sources of support and be offered the possibility to delay payments or restructure their debts, prior to disconnection. Winter moratorium[46] of disconnections for vulnerable consumers.

[46] An all season moratorium may be suitable to some MS but not necessarily to all. In addition, evidence on Excess Summer Death is less developed than for Excess Winter Deaths which makes it difficult to quantify the cost/benefits. Finally, stakeholders have noted that while in winter, heating is necessary, particularly if affected by bad health. Other cost effective solutions can be found for heatwave (drink water; staying indoors). We are aware that in some MS the housing stock is not prepared for heatwaves and houses are overheated. However, this may be better assessed at Member State level.

Pros	Continuous knowledge exchange.	Stronger enforcement of current legislation and continuous knowledge exchange.	Clarity on the concept and measuring of energy poverty across the EU.	Standardised energy poverty concept and metric which enables monitoring of energy poverty at EU level. Equip Member States with the tools to reduce disconnections.
Cons	Existing shortcomings of the legislation are not addressed: lack of clarity of the concept of energy poverty and the number of energy poor households persist. Energy poverty remains a vague concept leaving space for Member States to continue inefficient practices such as regulated prices. Indirect measure that could be viewed as positive but insufficient by key stakeholders.	Insufficient to address the shortcomings of the current legislation with regard to energy poverty and targeted protection.	New legislative proposal necessary. Administrative costs.	New legislative proposal necessary. Higher administrative costs. Potential conflict with principle of subsidiarity. Specific definition of energy poverty may not be suitable for all Member States. Safeguards against disconnection may result in higher costs for companies which may be passed to consumers. Safeguards against disconnection may also result in market distortions where new suppliers avoid entering markets where risks of disconnections are significant and the suppliers active in such markets raise margins for all consumers in order to recoup losses from unpaid bills. Moratorium of disconnection may conflict with freedom of contract.
Most suitable option(s): Option 1 is recommended as the most balanced package of measures in terms of the cost of measures and the associated benefits. Option 1 will result in a clear framework that will allow the EU and Member States to measure and monitor the level of energy poverty across the EU. The impact assessment found that the propose disconnection safeguards in Option 2 come at a cost. There is potential to develop these measures at the EU level. However, Member States may be better suited to design these schemes to ensure that synergies between national social services and disconnection safeguards can be achieved. Please note that Option 1 and Option 2 also include the measures described in Option 0+.				

7.1.2. *Description of the baseline*

Energy has a fundamental role to ensure adequate households' standards of living. Energy services are crucial to ensure warm homes, water and meals, lighting, refrigeration and the operation of other appliances. European households are, however, increasingly unable to meet their basic energy needs due to energy prices increasing faster than household income and inefficient housing and household appliances leading to higher energy bills[47].

An affordable connection to energy supply facilitates modern daily life by providing essential services and enabling social interactions. Lack of access to an energy supply impinges on the rights of energy consumers and negatively affects living conditions and health[48]. This is well recognised in legislation[49] and reflected in the overall objectives of the European Internal Energy Market (IEM).

Under the existing provisions in the Electricity and Gas Directive, Member States have to address energy poverty where identified. The evaluation of the provisions found important shortcomings stemming from the opaqueness of the term *energy poverty*, particularly in relation to consumer vulnerability, and the lack of transparency with regards to the number of households suffering from energy poverty across Member States.

The aim of this Section is to describe the two policy areas impacted by the proposed options: energy poverty and disconnection safeguards.

Energy poverty: drivers of energy poverty and number of households in energy poverty

Energy poverty is often defined as the situation in which individuals or households are not able to adequately heat their homes or meet other required energy services at an affordable cost[50].

Energy poverty is usually discussed in the context of general poverty. Yet, households face widely varying costs to achieve the same level of warmth for reasons other than income, such as, energy efficiency of the dwelling or household's ability to interact with the market. In addition, an adequate level of energy is essential for citizens to function and actively participate in society[51].

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47 *Energy poverty and vulnerable consumers in the energy sector across the EU: analysis of policies and measures*. (2015). Insight_E.

48 COM (2015) *"A framework Strategy for a Resilient Energy Union with a Forward-looking Climate Change Policy"*

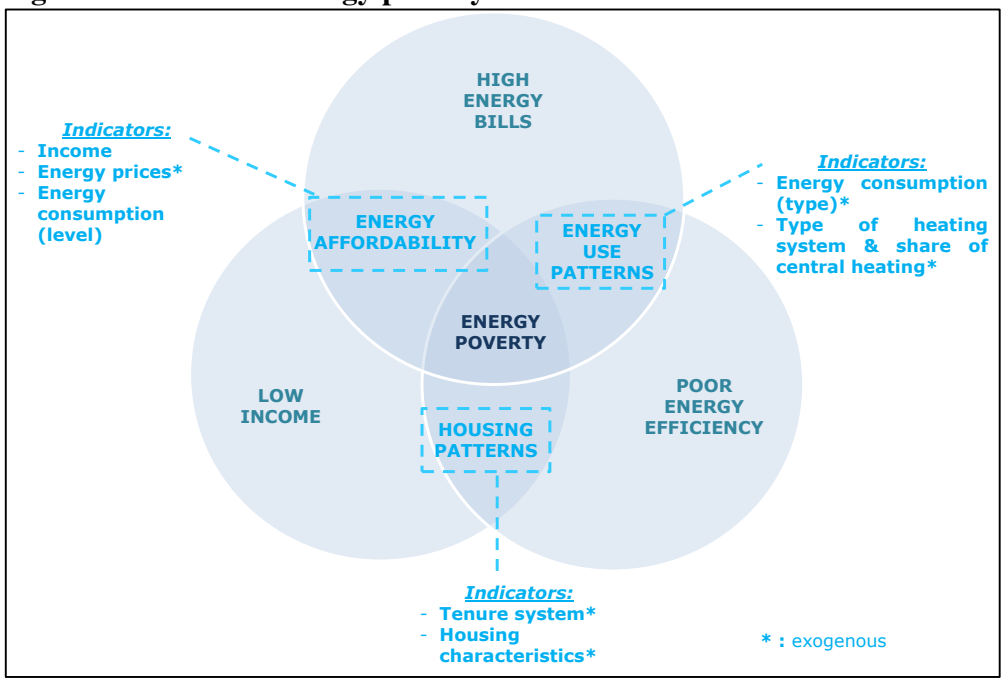
49 Directive 2009/72/EC Point 45 states that "Member States should ensure that household customers...enjoy the right to be supplied with electricity of a specified quality at clearly comparable, transparent and reasonable prices."

50 *Energy* poverty *and vulnerable consumers in the energy sector across the EU: analysis of policies and measures*. (2015). Insight_E.

51 *Fuel Poverty: The problem and its measurement*. 2001. John Hills. Available at: http://sticerd.lse.ac.uk/dps/case/cr/CASEreport69.pdf. *Working Paper on Energy Poverty*. 2016. Vulnerable Consumer Working Group. The Vulnerable Consumer Working Group (VCWG) provides advice to the European Commission on the topics of consumer vulnerability and energy poverty.

Insight_E identifies high energy bills, low income and poor energy efficiency as the main drivers of energy poverty[52].

Figure 1: Drivers of energy poverty



Source: Insight_E (2015)

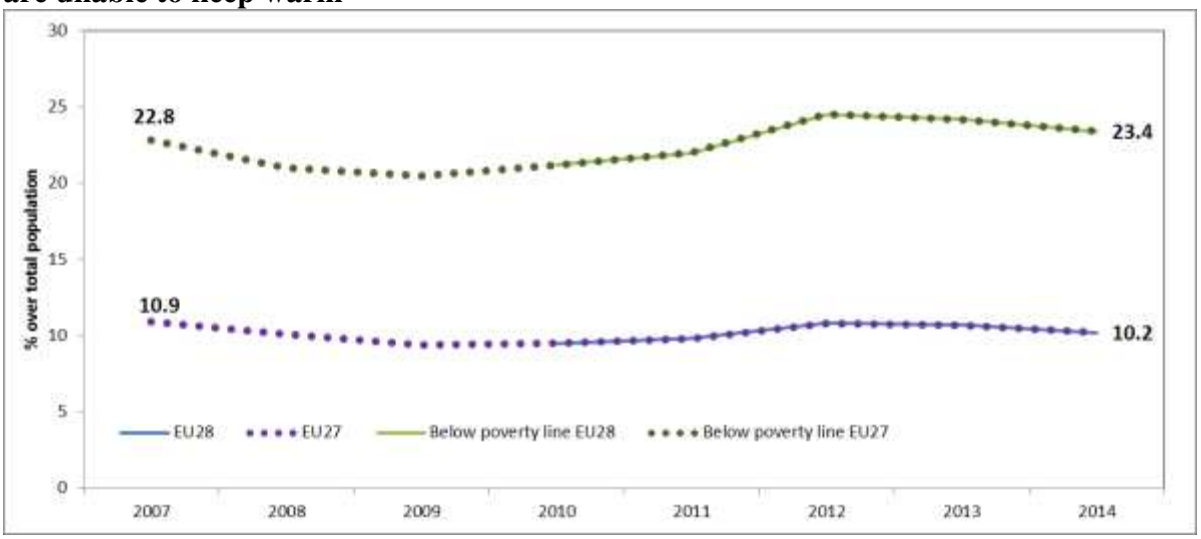
Looking at the drivers, it is likely that energy poverty impacts low-income households with higher energy needs. Eurostat publishes the number of households who felt unable to keep warm during winter. This indicator is widely used in the literature as a proxy indicator of energy poverty. In 2014, around 10% of the EU population was not able to keep their home adequately warm[53] (see Figure below).

Industry, consumer associations, regulators and Member States representatives are members of the group.

52 *Energy poverty and vulnerable consumers in the energy sector across the EU: analysis of policies and measure*s. (2015). Insight_E.

53 The indicator is measured as part of the Eurostat Survey on Income and Living Conditions (EU-SILC).

Figure 2: Percentage of all households and households in poverty that consider they are unable to keep warm



Source: Eurostat – SILC indicators (Inability to keep home adequately warm - Code: ilc_mdes01)

Evidence suggests that energy poverty is increasing in Europe. In recent years, energy prices have risen faster than household disposable income[54], which has been particularly problematic for low-income households, who depending on their individual circumstances, may have had to under-heat their homes, reduce consumption on other essential goods and services or get into debt to meet their energy needs[55].

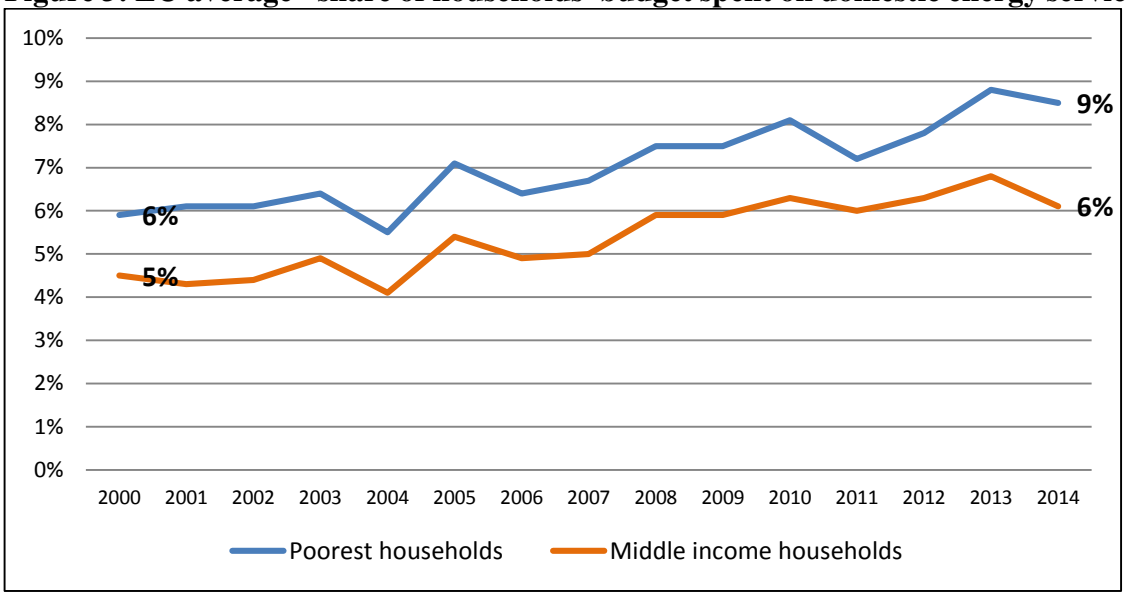
Data from Member States on household energy consumption shows that the poorest households have seen their share of disposable income spent on gas, electricity and other fuels used for domestic use[56] increased more than middle-income households. The Figure below presents the EU share of household expenditure on domestic energy between 2000 and 2014.

[54] Source: Eurostat (Electricity prices for domestic consumers; Gas prices for domestic consumers; disposable income of households per capita; period 2010 – 2014).

[55] *Working Paper on Energy Poverty*. 2016. Vulnerable Consumer Working Group.

[56] Domestic use refers to heating, lighting and powering appliances.

Figure 3: EU average - share of households' budget spent on domestic energy services



Source: National Statistical Authorities of EU Member States; VCWG (2016)

In 2014, expenditure on energy services for the poorest households in the EU increased by 50%, reaching almost 9% of their total budget.

Preliminary analysis for the upcoming Energy Price and Cost Report indicates that in most of the EU Member States the share of energy in total expenditure grew faster in the lowest income quintile than in the third quintile, implying that increasing energy costs impacted poorer households more significantly than those on middle income. For instance, the EU average spending for households in the lowest income quintile on electricity and gas increased by 24% in real terms. As a comparison, middle income households saw their domestic energy expenditure increase by 18% in real terms.

The lack of affordability of domestic energy services, which can be understood as a proxy for energy poverty, can have serious consequences on households' well-being.

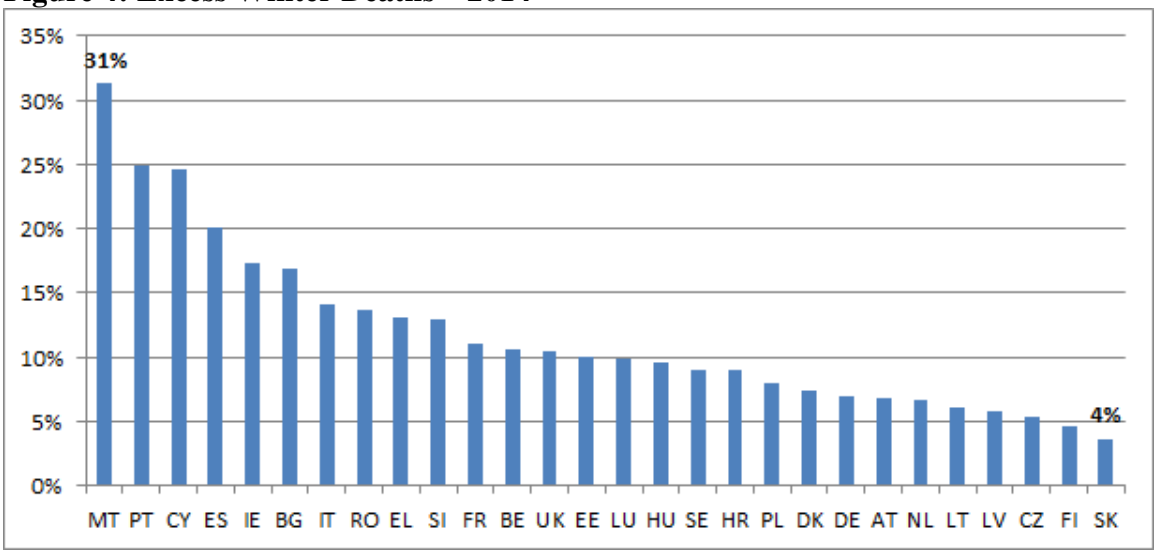
The Marmot Review highlighted the strong relationship between colder homes, Excess Winter Deaths (EWDs) and increased incidence of other health problems. The review found that 22% of EWDs in the UK could be attributed to cold housing. Healy[57] found that countries with the poorest housing (Portugal, Greece, Ireland, the UK) show the highest excess winter mortality.

The Figure below presents EWD[58] for the EU Member States in 2014. The Figure shows that deaths in winter are significantly higher than during the rest of the year, particular for some Member States.

[57] *Excess winter mortality in Europe: a cross country analysis identifying key risk factors*. (2003). Healy.

[58] *Excess Winter Deaths* = {[winter death (December – March)]- 0.5[Non-winter deaths (August – November, April – July]} / (average of non-winter deaths)

Figure 4: Excess Winter Deaths – 2014



Source: EU Buildings Database (BPIE)

In addition to the negative impacts on health, energy poverty can result in high level of indebtedness or even disconnection. At the EU level, energy poverty risks excluding some consumers from the energy transition, preventing them from enjoying the benefits of the IEM.

The issue of energy poverty or lack of affordability of domestic energy services is likely to remain relevant. In a scenario where energy prices follow GDP growth while wages, especially for low-income workers remain flat, the gap between household income and energy prices will widen and energy poverty is likely to increase. There are two main channels through which wages for low-skilled workers may be supressed:

- Automation: routine tasks which are usually carried out by low-skilled workers can be automated as technology allows. As the cost of technology falls, low-skilled wages may be supressed to compete with capital[59].
- Skill-bias innovation: modern economics rely on a more educated workforce. As demand for skilled individuals increases, it decreases the demand for unskilled workers and their wages[60]

These effects combined are likely to supress wages, making affordability of energy services more difficult for low-income households and, as a result, increase the number of households in energy poverty.

Disconnection safeguards: protecting energy poor and vulnerable consumers

[59] *Unemployment and Innovation*, No 20670, NBER Working Papers. 2014. Stiglitz.

[60] "*Skills, Tasks and Technologies: Implications for employment and earnings*", No 16082, NBER Working Papers. 2010. Acemoglu and Autor.

The evaluation identified that given the rising levels of energy poverty. Member States may have been discouraged to phase out regulated prices. Regulated prices, however, have negative implications on consumers, hindering competition and innovation[61].

The evaluation recommended that any future legislative change could look into reinforcing EU assistance on energy poverty proposing appropriate tools for addressing energy poverty which support Member States' efforts to phase-out regulated prices[62]. Article 3 of the Electricity Directive[63] and Gas Directive [64] markets reinforces the role of consumer protection and the additional need for protection of vulnerable consumers through particular measures, referring to the prohibition of electricity (and gas) in critical times as one option.

Disconnections in electricity or gas supply to residential households typically arise out of non-payment and can become especially problematic for households struggling to keep up with their bills. In addition, there may be a disproportionately negative impact on households with children or elderly residents in terms of health, education, etc.

In what follows, we provide an overview of the number of households being disconnected and the main disconnection safeguards applied by Member States.

Overview of electricity and gas disconnections in the EU

Disconnection rates vary significantly across Member States. Figure 5 indicates that the higher the disconnection level, as can be expected, the higher the arrears on utility bills[65], which increases when the income falls below 60% of the median income. Similar disconnection levels (Malta, Denmark, France, and Austria) exhibit similar levels of arrears on utility bills. However, there are some exceptions: UK, Lithuania, Belgium and Luxembourg have relatively high arrears and low disconnection rates.

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61 A detail description of the negative impacts of regulated prices and the Member States currently applying some kind of price regulation mechanism is included in Annex on Price Regulation

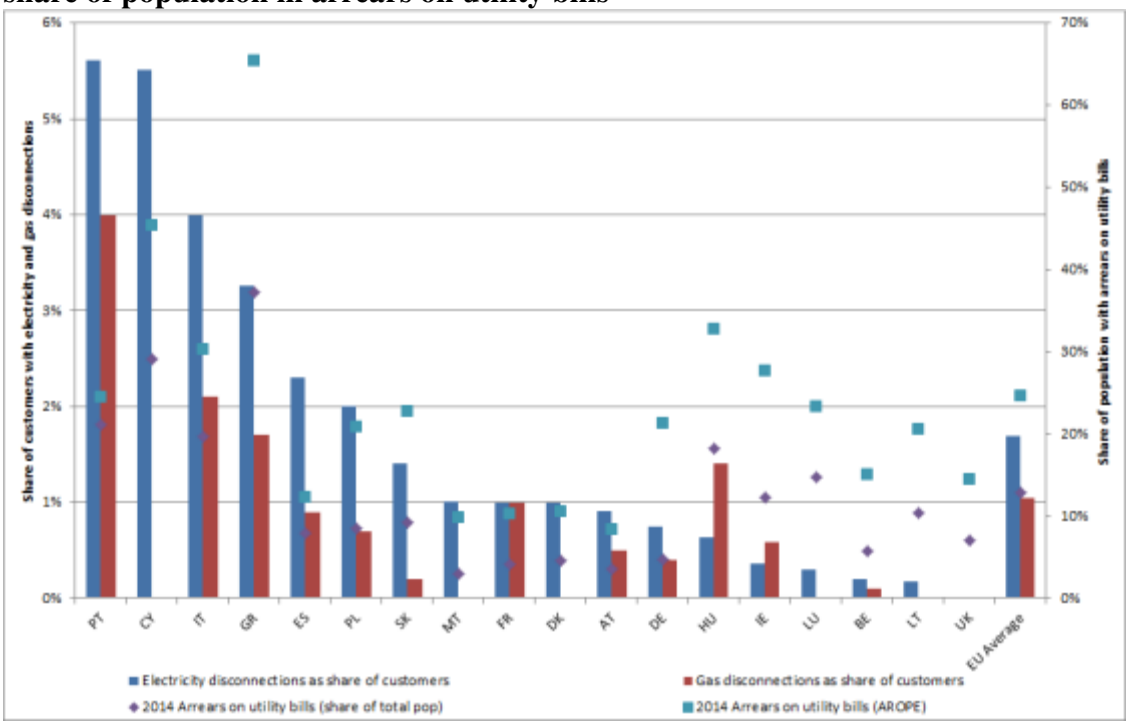
62 All energy consumers explicitly have a number of rights including a right to an electricity connection, choice of and ability to switch supplier, clear contract information and right of withdrawal, and accurate information and billing on energy consumption, vulnerable customers should receive specific protection measures to ensure adequate protection.

63 "*Member States shall take appropriate measures to protect final customers, and shall, in particular, ensure that there are adequate safeguards to protect vulnerable customers. In this context, each Member State shall define the concept of vulnerable customers which may refer to energy poverty and, inter alia, to the prohibition of disconnection of electricity to such customers in critical times. Member States shall ensure that rights and obligations linked to vulnerable customers are applied. In particular, they shall take measures to protect final customers in remote areas.*"

64 Directive 2009/73/EC of the European Parliament and the Council of 13 July 2009 concerning common rules for the internal market in natural gas and repealing Directive 2003/55/EC (OJ L 211, 14.8.2009, p. 94).

65 Eurostat EU-SILC 2014

Figure 5: Share of customers with electricity disconnections, gas disconnection, and share of population in arrears on utility bills



Source: Insight_E (Forthcoming); Data: Eurostat; CEER National Indicators Database 2015

The rate of electricity disconnections, where the data is available, is highest across the southern European Member States that have arguably been hardest hit by recessionary effects of the recent economic downturn[66]. In fact, in those Member States, households exhibit the highest shares of debt on utility bills.

In terms of gas disconnections, where the data was reported, Portugal, Italy, Greece and Hungary exhibit the highest levels of gas disconnections followed by France, Spain, Poland, Austria, Germany and Slovakia.

Disconnection safeguards: a classification of measures

Disconnection safeguards represent one of the measures that Member States implement to protect energy consumers. These measures ensure consumers have a continuous supply of energy. Such safeguards can be applied to the entire customer base or to specific groups, such as vulnerable consumers.

Disconnection safeguards can be grouped into four key measures, which can take the form of direct protection measures, such as disconnection prohibitions, and / or other complementary associated measures such as debt management, and customer engagement. See Table below[67].

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66 "*Measures to protect vulnerable consumers in the energy sector: an assessment of disconnection safeguards, social tariffs and financial transfers*". Forthcoming publication. Insight_E.

67 "*Measures to protect vulnerable consumers in the energy sector: an assessment of disconnection safeguards, social tariffs and financial transfers*". Forthcoming publication. Insight_E.

Table 1: Summary of disconnection safeguards

Measure	Description
Disconnection prohibition	Moratorium on disconnecting the energy supply (either electricity, gas or both) for all customers, a specific target group or time period (e.g., Winter)
Debt management	Debt management can include a negotiated a payment plan, delayed payment responsibility or a financial grant to assist with costs.
Customer engagement	Customer engagement typically involves communication between the energy supplier and the customer, where either the customer contacts the energy supplier for assistance or the energy supplier is required to engage with the customer before commencing the actual disconnection.

Source: Insight_E (Forthcoming)

Member States use a combination of these measures to prevent consumers from disconnection. A summary of those is reported in Table 2.

Table 2: Disconnection protection safeguards by Member States

Measures		Focus	AT	BE	BG	CY	CZ	DE	DK	EE	ES	FI	FR	GR	HR	HU	IE	IT	LT	LV	LU	MT	NL	PL	PT	RO	SE	SK	SI	UK
Disconnection prohibition	year-round measures	All consumers																						EG						
		Vulnerable consumers/low income/socio-demographic				E			E			EG	EG	EG		EG			EG					EG		E				
		Consumers with (or at risk of) medical conditions				E				EG	E	EG		EG		EG							EG				E		E	
		Services (such as public lighting, hospitals and transport)									EG						E													
		Unemployed consumers								EG		EG		EG																
		Under bill dispute settlement																E			E		EG	EG	EG		E			
	Seasonal measures (Winter or certain days of the week)	All consumers		EG						EG								E					EG							
		Vulnerable consumers/low income/socio-demographic										EG	EG	EG		EG	EG		EG							EG			E	EG
		Consumers with (or at risk of) medical conditions										EG				EG	EG													
Complementary measures		Debt management	LV	LV		L	L	LV			LV		L	V		L	L	L			L	L	L	L			L		L	L
		Prepaid meters	LV	L				LV									L	L			L			L						L
		Customer engagement	LV	LV				LV	L		LV		L				L	LV			LV			L	L	L	LV	L		V
Statistics		Elec Discon per 1000 customers	9.1	1.5		55.1		7.5	10.0		23.0		10.0	32.6		6.3	3.6	40.0	1.8		3.0	10.0		20.0	56.1			14.0		0.0
		Prepaid meters per 1000 customers	1.4	46.0		0.0		0.4			0.0		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0		15.1	0.0			0.0		12.0

E	electricity	G	gas	L	legislated	V	voluntary

Source: CEER National Indicators Database 2015, INSIGHT_E Country Reports 2015

Disconnection safeguards - disconnection prohibition

Disconnection prohibitions are non-financial measures where moratoriums on disconnections are declared, often for specific customer groups or for specific time periods. These include measures that forbid disconnection to all customers or a target group, or measures that allow disconnection only after certain stringent steps have been taken. Prohibition can apply at particular times of the year (e.g., Winter), target particular socio-demographic characteristics (e.g., either defined through the official definition for "vulnerable consumer" or target households with elderly or children), where this would have a negative impact on health, to customers in a legitimate complaint process, or to a situation where a country is going through a national economic crisis[68].

Nineteen states have either year-round or seasonal disconnection prohibition. Disconnection prohibition is legislated exclusively all year-round for specific customer groups in seven Member States (Cyprus, Denmark, Spain, Luxembourg, Poland, Portugal, Sweden), two Member States offer seasonal disconnection prohibition only (Belgium, UK) and eleven Member States offer both year-round and seasonal disconnection prohibition to varying customer groups (Estonia, Finland, France, Greece, Hungary, Ireland, Italy, Lithuania, Netherlands, Romania and Slovenia).

Only four Member States provide blanket coverage for consumers in relation to disconnection protection, but only on a seasonal basis (Belgium, Estonia, Italy, and the Netherlands). Other widely protected consumers are those with (or at risk of) medical conditions (in ten Member States - Cyprus, Estonia, Spain, Finland, Greece, Hungary, Ireland, the Netherlands, Sweden, Slovenia), and customers currently under dispute settlements (in six Member States - Italy, Luxembourg, the Netherlands, Poland, Portugal, Sweden).

Disconnection safeguards - debt management

Debt management can include non-financial arrangements such as counselling or assistance with budgeting as well as financial arrangements including a negotiated payment plan, delayed payment responsibility or a financial grant to assist with costs. In some instances, this is a measure that regulators or energy suppliers are required to offer, whereas in other Member States, this can be offered either voluntarily through a government agency, an energy supplier, or other consultation bodies.

The use of debt management measures is legislated in 17 Member States (Austria, Belgium, Cyprus, Czech Republic, Germany, Spain, France, Hungary, Ireland, Italy, Luxembourg, Malta, the Netherlands, Poland, Sweden Slovenia, and UK), while four Member States (Austria, Belgium, Germany, Spain) also implement additional voluntary measures, whereas Greece implements only voluntary measures for debt management.

Disconnection safeguards - customer engagement

Customer engagement typically involves communication between the energy supplier and the customer, where either the customer contacts the energy supplier for assistance or the

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[68] "*Measures to protect vulnerable consumers in the energy sector: an assessment of disconnection safeguards, social tariffs and financial transfers"*. Forthcoming publication. Insight_E.

energy supplier is required to engage with the customer before commencing the actual disconnection.

Energy consumers have a right to clear and transparent billing information and a single point of contact, whose role is to ensure that consumers receive all the information that they need regarding their rights.

Some form of customer engagement is implemented in 15 Member States (Austria, Belgium, Germany, Denmark, Spain, France, Ireland, Italy, Luxembourg, Poland, Portugal, Romania, Sweden, Slovakia, and UK). Limited information is available on how the various energy companies choose to engage with customers, but a review of the regulators showed that the legislation usually ensures that consumers are notified about their bills or an impending disconnection usually in the form of a letter[69].

Finally, 22 Member States combine the use of debt management and some form of customer engagement including: Austria, Belgium, Cyprus, Czech Republic, Germany, Denmark, Spain, France, Greece, Hungary, Ireland, Italy, Luxembourg, Malta, the Netherlands, Poland, Portugal, Romania, Sweden, Slovakia, Slovenia and UK.

On the other hand six Member States do not have debt management or customer engagement safeguards either in their legislation or voluntarily and include Bulgaria, Estonia, Finland, Croatia, Lithuania and Latvia.

Disconnection notification periods and procedures for disconnection and reconnection across Member States

Even if the time frames differ among Member States, the practice for disconnecting and reconnecting customers to electricity and gas provision is similar. The general practice in most Member States consists of at least one (or more) written notices of unpaid bills, followed by disconnection. Both the days between the unpaid bill and the final notice of disconnection, and between the latter and the disconnection are usually legislated[70].

The number of days before disconnection varies among Member States (Figure 6). The disconnection period is the highest in Belgium with a lengthy disconnection process[71], followed by the UK. Both Belgium and the UK have the lowest share of customers disconnected from electricity. The explanation for such low disconnection levels might be in the fact that those two states have the highest requirements in terms of days before disconnection is legally possible, but could also be linked to the fairly high share of prepaid meters and strong use of complementary measures. Denmark does not have a specific

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69 CEER National Indicators Database 2015

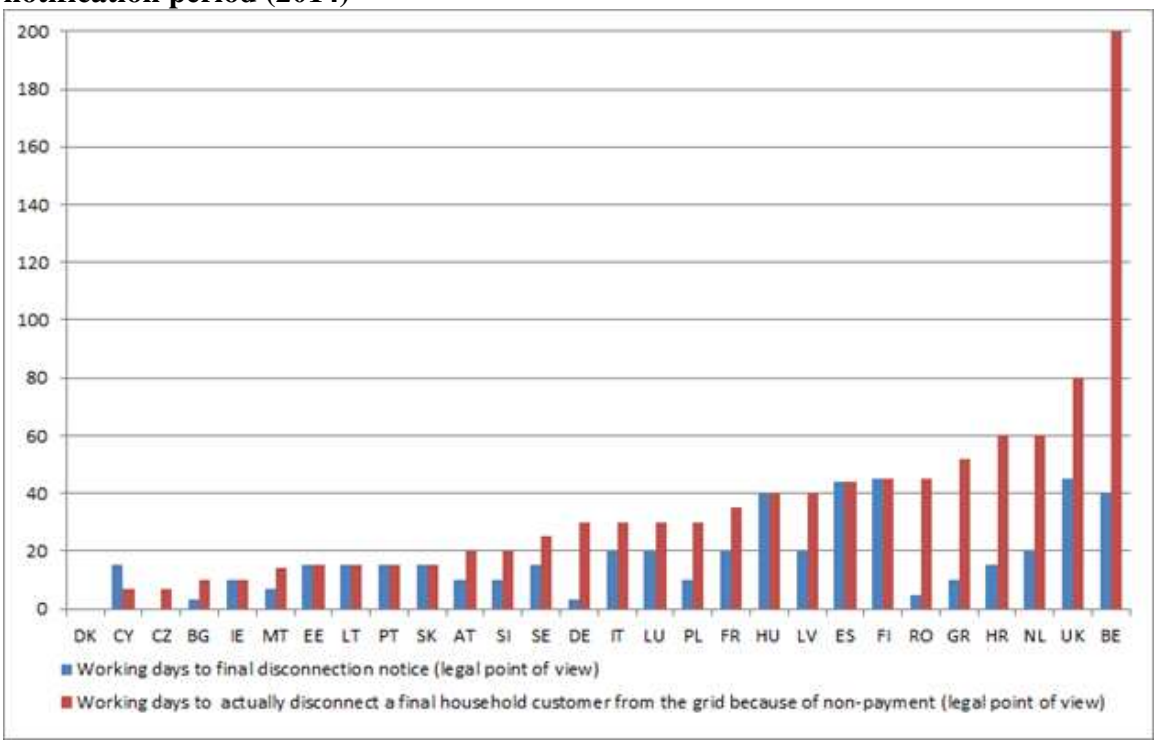
70 *"Measures to protect vulnerable consumers in the energy sector: an assessment of disconnection safeguards, social tariffs and financial transfers"*. Forthcoming publication. Insight_E.

71 Upon defaulting on payments, a customer is given at least 30 day notice of cancellation of the contract, followed by a 60 day grace period to find another supplier. If the customer defaults on payments with the second supplier, this process is repeated. Thereafter, the supplier can apply to the local council for permission to disconnect the customer, especially if they refuse the installation of a prepaid meter.

number of days legislated, but rather specifies that at least two notifications must be sent out[72].

Certain Member States (e.g., Sweden and Luxembourg) contact the social services in between the final notice period and the disconnection of a consumer. Other Member States have longer disconnection times where a smart meter is in place (e.g., in Italy before the disconnection takes place, the maximum power supply is reduced to 15% for 15 days[73]).

Figure 6: Working days before electricity disconnection, in ascending order for notification period (2014)



Source: Insight_E (Forthcoming)

Reconnection happens in most Member States only upon receipt of payment of the entire outstanding debt to the service provider or when an alternative repayment plan has been negotiated. In some Member States, the customer is reconnected if the unpaid bill is disputed. In those cases, the service provider cannot disconnect the customer again until the dispute is settled.

72 *"Measures to protect vulnerable consumers in the energy sector: an assessment of disconnection safeguards, social tariffs and financial transfers"*. Forthcoming publication. Insight_E.

73 *"Measures to protect vulnerable consumers in the energy sector: an assessment of disconnection safeguards, social tariffs and financial transfers"*. Forthcoming publication. Insight_E.

7.1.3. *Deficiencies of the current legislation*

This Section summarises Section 7.1.1 and Annex III of the Commission evaluation of the provisions on consumer vulnerability and energy poverty in the 2009 Electricity and Gas Directives. The full evaluation is included in a separate document.

The legislators' original objectives of these provisions were:

1. To ensure protection of vulnerable consumers by having Member States define the concept of vulnerable consumers and implement measures to protect them.
2. To mitigate the problem of energy poverty by having Member States address energy poverty, where identified, as an issue.

These provisions were put in place to facilitate the decision by Member States to proceed with electricity and gas market liberalisation, as it was recognised by the legislators that actions to protect vulnerable consumers were needed in the context of liberalising the European energy market.

The evaluation assesses the legislation against five criteria. The Table below provides a summary of this assessment.

Table 3: Evaluation of the provisions on consumer vulnerability and energy poverty

Criterion	**Legislation meets criterion**	**Assessment**	
		Achievements	*Shortcomings*
Effectiveness	Partially	Member States define vulnerable consumer and adopt measures to protect them.	Uneven protection of vulnerable consumers. Lack of data on the scale and drivers of energy poverty Growing energy poverty levels across the EU Lack of assistance by Member States to address energy poverty. NRA lack data to fulfil monitoring role. Some Member States still quote energy poverty as a reason for maintaining price regulation and not going ahead with full energy market liberalisation
Efficiency	Completely	Low costs compared with potential benefits.	
Relevance	Completely	Consumer vulnerability will remain relevant as some drivers of vulnerability are permanent.	Energy poverty likely to grow in the future if no policy adopted.
Coherence	Partially	No inconsistencies with or elements working against objectives of the provisions.	Lack of an agreed description of the term energy poverty and caveats in the obligations stand in contrast to the call for action in the Directive.
EU-added value	Completely	Member States have taken action as a result of EU intervention.	

Source: Evaluation of the provisions on consumer vulnerability and energy poverty

The evaluation concluded that the provisions in the Electricity and Gas Directive related to consumer vulnerability and energy poverty were mostly **effective**.

EU action successfully encouraged Member States to define the concept of vulnerable consumers in their legislation and to adopt measures to protect vulnerable consumers. The provisions have also brought the issue of energy poverty to the attention of Member States.

However, the evaluation also identified certain shortcomings. With respect to energy poverty, the evaluation shows that even though most Member States have correctly implemented the provisions on consumer vulnerability, the incidence of energy poverty has continued to rise across the EU. In addition, even though Member States have to address energy poverty where identified, the Electricity and Gas Directives do not include any reference to the meaning of energy poverty nor do they explain in which circumstances energy poverty can be identified as an issue.

At the same time current legislation does not enable comparable data on energy poverty to be sourced from Member States to deliver a full picture of energy poverty in the EU, in terms of scale, drivers and potential future evolution. In addition, while the provisions on vulnerable consumers and energy poverty were put in place to facilitate the decision by Member States to proceed with electricity and gas market liberalisation, 17 Member States still maintain electricity and/or gas price regulation, often quoting increase in energy poverty as a risk associated with deregulating energy prices.

While research indicates that energy poverty and consumer vulnerability are two distinct issues[74], the provisions in the Electricity and Gas Directives refer to energy poverty as a type of consumer vulnerability. The evaluation argues that this may have led to an incorrect expectation that a single set of policy tools could address both problems simultaneously.

The evaluation also identifies shortcomings in the effectiveness of the provisions referring to the role of National Regulatory Authorities (NRAs) in monitoring electricity and gas disconnections.

The evaluation found that the provisions were **efficient** and **relevant**. While efficiency was difficult to quantify due to lack of data, it is likely that the benefits derived from defining consumer vulnerability at the Member State level and implementing measures to protect them outweighed the costs of setting up such policies. In terms of relevance, evidence suggests that the problem of energy poverty is growing and it is likely to continue without policy intervention. European Commission[75] research suggests that consumer vulnerability in the energy market will continue to be a relevant policy issue in the future as a substantial share of those characterised as vulnerable consumers have permanent characteristics that make them vulnerable.

Regarding **coherence**, there were no inconsistencies or elements in the legislation working against the objectives of the provisions on vulnerable and energy poor consumers. Nevertheless the misidentification of consumer vulnerability and energy poverty as the same issue in the Electricity and Gas Directives means that the expected combined impacts

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74 *"Energy poverty and vulnerable consumers in the energy sector across the EU: analysis of policies and measures"*. (2015). Insight_E.

75 European Commission (2016). Available at: http://ec.europa.eu/consumers/consumer_evidence/market_studies/vulnerability/index_en.htm-summit/2015/files/ener_le_vulnerability_study_european_consumer_summit_2015_en.pdf.

are not occurring and energy poverty grows while Member States take action to protect vulnerable consumers.

In relation to **EU-added value**, while it is true that some Member States had been already protecting their vulnerable energy consumers prior to EU intervention, others have been obliged to take action as a result of EU intervention.

Overall, the evaluation concluded that the provisions have mostly met their objectives. However, the legislation did not give sufficient attention to the issue of energy poverty. As the Electricity and Gas Directives define energy poverty as a type of consumer vulnerability, the effectiveness of the provisions was reduced. This categorisation leads to a simplistic expectation that a single set of policy measures from Member States would automatically address both problems simultaneously. However, evidence suggests that energy poverty has been rising over the years, despite the protection available for vulnerable consumers. In parallel, Member States have maintained regulated prices, which had a negative effect on the internal energy market.

The Options presented in this impact assessment attempt to address this situation.

7.1.4. *Presentation of the options.*

This Section presents the policy options in detail. Each Option includes a table with the description of the specific measures. An assessment of the costs and benefits for each of the measures is presented in the following Section.

Business as Usual (BaU): sharing of good practices.

The BaU includes measures that are currently implemented or in the pipeline. These measures will be undertaken without legislative change and aim at improving knowledge-exchange.

Table 4: BaU

	Measures	Pros	Cons
Energy poverty	Promoting good practices	Continuous Knowledge exchange.	Existing shortcomings of the legislation are not addressed: lack of clarity of the concept of energy poverty and the number of energy poor households persist. Energy poverty remains a vague concept leaving space for Member States to continue inefficient practices such as regulated prices. Indirect measure that could be viewed as positive but insufficient by key stakeholders.

The Commission has already secured funding to set up an Observatory of Energy Poverty. However, the BaU scenario assumes the funding for the Observatory will not be extended beyond 2019 and therefore no additional cost will be incurred in the appraised period.

The Commission will continue promoting the exchange of good practices which are likely to contribute to enhance transparency and knowledge dissemination. However, this option may be insufficient to address the partial effectiveness of the current provisions as identified in the evaluation as the current legislation does not require Member States to measure energy poverty and hence to address it.

Option 0+: sharing of good practices and monitoring the correct implementation of the legislation.

There is scope to address some of the problems identified in the evaluation without new legislation. This option seeks non-legislative measures such as voluntary collaboration across Member States as a tool to address these problems. With the help of the EU Observatory of Energy poverty, this option includes voluntary collaboration across Member States to agree on the scope of energy poverty as well as the way of measuring. Measures to ensure the monitoring of disconnections across Member States are also included.

The evaluation identified that National Regulatory Authorities (NRAs) have not reported to ACER data on the number of disconnections. As described in the evaluation, ACER reported that only 16 NRAs were able to report data on disconnections. This is despite the legal obligation stated in the Electricity Directive Article 37 *Duties and powers of the regulatory authority* under paragraphs (j)[76] and (e)[77].

In addition, the Observatory delivers the exchange of good practices and better statistical understanding of the drivers of energy poverty. Option 0+ assumes the Observatory continues its operation at least until 2030 (the end of the assessment period for the Impact Assessment).

Table 5: Option 0+

	Measures	Pros	Cons
Energy poverty	EU Observatory of Energy Poverty. NRAs to monitor and report data on disconnections. Voluntary collaboration across Member States to agree on scope and measurement of energy poverty.	Stronger enforcement of current legislation and continuous knowledge exchange.	Insufficient to address the shortcomings of the current legislation with regard to energy poverty and targeted protection.

This option does not address all the shortcomings identified in the evaluation, such as the need to measure energy poverty and the lack of adequate tools to protect vulnerable and energy poor consumers. Furthermore, voluntary collaboration may not be a suitable measure. The Commission already undertakes actions involving Member States, such as the publication of guidelines and working paper in the context of the Vulnerable Consumer Working Group, with have had a limited impact on Member States. Thus, legislative action, beyond Option0+, is required.

Option 1: Setting an EU framework to monitor energy poverty.

[76] Monitoring the level and effectiveness of market opening and competition at wholesale and retail levels, including on electricity exchanges, prices for household customers including prepayment systems, switching rates, disconnection rates, charges for and the execution of maintenance services, and complaints by household customers, as well as any distortion or restriction of competition, including providing any relevant information, and bringing any relevant cases to the relevant competition authorities;

[77] Reporting annually on its activity and the fulfilment of its duties to the relevant authorities of the Member States, the Agency and the Commission. Such reports shall cover the steps taken and the results obtained as regards each of the tasks listed in this Article;

This option includes obligations on Member States that will need to be implemented through new EU legislation. The measures included in this option are designed to address the shortcomings identified in the evaluation:

- clarifying the concept of energy poverty,

- improving transparency with regard to the number of households in energy poverty.

Table 6: Option 1

	Measures	Pros	Cons
Energy poverty	Generic, adaptable description of the term energy poverty in the legislation. Member States to measure energy poverty.	Shared understanding of what energy poverty entails while flexible enough to cater for Member States' differences. Transparency when measuring and monitoring energy poverty. Synergies with the Observatory.	New legislation will be necessary. Administrative impact on Member States.

Option 1 includes a number of legislative changes that represent new obligations for Member States. In what follows, we provide a detailed description of these new obligations.

Energy poverty - a description of the term energy poverty

Option 1 adds a description of the term energy poverty in the EU legislation. The objective of this measure is to clarify the term energy poverty.

A number of European institutions have called on the European Commission to propose an EU-wide definition of energy poverty, calling for a common description of the term energy poverty.

- EESC (2011; 1)[78]: *"... energy poverty should be tackled at all tiers of government, and that the EU should adopt a common general definition of energy poverty, which could then be adapted by Member States".*
- Committee of the Regions (2014;15)[79] *"...recognition of the problem at the political level on the one hand, and to ensure legal certainty for measures to combat energy poverty on the other; such a definition should be flexible in view of the diverse circumstances of the Member States and their regions…".*
- European Parliament (2016)[80] *" Calls on the Commission to develop with stakeholders a common definition of energy poverty which should aim at assessing at least the following elements: material scope, difficulty for a household to gain access to essential energy, affordability and share of total household cost, impact*

[78] European Economic and Social Committee (EESC) (2011) Opinion of the European Economic and Social Committee on *'Energy poverty in the context of liberalisation and the economic crisis'* (exploratory opinion). Official Journal of the European Union, C 44/53.

[79] Committee of the Regions (CoR) (2014) Opinion of the Committee of the Regions - *Affordable Energy for All.* Official Journal of the European Union, C 174/15.

[80] *European Parliament. Committee on Employment and Social Affairs. Draft report on meeting the antipoverty target in the light of increasing household costs*. (2015/2223(INI)). Rapporteur: Tamás Meszerics.

on basic household needs such as heating, cooling, cooking, lighting and transport".

- European Parliament (2016)[81] *"Calls for the development of a strong EU framework to fight energy poverty, including a broad, common but non-quantitative definition of energy poverty, focusing on the idea that access to affordable energy is a basic social right"*

Thomson et al[82] summarise the arguments in favour and against of an EU-wide definition of energy poverty.

Table 7: Arguments in favour and against an EU-wide definition of energy poverty

In favour	Against
Policy synergy. Not all Member States are addressing this problem and those that are, act on their own, without seeking synergies with others, which makes it harder to identify, assess and deal with energy poverty at the European level.	Limited evidence. Need to compile comparable household data on energy consumption and income to produce reliable statistics.
Recognition. A common EU-level definition of energy poverty may give the problem better visibility at the Member State level.	Comparability. A shared pan-EU definition would need to be relatively broad in order to accommodate the diversity of contexts found at the Member State-level, in terms of climate conditions, socioeconomic factors, energy markets and more.
Clarification. Adopting even a general description of fuel or energy poverty at the EU-level would help to resolve the considerable terminological confusion that presently exists, and may pave the way for more detailed national definitions.	Path dependency. An incorrect definition may lead Member States to a wrong path from which it may be difficult to depart as a result of path dependency.

Source: Thomson et al (2016)

The Vulnerable Consumers Working Group (VCWG)[83] looked into several definitions used to describe energy poverty which have been put forward by Member States, European institutions and research projects. Most of the definitions shared common themes:

- domestic energy services refer to services such as heating, lighting, cooking and powering electrical appliances;
- the term affordable is used to refer to households receiving adequate energy services without getting into debt; and
- the term adequate usually means the amount of energy needed to ensure basic comfort and health.

VCWG concluded that a prescriptive definition of energy poverty for the EU28 would be too restrictive, given the diverse realities across Member States. Yet, the group agreed that a generic definition represents a positive step forwards to tackle the problem of energy poverty. The VCWG argues that, if such as EU-wide definition were to be identified, it should be simple, focus on the problem of affordability and allow sufficient flexibility to be relevant across Member States[84]. Such a definition can refer to elements such as

81 *European Parliament. Committee on Industry, Research and Energy. Draft report on Delivering a New Deal for Energy Consumers*. (2015/2323(INI)). Rapporteur: Theresa Griffin.

82 *Fuel poverty in the European Union: a concept in need of definition?* 2016. Thomson et al.

83 *Working Paper on Energy Poverty*. 2016. Vulnerable Consumer Working Group.

84 A few Member States already have a definition of energy poverty. These definitions are presented in Sub-Annex 1.

households with a low-income; inability to afford; and adequate domestic energy services. Within the generic definition Member States can adapt it to suit national circumstances (e.g. by adopting their own numerical threshold for low income).

Energy poverty - Measuring energy poverty

Option 1 requires Member States to measure energy poverty. To measure energy poverty, Member States will need to construct a metric which should make reference to household income and household domestic energy expenditure.

Measuring energy poverty allows Member States to understand the depth of the problem and assess the impact of the policies to tackle it[85].

Most researchers used Eurostat Survey on Income and Living Conditions (EU-SILC) to produce proxy indicators of energy poverty at Member State level such as the perceived inability to keep homes adequately warm[86]. However, this indicator has some well-known limitations[87] [88]:

- subjectivity due to self-reporting;
- limited understanding of the intensity of the issue due to the binary character of the metric;
- assumption that participants in a survey view such judgments like 'adequacy of warmth' in a similar way; and
- difficult to compare across Member States.

In Member States that have or are considering energy poverty metrics, most experiences concern expenditure-based metrics rather than consensual-based metrics. The advantage of an expenditure based metric is that it is quantifiable and objective. These indicators measure energy poverty as a result of two of the main drivers of energy poverty: domestic energy expenditure and household income. Nonetheless, these indicators also suffer from some limitations[89]:

- cannot assess whether consumers reduce expenditure because of budget constraints or due to other factors. Thus, it does not take account of the issue of self-disconnection i.e. households who do not consume adequate amount of energy to avoid falling into arrears or debt;
- it does not reflect consumers' motivation for expenditure levels; and
- sensitive to methodological decisions such as definition of income or the definition of the threshold.

Member States will have the freedom to define the metric according to their circumstances. A European Commission study reviewed 178 indicators of energy poverty and proposed a final set of four indicators, three of them expenditure based metrics. The study confirmed

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85 *Working Paper on Energy Poverty*. 2016. Vulnerable Consumer Working Group.
86 This kind of indicators is referred in the academic literature as consensual-based indicators.
87 Selecting Indicators to Measure Energy Poverty. 2016. Trinomics.
88 "*Quantifying the prevalence of fuel poverty across the European Union"*. 2013. Thomson and Snell.
89 *"Selecting Indicators to Measure Energy Poverty"*. 2016. Trinomics.

that all the final recommended indicators can be produced using data already collected by Member States[90].

These measures build upon the existing provisions on energy poverty in the Electricity and Gas Directive. They offer the necessary clarity to the term energy poverty, as well as, the transparency with regards to the number of household in energy poverty. Since currently available data can be used to measure energy poverty, the administrative costs are limited. Likewise, the actions proposed do not condition Member States primary competence on social policy, hence, respecting the principle of subsidiary.

[90] Trinomics 2016. Available at: https://ec.europa.eu/energy/sites/ener/files/documents/Selecting%20Indicators%20to%20Measure%20Energy%20Poverty.pdf

Option 2: Setting a uniform EU framework to monitor energy poverty, preventative measures to avoid disconnections and disconnection winter moratorium for vulnerable consumers.

Table 8: Option 2

	Measures	Pros	Cons
Energy poverty	- Specific, harmonised definition of energy poverty. - Require Member States to measure energy poverty using required energy.	- Improve comparability of energy poverty as a result of a harmonised concept of energy poverty. - Measuring energy poverty using required energy.	- New legislation will be necessary. - A prescriptive definition of energy poverty may not be adequate for all Member States. - High administrative cost to measure energy poverty using required energy.
Safeguards against disconnection	- A minimum notification period before a disconnection. All customers to receive information on the sources of support and be offered the possibility to delay payments or restructure their debts, prior to disconnection. - Winter moratorium of disconnections for vulnerable consumers.	- Equips Member States with the tools to prevent and reduce the number of disconnections. - Gives customers more time to make arrangements to pay their bills, i.e. avoids unnecessary disconnections and costs of disconnecting and reconnecting. - Customers are given information. about outreach points. - Customers are given an opportunity to better handle their energy debts - The most vulnerable customers will benefit from a guaranteed energy supply through the coldest months of the year.	- New legislation will be necessary. - Administrative impact on Member States. - Administrative impact on energy companies - Safeguards against disconnection may result in higher costs for companies which may be passed to consumers. - Safeguards against disconnection may also result in market distortions as suppliers seek to avoid entering markets where there are likely to be significant risks of disconnections and the suppliers active in such markets raise margins for all consumers in order to recoup losses from unpaid bills. - Moratorium of disconnection may conflict with freedom of contract.

Option 2 represents additional obligations for Member States. In what follows, we describe these new obligations.

Energy poverty - EU definition of energy poverty

Option 2 adds a specific definition of energy poverty in the EU legislation. Energy poverty will refer to those households which after meeting their required energy needs fall below the poverty line or other income related threshold. This measure will clarify the term energy poverty (as in Option 1) and improve the comparability and monitoring of energy poverty within the EU.

A definition using a relative income threshold, such as the Low Income High Cost[91], is suited to measure energy poverty in the EU. Since the poverty threshold is a relative metric (e.g. below 40% of the median income) this type of metric takes account of the distribution of income in each Member State. However, it might well be that in some Member States a significant number of households live below the poverty line. In those cases, a different metric of energy poverty using a lower income threshold may be more suitable.

Some stakeholders will be in favour of such as measure since it addresses the need for a common definition. However, as it was described in Option 1, the EESC (2011: 1) and Committee or the Regions (2014;15) request the Commission a *'common general definition'* ; *'flexible in view of the diverse circumstances of the Member States and regions*'. The VCWG[92] also stated that *'a prescriptive definition of energy poverty for the EU28 would be too restrictive, given the diverse realities across Member States'.*

Similar arguments were put forward in Thomson et al[93] with regard to comparability. The authors argue that a shared pan-EU definition would need to be relatively broad in order to accommodate the diversity of contexts found at the Member State level in terms of climate conditions, socioeconomic factors or energy markets. This is in contradiction with a more prescriptive definition of energy poverty at the EU level.

Energy poverty - measuring energy poverty

Option 2 requires Member States to measure energy poverty using *'required energy'*. Metrics using *'required'* rather than *'actual'* expenditure calculate the amount of energy necessary to meet certain standards such as a specific indoor temperature during a number of hours per day.

The main advantage of this type of measurement[94] is that it refers to an adequate level of energy service. As such, it computes the amount of energy for a specific heating regime rather than measuring actual expenditure, which may not be adequate for low-income households that may under-consume due to budget constraints.

In order to be able to compute required energy, the following information is needed[95]:

- heating system and fuels used;
- dwelling characteristics;
- regional and daily climate variations; and
- number of days per year a household stays in their home.

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91 "*Low income High Costs (LIHC) indicator"* (Hills, 2011): A household i) income is below the poverty line (taking into account energy costs); and ii) their energy costs are higher than is typical for their household type.

92 *Working Paper on Energy Poverty*. 2016. Vulnerable Consumer Working Group.

93 *"Fuel poverty in the European Union: a concept in need of definition?"* 2016. Thomson et al.

94 The UK, which has considerable experience in this field, measures energy poverty or fuel poverty using required energy.

95 *Selecting Indicators to Measure Energy Poverty*. 2016. Trinomics.

This data, especially the variables related to dwelling characteristics, are rarely available. To collect it, Member States are likely to need to run a Housing Condition Survey[96] which ideally should be linked to the Household Budget Survey.

Safeguards against disconnection - minimum notification period of 40 working days

Evidence suggests that stronger guidelines dictating adequate disconnection times and procedures could be an effective way to prevent disconnections. For instance, in Belgium and UK, the two countries with the highest disconnection time requirements, disconnection levels are at the lowest[97] .

This measure requires Member States to give all customers at least two months (approximately 40 working days) notice before a disconnection from the first unpaid bill.

In Member States, legislated working days before disconnecting a customer vary between a week and 200 days, with an average of approximately 40 days (See Table below).

Table 9: Statistics on disconnection notices (legal requirements) in Member States

	MIN	MAX	Average	Standard deviation
Working days to final disconnection notice[98]	3	45	18.15	12.87
Working days to actually disconnect a final household customer from the grid because of non-payment	7	200	36.81	36.79

Source: Insight_E (Forthcoming); Data: Eurostat; CEER National Indicators Database 2015

Longer disconnection period may stop some disconnections as customers have more time to engage or to seek help. The direct monetary benefit comes in the form of avoided disconnection and reconnection costs to society. Other non-direct monetary benefits to the utility are those of retaining the customer, and avoiding lost income, due to allowing the consumer time to pay back arrears.

It is possible to calculate the amount of time before which it is not cost effective to disconnect a household from electricity and gas provision. This is done by comparing the cost of disconnection and reconnection with the average monthly household expenditure for gas and electricity.

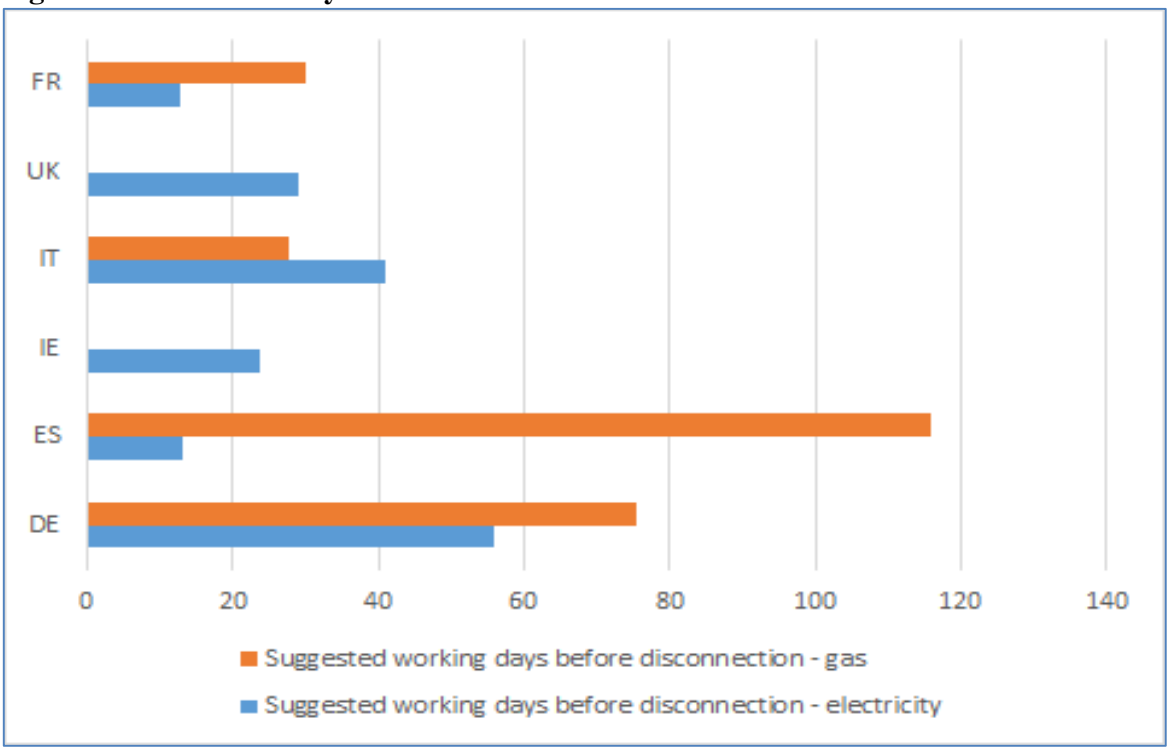
Figure 7 shows the number of days it is cost-effective not to disconnect a household for those Member States with available data to perform the necessary calculations.

[96] The Housing Condition Survey measures the physical characteristics of the dwelling such as height of the ceilings, materials of the wall, or the size of the windows to calculate the energy performance of the building.

[97] "*Measures to protect vulnerable consumers in the energy sector: an assessment of disconnection safeguards, social tariffs and financial transfers"*. Forthcoming publication. Insight_E.

[98] Denmark does not stipulate a number of days but rather that a minimum of two notices be sent

Figure 7: Number of days from which it is cost-effective to disconnect a household



Source: Insight_E (Forthcoming)

Interestingly for both electricity and gas it is not cost effective to disconnect within a certain time starting from the unpaid bill for any of the considered countries. For electricity, in Germany and Italy, it is cost-effective to disconnect only after approximately 2 months from the unpaid bill, while in Ireland and the UK at least one month is needed to justify disconnection. That value is approximately 15 working days for France and Spain, having less costly connection and reconnection procedures. For gas, as the cost of connection and reconnection is higher, those values are larger. In Germany and Spain three or more months of unpaid bills would justify a disconnection, for Italy and France more than one month[99].

It is to be noted that these numbers merely compare the cost of connecting and disconnecting a household with household energy bills. Including other social and health benefits would increase the amount of days before a disconnection is cost effective. Those costs are difficult to quantify. Nonetheless, a number of articles and research projects

[99] *"Measures to protect vulnerable consumers in the energy sector: an assessment of disconnection safeguards, social tariffs and financial transfers"*. Forthcoming publication. Insight_E

provide evidence of a link between warmer homes and improvements in health[100][101][102][103][104][105]. More information on the benefits of a longer notification period is provided in the next Section.

Setting a minimum notification period of 40 working days will lead to 18 Member States having to increase their disconnection notice requirements (See Table below). Five of those would have to increase the notice by 10 working days or less. Hungary, Latvia, Spain, Finland, Romania, Greece, Croatia, the Netherlands, UK and Belgium would not be impacted by this regulation. In addition, Member States with robust social security schemes disconnection safeguards would not have any substantial impact as early intervention typically assists vulnerable consumers and the energy poor with avoiding disconnections, nota bene via direct financial support.

The extension of the disconnection notice period is associated with additional costs for the suppliers in the form of bills which can be left unpaid by some of the customers. The measure also has potential market distortion effects as suppliers seek to avoid entering markets where there are likely to be significant risks of disconnections and the suppliers active in such markets raise margins for all consumers in order to recoup losses from unpaid bills.

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[100] *Chilled to Death: The human cost of cold homes*. (2015). Association for the Conservation of Energy, Available at: http://www.ukace.org/wp-content/uploads/2015/03/ACE-and-EBR-fact-file-2015-03-Chilled-to-death.pdf

[101] *"Fuel Poor & Health. Evidence work and evidence gaps"*. DECC. Presented at Health, cold homes and fuel poverty Seminar at the University of Ulster. (2015). Cole, E. Available at: http://nhfshare.heartforum.org.uk/HealthyPlaces/ESRCFuelPoverty/Cole.pdf

[102] *Towards an identification of European indoor environments' impact on health and performance - homes and schools*. (2014). Grün & Urlaub.

[103] Excess winter mortality: a cross-country analysis identifying key risk factors. Journal of Epidemiology & Community Health 2003. Healy.

[104] *Estimating the health impacts of Northern Ireland's Warm Homes Scheme 2000-2008*. (2008). Liddell.

[105] *The Health Impacts of Cold Homes and Fuel Poverty* (London: Friends of the Earth). (2011). Marmot Review Team.

Table 10: Additional working days with a two month disconnection notice[106]

Member State	Additional number of days
Cyprus	33
Czech Republic	33
Bulgaria	30
Ireland	30
Malta	26
Estonia	25
Lithuania	25
Portugal	25
Slovakia	25
Austria	20
Slovenia	20
Sweden	15
Germany	10
Italy	10
Luxembourg	10
Poland	10
France	5

Source Insight_E (Forthcoming); Data: Eurostat; CEER National Indicators Database 2015

Safeguards against disconnection – prior to disconnection notice, consumers should receive: (i) information on the sources of support and (ii) be offered the possibility to delay payments or restructure their debt.

Customer engagement

Customer engagement typically involves communication between the energy supplier and the customer, where either the customer contacts the energy supplier for assistance or the energy supplier is required to engage with the customer before commencing the actual disconnection. This communication can take the form of a letter, registered letter, e-mail, phone call, text message or house call. The use of these measures varies across Member States and while a comprehensive review of how this is undertaken is not available, it is clear that some variation of consumer engagement occurs nonetheless.

Debt management

Debt management can include non-financial arrangements such as counselling or assistance with budgeting as well as financial arrangements including a negotiated payment plan, delayed payment responsibility or a financial grant to assist with costs.

Safeguards against disconnection - winter moratorium of disconnections for vulnerable consumers.

This measure stops disconnection from energy provision (electricity and gas), for vulnerable consumers, during the winter months. Already, 10 Member States provide seasonal disconnection prohibitions at particular times.

Of those Member States, eight define clearly the winter period during which disconnections are banned (See Figure 8).

[106] Denmark does not stipulate a number of days but rather that a minimum of two notices be sent

Figure 8: Winter period with ban on disconnection in Member States

	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
BELGIUM									
ESTONIA									
FINLAND									
FRANCE									
HUNGARY									
IRELAND									
NETHERLANDS									
UK									

Source: Insight_E (Forthcoming)

On the other hand, other countries define the winter as 'cold season' or depending on temperatures (e.g. Lithuania prohibit disconnections when the highest daily air temperature is lower than minus 15 °C or higher than plus 30 °C).

This measure, unlike the others, will specifically target vulnerable consumers. Hence, the coverage of the measure depends on the definition of consumer vulnerability in energy markets in each of the Member States.

With regard to the disconnection safeguards discussed in this Section, it needs to be noted that Member States may be better suited to design these schemes to ensure that synergies between national social services and disconnection safeguards can be achieved. These synergies may also result in public sector savings which may be significant given the substantial costs of some of these measures, see Table 22 and Table 23.

7.1.5. *Comparison of the options*

This Section quantifies the costs and benefits for the BaU and each of the policy options. The tables below summarise the main results of the Cost Benefit Analysis (CBA). The methodology, assumptions and calculations are subsequently explained.

Table 11: BaU: costs and benefits

	Costs		Benefits	
	Description	Quantification	Description	Quantification
Promoting good practices.	Exchange of good practices and collaboration across Member States	EUR 0.	Continuous Knowledge exchange.	N.A. only qualitative.

Table 12: Option 0+: costs and benefits

	Costs		Benefits	
	Description	Quantification	Description	Quantification
EU Observatory of Energy Poverty.	Running the EU Observatory of energy poverty.	EUR100,000 per year .	Knowledge exchange.	N.A. only qualitative.
NRAs to monitor and report figures on disconnections.	Better implementation of current legislation Electricity Directive Article 37 (j) and (e).	No additional cost.	Improved information on number of disconnections.	N.A. only qualitative.

Table 13: Policy Option 1: costs and benefits

	Costs		Benefits	
	Description	Quantification	Description	Quantification
Energy poverty				
Generic adaptable description of the term energy poverty in the legislation.	Enumerate the main characteristics that define energy poverty.	No additional cost.	Transparency, clarification and policy synergies.	N.A. only qualitative.
Member States to measure energy poverty.	Produce a metric to measure energy poverty.	Administrative cost.	Understanding the extent of the problem. Improved transparency.	N.A. only qualitative.

Note: Policy Option 1 includes the measures described in option 0+.

Table 14: Policy Option 2: costs and benefits

	Costs		Benefits	
	Description	Quantification	Description	Quantification
Energy poverty				
Specific definition of energy poverty	Produce a specific harmonised definition of energy poverty.	No additional cost.	Transparency, clarification and policy synergies.	N.A. only qualitative.
Member States to measure energy poverty using required energy	Collecting detailed housing stock data.	Administrative cost.	Understanding the extent of the problem. Improved transparency.	N.A. only qualitative.
Disconnection safeguards				
A minimum notification period before a disconnection.	All customers will receive a disconnection notice at a minimum of at least two months (or 40 working days) before disconnection from the first bill unpaid.	Cost of unpaid bills.	General benefits from avoiding disconnection in the form of improvements in households' health and well-being; cross-departmental savings; and avoiding cost of disconnection and reconnection. Gives customers more time to make arrangements to pay their bills.	N.A. only qualitative.
All customers to receive information on the sources of support and be offered the possibility to delay payments or restructure their debts, prior to disconnection.	Prior to issuing a disconnection notice, all consumers should: receive: (i) information on the sources of support, and; (ii) be offered the possibility to delay payments or restructure their debt.	Consumer information cost varies depending on the type of intervention which may include registered letters; phone calls; text message; or emails. Debt management cost depends on the type of intervention.	General benefits from avoiding disconnection. Gives customers more time to make arrangements to pay their bills, i.e. avoids unnecessary disconnections and costs of disconnecting and reconnecting. Customers are given information about outreach points. Customers are given an opportunity to better handle their energy debts	N.A. only qualitative.
Winter moratorium of disconnections for vulnerable consumers.	In case of non-payment vulnerable consumers will not be disconnected from the electricity and gas grid during Winter.	The cost of unpaid bills.	General benefits from avoiding disconnection. The most vulnerable customers will benefit from a guaranteed energy supply through the coldest months of the year.	N.A. only qualitative.

Note: Policy Option 2 includes the measures described in option 0+.

Methodology

The methodology follows the Better Regulation Guidelines. In this Section, we present the steps taken for the calculation of the costs and benefits.

Introduction - Costs and Benefits Analysis (CBA)

This impact assessment takes account of societal costs and benefits when assessing the impact of the policies. In addition, the net impact on total welfare and the net impacts on specific groups (i.e. winners and losers) are relevant as these provisions are likely to benefit more those in lower income or vulnerable economic conditions.

The cost of the measures occurs immediately following the adoption of the policies into national legislation and are borne by public authorities (i.e. measuring energy poverty) and energy providers (e.g. disconnection safeguards). Benefits, on the other hand, tend to emerge over a longer time frame and are more difficult to quantify.

As far it has been possible, costs and benefits are based on market prices. However, this has not always been possible, particularly when quantifying the benefits.

In the case of disconnection safeguards, the costs of this measure represent the mirror image of the benefits for those households who are not disconnected as a result of the safeguards. Even though this is a symmetrical change in private welfare and therefore it cancels out at the aggregate level, there is an impact in terms of transfer of welfare between those who are not in risk of disconnection (wealthier households) and those in risk of disconnection (poorest households). It can be argued that this transfer has a positive impact on efficiency if we assume poorest household have a higher marginal utility for each additional euro received than wealthier households. This approach has been followed in some Impact Assessments[107] using empirical evidence from the academic literature[108]. Due to lack of data, however, these effects have not been quantified.

The discount rate used equals 4%. The time period starts when the measures are implemented at Member State level and ends in 2030. We assume measures are implemented in 2020[109]. In reality, the starting period may be subject to change depending on which year the measures are approved in each Member State. This will advance or delay the costs and benefits impacting the overall net benefit of the policies.

As stated in the Better Regulation guidelines, CBA has important limitations. The main limitations refer to:

- the assumption that income can be a proxy for happiness or satisfaction,
- the fact that it willingly ignores distributional effects; and

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[107] UK Treasury *'Green Book Appraisal and Evaluation in Central Government* (2003). Annex 5 Distributional Impacts. Available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/220541/green_book_complete.pdf

[108] Cowell and Gardiner (1999); Pearce and Ulph (1995)

[109] We assume the legislation proposed in the Winter Package will be approved by the co-legislator in 2017 and Member States will require three years for implementing the new measures.

- its lack of objectivity when it comes to the selection of certain parameters (e.g. the inter-temporal discount rate), which can tilt the balance in favour of certain regulatory options over others.

The overall goal of the intervention is to achieve the benefits at the overall lowest cost. The policy options will contribute to advancement in social welfare in terms of economic efficiency, consumer protection and life satisfaction.

Quantifying the costs

Producing a description of energy poverty (policy Option 1); and a specific definition of energy poverty (policy Option 2) will be undertaken by the European Commission at no additional cost.

Business as Usual – calculating the costs

Exchange of good practices

The European Commission continues fostering the exchange of good practices across Member States through its network of stakeholders such as the Vulnerable Consumers Workings Group. No additional cost is estimated.

Option 0+ – calculating the costs

The cost of the EU Observatory of Energy Poverty

The European Commission has published a contract service to build and maintain the EU Observatory of Energy Poverty. The current budget equals EUR 800,000 for a 40 month contract. The continuation of the work after the contract is estimated at EUR 100,000 per year[110].

The cost of NRAs monitoring and reporting figures on disconnections

The current energy legislation requires national regulators to monitor disconnections. However, not all Member States report figures on disconnections[111]. Full implementation of the current legislation represents no extra cost as there is no additional obligation.

Policy Option 1 – calculating the costs

The cost of Member States to measuring energy poverty making reference to household income and household energy expenditure

Measuring energy poverty will result on a new information obligation for Member States. This is a direct cost related to compliance i.e. the need to divert resources to address the

[110] *"Selecting Indicators to Measure Energy Poverty*". (2016). Trinomics.
[111] *ACER Market Monitoring Report* (2014)

direct consequences of the policy options which creates an administrative cost[112] to comply with the new information obligation.

The administrative costs consist of two different cost components: the business-as-usual costs and administrative impacts. The administrative impacts stem from the part of the process which is done solely because of a new legal obligation.

To compute these costs we follow the Better Regulation Guidelines which state that the effort of assessment should remain proportionate to the scale of the administrative costs imposed by the legislation and must be determined according to the principle of proportionate analysis.

To calculate the administrative cost we use the Standard Cost Model. The main objective of the model is to assess the cost of information obligations imposed by EU legislation.

The following Table presents the steps that will need to be followed to measure energy poverty.

[112] Administrative costs are defined as the costs incurred by enterprises, the voluntary sector, public authorities and citizens in meeting legal obligations to provide information on their action or production, either to public authorities or to private parties.

Table 15: Steps to measuring energy poverty

Activity	
Identification of information obligations	Measuring energy poverty making reference to household income and household energy expenditure. Data requirements: household income and household energy expenditure. Source: Household Budget Survey and/or Survey of Income and Living Conditions.
Identification of required actions	Familiarising with the information obligation: senior managers will need to assess the information needed and allocate tasks within the Civil Service to measure energy poverty. Training employees about the information obligation: civil servants will need training on the necessary data to measure energy poverty. The amount of training necessary is likely to be limited since the information needed (i.e. household income and household energy expenditure) is already collected by Member States. Retrieving relevant information from existing data: civil servants will need to retrieve household income and household energy expenditure data either from the Household Budget Survey and/or Survey on Income and Living Condition. Producing new data: civil servants will need to use household income and household energy expenditure to produce an indicator of energy poverty. For those Member States with no official metric to measure energy poverty, it is likely that the Civil Service will produce different metrics and recommend one for adoption. The work required to produce the most common indicators of energy poverty is not particularly burdensome[113]. Holding meetings: senior civil servants will hold several meetings to decide which metric should be used to measure energy poverty. Ultimately a decision will need to be made at the Government level before the metric is reported to the European Commission. Inspecting and checking: civil servants will need to perform quality control activities on the data to ensure the robustness of the results. Submitting the information: civil servants will need to submit the information to the European Commission. It is likely that in some cases civil servants may need to allocate additional time for discussion with European Commission officials for clarification.
Identification of target group	Public Authorities
Identification of frequency of required actions	Once a year
Identification of relevant cost parameters	No particular relevant cost such as external costs (e.g. using consultancies or gathering new data) has been identified.
Assessment of the number of entities concerned	28 Member States

The administrative impact will decrease after the first year since Member States will be familiar with the new obligation and have agreed on the internal procedures to measure

[113] *"Selecting Indicators to Measure Energy Poverty".* (2016). Trinomics.

energy poverty. Hence, we have computed the administrative impact for year 1 and the administrative impact for the subsequent years separately.

An estimation of the time and frequency of the tasks was gathered from information provided by Member States.

France, the UK and Ireland already measure energy poverty. Hence, this obligation will not constitute an additional cost for these Member States.

To quantify the administrative impact we used the Standard Cost Model. The model does not include information for Croatia. The cost of measuring energy poverty in Croatia was calculated using information on labour cost from Slovenia. Even though this is not ideal, we prefer this approach to avoid any under-estimation of the cost of the obligation. At the EU level, the relative small size of Croatia means that the EU wide cost will not be significantly affected by this assumption. The final cost is shown in the Table below.

Table 16: Cost of measuring energy poverty making reference to household income and household energy expenditure (EUR)

	First year	Following years
Standard Cost Model	EUR 454,129	EUR 255,277
Estimated cost in France, UK, Ireland	(-EUR57,137)	(-EUR32,444)
Estimated cost in Croatia	EUR 10383	EUR 5788
Final cost	EUR 407,375	EUR 228,621

Source: European Commission's calculation

For completeness, we include the results of the Standard Cost Model in the tables below. These results include the cost of measuring energy poverty in all Member States but Croatia.

Table 17: Administrative costs of measuring energy poverty in year 1

Obligation	Action	Target Group	Staff type	Hourly rate	Man hours	Activity cost (EUR)
Measuring energy poverty	Familiarizing with the information obligation	28 MS	Legislators, senior officials and managers	41.5	65	75,530
	Training employees about the information obligations	28 MS	Professionals	32.1	33	29,660
	Retrieving relevant information from existing data	28 MS	Professionals	32.1	50	44,491
	Adjusting existing data	28 MS	Professionals	32.1	25	22,470
	Producing new data	28 MS	Professionals	32.1	143	128,079
	Holding meetings	28 MS	Legislators, senior officials and managers	41.5	52	60,424
	Inspecting and checking	28 MS	Professionals	32.1	31	27,638
	Copying	28 MS	Professionals	32.1	50	44,940
	Submitting the information	28 MS	Professionals	32.1	23	20,897
					Total	454,129

Source: European Commission's calculation

Table 18: Administrative costs of measuring energy poverty in following years

Obligation	Action	Target Group	Staff type	Hourly rate	Man hours	Activity cost (EUR)
Measuring energy poverty	Familiarizing with the information obligation	28 MS	Legislators, senior officials and managers	41.5	27	31,374
	Training employees about the information obligations	28 MS	Professionals	32.1	29	26,065
	Retrieving relevant information from existing data	28 MS	Professionals	32.1	33	29,660
	Adjusting existing data	28 MS	Professionals	32.1	12.5	11,235
	Producing new data	28 MS	Professionals	32.1	45	40,446
	Holding meetings	28 MS	Legislators, senior officials and managers	41.5	26	30,212
	Inspecting and checking	28 MS	Professionals	32.1	33	29,660
	Copying	28 MS	Professionals	32.1	45	40,446
	Submitting the information	28 MS	Professionals	32.1	18	16,178
					Total	255,277

Source: European Commission's calculation

Option 2 – calculating the costs

The cost of Member States measuring energy poverty using required energy

The UK measures energy poverty using required energy rather than actual expenditure. Social and physical surveys are carried out in each constituent country to gather all the necessary information to estimate and monitor energy poverty.

The European Commission requested the assistance of the Scottish Government to gather the necessary information to understand the activities and estimate the costs of measuring energy poverty using required energy. The estimated cost for using this approach at the EU level is based on the cost of an analogous exercise to measure energy poverty in Scotland.

The main tool to gather all the data to estimate the level of energy poverty in Scotland is the Scottish House Condition Survey[114] (SHCS). The objective of the survey is much broader than measuring energy poverty. The survey includes a range of additional topics, as well as information on several characteristics of the household. Each year a Technical Report[115] is published to summarise the survey methodology and delivery of the survey work.

The SHCS includes a sample of more than 3,000 paired households and dwellings. The Table below breaks down the different components of the SHCS. Member States already undertake social surveys[116], making the physical survey the main additional cost of this measure.

Table 19: SHCS – cost structure

SHCS – Activities	Description of activities	SHCS – Share of total cost
Survey management	Project management, recruitment, briefing and training, etc.	15%
Fieldwork costs - Social surveys - Physical survey	45 minutes social interview and 60 minutes physical survey, and work to secure interviews.	 24% 33%
Processes and final output	Data processing, sampling, selection, questionnaire development, validation, clean datasets, and survey reports.	24%
Estimating energy poverty	Energy poverty modelling using information collected in the surveys	4%

Source: European Commission's calculation

The methodology to calculate cost of gathering data to measure energy poverty using required energy at EU level is as follows:

1. Calculate the cost per interview.

[114] The Scottish House Condition Survey run as a standalone survey every 5 years, in 1991, 1996, and 2002. In 2004 it became an annual survey, running separately until 2011. From 2012, the SHCS was merged with the Scottish Household Survey.

[115] "*Scottish Household Survey Technical Report*". Available at: http://www.gov.scot/Topics/Statistics/SHCS/2009techrep

[116] For instance, physical surveys can be run as a sub-sample of larger surveys such as the Household Budget Survey which will significantly reduce the costs.

2. Adjust cost per interview by Member States labour costs.
3. Multiply cost per interview in each Member States by the number of effective interviews necessary to get a representative sample in each Member States.

Based on the information provided by the Scottish Government, we estimate the cost of the SHCS per interview to be around EUR 268. This cost includes the activities described in the Table above: survey management; fieldwork cost (physical survey); processes and final output; and estimating energy poverty.

A significant component of that cost relates to labour costs. Thus, we adjust the cost per interview by the different labour costs across the EU using information on wages provided in the Standard Cost Model. As previously mentioned, the model does not contain labour costs for Croatia. As before, we approximate Croatian labour costs using the labour cost in Slovenia.

The total number of households that would need to be interviewed depends on several statistical considerations. We use the effective sample size of the Household Budget Surveys[117] provided by Eurostat.

[117] Eurostat Household Budget Surveys 2010 Achieve Sample Sizes. Quality Report. Source: http://ec.europa.eu/eurostat/documents/54431/1966394/LC142-15EN_HBS_2010_Quality_Report_ver2+July+2015.pdf/fc3c8aca-c456-49ed-85e4-757d4342015f

Table 20: Cost per dwelling adjusted by Member States labour costs

Member State	Adjustment factor (MS' labour cost / UK labour cost – category: professional)	Cost per interview (EUR)	Sample size required	Total cost (EUR)
BE	1.3	346	3,459	1,195,000
BG	0.1	27	1,343	36,000
CZ	0.3	82	3,182	262,000
DK	1.2	320	1,697	544,000
DE	1.1	298	37,606	11,209,000
ET	0.2	62	1,619	100,000
IE	1.1	291	2,562	746,000
EL	0.7	184	1,512	278,000
ES	0.7	193	8,743	1,688,000
FR	1.0	274	5,114	1,404,000
IT	1.0	272	8,884	2,420,000
CY	0.8	219	1,910	419,000
LV	0.2	44	1,653	73,000
LT	0.2	44	1,242	55,000
LU	1.3	356	3,068	1,092,000
HU	0.2	60	4,175	250,000
MT	0.4	116	3,157	366,000
NL	0.9	249	1,461	364,000
AT	1.0	269	2,962	796,000
PL	0.3	91	4,022	367,000
PO	0.6	156	30,228	4,708,000
RO	0.2	45	6,328	288,000
SL	0.5	138	2,658	366,000
SK	0.3	69	2,076	143,000
FI	0.9	253	2,532	640,000
SE	1.0	258	2,157	556,000
HR	0.5	138	2,464	340,000
Total Cost				30,704,000

Source: European Commission's calculation

As the housing stock changes slowly, a physical survey of the housing stock does not need to be carried out annually. The survey can be run every two years and produce accurate results[118]. Hence, we estimate that the **total annual cost** of measuring energy poverty using required energy to be approximately EUR **15.35 million**.

The annual cost may increase for those Member States that have to start procurement processes to gather this data. It is likely, however, that the cost of measuring energy poverty using required energy is over-estimated. This is because the SHCS gathers more information than what is explicitly required to measure energy poverty.

The cost of disconnection safeguards – 40 working days minimum notification period

The cost of a minimum notification period can be assessed as the amount of the unpaid energy bills during the period in which disconnection is not possible. This could be either a cost, in case the consumer never pays back the bills, or a delayed income, in case the

[118] Based on interview with Scottish Survey manager.

measure is successfully implemented and the non-paying consumer only delays in paying the bill.

The direct monetary benefit comes in the form of avoided disconnection and reconnection costs to society. To calculate the average amount of time spent on disconnection and reconnection, the cost of disconnection and reconnection was divided by the hourly wage of a technical staff using data from the Standard Cost Model. The average time was equal to 2.4 hours. To calculate the potential savings to society, we assume that the notification reduces the number of disconnections by 10%. We consider 10% to be a conservative assumption. The examples of UK and Belgium show that long pre-disconnection periods contribute, among other factors, to low disconnection numbers. In addition, in many cases disconnections are solved within few days. Notifications are sent to all consumers, many of them, are not necessarily vulnerable or in low-income but have simply forgotten to pay their energy bills.

After the notification, households will be disconnected and acquire a debt with their energy supplier. In many cases, those households will be reconnected again and the debt will be repaid either by the households or the Government. In other cases, a household can be declared in bankruptcy and never repay the debt. For those cases, the unpaid bill during the notification period will be a cost for the supplier. To calculate this cost, we assume[119] a high cost scenario where 30% of households will never repay their debts and a central cost scenario for which 10% households will never repay their debt.

There are no statistics available with the number of households permanently without electricity or gas as a result of non-payment. Anecdotal evidence, gathered through discussions with national regulators, indicate that this number may be small. Given that the majority of European households connected to the electricity or gas grid do receive energy services, it is possible that before or after a household is being disconnected, some kind of process starts by which the affected household or the public sector repay the debt or it is condoned by the supplier.

This is highly likely in Member States with strong social security systems such those who may have to extend their notification like Austria, Germany, Denmark, France, or Sweden and Member States such as Ireland and Poland where pre-payment meters are offered to households as a last resort measures to provide energy and slowly repay the debt. For these Member States, extending the notification period may not result in any added cost. However, to avoid any under-estimation of the cost we have added all the Member States with notification periods lower than 40 days.

The steps taken to calculate the total net costs are the following:

- Calculate the cost of connection and disconnection in each Member State impacted by this measure.
- Estimate the savings of a longer notification period which equals to the avoided cost of connection and reconnection.
- Calculate the average household energy expenditure for 40 working days in each Member State impacted by this measure.

[119] The assumed number of households unable to repay the debt was checked against regulators' experiences.

- Estimate the cost of the measure assuming that 10% (central cost scenario) and 30% (high cost scenario) of households will never repay their debt.
- Calculate the net cost of the policy.

The net cost of unpaid bills for these two scenarios for those Member States with a notification period lower than 40 working days is presented in Table 21.

Table 21: Estimated cost of extending notification period

Member State	Central Cost (10%) in EUR	High Cost (30%) in EUR
AT	148,160	1,027,465
BG*	184,081	624,502
CY	236,164	942,264
CZ*	405,482	1,587,838
DE	627,268	9,340,006
DK	219,079	1,216,659
EE*	-5,018	96,725
FR	1,617,788	6,439,202
IE	35,596	222,339
IT	-570,068	18,342,145
LT	6,046	24,428
LU*	3,194	24,311
MT	11,103	47,098
PL	945,689	4,131,371
PT	2,328,274	9,210,831
SE*	156,570	778,667
SI*	204,133	708,164
SK	109,395	484,050
Total Annual Cost	**6,662,934**	**55,248,063**

*Note: * indicates Member States without available data on disconnections. For these Member States disconnections was proxy by the average number of disconnections.*
Source: European Commission's calculation

Estonia and Italy enjoy a net benefit from extending the notification period i.e. expressed as a negative cost. In these Member States, the savings from avoiding the cost of connection and reconnection during the notification period is higher than the total debt in the central cost scenario where 10% of households do not repay their debt.

The results in Table 21 are nonetheless sensitive to the assumptions used with regard to the number of disconnections avoided and the number of households who will never repay their debt. For instance, if we assume that just 5% of households do not repay their debt, extending the notification period results in an EU net benefit of more than EUR 5 million.

It is also important to note that publically available data on disconnection rates across all Member States is incomplete, despite Member States' obligation to report such data to National Regulatory Authorities. For the purpose of the present analysis, the average number of disconnection was applied to proxy for potential disconnection in those Member States without available data. This assumption may not be adequate for Member States such as Luxembourg or Sweden which may have a significantly lower number of disconnections than the average.

Overall, it is likely that the conservative assumption used in the calculation of the costs led to conservative estimates of the cost which may over-estimate the impact of the measures.

In addition to the above it is important to note that Member States with robust social security schemes are unlikely to face any additional costs as a result of the extension of the disconnection notice period as rapid intervention of social security services typically helps households in those Member States to avoid disconnections.

The cost of disconnection safeguards - prior to disconnection notice, consumers should receive: (i) information on the sources of support and (ii) be offered the possibility to delay payments or restructure their debt.

To calculate the cost of these measures, we collected information on the cost of similar schemes currently operating in Member States and estimate the cost of replicating these schemes in the Member States where debt management or customer engagement activities do not exist.

The steps taken to calculate the total costs are the following:

- Gather information on case studies and calculate the cost per household for debt management and customer engagement.
- Calculate the cost per household in each Member States taking account of different labour costs using information from the Standard Cost Model.
- Multiply the cost per household by the number of households in arrears (high cost scenario) and the number of disconnections (central cost scenario)

Similarly to the cost of extending notification period, it is likely that in some Member States, particularly those with strong social security system, households may never need debt management advice or information on the sources of support.

It might well be that even though Member States such as Denmark, Finland, or the Netherlands do not have official debt management advice or customer engagement activities[120], households in these Member States do receive support prior to disconnection or when facing difficulties to pay their energy bills. That will make these measures superfluous. In those cases, Member States will not face any additional cost. However, to avoid any under-estimation of the costs, the impact assessment includes all the Member States without these services[121].

Using the number of households in arrears as a proxy for the number of disconnections may also over-estimate the costs. First of all, not all households in arrears may be in a position to require support. Arrears may well be for other reasons than financial constraints or difficulties to make ends meet. Secondly, in some Member States, households in arrears may receive support from local authorities or social services which will erase the need for these measures and thus the cost.

As a result of these assumptions, we believe the costs presented here are conservative.

The cost of debt management

Step Change is a UK based charity which helps people overcome their debt difficulties[122]. In 2014, the charity served more than 300,000 people at an operating cost of around GBP

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120 *"Measures to protect vulnerable consumers in the energy sector: an assessment of disconnection safeguards, social tariffs and financial transfers"*. Forthcoming publication. Insight_E

121 *"Measures to protect vulnerable consumers in the energy sector: an assessment of disconnection safeguards, social tariffs and financial transfers"*. Forthcoming publication. Insight_E

122 Step Change: http://www.stepchange.org/

140 per beneficiary which equates to around EUR 172[123]. A similar scheme operates in Germany at the local level[124]. The cost of the Germany scheme was on average EUR 167 per households. The estimations are based on the cost from the UK based programme since it is run nationally. Nonetheless, the UK and German program have similar cost per households.

Assuming the same efficiency in other Member States but different labour costs, the cost of replicating Step Change activities in other Member States is shown in Table 22. The same Table also shows the cost of extending the services to all households in arrears with utility bills (as potential households in need of assistance with managing utility bills – high cost scenario) and the cost of providing the service to those households who are actually disconnected[125] – central cost scenario.

When estimating the costs of debt management it is important to note that debt management assistance have positive long-term impacts on households. This means that a substantial share of households benefiting from debt management assistance can be expected to manage their payments more effectively after the initial intervention. Thus, the annual cost of this intervention can be expected to decrease annually reflecting the success rate of the measure.

For instance, from the more of 1,200 households receiving support in Germany, 90% of the beneficiaries felt their future energy needs would be secured and therefore were not in need to reapply to receive assistance. In addition 80% of the disconnection threats were averted which generates savings in the form of avoided disconnection and reconnection costs.

The 90% success rate in the German example may not be easy to replicate in other Member States. As a conservative assumption we assume a success rate of 25%. Hence, the annual cost of the measure will decrease by 25% year-on-year.

It is also important to note that this type of services, despite being of a considerable cost per customer provide an added-value to the energy suppliers. For example, Step Change is partly funded by the energy suppliers as they enjoy the benefits of having an intermediary that provides support to customer on arrears or in risk of disconnection for non-payment.

The cost of customer engagement

Irish suppliers have established an Energy Engage Code which provides guidelines on the approach suppliers should take with customers in arrears and those with possible disconnection. According to the Code, suppliers should communicate with customers having difficulties in paying their bills and advise them on possible debt management plans. The cost of this option involves communication costs including letter, phone calls

[123] 2014 average exchange rate of GBP 0.806 for one euro.

[124] Information on the scheme can be found at: https://www.verbraucherzentrale.nrw/mediabig/238730A.pd and https://www.verbraucherzentrale.nrw/mediabig/237456A.pdf

[125] Information on the total number of disconnections was not available for all Member States. For those Member States for which this information was not available, we applied the average disconnection rate.

and SMS messages. Information on the estimated cost of customer engagement provided by one of the main Irish suppliers is presented below:

- Written communication: EUR 1.5
- Phone calls: EUR 5
- Mobile Text: 8 euro cents

It is likely that this measure may have positive long-term impacts reducing the number of beneficiaries and the cost of the scheme. However, we did not find any evidence of the possible success rate. To avoid any under-estimation of the cost we assume the number of beneficiaries remains constant over time.

This amounts to an estimated cost of customer engagement of around EUR 6.6 per customer. The same approach as per debt management was used to calculate the cost of extending similar schemes to other Member States. We first adjust the cost of customer engagement per customer for each Member State using Eurostat Purchasing Power Parity Index. The cost per customer was multiplied by the total number of households in arrears – high cost scenario and total number of disconnections – central cost scenario.

Table 22: Cost of debt management and customer engagement

Member State	Estimated cost of debt management (EUR)		Member State	Estimated cost of customer engagement (EUR)	
	Central Cost	High cost		Central Cost	High Cost
BG	114,408	6,770,270	BG	21,056	1,245,997
DK	7,665,949	73,559,897	CY	121,107	97,921
EE	65,607	3,882,393	CZ	9,217	545,417
FI	708,564	41,930,412	EE	7,045	416,885
HR	1,016,791	22,934,923	FI	25,786	1,525,929
LT	95,899	5,634,449	GR	900,327	4,138,621
LV	22,088	1,266,903	HR	52,140	1,176,085
PT	33,574,204	91,806,810	HU	410,753	1,139,442
RO	293,008	17,339,207	LT	11,309	664,469
SK	121,024	7,161,768	LV	3,129	179,479
			MT	12,187	100,663
			NL		9,876,748
			SI	116,888	164,857
Total Annual Cost	43,677,542	272,287,031	Total Annual Cost	1,690,944	21,272,514

Note: the number of reported disconnections in the Netherlands was nil. CEER database
Source: European Commission's calculation

The cost of disconnection safeguards - winter moratorium of disconnections for vulnerable consumers.

A winter disconnection moratorium for vulnerable consumers may result in a cost for the energy supplier, consumers or the government, depending on how the measure is financed. The cost of this measure can be estimated as the cost of the unpaid energy bill from non-paying vulnerable consumers during winter. However, the debt per each non-paying household might be recovered at a certain point, therefore not resulting in a cost.

The cost per non-paying household of a possible winter disconnection is reported in Table 23. This was calculated assuming that a household does not pay the energy costs for the full winter, assumed to be four months long which is equal to the average legislated winter

length in countries that have disconnection safeguards for the winter. This was calculated using the average energy expenditures for the lowest income quintile.

We also assume that a percentage of vulnerable consumers will not repay their energy bill due to the moratorium. A high and a central cost scenario are presented in the table below. The scenarios assume that 30% (high cost) and 10% (central cost) of the vulnerable households will not repay their energy bills during winter. It can be argued, as it was done previously for the other disconnection safeguards, that these assumptions are likely to over-estimate the cost.

It might be that some Member States such as Austria, Germany or Luxembourg have sufficient tools in place to protect vulnerable households from being disconnected making a moratorium unnecessary. For those Member States, the costs of the moratorium will not be realised. However, as in the other Sections of the impact assessment, we have included all Member States without a winter moratorium for vulnerable consumers.

As previously discussed, anecdotal evidence suggests that the number of households permanently cut-off from electricity and gas services because of non-payment may be significantly lower.

The number of vulnerable consumers was not available for some of the impacted Member States. In these cases, referred in the table below with an asterisk, the number of vulnerable consumers the number of households unable to keep their homes adequately warm was used as a proxy. This is likely to over-estimate the number of vulnerable households, particularly in those Member States with an explicit definition of consumer vulnerability in energy markets. Further information on the definition of consumer vulnerability in energy markets can be found in the evaluation.

It needs to be added that the inability of a vulnerable household to pay its energy bill may also be linked to the type of tariff. It might well be that vulnerable households are not in the most advantageous tariff. In those cases, switching to a more competitive offer reduces energy costs and may avoid disconnection. These interactions were not taken into account in this impact assessment. However, it can be assumed that the preventative measures undertaken prior to disconnection such as customer engagement and debt management may assist vulnerable consumers to reduce their energy cost by switching to a more economic tariff.

Finally, there might be scope for reducing the costs of winter moratorium of disconnections if it is designed taking into account Member States national social services. However, as social policy is a primary competence of Member States, an EU winter moratorium on disconnections may go beyond the limits of subsidiarity (see Section 7.1.6 Subsidiarity).

Table 23: Cost of winter moratorium for vulnerable consumers

Member state	Vulnerable consumers	Electricity		Gas	
		Central cost case (10% disconnect and never pays back) in EUR	High cost case (30% disconnect and never pays back) in EUR	Central cost case (10% disconnect and never pays back) in EUR	High cost case (30% disconnect and never pays back) in EUR
AT*	118,357	2,092,547	6,277,640	733,812	2,201,435
BG*	1,048,035	9,643,610	28,930,829	229,965	689,895
CZ*	267,191	4,559,591	13,678,772	2,807,494	8,422,483
DE*	1,978,803	33,507,728	100,523,184	15,962,343	47,887,029
LU*	1,374	26,642	79,926	20,210	60,630
LV*	215,001	1,743,136	5,229,408	607,682	1,823,046
MT	24,416	242,927	728,782	36,852	110,557
PT	61,129	941,387	2,824,160	707,059	2,121,176
SK*	117,990	1,172,983	3,518,950	1,333,957	4,001,872
Total Annual Cost		53,930,551	161,791,651	22,439,374	67,318,123

Note: Vulnerable consumers for AT, BG, CZ, DE, LU, LV and SK set as the number of households feeling unable to keep warm during winter. It was not possible to calculate the cost for Croatia due to lack of data on household energy expenditure
Source: European Commission's calculation

Summary Table

The annual cost and the total net present cost for the period 2020 and 2030 of the policy options presented in the impact assessment are summarised in the Table below.

Table 24: Total Cost

	Annual cost in EUR	Net present cost for the period 2020 – 2030 in EUR
BAU: sharing of good practices.	0	0
Option 0+: sharing of good practices and increasing the efforts to correctly implement the legislation.	100,000	911,090
Policy Option 1: Setting an EU framework to monitor energy poverty		
Central cost scenario	407,375 (first year) 228,621 (following years)	2,261,696
Policy Option 2: Setting a uniform EU framework to monitor energy poverty, preventative measures to avoid disconnections and disconnection winter moratorium for vulnerable consumers.		
Central cost scenario	159,105,345	1,194,481,728
High cost scenario	587,348,869	3,820,183,393

Source: European Commission's calculation

Quantifying the Benefits

In this Section we describe the benefits derived from implementing the policies.

Overall benefits

Tackling energy poverty can have positive effects on individual's health and well-being, savings for the health sector, as well as provide economy-wide gains on productivity levels. Although it is difficult to quantify the specific impact of the policies presented in this impact assessment towards these overall benefits, it is likely that applying these policies will contribute to reap these benefits.

For instance, it is likely that on individual's health, there have been various studies linking cold homes with respiratory illnesses and excessive winter mortality. The World Health Organisation estimated that 30% of Excess Winter Deaths (EWD) can be directly related to cold homes[126]. The 2009 Annual Report of the Chief Medical Officers[127] estimated that for every £1 spent on ensuring homes are kept warm, the public health sector saves £0.42.

A recent study concluded that home environment is key to ensure citizens are healthy and productive[128]. Remaining connected to an energy supply better enables households to maintain healthy homes in terms of indoor temperature and humidity levels. Lack of energy supply has been linked to an increase of respiratory illnesses, circulatory diseases, mental health and allergies, which, left unchecked, lead to absence from work and loss of productivity estimated to total 9.8 billion EURO annually in Europe[129][130][131]. Policies proposes in the revision of the EED and the EPBD which contribute to better energy efficiency in the domestic sector will also contribute to realise benefits of better health and productivity.

The UK Healthy Homes Barometer 2016 estimates that minor illnesses, such as coughs, colds, flus and illnesses can be attributed to 27 million lost working days, which affect morale and productivity. The direct cost to the economy in the UK due to these absences is estimated at £1.8 billion in 2013.

Ensuring energy provision can also have a positive impact on educational attainment, lower missed school days and life chances for children[132].

Identifying energy poverty will also assist Member States in assessing the level of energy poverty. Such identification will support Member States to better target public policies to those households in need of assistance. In addition, disconnection safeguards will further help Member States to reduce the number of disconnections, benefiting in particular low-

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126 "*Indoor cold and mortality. In Environmental Burden of Disease Associated with Inadequate Housing"*, (Bonn: World Health Organisation (Regional office for Europe)). (2011). Rudge, J.

127 2009 Annual Report of the Chief Medical Officer (London: Department of Health). 2010. Donaldson, L.

128 "*Healthy Homes Barometer"*. (2016). Wegener and Fedkenheuer,

129 *"Towards an identification of European indoor environments' impact on health and performance - homes and schools"*. (2014). Grün & Urlaub,

130 *"The Health Impacts of Cold Homes and Fuel Poverty"* (London: Friends of the Earth). (2011). Marmot Review Team.

131 *"Estimating the health impacts of Northern Ireland's Warm Homes Scheme"* 2000-2008. (2008). Liddell.

132 *Evaluating the co-benefits of low-income energy-efficiency programmes*. 2013. Heffner & Campbell.

income households who are more likely to face energy poverty. With such measures in place, Member States may feel more confident to phase out regulated prices.

The removal of regulated prices which will bring efficiency improvements, resulting on:

- more competition in the energy markets with positive impacts on consumer and innovation;
- the removal of market distortions which alter the allocation of resources.
- additional citizen's satisfaction due to the positive impacts of competition on innovation in the form of enhanced service provision and quality;
- a positive impact on the internal energy market. Companies wishing to engage in cross-border trade will not be discouraged by regulated prices, which prevent competition when set below cost,; and
- improved public finances since regulated prices are an ineffective measure of protection as they are applied to all households, including those who can afford to pay a higher price. Phasing out regulated prices will unlock resources which can be used for targeted protection.

Better information on the level of energy poverty and measures to reduce the number of disconnections will have a positive impact on consumer protection and the health and well-being of European citizens. Art. 38 of the Charter of Fundamental Rights of the EU requires EU policies to ensure a high level of consumer protection. The Treaty establishes that *'consumer protection requirements shall be taken into account in defining and implementing other Union policies and activities'* (TFEU, art. 12), and that '*... the Union shall contribute to protecting the health, safety and economic interests of consumers, as well as to promoting their right to information, education and to organise themselves in order to safeguard their interests*.' (TFEU, Art. 169)

Policy Option 1 – assessing the benefits

The benefits of a generic description of the term energy poverty in the legislation

Three main benefits have been identified as a result of a shared understanding of energy poverty across the EU: recognition, clarification and policy synergy[133].

In terms of recognition, an EU description of energy poverty may help Member States to identify the problem. This is relevant as the majority of Member States have not defined the phenomenon of energy poverty despite the evidence which suggest that household across Europe are struggling to access adequate energy services[134],

As for clarification, a major regulatory impediment to addressing energy poverty is the unclear understanding of the term. This is particularly relevant as in many cases the term energy poverty is mixed or used interchangeably with the broader term of consumer vulnerability or general poverty[135]. Adopting a generic description of energy poverty would help to resolve the terminological confusion that presently exists, and may pave the way for more detailed national definitions. Above all a generic common understanding of energy poverty in the EU, which focuses on the drivers of energy poverty, is a necessary

[133] "*Fuel poverty in the European Union: a concept in need of definition?"* 2016. Thomson et al.
[134] *"Quantifying the prevalence of fuel poverty across the European Union".* (2013). Thomson and Snell.
[135] "*Working Paper on Energy Poverty"*.(2016). Vulnerable Consumer Working Group.

prerequisite towards achieving reliable and comparable data on the current and future evolution of the nature and scale of the issue.

In terms of policy synergy, there is potential for achieving synergies at the EU and Member State level. Having a shared concept could also assist Member State cooperation and knowledge exchange in this area.

The benefits of measuring energy poverty by referring to household income and household energy expenditure

Measuring energy poverty will assist Member States to assess whether energy poverty is getting better or worse over time. It will also help Member States to identify the people affected so that they can be targeted by appropriate interventions. Hence, measuring energy poverty will help policy makers to assess the impact of their policies[136].

In summary, measuring energy poverty will enable Member States to:

- measure the level of energy poverty at a particular moment of time
- identify trends and changes on the levels of energy poverty,
- understand the extent, depth and persistence of the problem,
- identify the kinds of people affected; and
- support policy design and delivery to tackle the problem

These offer the necessary clarity to the term energy poverty, as well as, the transparency with regards to the number of household in energy poverty while respecting the principles of subsidiarity.

Option 2– assessing the benefits

The benefits of a specific EU definition of energy poverty

A specific, harmonised EU definition of energy poverty such as the one explained previously will bring benefits similar to those associated with a general definition of energy poverty. In addition, being a more specific definition, we expect the benefits in relation to clarification to be higher.

However, here it is important to remember the risks that a specific definition of energy poverty at the EU level may bring in terms of currently limited comparable evidence, comparability and relevance, and path dependency[137] .

As discussed before, a specific EU definition of energy poverty may be in conflict with the diversity of contexts at the Member States in terms of climate conditions, socioeconomic factors or energy markets. If the definition were to be inadequate for a Member State, it would take considerable amount of time to change the EU legislation and amend this situation.

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[136] *Fuel Poverty: The problem and its measurement*. (2001). John Hills. Available at: http://sticerd.lse.ac.uk/dps/case/cr/CASEreport69.pdf

[137] *"Fuel poverty in the European Union: a concept in need of definition? "* (2016). Thomson et al.

The benefits of Member to measure energy poverty using required energy

Measuring an adequate level of energy services is the main advantage of using required rather than actual expenditure. This is the approach taken in the UK and it is regarded as most appropriate by several experts[138]. It requires, nonetheless, agreeing on what is adequate. In some cases, the term adequate refers to a specific heating regime[139].

Having defined what is adequate, the required energy approach calculates the amount of energy needed to meet that heating regime. Energy poverty is later computed comparing the required energy expenditure against household income. Hence, required energy expenditure solves the main weakness of the actual expenditure approach. When using actual expenditure, we are not able to distinguish between those households that do not consume sufficient energy because of financial constraints from those that do not need much energy to meet their energy needs because they live in a high energy efficient dwelling.

The benefits of disconnection safeguards - minimum notification period

Longer disconnection periods will provide customers with additional time to engage with suppliers and/or seek help. There is a direct monetary benefit in the form of avoided disconnections and reconnection costs. In addition to these benefits, any avoided disconnection stemming from this measure will bring benefits such as health improvements and cross-department savings in social and health budgets, and improvements in equality.

Suppliers will also benefit from lower disconnection rates as they will retain such customers, thereby avoiding lost income, allowing the customer to pay back arrears, and avoiding some of the costs related to new customer acquisition.

The benefits of disconnection safeguards - prior to disconnection notice, consumers should receive: (i) information on the sources of support and (ii) be offered the possibility to delay payments or restructure their debt.

Providing additional information to consumers and the possibility to delay payments or restructure their debt may result in a number of disconnections being averted. Hence, the benefits are similar as in the case of extended notification period In addition, households will be better informed, and can improve their energy management and potentially avoid future debt. As described in the case of minimum notification period, suppliers will also benefit from lower disconnections. Investment in consumer engagement and debt management services will support a number of jobs in services such as debt counselling.

The benefits of winter moratorium of disconnections for vulnerable consumers.

[138] *"Selecting Indicators to Measure Energy Poverty"*. (2016). Trinomics.

[139] For instance in the case of Scotland, the current definition of fuel poverty makes reference to a heating regime for standard occupants between 21°C and 18°C for 9 hours during weekdays and 16 hours else and for any occupant aged 60 or more or long-term sick and disabled between 23°C and 18°C 16 hours per day. Source: http://www.gov.scot/resource/0039/00398798.pdf

Similar to the other measures which reduce disconnections, a winter moratorium will bring benefits in the form of health benefits to vulnerable consumers, cross-departmental savings in social and health budgets, and avoided disconnection and reconnection costs.

Sensitivity analysis

This impact assessment suffers from important shortcomings to quantify the benefits. The policy options bring multiple benefits in terms of better public policy with regard to energy poverty, improvements in individuals' well-being and public sector saving from fewer disconnections. However, we were not able to quantify the value of these benefits from market prices.

Sensitivity analysis allows us to calculate the amount of benefits that would be necessary to justify the costs from these policies.

One of the key benefits of the options presented stem from improvements in individual health which can be particularly effective at addressing Excess Winter Deaths (EWD). EWD refers to deaths which would not have occurred if dwellings had been properly heated. The cost to society of EWD can be estimated as forgone GDP i.e. each excess winter death translates in forgone monetary value approximated by GDP per capita. This is a rather crude measure with some disadvantages (e.g. different values for different countries) but it can be interpreted as an estimation of the loss to society.

To perform the sensitivity analysis, the following steps are taken:

- Aggregate the cost of policy Option 1 and 2 for the high and central cost scenario.
- Multiply the number of EWD[140] by the GDP per capital[141]
- Calculate the reduction in EWD that equals the cost of the policies.

The results of the calculation are presented below.

Table 25: Sensitivity analysis

	Benefits from reduction in Excess Winter Deaths equal to the cost of the policies
Policy Option 1: Setting an EU framework to monitor energy poverty	
Policy Option 1 – first year	0.004%
Policy Option 1 – following years	0.002%
Policy Option 2: Setting an EU uniform framework to monitor energy poverty and reduce disconnections for vulnerable consumers.	
Policy Option 2 – central cost scenario	1.5%
Policy Option 2 – high cost scenario	5.6%

Source: European Commission's calculation. Note: Policy Option 1 and 2 include the measures described in option 0+.

[140] The number of EWD is calculated following an approach similar to Johnson and Griffinths (2003). The number of deaths is equal to the deaths between the months of December and March minus the average number of deaths for other months. Data source: Eurostat. Mortality Statistics.

[141] Eurostat. GDP per capital in euros at current prices.

The Table shows that a minimal reduction in EWD is sufficient to justify the cost arising from policy Option 1. On the other hand, a reduction of 1.5% and 5.6% is necessary for the cost of policy Option 2 to be equal to possible benefits. The differences between the low and high cost scenario are explained by the assumptions used to calculate the cost, and in particular, to the number of households that after being disconnected or because of the moratorium will never repay their debt.

Box 1: Impacts on different groups of consumers

The benefits of the measures contained in the preferred option (Option 1), described in detail in the preceding pages, accrue overwhelmingly to energy poor households. Depending on how individual Member States choose to finance their new obligations to measure energy poverty levels (costs outlined in detail in Tables 15 to 17), the marginally increased burdens resulting from the implementation of these measures are socialized amongst other ratepayers or taxpayers. The measures can therefore be considered progressive in nature i.e. they tend to redistribute surplus from relatively high-income ratepayers/taxpayers to increase the welfare of lower-income ratepayers

7.1.6. *Subsidiarity*

In this Section we assess the options presented in the impact assessment against the subsidiarity principle as stated in Article 5 of the Treaty of the EU.

The subsidiarity principle is upheld because the objectives of the policy options, which have been defined to address the shortcoming of the current legislation as identified in the evaluation, cannot be achieved sufficiently by Member States.

The evaluation of the current provision of the Electricity and Gas Directive defined energy poverty as a subset of consumer vulnerability. This categorisation leads to a simplistic expectation that a single set of policy measures from Member States would automatically address both problems simultaneously. However, evidence suggests that energy poverty has been rising over the years, despite the protection available for vulnerable consumers. In this context, Member States have been reluctant to phase out regulated prices, pointing towards the protection of vulnerable and energy poor households as one of the main reasons. As a consequence, national regulation has had negative spill-over effects, weakening the internal energy market.

The measures proposed in Option 1 build upon the existing provisions on energy poverty in the Electricity and Gas Directive. They offer the necessary clarity to the term energy poverty, as well as, the transparency with regards to the number of household in energy poverty. Since currently available data can be used to measure energy poverty, the administrative costs are limited. Likewise, the actions proposed do not condition Member States primary competence on social policy, hence, respecting the principle of subsidiary.

In addition, the protection of vulnerable and energy poor consumers has been quoted as one of the reasons for maintaining regulated prices. This type of intervention, particularly when prices are regulated below costs, has negative implications on the functioning of the internal energy market. Article 114 and 194 pf the Treaty pf the Functioning of the European Union states that in order to achieve the objectives in Article 26, the EU legislators *shall adopt the measures for the approximation of the provisions laid down by law, regulation or administrative action in Member States which have as their object the establishment and functioning of the internal market*. Article 194 states that the Union *policy shall aim to ensure the functioning of the energy market*.

It can be argued that Article 169 on Consumer Protection provides further justification for action at the EU level. The options described in this IA include disconnection safeguards

either as preventative measures prior to disconnection or as a prohibition of disconnection for vulnerable consumers.

The options presented in this Annex bring a double dividend: on the one hand they contribute to the protection of consumers – as explained in the introduction there is a link between energy poverty and excess winter deaths – and on the other hand, these measures support the completion of the internal energy market.

It needs to be noted that, as we explained in Option 2, Member States may be better suited to design schemes to protect households from disconnection in order to ensure that synergies between national social services and disconnection safeguards are achieved.

In addition, a prohibition on disconnections for vulnerable consumers may restrict the principle of freedom of contract, in particular for the ten Member States that do not have such a measure in place. However, action at EU level may be the most effective way to ensure a common level of protection for vulnerable consumers. Furthermore, in terms of proportionality, Member States should carefully specify the group of vulnerable consumers who cannot be disconnected to avoid going beyond what is necessary to achieve the consumer protection objective.

7.1.7. *Stakeholders' Opinions*

The options described in this impact assessment have benefited from the continued dialogue between the European Commission services and civil society through the Vulnerable Consumer Working Group (VCWG).

The VCWG was reconvened after the 2015 Citizens' Energy Forum. The group has met five times since then:

- 3 June 2015
- 21 October 2015
- 9 December 2015
- 26 January 2016
- 24 May 2016

The VCWG meetings are attended by key stakeholders from industry, consumer associations, academics, regulators and representatives of Member States. A full list of the members of the group who have attended at least one of the last five meetings is provided below:

Table 26: Members of the Vulnerable Consumer Working Group

Organisation	Member State
Ministry of Economics	Latvia
Ministry of Economy	Poland
Ministry of Employment and the Economy, Energy Department	Finland
Ministry of National Development	Hungary
Bulgarian Permanent Representation to the EU	Bulgaria
Hungarian Permanent Representation to the EU	Hungary
Czech Permanent Representation to the EU	Czech Republic
FPS Economy - DG Energy	Belgium
ERO - Energy Regulatory Office of the Czech Republic	Czech Republic
E-control Austrian Energy Regulator	Austria
OFGEM	United Kingdom
NEON	European Organisation
Citizens advice	United Kingdom
Danish Consumer Council	Denmark
DECO	Portugal
The Swedish Consumer Energy Markets Bureau	Sweden
RWADE	Belgium
University of Leicester	United Kingdom
University of Stuttgart	Germany
European Disability Forum	European Organisation
Fondazione Consumo Sostenibile	Italy
GEODE	European Organisation
HISPACOOP	Spain
Housing Europe	Belgium
International Union of Tenants	European Organisation
EURELECTRIC	European Organisation
EUROGAS	European Organisation
ADEME	France
AEEGSI	Italy
AISFOR	Italy
CEDEC	European Organisation
DGEC	France
EAPN	European organisation
EFIEES	European Organisation
ENGIE	France
FdSS	France

In the meetings of the VCWG[142], the group discussed the topic of energy poverty. These discussions were captured in the Working Paper on Energy Poverty[143]. The group conclusions were as follows *(emphasis added)*:

- Measuring energy poverty is important to understand the depth of the problem and also assess the impact of the policies which have been put in place to tackle it. Metrics which account for the relationship between household income and household energy needs or expenditure capture well the problem of affordability.

[142] The minutes, agenda and presentations of the meetings can be found online at: https://ec.europa.eu/energy/en/events/citizens-energy-forum-london

[143] VCWG (2016) Working Paper on Energy Poverty. Available at: https://ec.europa.eu/energy/sites/ener/files/documents/Working%20Paper%20on%20Energy%20Poverty.pdf

- Better information on housing stock, which can be efficiently gathered as part of the regular Household Budget Survey, will help Member States to measure energy poverty and design energy efficiency policies which benefit the energy poor.
- Tackling energy poverty requires a combination of policies, dealing with the causes and the symptoms of energy poverty. Good examples include targeted short-term (financial support) and long-term measures (energy efficiency) in addition to consumer protection and reasonable safeguards against disconnections.
- A common understanding of the concept of energy poverty will help Member States, civil society and industry to start a dialogue about the depth of energy poverty and how to tackle it. The VCWG considers that a common understanding of energy poverty in the form of a generic definition represents a positive step forwards to tackle the problem of energy poverty. Such a definition should be simple, focus on the problem of affordability, and allow sufficient flexibility to be relevant across Member States. The VCWG proposes that such a definition can refer to elements such as low-income; inability to afford; and adequate domestic energy services

The options described in this impact assessment draws from the conclusions of this paper. In particular, key elements of Option 1 are supported by the VCWG Working Paper on Energy Poverty.

Sub-Annex 1

Table 27: Energy poverty definitions

Member State	Definition
France	Energy Poverty: A person who encounters in his/her accommodation particular difficulties to have enough energy supply to satisfy his/her elementary needs, this being due to the inadequacy of resources or housing conditions.
Ireland	Energy poverty is a situation whereby a household is unable to attain an acceptable level of energy services (including heating, lighting, etc.) in the home due to an inability to meet these requirements at an affordable cost.
Cyprus	Energy poverty may relate to the situation of customers who may be in a difficult position because of their low income as indicated by their tax statements in conjunction with their professional status, marital status and specific health conditions and therefore, are unable to respond to the costs for the reasonable needs of the supply of electricity, as these costs represent a significant proportion of their disposable income.
Slovakia	Energy poverty under the law No. 250/2012 Coll. Of Laws is a status when average monthly expenditures of household on consumption of electricity, gas, heating and hot water production represent a substantial share of average monthly income of the household"
England	Energy poverty: A household i) income is below the poverty line (taking into account energy costs); and ii) their energy costs are higher than is typical for their household type.
Scotland	Fuel poverty: A household, in order to maintain a satisfactory heating regime, it would be required to spend more than 10% of its income (including Housing Benefit or Income Support for Mortgage Interest) on all household fuel use.
Wales	Fuel poverty is defined as having to spend more than 10% of income (including housing benefit) on all household fuel use to maintain a satisfactory heating regime. Where expenditure on all household fuel exceeds 20% of income, households are defined as being in severe fuel poverty.
Northern Ireland	A household is in fuel poverty if, in order to maintain an acceptable level of temperature throughout the home, the occupants would have to spend more than 10% of their income on all household fuel use.

Source: Insight_E 2015

Fejl! Brug fanen Hjem til at anvende Heading 2 på teksten, der skal vises her.

7.2. Phasing out regulated prices

7.2.1. *Summary table*

Objective: Removing market distortions by achieving the phase-out of supply price regulation for all customers[144].			
Option: 0	**Option 1**	**Option 2a**	**Option 2b**
Making use of existing *acquis* to continue bilateral consultations and enforcement actions to restrict price regulation to proportionate situations justified by general economic interest, accompanied by EU guidance on the interpretation of the current acquis.	Requiring Member States to progressively phase out price regulation for households by a deadline specified in new EU legislation, starting with prices below costs, while allowing transitional, targeted price regulation for vulnerable customers (e. g. in the form of social tariffs).	Requiring Member States to progressively phase out price regulation, starting with prices below costs, for households above a certain consumption threshold to be defined in new EU legislation or by Member States.	Requiring Member States to progressively phase out below cost price regulation for households by a deadline specified in new EU legislation.
Pros: **-** Allows a case-by-case assessment of the proportionality of price regulation, taking into account social and economic particularities in Member States	Pros: **-** Removes the distortive effect of price regulation after the target date. **-** Ensures regulatory predictability and transparency for supply activities across the EU.	Pros: - Limits the distortive effect of price regulation. - Would reduce the scope of price regulation therefore limiting its distortive impact on the market.	Pros: - Limits the distortive effect of price regulation and tackles tariff deficits where existent.
Cons: - Leads to different national regimes following case-by-case assessments. This would maintain a fragmented regulatory framework across the EU which translates into administrative costs for entering new markets.	Cons: - Difficult to take into account social and economic particularities in Member States in setting up a common deadline for price deregulation.	Cons: - Difficult to take into account social and economic particularities in Member States in defining a common consumption threshold above which prices should be deregulated..	Cons: - Defining cost coverage at EU level is economically and legally challenging. - Implementation implies considerable regulatory and administrative impact. - Price regulation even if above cost risks holding back investments in product innovation and service quality.
Most suitable option(s): Option 1 - Setting an end date for all price intervention would ensure the complete removal of market distortions related to end-user price regulation and help create a level playing field for supply activities across the EU while allowing targeted protection for vulnerable customers and/or energy poor.			

[144] For the purpose of this annex of the impact assessment, households or household customers shall include customers in a comparable situation (e. g. SMEs, hospitals etc.)

7.2.2. *Description of the baseline*

A regulated supply price is considered as a price subject to regulation or control by public authorities (e.g. governments, NRAs), as opposed to being determined exclusively by supply and demand. This definition includes many different forms of price regulation, such as setting or approving prices, standardisation of prices or combinations thereof.

The existing *acquis* only allows price regulation if strict conditions are met.

Regulated prices are unlawful under current Gas and Electricity Directives as interpreted by the Court of Justice, unless they meet specific conditions. Accordingly, the Court of Justice has ruled[145] that supply prices must be determined solely by supply and demand as opposed to State intervention as from 1 July 2007. The Court based its interpretation on the provision[146] stating that Member States must ensure that all customers are free to buy electricity/natural gas from the supplier of their choice as from 1 July 2007 (Article 33 of the Electricity Directive and Article 37 of the Gas Directive interpreted in light of the very purpose and the general scheme of the directive, which is designed progressively to achieve a total liberalisation of the market in the context of which, in particular, all suppliers may freely deliver their products to all consumers).

Article 3(1) of Gas and Electricity Directives requires Member States to ensure, on the basis of their institutional organisation and with due regard to the principle of subsidiarity, that natural electricity/gas undertakings are operated in accordance with the principles of that directive with a view to achieving, inter alia, a competitive market.

However, Gas and Electricity Directives are also designed to ensure that, in the context of that liberalisation, high standards of public service are maintained and the final consumer is protected.

In order to meet those latter objectives, Article 3(1) of Gas and Electricity Directives states that it applies without prejudice to Article 3(2), which expressly permits Member States to impose public service obligations on undertakings operating in the electricity and gas sectors, which may in particular concern the price of supply.

In this context the conditions allowing price regulation in the form of public service obligation imposed on undertakings are to i) be adopted in the general economic interest, ii) be clearly defined, transparent, non-discriminatory and verifiable, guarantee equality of access for EU companies to national customers and iii) meet a requirement for proportionality (which refers in particular to limitation in time and as regards the scope of beneficiaries).

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[145] Case C-265/08, Federutility and others v Autorità per l'energia elettrica e il gas

[146] The Court judgement was based on Article 23(1)(c) of Directive 2003/55 of the Second Energy Package which provides that Member States must ensure that all customers are free to buy natural gas from the supplier of their choice as from 1 July 2007; however a similar provision is contained in the Second Package Electricity Directive and the relevant provisions has remained unchanged in the Third Package Directives.

Price regulation for *non-households* has been systematically challenged via infringements while price regulation for *households* has not been yet subject to infringement procedures. Deregulating household prices may be politically unpopular in Member States where regulation is justified by social policy objectives and/or lack of competition.

This policy choice has meant addressing through infringements the more important market distortion created by the regulation of prices for larger and potentially most active consumers who use most of the energy sold on the European market (more than 70% of total electricity consumption and close to 60% of the total gas consumption)[147]. In addition, the Commission has opted initially for an informal approach via bilateral consultations with Member States to discuss reasonable and sustainable alternatives to price regulation and accompanying support for vulnerable consumers. However, infringement actions against price regulation for households are not excluded in the follow-up to informal consultations.

Electricity and gas price regulation refers to the 'energy' component of the end-user price, excluding costs of transport/distribution, taxes, other levies and VAT. This component is the element which should be determined by market demand and supply in a fully liberalised energy market. By contrast, the other elements that influence the end-use electricity price are subject to other regulation and legislation including network regulation, taxes and levies/support schemes for energy efficiency and renewable energy sources.

7.2.3. *Deficiencies of the current legislation*

Despite the current acquis, some form of price regulation exists in 17 Member States, as shown in the table below.

This is problematic because evidence presented in Section 5 of the present Annex demonstrates that regulation of electricity and gas prices limits customer choice, reduces customer satisfaction and restricts competition. This is particularly true for markets where supply prices are set below costs (i.e. without taking into consideration wholesale market prices and other supply costs).

Artificially low regulated prices (even without pushing them below costs) limit market entry and innovation, prompt customers to disengage from the switching process and consequently hinder competition in retail markets. In addition, they may increase investor uncertainty and impact the long-term security of supply.

Furthermore, regulated prices (even when set above costs) can act as a pricing focal point which competing suppliers are able to cluster around and – at least in markets featuring strong customer inertia – can also considerably dilute competition.

As shown in the Evaluation of the EU's regulatory framework for electricity market design and consumer protection in the fields of electricity and gas, market-based energy prices that are able to take into account the rapid changes of demand and response and cross-

[147] In 2014, non-residential customers consumed 1.921.153 out of the total 2.706.310 Gigawatt-hour electricity consumption and 1.506.185 Gigawatt-hour out of the total 2.578.779 Gigawatt-hour of gas consumption – Eurostat data, 2014.

border trade are even more crucial than in 2009. The evaluation concludes that progress towards lifting regulated prices blocking competition and consumers' choice should continue (Evaluation Section 7.1.1).

Table 1: Energy price regulation in EU Member States – February 2016[148]

[148] Based on current state of play of the conformity checks.

Member State	Electricity	Gas
Austria		
Belgium		
Bulgaria	**X**	**X**
Croatia	**X**	**X**
Cyprus[i]	**X**	
Czech Republic		
Denmark[ii]	**X**	**X**
Estonia		
Finland		
France	**X**	**X**
Germany		
UK (Great Britain)		
UK (Northern Ireland)	**X**	**X**
Greece[iii]		**X**
Hungary	**X**	**X**
Ireland		
Italy[iv]	**X**	**X**
Latvia[v]		**X**
Lithuania[vi]	**X**	**X**
Luxembourg		
Malta[vii]	**X**	
Netherlands		
Poland[viii]	**X**	**X**
Portugal[ix]	**X**	**X**
Romania[x]	**X**	**X**
Slovakia	**X**	**X**
Slovenia		
Spain[xi]	**X**	**X**
Sweden		
Source: European Commission Data.		

[i] Price regulation economically justified due to natural monopoly.
[ii] **Denmark** is implementing measures aimed at progressively removing regulated prices. This follows from changes in the energy law introduced in January 2013.
[iii] Discussions with **Greece** on the phase-out of regulated prices are conducted as part of the Economic Adjustment Programme and lead to the phase-out of electricity regulated prices for households and small enterprises as of 30 June 2013. The only exceptions are end-user prices for vulnerable customers. As regards gas, a major reform of the Greek gas retail market is envisaged that seeks to abolish the regional monopolies of the EPAs for gas supply and to progressively extend eligibility to all retail customers.
[iv] **Italy** has introduced since 2013 market based reference prices for small customers including SMEs that according to the Italian NRA should be considered de facto non-regulated.
[v] **Latvia** has removed regulated prices for *electricity* for households other than vulnerable in January 2015. As a first step towards price deregulation, a revised Energy Law, adopted on 18 September 2014, introduced a category of vulnerable customers (underprivileged social groups and families with 3 or more children) and set a fixed price for electricity for these customers. Regarding *gas*, the liberalization is expected to be completed by 2017, subject to interconnections projects being realized in order to make the transition from isolated market to an interconnected one.
[vi] **Lithuania** has removed *electricity* regulated prices in the beginning of 2015.
[vii] **Malta** regulates electricity prices for all customer segments. However, it has extensive exemptions notably from market opening and customer eligibility provisions of the Third package.
[viii] Discussions with **Poland** are ongoing regarding draft measures communicated to Commission's services implementing the judgement delivered on 10 September 2015 concerning gas price regulation (*36/14 Commission v. Poland*). The draft measures foresee deregulation of gas prices for households by 2023.
[ix] **Portugal** has agreed a roadmap for phasing out regulated prices as a result of the infringement proceedings initiated by the Commission. In August 2012, the government announced the complete elimination of regulated tariffs with a transitory tariff in place for three years.
[x] **Romania** has agreed an electricity and gas price deregulation calendar as part of the Economic Adjustment Programme.
[ix] In **Spain**, on 27 December 2013, the new Electricity Act modified the last resort tariff for electricity and introduced the PVCP (Precio Voluntario Pequeño Consumidor or Voluntary price for small customers) for electricity households. The energy component of this price reflects the spot market during the period, only the profit margin of the suppliers being regulated.

7.2.4. *Presentation of the options*

Option 0: Making use of existing acquis to continue bilateral consultations and enforcement actions to restrict price regulation to proportionate situations justified by manifest public interest

This option consists in a new round of bilateral meetings with the Member States as regards households, relying on the existing acquis. Due to the political sensitivity attached to price regulation for households, but also taking into account that national price regulation regimes are characterised by a variety of rules and justifications thereof, voluntary collaboration between Member States based on assistance by the Commission services has not been considered as an adequate tool for achieving price deregulation, a bilateral approach being preferred. Bilateral meetings can be followed by EU Pilots and infringement procedures to restrict price regulation to time-limited situations justified by the public interest.

In this context, the Commission services will:

- offer Member States assistance on practical implementation of deregulation including on accompanying good practice in protecting the energy poor through social policy;
- monitor Member States' adherence to adopted phase-out roadmaps and the implementation of the principle of cost-reflectiveness of their regulated prices; and

- initiate enforcement where Member States refuse to phase-out regulated prices on a voluntary basis.

While enforcement action under this option may be effective, as repeatedly backed by favourable judgements of the European Court of Justice, infringement actions by the Commission against price regulation for households remain politically sensitive.

Option 1: Requiring Member States to progressively phase out price regulation for households by a deadline specified in new EU legislation, starting with prices below costs, while allowing transitional, targeted price regulation for vulnerable customers (e. g. in the form of social tariffs).

The legislative measures would include:

- introducing binding deadlines (e. g. 3-4 years from the entry into force of the legislation) in the Electricity and Gas Directives for price-setting for households to be free of regulatory intervention and instead subject only to supply and demand.
- allowing regulated prices (e. g. in the form of social tariffs) targeted at specific groups of vulnerable customers, notably the energy poor. This would also contribute to ensuring universal access to affordable energy services as required under UN-backed Sustainability Development goals.

These measures would be accompanied by:

- bilateral consultations, as appropriate, to support Member States in defining and implementing the roadmaps and in identifying vulnerable groups for special protection.
- technical advice, guidance and sharing of good practices on energy efficiency, alternative financial support measures (e. g. energy cheques) or income support through the welfare system to complement or progressively substitute the need for social tariffs.

This option might accelerate liberalization processes in Member States by establishing a clear target date for price deregulation while allowing regulated prices as targeted, transitional support to vulnerable customers. However, it would not fully take into account social and economic particularities in Member States in setting up a common deadline for price deregulation.

Option 2a: Requiring Member States to progressively phase out price regulation, starting with prices below costs, for households below a certain consumption threshold to be defined in new EU legislation or by Member States, with support from Commission services.

If the consumption threshold is defined below current levels used by Member States to apply price regulation, this option would reduce the scope of price regulation therefore limiting its impact on the market.

The main challenge of this option concerns the calculation of the right thresholds. Allowing regulated prices up to certain rather low energy consumption thresholds may miss out some poorer customers who may consume rather more energy per household, as they may spend more time in their homes (due to unemployment, invalidity, home work), live in poorly insulated dwellings or require to be connected to medical equipment. As a consequence they may exceed the defined thresholds. On the other hand and contrary to the desired

effect, ordinary customers of sufficient wealth but low consumption e.g. due to a lifestyle with a relatively limited use of appliances may profit from such thresholds. The same might apply to secondary homes inhabited only temporarily by wealthier customers.

Maintaining regulated prices for large parts of consumption through high thresholds prevents the development of market-based demand response and other flexibility options, as price-based incentives cannot be created through price regulation schemes as effectively as by the market. This option could thus limit the achievement of the full effects of the Market Design initiative, particularly its elements aimed at end-customers.

Option 2b: Requiring Member States to phase out below cost price regulation by a deadline specified in new EU legislation.

While this option would limit the distortive effect of price regulation and tackle tariff deficits, maintaining regulated prices, even if above cost, would prevent the development of market-based demand response and other flexibility options, as price-based incentives cannot be created through price regulation schemes as effectively as by the market. Moreover, price regulation that does not allow charging more than current costs risks holding back investments in product innovation and service quality.

The main challenge of this option would be to define cost coverage methodologies for price regulation at EU level. It is legally challenging as the current EU *acquis* establishes as a general rule that prices should be set by market forces; moreover, this option could produce weaker effects than current EU *acquis* as it would limit the requirement of proportionality to be met by price regulation only to the cost coverage aspect (not taking into account the limitation in time, in the scope of beneficiaries or the necessity test). It is also economically challenging due to opaque cost structures of the companies. Moreover, ensuring cost-reflectiveness by regulation would imply considerable regulatory and administrative impact.

7.2.5. *Comparison of the options*

Comparison of performance of energy markets with and without price regulation

The objective of this Section is to assess the performance of energy markets where prices are established by a governmental authority (they are regulated) with that of markets where prices are set in market conditions, by supply and demand. The assessment is made based on the level of competition within each group of markets, according to the conventional structure-conduct-performance framework, which explores a range of retail market indicators such as market structure and concentration, consumer switching activity and consumer experience.

In order to assess the performance of markets with and without energy price regulation the present Section carries out a comparative analysis of energy markets across all EU Member States, grouped in two categories: markets where energy prices are set in market conditions and markets characterised by intervention in the price setting mechanism. These two groups are appraised using average values for each of the elements considered, weighted by population.

Background: Energy market liberalisation and price regulation

The EU-level liberalisation of the electricity market was initiated with the First Energy Market Directive, which was adopted in 1996. At that time, both the United Kingdom and

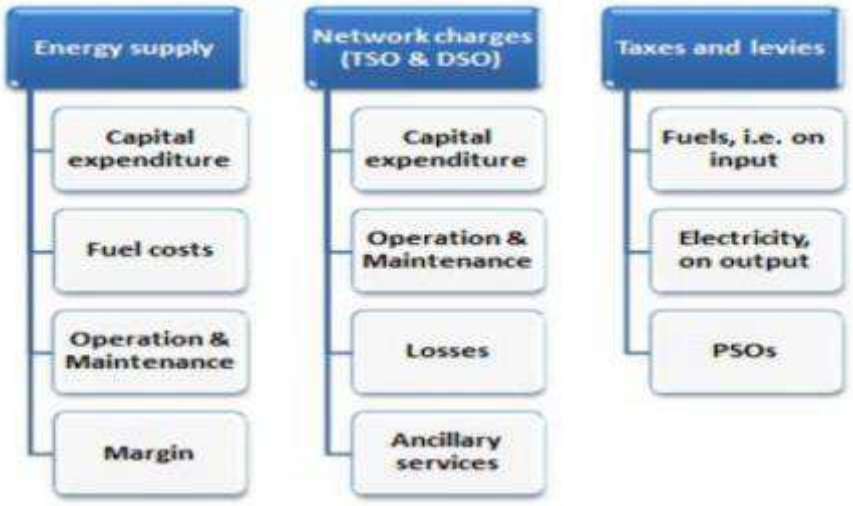
the Nordic countries had already started to liberalise their markets. Two additional legislative packages have followed since then, i.e. the Second Energy Market Directive in 2003 and the Third Package, including the Third Electricity Directive, in 2009. The process has aimed to separate the network activities, i.e. transmission and distribution, from generation and supply activities. The rules regarding unbundling of these activities into separate entities have become increasingly stringent over this period to properly ensure this separation of activities. This has mainly reflected concerns about the competition, in particular regarding an appropriate pricing of these services as well as fair access to the networks for new entrants.

Following the separation of the different activities in the supply chain of electricity, the price formation of the final end-user price has also changed. The electricity price now consists of different components relating to the different parts of the supply chain, as shown on Figure 1.

While regulated prices are unlawful under current Gas and Electricity Directives, unless they meet specific conditions, many Member States still apply price regulation.

At the same time it is important to note, as already explained in Section 2 of the present Annex, that electricity and gas price regulation refers only to the 'energy' component of the end-user price, excluding network charges, taxes, other levies and VAT. This component is the element which should be determined by market demand and supply in a fully liberalised energy market.

Figure 1: Different components of the final electricity price



Source: ECFIN

Background: Academic discussion on the merits of energy market liberalisation

A number of academic papers have presented arguments in favour of price regulation in retail energy markets. The assumption presented is that deregulation will not lead to any significant efficiency improvement or added value. The argument presented is that the potential retail savings on activities such as metering, billing or customer services are uncertain and their expected economic impact is too low to be significant for most

customers.[149] In addition, it is also argued that customers are reluctant to change[150] and in some cases inability to make appropriate choices.[151]

However, the above mentioned arguments have been refuted by a number of authors. Littlechild argues that domestic customers are not indifferent to choice, and retailing is precisely the activity that can lead to products that best suit customers' preferences.[152] Based on the US experience with energy market liberalisation Zarnikau and Whitworth[153], Rose[154] and Joskow[155] demonstrate cost-saving benefits from competition.

Moreover, introducing competition is equivalent to opening the door to innovation. The market can create alternatives to a regulated framework. Those in favour of a regulated retail market assume regulators will set up a pass-through tariff in which the final price of energy will be composed of the cost of wholesale energy plus a margin to cover for the cost of selling the energy to the final customers. However, Littlechild argues that if customers want this option, the market will be able to deliver it. Indeed, as it is already the case in the Nordic Member States, with the roll-out of smart meters, dynamic tariffs, which are similar to the pass-through tariffs, will be available to customers. From this perspective, the advantages of competition are clear.

Other arguments in favour of open retail markets refer the possibility that suppliers introduce new billing options, improve operations of the wholesale market by raising the number of agents involved or provide energy efficiency related services. On the other hand, regulated prices may reduce customer engagement and, in these markets, there is a possibility for Governments to alter electricity tariffs for political gains. More generally, it has been argued that end-user price regulation in electricity and gas markets distorts the functioning of the market and jeopardises both security of supply and the efforts to fight climate change[156].

Assessment of market structure and concentration

Measures of market structure and concentration, such as the number of main suppliers and the market share of largest suppliers, provide an indication of the degree of competition in a market, which is a useful first step to draw a comparison between markets with energy price regulations and those where prices are set by supply and demand. Markets with lower market concentration where a high number of service providers compete to gain and retain customers are under competitive pressure to deliver better deals for consumers. This makes market structure indicators relevant for assessing the performance of energy markets.

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[149] *"Why do we need electricity retailers? Or can you get it cheaper wholesale"* (2000) Paul L. Joskow; "The future of retail energy markets" (2008) Catherine Waddams; "The big retail 'bust': what will it take to get true competition?" (2000) Theresa Flaim

[150] *"Consumer preference not to choose: methodological and policy implications"* (2007) Timothy J Brennan

[151] *"Retail competition in electricity markets"* (2009) Christophe Defeuilley

[152] *"Retail competition in electricity markets—expectations, outcomes and Economics"* (2009) Stephen Littlechild

[153] *"Has Electric Utility Restructuring Led to Lower Electricity Prices for Residential Consumers in Texas?"* (2006) Jay Zarnikau, Whitworth

[154] *"The State of Retail Electricity Markets in the US"* (2004) Kenneth Rose

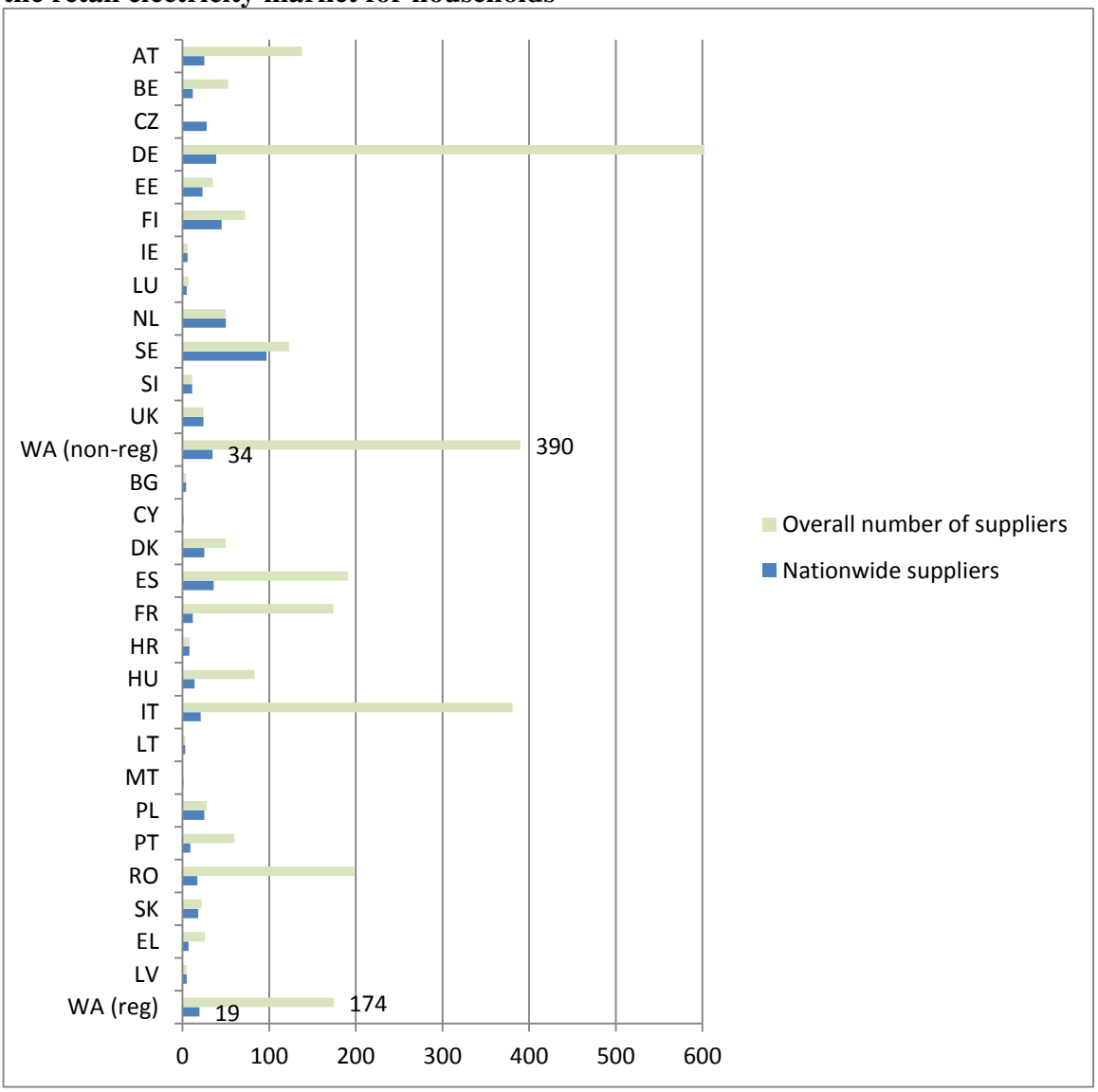
[155] *"Markets for power in the United States: an interim assessment"* (2005) Paul L Joskow

[156] *"Position paper on end-user price regulation"* (2007) European Regulators' Group for Electricity and Gas

Evidence shows that energy markets without price regulation show a higher number of suppliers and less market concentration. In fact, while markets without electricity price regulation have on average 34 nationwide suppliers, markets with regulated prices have 19, as shown on Figure 2. A similar trend can be observed within the gas market, as shown on Figure 4. While markets without gas price regulation have on average 30 suppliers, markets with regulated prices have 17.

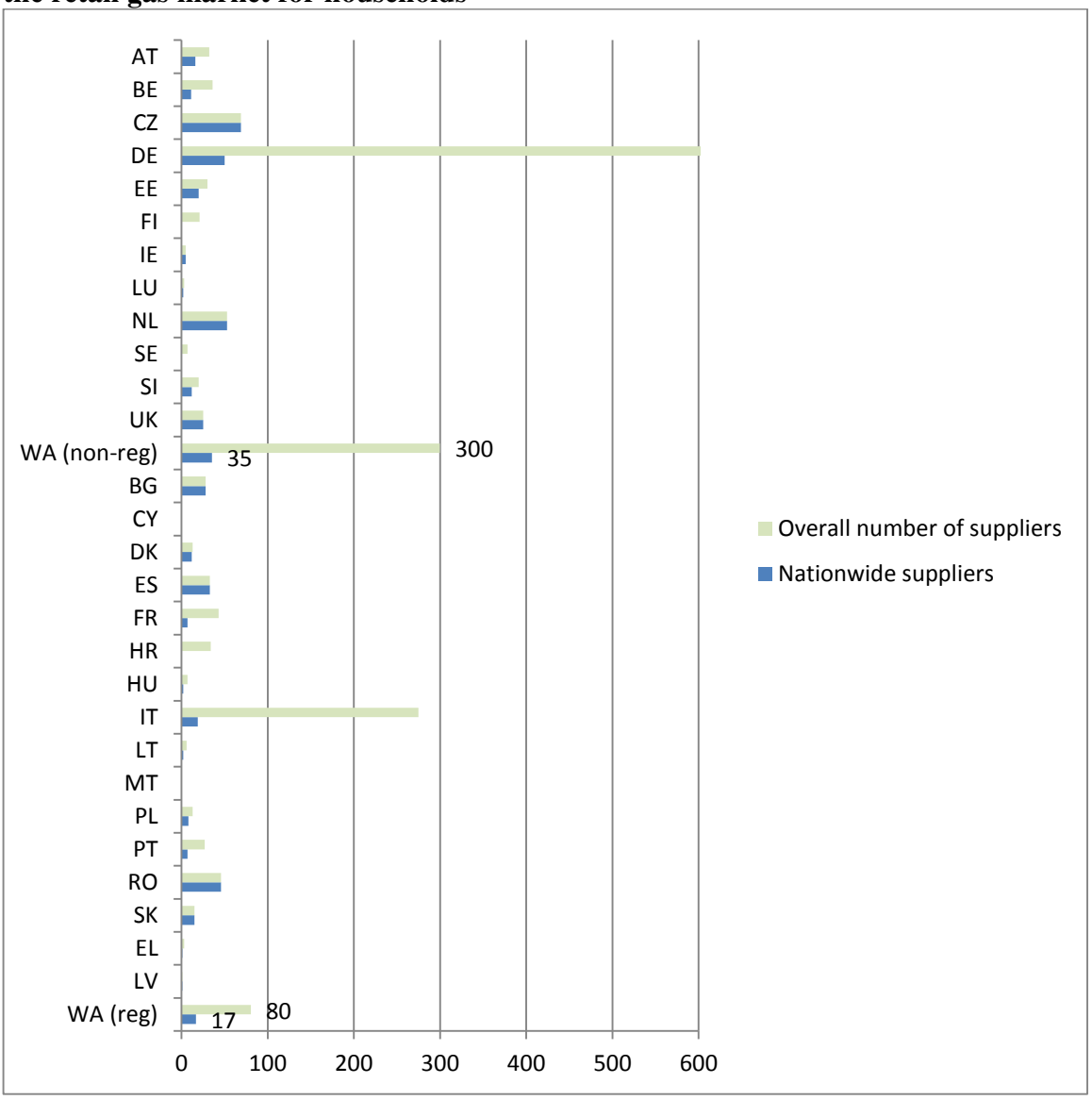
Among the top ten electricity markets in terms of the number of suppliers, seven do not use any form of price regulation, including Sweden (97 nationwide suppliers), the Netherlands (75) and Finland (45). In contrast, among the ten electricity markets with the lowest number of suppliers, eight are characterised by regulated prices, including Cyprus (1 nationwide supplier), Malta (1), Lithuania (3), Bulgaria (4) and Latvia (5).

Figure 2: Overall number of suppliers and number of nationwide suppliers active in the retail electricity market for households



Source: ACER

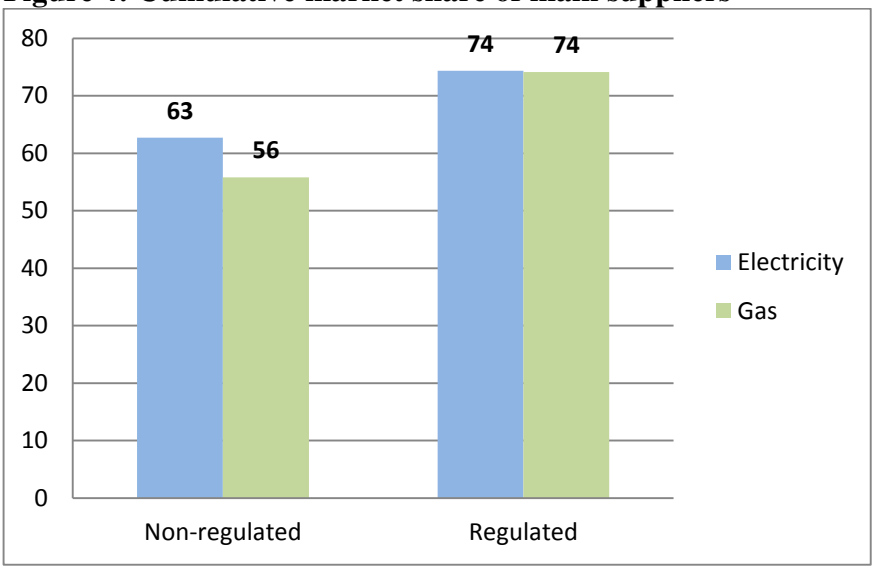
Figure 3: Overall number of suppliers and number of nationwide suppliers active in the retail gas market for households



Source: ACER

Market concentration, measured by the share of the main suppliers in that market, is another key indicator of competitiveness. Main suppliers (i.e. suppliers who have a market share above 5% of the total) in markets without price regulation have a 63% market share in the electricity market and 56% market share in the gas market. Markets with regulated prices see main suppliers covering 74% of the market on average in electricity and gas markets. This data further confirms the advantage of markets without price regulation in terms of their competitive performance.

Figure 4: Cumulative market share of main suppliers



Source: ACER

Assessment of market conduct

Effective retail competition is characterised by competition between suppliers over price and non-price elements whereby suppliers undercut each other's' prices to the efficient cost level, improve the quality of their services and develop innovative products which meet the requirements of customers with a view to increasing market share and profits. In competitive retail markets customers should have the freedom of choice by moving to an alternative supplier, to change contracts or to choose new products. The freedom to choose the energy supplier is key because customer switching activity puts competitive pressure on market actors.

In the present Section all of the above described elements of retail market conduct are analysed for both regulated and non-regulated energy price markets in order to complete the relative performance assessment of these markets.

Price competition

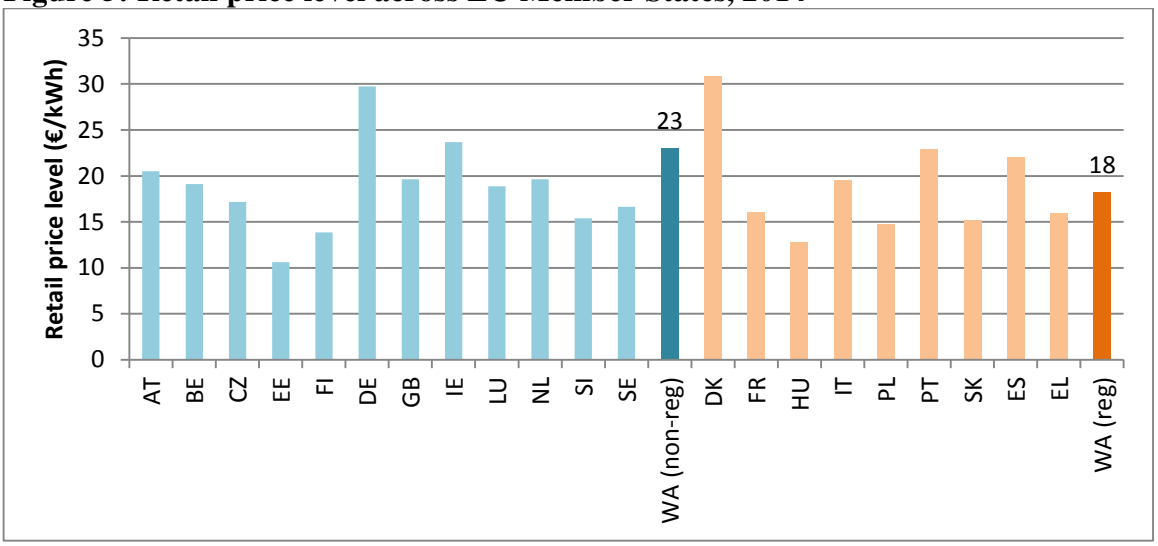
Price competition is typically used as the basic indicator of market competitiveness. Price competition among suppliers is limited to the energy component of the supply price which remains the largest of the three price components despite the fact that this component has generally diminished since 2008 mainly due to increases in the taxes/levies.[157]
Data from the Agency for the Cooperation of Energy Regulators (ACER)[158] shows that Member States without regulated prices have on average slightly higher energy prices than those with price regulation. This is not surprising as Member States with regulated prices can set *de facto* the final price on energy services. Price regulation by State authorities can

[157] *"Energy prices and costs in Europe"* (2014) European Commission https://ec.europa.eu/energy/sites/ener/files/publication/Energy%20Prices%20and%20costs%20in%20Europe%20_en.pdf

[158] "*Market Monitoring Report 2014*" (2015) ACER, available at http://www.acer.europa.eu/Official_documents/Acts_of_the_Agency/Publication/ACER_Market_Monitoring_Report_2015.pdf

and in some instances does result in prices set below costs, i.e. the end consumer price does not cover the full costs of producing and delivering energy to consumers.

Figure 5: Retail price level across EU Member States, 2014



Source: ACER

Note: Information for Latvia; Bulgaria; Bulgaria, Croatia, Cyprus; Lithuania; Malta; and Romania not available.

While lower retail prices seem to present an immediate advantage to all customers, it is important to analyse the economic sustainability of energy prices regulated below the actual cost and changes to consumer surplus resulting from price regulation.

Cost reflectiveness of regulated prices

Regulated prices can have negative impacts on the energy market especially if they are set too low. First, energy prices which are set too low fail to provide the right signal to energy customers about costs and scarcity, which risk resulting in over-consumption of a cheap service. Second, the low level might hamper the process of market opening by discouraging new companies from entering the market. Third, they will determine the ability of different suppliers to make competitive offers on the wholesale market. For this reason, if end-user prices are set too low, suppliers might not be able to recover their costs and could face potential losses.

By contrast, if set too high, they might not reflect the production costs of the incumbent and increase their rents, while at the same time reducing the surplus of final customers. The result is inefficiencies in the overall energy system.

Determining the proper level of regulated prices requires full information on the cost structure of the industry, which is becoming increasingly difficult as the electricity markets evolve.

In fact, while ensuring cost-reflectiveness of regulated prices could be an option to address negative effects of price regulation, the regulators' ability to set the *right* margin between wholesale and retail prices is limited by imperfect information and rapidly changing market conditions including a wholesale market which is affected by commodity prices, cost of capital and the price of CO2 allowances, to quote just a few. These barriers constitute a significant disadvantage characterising any kind of price regulation, even that which is set "above costs", as there is a high risk that the margins set by the regulators will not be

sufficient for new service providers to enter the market. The effect of such miscalculation of the most optimum price level would be less market players and less competition and therefore less innovation and a lower general level of services.

Issue of tariff deficits

Electricity tariff deficits have emerged as an issue for public finances. A tariff deficit implies that a deficit or debt is built up in the electricity sector, often in the regulated segments of transmission or distribution system operators, but in some cases also in the competitive segments, e.g. in incumbent utilities.

A deficit is accumulated due to the fact that the regulated tariffs which should cover the system's operating costs are either set too low or not allowed to increase at a pace that cover rising production or service costs. As these deficits accumulate due to government regulation of tariff or price levels, they have been recognised as contingent liabilities of the State in a few Member States. In these cases, the debt stemming from low energy prices need to be repaid through general taxation from present or future taxpayers.

The results of a study carried out by the Directorate General for Economic and Financial Affairs on the issue of electricity tariff deficits indicates that 11 Member States had accumulated electricity tariff deficits as of 2012[159]. Within that group, 10 Member States continue to regulate their electricity prices, as shown in Figure 7.

Figure 6: Electricity tariff deficit – comparison between Member States

Table 3.1: Electricity tariff deficit– comparison between Member States

		ES	PT	EL	FR	IT	DE	BG	MT	RO	HU	LV
Cumulated tariff debt, % of GDP, 2013		3	2.2-2.6	0.4	0.2	0.1*	0.01	1-1.5**	N.A.	0.1*	N.A.	N.A.
Cumulated tariff debt, EUR billion, 2013		30	3.7-4.4	0.7	4	1.5*	0.2	0.4-0.6**	N.A.	0.15*	N.A.	N.A.
Scope of the tariff deficit	- on RES account			✔		✔	✔					
	- on PSO account				✔							
	- of access costs	✔										
	- of integral tariff		✔					✔				
	- tariff below costs				✔			✔	✔	✔	✔	✔
Deficit recognized by the authorities or energy regulator?		✔	✔	✔	✔	✔	✔					
Deficit cumulative (i.e. not settled in the following period)?		✔	✔	✔	✔	✔		✔	✔	✔		

Note:
* 2012, ** World Bank forecast

Source: Commission Services

Source: DG ECFIN, European Commission

Cumulated tariff debts are substantial in some Member States. In Spain and Portugal, where electricity prices are regulated, the tariff debt represented 3% and 2.2-2.6% of the GDP respectively.

Link between wholesale and retail prices

[159] *"Electricity Tariff Deficits. Temporary or permanent problem in the EU?"* (2014) European Commission

While regulated price markets show an advantage over unregulated price markets in terms of the final price for the consumer, research carried out by the European Parliament shows that the relationship between wholesale and retail prices for households is weaker in countries with price regulation.[160] Whilst retail household prices appear to be positively related to wholesale prices for both groups of countries, the link for countries with price regulation is less pronounced based on the estimated coefficients. This indicates that regulated prices may weaken the link between wholesale prices and retail prices, or at least tend to delay it. While this could delay or prevent the increase of household prices when wholesale prices are high, it may also imply that households cannot fully benefit from a decrease in wholesale prices.

Ensuring an effective link between wholesale and retail energy prices is key for delivering the benefits of the wholesale energy market competition to energy consumers. To give a sense of perspective, the European Commission 2014 report on the "Progress towards completing the Internal Energy Market" found that wholesale electricity prices in the EU declined by one-third and wholesale gas prices remained stable between 2008 and 2012.[161]

Protection of vulnerable consumers and the energy poor

Continuous price regulation in some Member States is justified on the grounds of protection of vulnerable consumers and the energy poor. In this context, it is argued that energy price regulation is necessary to protect customers from the market power of energy monopolies. This is because an unregulated monopoly could charge customers a price much higher than its production cost. Similar arguments have been put forward with respect to vulnerable customers.

However, evidence shows that blanket energy price regulation is not an optimal protection measure for vulnerable consumers from the point of view of efficient allocation of public resources. The above is based on the assumption that deficits associated with energy prices regulated below-costs are financed from the State budget. In fact, under regulated energy price environments public resources are often used to support all households, regardless of their income or vulnerability. The efficiency of such approach is questionable as even the distribution of benefits associated with low regulated energy prices results in higher income groups receiving higher public support than lower income groups, as evidenced in Figure 7 below, which shows that top earners in most Member States consume more electricity than the lowest income groups. Higher energy consumption among top income groups occurs despite the assumed higher efficiency of dwellings inhabited by these income groups and higher energy efficiency of appliances typically used.

[160] *"The impact of oil price on EU energy prices"* (2014) European Parliament

[161] "*Communication on progress towards completing the Internal Energy Market*" European Commission COM(2014) 634 final

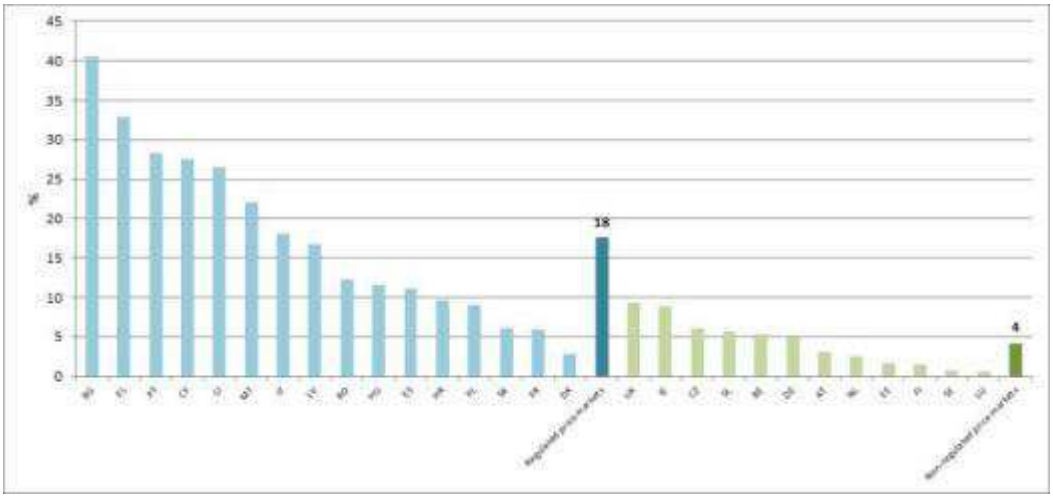
Figure 7: Electricity consumption per income group

electricity									
TWh/Quintile									
		Min_p / Max Q							
MS	Last obs Y	Q_1	Q_2	Q_3	Q_4	Q_5	Total	Share [Q3;Q5]	Share [Q5]
AT	2010	2.5317	3.0301	3.6029	4.1585	4.7198	18.0429012	69.17	26.16
BE	2014	3.7848	4.3654	4.9736	5.1633	6.0783	24.3654214	66.55	24.95
BG	2014	1.8161	1.9771	2.0471	2.3799	2.3553	10.5755563	64.13	22.27
CY	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
CZ	2014	4.9008	4.7586	4.7242	4.6512	4.6011	23.6357537	59.13	19.47
DE	2013	14.8852	19.2219	24.5255	29.7412	35.1913	123.564998	72.40	28.48
DK	2014	1.4548	2.0504	2.2440	2.3280	3.0378	11.1149013	68.46	27.33
EE	2012	0.2111	0.2751	0.3492	0.4402	0.6445	1.92015702	74.68	33.57
EL	2014	1.9987	2.3096	2.6036	2.8719	3.2565	13.0403713	66.96	24.97
ES	2014	10.7711	13.1299	15.0333	16.4261	19.1277	74.4881824	67.91	25.68
FI	2012	1.7214	2.7925	3.6704	5.2136	7.5286	20.9265293	78.43	35.98
FR	2011	29.6126	33.9193	37.2348	42.4051	52.4225	195.594225	67.52	26.80
HR	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
HU	2014	1.5453	1.8989	2.3589	2.8177	3.1565	11.7773296	70.76	26.80
IE	2010	1.4156	1.8064	2.0748	2.3413	2.5326	10.1706472	68.32	24.90
IT	2014	12.2328	13.0597	13.2631	14.1195	14.6320	67.3071007	62.42	21.74
LT	2012	0.5790	0.4817	0.5090	0.5239	0.5544	2.64797763	59.94	20.94
LU	2013	0.1836	0.2325	0.3155	0.2818	0.3067	1.32017006	68.48	23.23
LV	2014	0.3551	0.3211	0.3466	0.5103	0.4600	1.99303232	66.08	23.08
MT	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
NL	2013	10.1102	11.1071	12.6973	14.6148	16.8544	65.3836495	67.55	25.78
PL	2014	4.8701	6.0313	7.0604	8.2860	9.8964	36.1441731	69.84	27.38
PT	2010	2.6357	2.8525	3.1092	3.4401	4.5354	16.5727938	66.88	27.37
RO	2014	1.6464	2.3104	2.8959	3.3612	3.9355	14.1494067	72.04	27.81
SE	2012	3.2397	4.4504	6.1886	8.1432	10.0573	32.0791578	76.03	31.35
SI	2012	0.6814	0.7766	0.9146	0.9833	1.1003	4.45618993	67.28	24.69
SK	2014	0.8997	1.2671	1.5558	1.7263	1.9268	7.37562799	70.62	26.12
UK	2014	21.6071	24.6902	26.1358	28.2850	32.7540	133.472173	65.31	24.54

Source: DG ENER

It can be argued that if resources previously allocated to finance below-cost price regulation are used for targeted support of vulnerable consumers, a higher impact can be achieved in terms of the protection of vulnerable consumers. This conclusion is supported by evidence presented in Figure 8 which shows that consumers in unregulated price markets feel more able to maintain an adequate level of heat during winter. This data also shows that energy price regulation is not an effective means of addressing energy poverty.

Figure 8: Percentage of population unable to keep their homes warm during winter, 2014



Source: DG ENER

Non-price competition/innovation

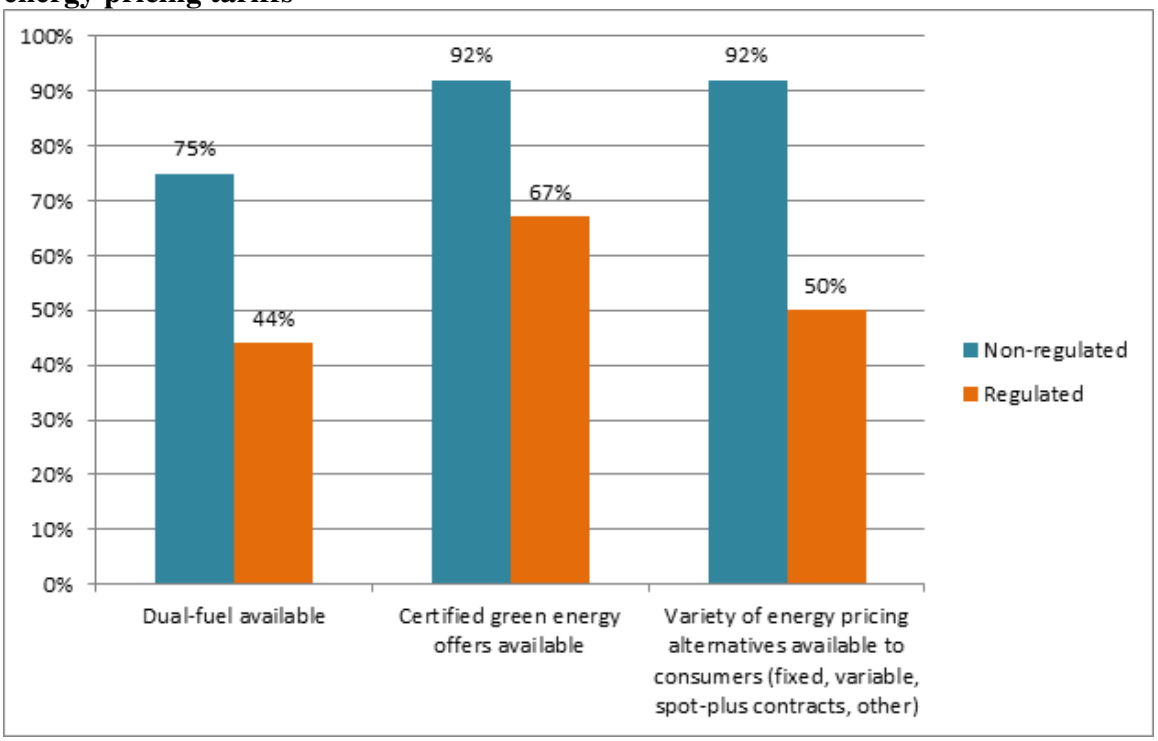
Although low prices are the most commonly thought of way for firms to attract consumers, suppliers may also seek to distinguish their products by other means. These may include

quality of service, convenience, an environmentally sustainable product, or any other non-price aspect that adds value for consumer and brings innovation to the retail energy market. The diversity of products available in a market is therefore also a good indication of the health of competition.

Conversely, when prices are kept artificially low customer surplus may be reduced as some customers are able and willing to pay higher prices for better and more innovative energy services. In that context regulated prices might deprive those customers from accessing more offers and more innovative and complex services such as certified green energy offers, loyalty programmes, access to new technologies such as smart metering and mobile apps, or non-financial benefits such as free maintenance of water boilers or home insurance which are delivered by some retailers within the energy market.

In fact, data displayed in Figure 9 shows that customers in markets where prices are not regulated have access to more diverse services and a wider choice of offers. Dual fuel offers are available in 75% of the markets without price regulation and only in 44% in those with regulated prices. Certified green energy offers are available in 92% of the markets without price regulation and in 67% of the markets with regulated prices. Only 50% of markets with regulated prices offer energy pricing alternatives, while this option is available in 92% of markets without price regulation.

Figure 9: Share of Member States with dual-fuel, certified green and variety of energy pricing tariffs



Source: ACER

Markets without price regulation are also characterised by retail energy markets delivering more financial and non-financial benefits and a greater availability of information and communication technologies in association with energy contracts, as showed in Figure 10.

Figure 10: Retail market innovation

	number of electricity only offers	dual-fuel available	certified green energy offers available	availability of non-price financial benefits	availability of non-financial benefits	ICT offer	Variety of energy pricing alternatives available to consumers
Austria	53	Yes	Yes	Yes	Yes	Yes	Yes
Belgium	20	Yes	Yes	Yes	No	Yes	Yes
Bulgaria	1	N/A	N/A				No
Croatia	4	N/A	N/A				Yes
Czech Republic	69	Yes	Yes				Yes
Cyprus	1	N/A	N/A				No
Denmark	83	No	Yes	Yes	No	Yes	Yes
Estonia	40	Yes	No				Yes
Finland	401	No	Yes	Yes	Yes	Yes	Yes
France	22	Yes	Yes				Yes
Germany	404	No	Yes	Yes	No	Yes	Yes
Great Britain	69	Yes	Yes	Yes	Yes	Yes	Yes
Greece	7	No	No				Yes
Hungary	4	No	No				No
Ireland	9	Yes	Yes	Yes	Yes	Yes	Yes
Italy	23	Yes	Yes	Yes	Yes	Yes	Yes
Luxembourg	18	Yes	Yes				Yes
Latvia	1	N/A	N/A				No
Lithuania	1	N/A	N/A				No
Malta	1	N/A	N/A				No
Netherlands	86	Yes	Yes	Yes	No	Yes	Yes
Poland	133	No	Yes				Yes
Portugal	34	Yes	Yes				Yes
Romania	1	N/A	N/A				No
Slovakia	23	No	No				No
Slovenia	5	Yes	Yes				No
Spain	54	Yes	Yes	Yes	Yes		Yes
Sweden	378	No	Yes	Yes	Yes	Yes	Yes

Source: ACER/CEER, VaasaETT

Data presented above further confirms that markets where prices are set according to supply and demand perform better in terms of bringing innovation to the retail energy market– deliver greater choice and more innovative services and offers, than markets where energy prices are regulated.

Customer switching activity

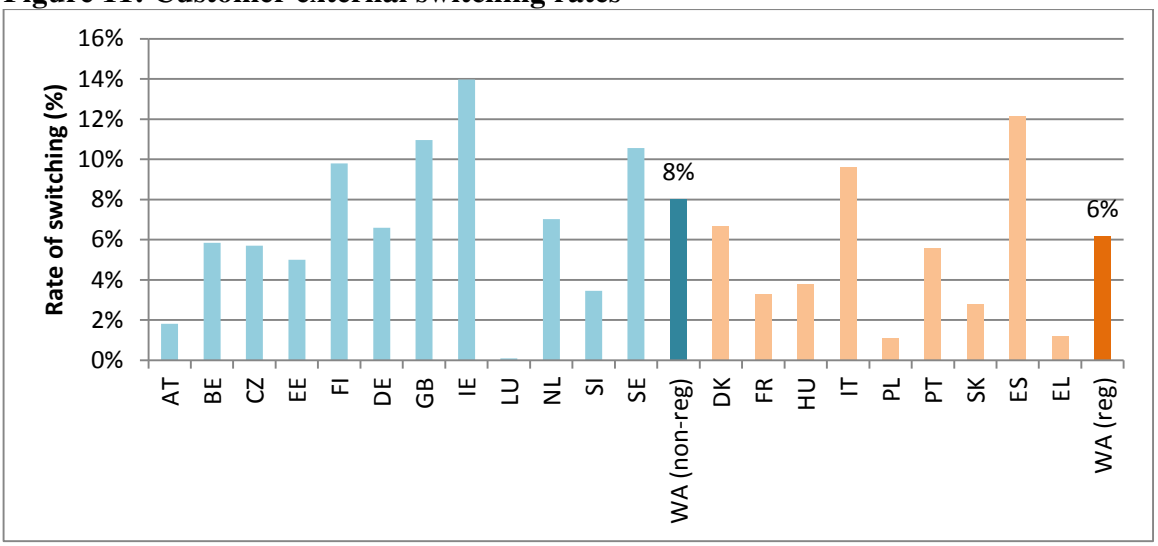
Customer switching activity puts competitive pressure on suppliers and therefore is an important indicator of competition within the market.

ACER data presented in Figure 11 and 12 shows that markets with no price regulation show higher customer activity both in terms of external switching (movement between suppliers) and internal switching (movement between alternative products from the same supplier) than markets with regulated prices.

On the other hand, electricity switching rates in markets with price regulation are significantly lower. In Malta, Cyprus, Bulgaria, Latvia, Lithuania and Romania switching

rates remained at zero, mainly due to the lack of retail competition or very weak competition and limited choice available to customers.

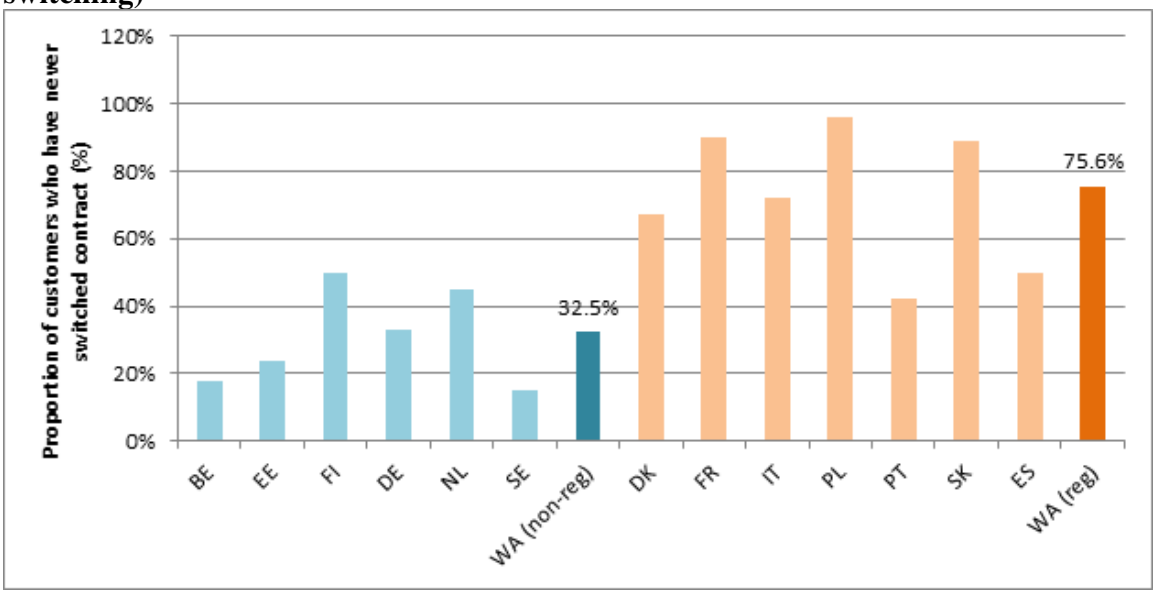
Figure 11: Customer external switching rates



Source: ACER

Customers in regulated price markets also display lower internal switching rates – a phenomenon which can be explained by more restricted choice of offers in those markets. In fact, Figure 12 shows that 75% of customers in markets with price regulation have never switched contracts, in comparison to 32,5% in markets with no price regulation.

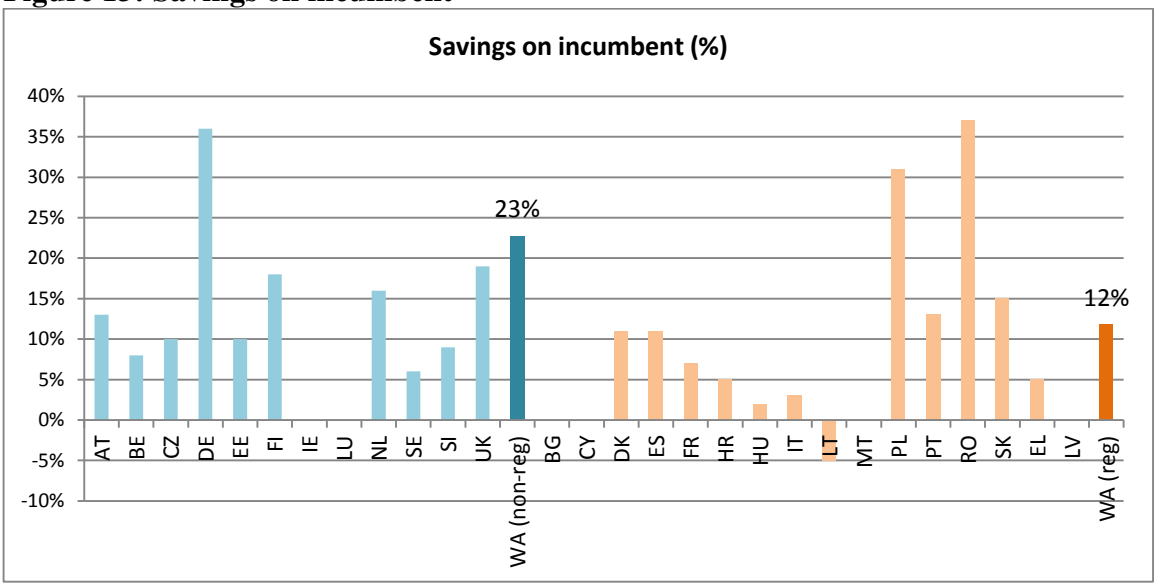
Figure 12: Proportion of customers who have never switched contract (internal switching)



Source: ACER

Low switching rates in markets with price regulation represent a lost opportunity for savings for many customers. **In fact in most markets customers can derive substantial benefits from switching**, as illustrated in Figure 13. In markets without price regulation customers can save on average 23% of their energy bill by switching from the incumbent. Potential savings in markets with price regulation amount to 12% on average.

Figure 13: Savings on incumbent



Source: ACER

Assessment of customer experience

Customer experience is key to appraising the comparative performance of different types of markets. Variables which compose customer experience and are analysed in this Section include comparability of offers, trust in retails to respect the rules and regulations protecting customers, the degree to which customer expectations are met and customer satisfaction with the choice.

The above variables are measured by the Consumers, Health, Agriculture and Food Executive Agency (CHAFEA) as part of the Market Monitoring Survey. The report surveys 42 markets in the 28 Member States of the EU, as well as Norway and Iceland, with the general aim to assess customer experiences and the perceived conditions of the customer markets in all EU Member States. The assessment is measured through a "Market Performance Indicator" (MPI) which is a composite index indicating how well a given market performs, according to customers.

The overall MPI score for the market for “electricity services” across the EU is 75.3 points, based on a maximum possible score of 100 points. Electricity services market scored 3.3 points lower than the services markets average. This makes it a low performing services market, ranking 26th of the 29 services markets. The overall MPI score for the market for “gas services” at EU28 level is 78.1, which is lower than the services markets average score by 0.5 points. This makes it a middle to high performing services market, ranking 14th of the 29 services markets.

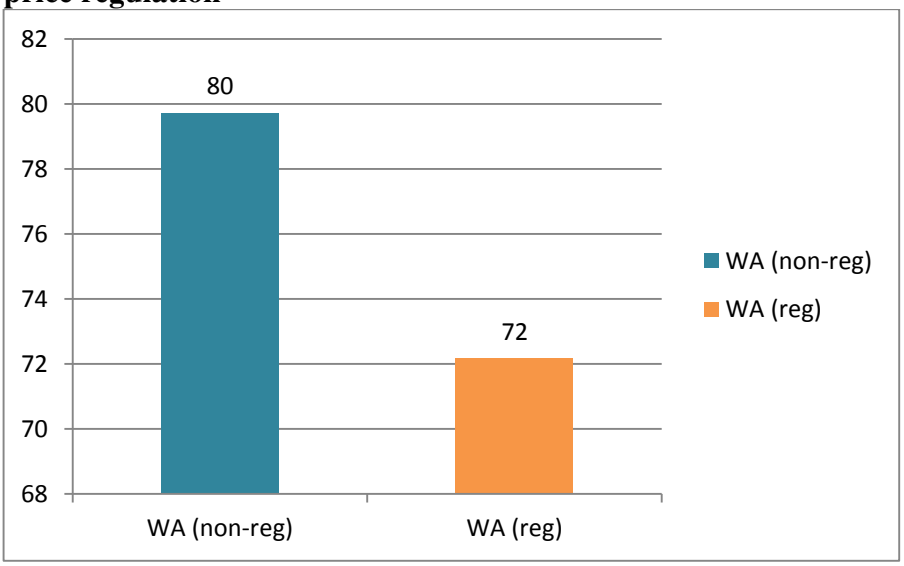
In comparison to the services markets average, the “electricity services” market has a higher proportion of complaints and higher detriment score, measuring customers experiencing problems with the products or services they purchased. The electricity services market also performs worse than average in terms of the comparability of offers, customers' trust in suppliers, the capacity to meet customers' expectations, and the ability of the market to deliver sufficient choice. It is also characterised by a lower than average switching activity.

At the same time, there is a 34.1 point difference in MPI between the top ranked country and the lowest ranked country, indicating that there are considerable country differences

to be taken into account when evaluating the electricity services market. The market scores higher in the EU15 and lower in the EU13 compared to the EU28, while performing especially well in the Western and Northern regions.

In comparison to the services markets average, the "gas services" market scores above the average for the problems, detriment and expectations components. However, the comparability and choice components are lower. The "gas services" market also has a lower than average switching proportion.

Figure 14: Market Performance Indicator for electricity markets with and without price regulation

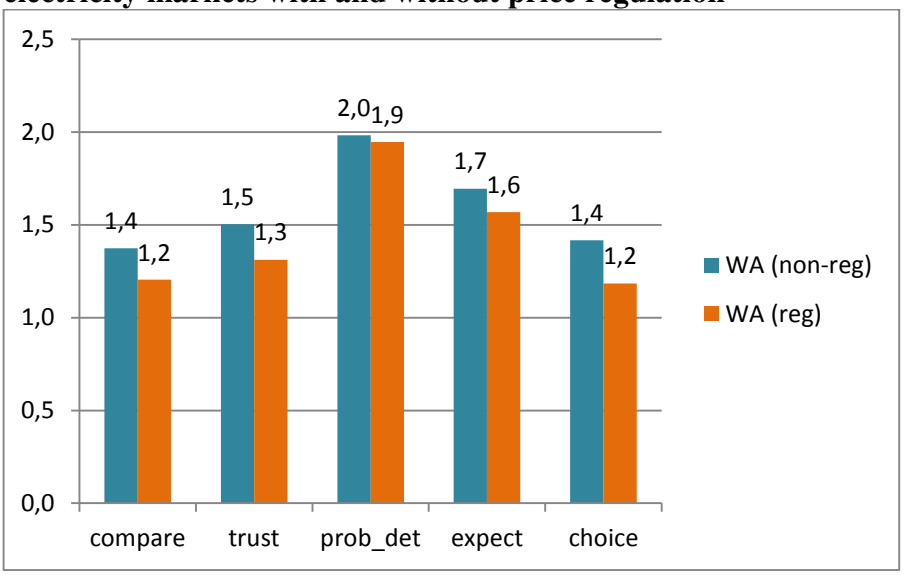


Source: EC, DG JUST[162]

The MPI scores for 2015 indicate a clear advantage of markets without price regulation over those with regulated prices in terms of customer satisfaction. As shown in Figure 14, markets without price regulation scored on average 80 points, while those with price regulation scored 72. The advantage of markets without price regulation over those with regulated prices was equally spread across all five components analysed, as shown in Figure 15.

162 *"Monitoring Customer Markets in the European Union 2013 – Part III (Electricity)"(2013)* European Commission

Figure 15: Market Performance Indicator for electricity markets per component for electricity markets with and without price regulation



Source: EC, DG JUST

The 2013 edition of EU market surveys provides an insight into general customer satisfaction with the electricity market, as shown in Figure 15. Markets without price regulation scored 7.6 and 7.8 on average for customer satisfaction with the offers on the market and with the variety of suppliers, while markets with price regulation scored 6.8 and 5.8 points respectively. This data confirms a clear advantage of markets without price regulation from the customer point of view.

Figure 16: Customer satisfaction with the electricity market

Source: European Commission (2013)

Conclusion of the assessment

In this Section we have methodically screened the performance of markets with and without price regulation based on a number of competitiveness indicators and market surveys which measure market competitiveness and customer satisfaction with the electricity and gas markets. The analysis indicates that electricity and gas markets where

prices are set by supply and demand are able to deliver better and more diverse services to the customers. In fact, despite slightly higher prices in markets without price regulation, customers in these markets show a higher level of satisfaction as they have a wider choice and access to better quality services which are more reflective of their preferences.

The analysis nonetheless suffers from clear limitations such as selection bias. It might well be that the Member States in the category of non-regulated prices have lower market concentration, higher switching rates or better customer experience for reasons different than price regulation. However, despite the methodological weaknesses of the analysis, the results are comparable with the results of research carried out by ACER in its Market Monitoring Report.

In fact, in order to achieve a full picture of energy market competitiveness which is not dependent on a single indicator ACER produced a single composite index ('ACER Retail Competition Index – ARCI') which provides a comprehensive picture of the relative competition performance of the retail electricity and gas household markets in each Member State. The indicator combines several elements, including market concentration, entry/exit activity, switching, consumer satisfaction and mark-ups (see Table 2 below). As such the indicator covers all of the individual components used to analyse the performance of markets with and without electricity and gas price regulation.

Table 2: Competition indicators included and the assessment framework for the composite index

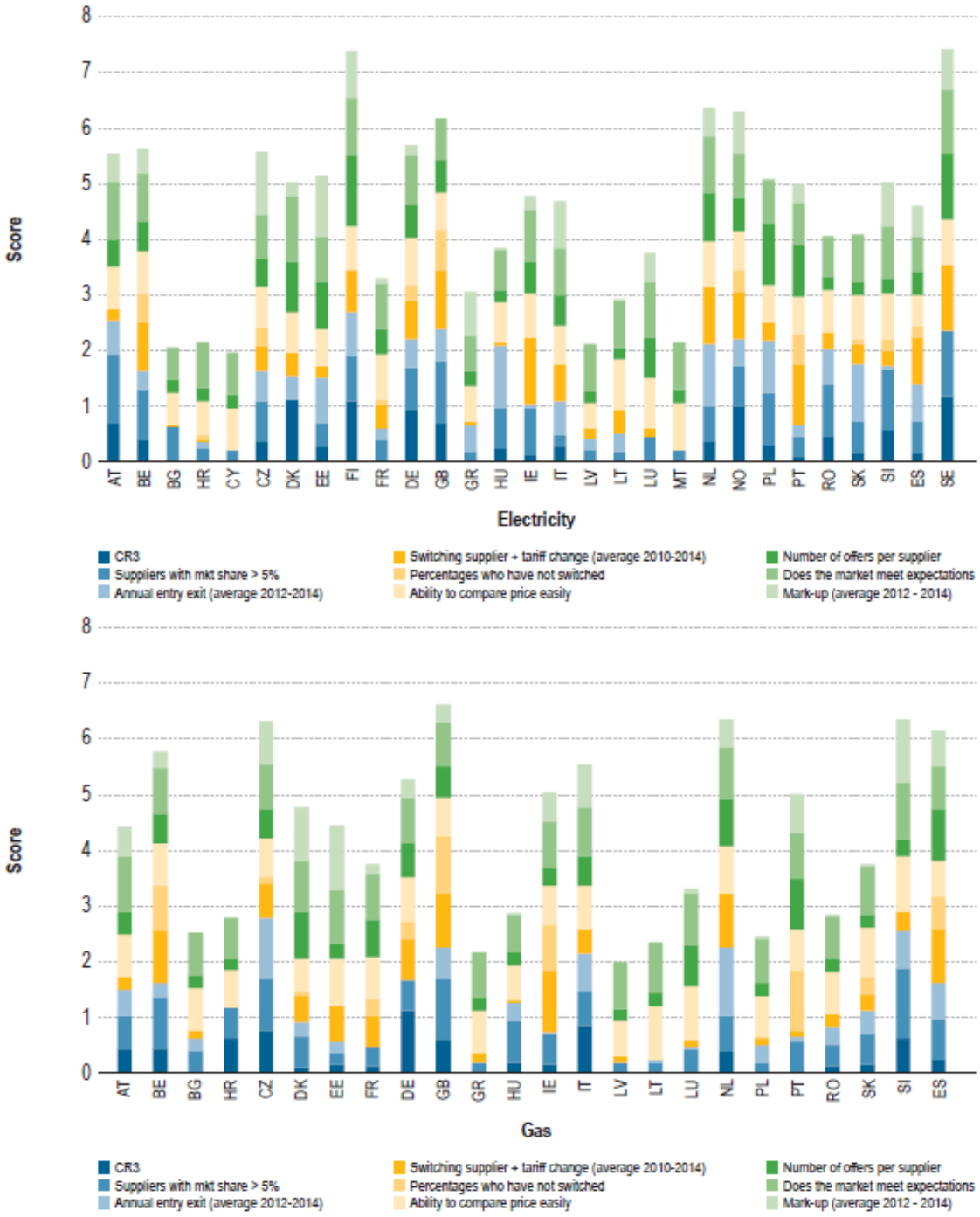
Indicator	Scope	Low score = 0	High score =10	Weight
Concentration ratio, CR3	National	Market share of three largest suppliers 100%	Market share of three largest suppliers 30% or less	10
Number of suppliers with market share > 5%	National	Low number of suppliers	High number of suppliers	10
Ability to compare prices easily	National	Difficult to compare prices	Easy to compare prices	10
Average net entry (2012-2014)	National	Net entry zero	Net entry of five or more nationwide suppliers	10
Switching rates (supplier + tariff switching) over 2010-2014	National	Annual switching rate zero	Annual switching rate 20% or more	10
Non-switchers	National	None have switched	All have <1/3 not switched	10
Number of offers per supplier	Capital city	One offer per supplier	Five or more offers per supplier	10
Does the market meet expectations	National	Market does not meet expectations	Market fully meets expectations	10
Average mark-up (2012–2014) adjusted for proportion of consumers on non-regulated prices	National	High mark-up	Low mark-up	10

Source: ACER

According to the index, the most competitive markets for households are electricity markets in Sweden, Finland, the Netherlands, Norway and Great Britain and gas markets in Great Britain, the Netherlands, Slovenia, the Czech Republic and Spain. The index shows weak retail market competition in electricity household markets in Latvia, Bulgaria and Cyprus and gas household markets in Lithuania, Greece and Latvia.

The results of the ACER analysis, presented also in Figure 14, indicate that the level of competition in markets with regulated prices for households is much lower than in countries that do not regulate electricity and gas prices, with the exceptions of the gas markets in Spain and Denmark. Therefore the ACER indicator confirms the overall findings of the analysis of the performance of markets with and without price regulation carried out in the present Section.

Figure 17: ACER Retail Competition Index (ARCI) for electricity and gas household markets – 2014



Source: ACER

Comparison of options for price deregulation

Table 3: General comparison of the options

	0. Non legislative: Making use of existing *acquis* to continue bilateral consultations and enforcement actions, accompanied by EU guidance	**1. Legislative obligation: No price regulation but social tariffs allowed**	**2a Legislative obligation: Price regulation allowed below certain consumption threshold**	**2b. Legislative obligation: Cost covering price regulation allowed without limitation as to the amount of energy consumed**
Time limitation	End date to be set by each Member State in compliance with EU acquis to be assessed on case-by-case basis.	End date set in EU legislation for all price regulation (except social tariffs)	End date set in EU legislation for price regulation above a certain consumption threshold. No end date for price regulation below the defined threshold.	End date set in EU legislation for price regulation below costs No end date for price regulation below the defined threshold.
Limitation as to the scope of beneficiaries	Scope of beneficiaries to be defined by each Member State in compliance with EU acquis to be assessed on case-by-case basis.	No beneficiaries of price regulation. Social tariffs allowed as transitional measure	Beneficiaries of price regulation limited to households below a certain consumption threshold	No limitation as regards the scope of beneficiaries (all households).
Methodology for setting the price	Methodology to be defined by each Member State in compliance with EU acquis to be assessed on case-by-case basis.	No provisions as regards methodology (cost coverage etc.) necessary as all price regulation is to be phased out.	Methodology to be defined by each Member State in compliance with EU acquis to be assessed on case-by-case basis.	Principles ensuring cost coverage (e. g. at least positive mark-ups or costs of an efficient supplier plus a reasonable profit margin) to be defined in EU legislation while concrete methodologies would be developed at national level.
Level of harmonisation	Allows a case-by-case assessment of the price regulation regimes as well as of the eventual exemptions.	Harmonised end date for blanket price regulation. Allows a case-by-case assessment of the exemptions to price deregulation (targeted price regulation for vulnerable consumers).	Harmonised end date for blanket price regulation. Harmonised exemptions to price deregulation (based on a consumption threshold).	Harmonised end date for blanket price regulation. Harmonised exemptions to price deregulation (based on a price threshold).

Option 0

Option 0 consists of making use of the existing *acquis* to continue bilateral consultations and enforcement actions to restrict price regulation to proportionate situations justified by general economic interest.

Costs

The main costs of this option are those of adapting price regulation regimes in Member States following a case by case assessment by the Commission services via bilateral consultations followed by infringement actions where appropriate based on the current EU acquis. This option would result in different national regimes of price intervention (in terms of applicability in time, to the scope of beneficiaries and definition of price regulation) or a complete removal thereof, assessed on a case-by-case basis in terms of compliance with the EU acquis including as regards proportionality of the measure for achieving the pursued general interest objectives. It is therefore difficult to estimate the costs associated with the implementation of each regime.

The resulting diversity of regimes would create/maintain uncertain prospects for businesses which discourages cross-border supply activities.

The lack of a level playing field across the EU in terms of price setting procedures translates into administrative costs for entering and conducting business in new markets.

Member States with no price regulation will not be affected by the implementation of this option. Therefore no economic impacts are to be expected.

Benefits

While overall the competition on retail markets would improve compared to the existing situation due to the limitation or complete removal of price regulation in Member States, market distortions would continue to exist impacting national markets as well as cross-border competition.

Consumers' benefits linked to price deregulation (more consumer choice for suppliers and energy service providers, better services and resulting increased consumer satisfaction) would vary according to the national price intervention regime/the lack thereof.

Option 1

Option 1 consists of requiring Member States to progressively phase out price regulation for households by a deadline specified in new EU legislation, while having the right to allow transitional, targeted price regulation for vulnerable customers (e. g. in the form of social tariffs).

Social tariffs are a form of regulated prices, usually below market level, available to specific groups of vulnerable customers, notably the energy poor, to ensure that these customers have access to energy at affordable prices.

A social tariff can apply to electricity and/or gas (or any other fuel). The illustrative analysis of costs and benefits for this option will focus on electricity.

Costs

The main cost components of this option are associated with the potential introduction of a targeted price regulation for vulnerable consumers, such as through the social tariff. Member States already applying social tariffs (BE, BG, CY, FR, DE, GR, PT, RO, ES, UK) would not be affected by the implementation of this option.

The estimation of cost and benefits of Option 1 is made in comparison to the free market option (with no regulated prices of any kind or social tariff) for Member States which currently do not use "social tariffs" as a form of protection of vulnerable consumers.

The estimations provided are for illustrative purposes only. The final amount of targeted electricity and/or gas, number of households and level of subsidies can be varied depending on the preferences of the Member State implementing the measure.

Table 4 below shows the average annual electricity consumption and average annual expenditure on electricity which are the two variables used to estimate the cost of introducing social tariffs.

Table 4: Average annual household electricity consumption and expenditure, 2014

Member State	Average annual electricity consumption	Average annual expenditure on electricity
	kWh/HH	EURO/HH
BG	3836	275
CY	4935	920
DK	4288	439
ES	3855	687
FR	5204	499
GR	3953	471
HR	3712	374
HU	2522	233
IT	2494	375
LT	2025	180
LV	2099	180
MT	4266	553
PL	2010	221
PT	2935	377
RO	1590	144
SK	2682	330

Source: INSIGHT_E

The cost of implementing a social tariff depends on the scope of beneficiaries, the difference between the market-based price of energy and the advantageous price set for the beneficiaries of social tariffs as well as on the amount of energy consumption to be covered by the social tariff.

For the purpose of this analysis, the beneficiaries of the social tariff are defined as the share of the population unable to keep warm (according to EU-SILC 2014). The level of the social tariff is defined as 20% less than the regular electricity price (which is shown as the average 2014 nominal price without taxes and levies). There would be no cap on the amount of energy consumption covered by the social tariffs for the defined beneficiaries.

However, in reality Member States would be able to decide on all of the above elements according to their national circumstances. This means that Member States would be able to decide on a more restraint or larger group of beneficiaries, a specific discount level defining the price level under social tariffs and/or set a cap on energy consumption beyond which market prices apply.

Within Option 1 various sub-options can be explored with respect to financing the implementation of the social tariffs, such as:

A- financing only by non-vulnerable households,
B- financing by all households and
C- financing by all electricity customers (including industry, commercial sectors, and all households including vulnerable households).

However, it is important to bear in mind that a levy only on industrial customers would not be desirable as this would make industry less competitive. The final tariff would still vary for vulnerable (eligible households) and other household customers as the base price for the regular tariff and the social tariff remains the same in each instance. Of course, the social tariffs can also be financed in part or in whole through the government budgets and this option could be explored in addition (i.e. financial transfers).

The table and figures below show the costs or savings (net benefits) of the introduction of a tariff, with savings arising for households receiving the social tariff and costs for those paying for the tariff measure. Costs and benefits are calculated for each of the above defined sub-options for financing: A, B and C.

As shown in the summary table below, the costs to finance the social tariff will see an increase in the electricity bills from 1-14% depending on electricity prices, share of vulnerable consumers and average electricity consumption in each Member State. The increase in the electricity bills as result of the implementation of the measure is expected to be highest in BG, GR, CY and PT if the financing is done via all non-vulnerable households or all households. Financing the measure across all electricity consumers allows alleviating the increase in energy bills thus limiting the impact on individual customers.

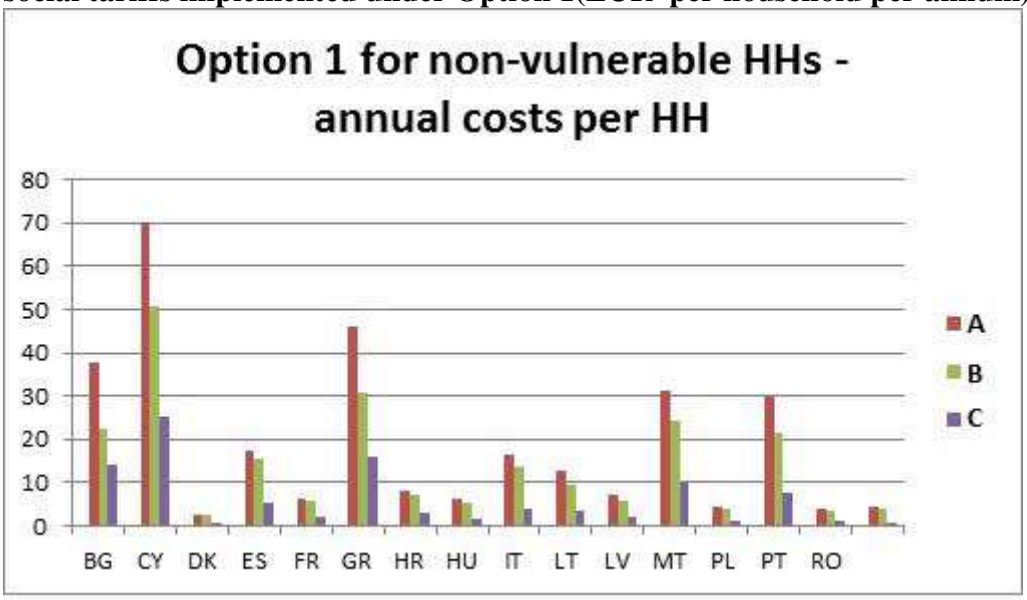
Table 6: Comparison of differences in tariffs to vulnerable and non-vulnerable households for Option 1 according to different financing models

	A - Financing across all non-vulnerable households		B - Financing across all households		C - Financing across all electricity consumers	
	Non-vulnerable Households (regular tariff)	Vulnerable Households (social tariff)	Non-vulnerable Households (regular tariff)	Vulnerable Households (social tariff)	Non-vulnerable Households (regular tariff)	Vulnerable Households (social tariff)
BG	14%	-20%	8%	-10%	3%	-16%
CY	8%	-20%	6%	-13%	2%	-18%
DK	1%	-20%	1%	-19%	0%	-20%
ES	2%	-20%	2%	-17%	1%	-19%
FR	1%	-20%	1%	-19%	0%	-19%
GR	10%	-20%	7%	-12%	2%	-17%
HR	2%	-20%	2%	-18%	1%	-19%
HU	3%	-20%	2%	-17%	1%	-19%
IT	4%	-20%	4%	-16%	1%	-19%
LT	7%	-20%	5%	-13%	2%	-18%
LV	4%	-20%	3%	-16%	1%	-19%
MT	6%	-20%	4%	-14%	1%	-18%
PL	2%	-20%	2%	-18%	0%	-19%
PT	8%	-20%	6%	-13%	1%	-18%
RO	3%	-20%	2%	-17%	1%	-19%

Source: INSIGHT_E

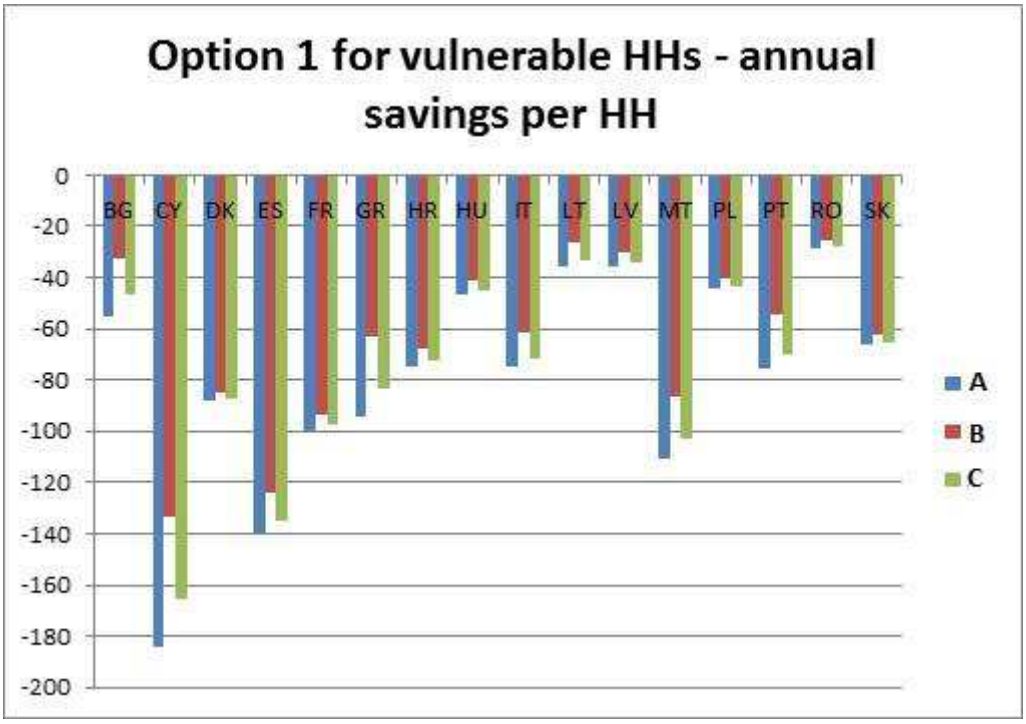
Figure 17 and 18 further explore the nominal costs and benefits per vulnerable and non-vulnerable household.

Figure 17: Comparison of annual costs per non-vulnerable household to finance social tariffs implemented under Option 1(EUR per household per annum)



Source: INSIGHT_E

Figure 18: Comparison of annual savings per vulnerable household benefiting from social tariffs implemented under Option 1(EUR per household per annum)



Source: INSIGHT_E

Other costs related to the implementation of this option would be those associated with the adoption and implementation of deregulation roadmaps in Member States applying price regulation.

Benefits

This option delivers benefits linked to price deregulation in the form of a more competitive retail energy market and the associated wider consumer choice of suppliers and energy service providers and access to a larger variety of products, services and offers, thus increasing consumer satisfaction, as demonstrated earlier in the present Section, under subheading 5a.

At the same time the option to provide transitional and targeted price regulation to clearly defined vulnerable consumer groups would provide the means for achieving the objective of consumer protection during the period of market adjustment. After the period of adjustment, transitional price regulation for targeted groups could be replaced by social policy measures.

Moreover, suppliers would benefit from a level playing field across the EU in terms of a regulatory environment which would encourage cross-border competition. For suppliers in Member States applying price regulation, implementation of this option would lead to a decrease in total costs due to the removal of compliance costs related to setting and submitting for approval/applying regulated prices as set by the national authorities.

Allowing regulated prices (e. g. in the form of social tariffs) targeted at specific groups of vulnerable consumers, notably the energy poor, would also contribute to ensuring universal

access to affordable energy services as required under UN-backed Sustainability Development goals.

Summary of costs and benefits for Option 1

The table below summarises the costs and benefits associated with the implementation of Option 1. It reveals that costs of the measure would vary depending on the chosen financing model, leading to an increase in the electricity tariff of non-eligible customers by 1-15%. Vulnerable households eligible for social tariff save on average 20% on their annual electricity bills.

Table 7: Option 1 - Cost and Benefits

	Costs		Benefits	
Measure	**Description**	**Quantification**	**Description**	**Quantification**
Targeted price regulation for vulnerable customers in the form of social tariffs.	Social tariffs in place for a targeted customer group (usually less than 20% of the population) accompanying the transition towards market base prices.	Depending on the financing model (the current examples are cost-neutral to government), those on the regular tariff will see an increase in their electricity tariff by 1-15%.	Allowing price regulation exclusively for clearly defined vulnerable customer groups would ensure that it is a targeted and transitional measure. Benefits linked to price deregulation: wider consumer choice, innovation in the retail energy market linked to increased competition, better quality of services, increased consumer satisfaction.	Vulnerable households save 20% on their annual electricity bills.

Box 1: Impacts on different groups of consumers

The benefits of the measures contained in the preferred option (Option 1), described in detail in the preceding pages, accrue overwhelmingly to households who would qualify for targeted social tariffs and/or other targeted social support measures i.e. vulnerable and/or energy poor consumers. The biggest losers from the measures in the preferred option are high-volume, often higher-income consumers who have in the past benefitted from retail prices that have been set at artificially low levels (see Table 6 and Figures 17 and 18, above). The measures can therefore be considered progressive in nature i.e. they tend to redistribute surplus from relatively high-income ratepayers to increase the welfare of lower-income ratepayers.

Nevertheless, it is also important to remember that in Member States where costs of social tariffs are covered through a tax or a levy on the electricity bill, the social tariff regime places a disproportionately high burden on low-income consumers who are just above the threshold for qualifying for a social tariff. In contrast, direct financial support that is financed through income taxation would avoid this and place a higher burden on those with broader shoulders. For this reason, when it comes to the most effective means of fighting

energy poverty, well-targeted social policy measures and investments in energy efficiency, rather than social tariffs, are essential

Option 2a

Option 2a consists of requiring Member States to progressively phase out price regulation for households above a certain consumption threshold to be defined in new EU legislation or by Member States, with support from Commission services.

Costs

The main costs associated with the implementation of this option are linked to the financing of the subsidised energy amount for all beneficiaries of the measure (all households).

For the purpose of this analysis we assumed that all Member States applying price regulation in the energy markets would deliver 30% of consumption of electricity for all households at a reduced rate of 20% less than the average regular price[163]. This level was selected based on the current implementation of various social tariff schemes across Member States, which point towards a reduction in the overall annual bill of 10-30%. However this scheme applies to all households rather than vulnerable households only. These values are for illustrative purposes only and the final amount can be varied depending on the preferences of the Member States implementing the measure.

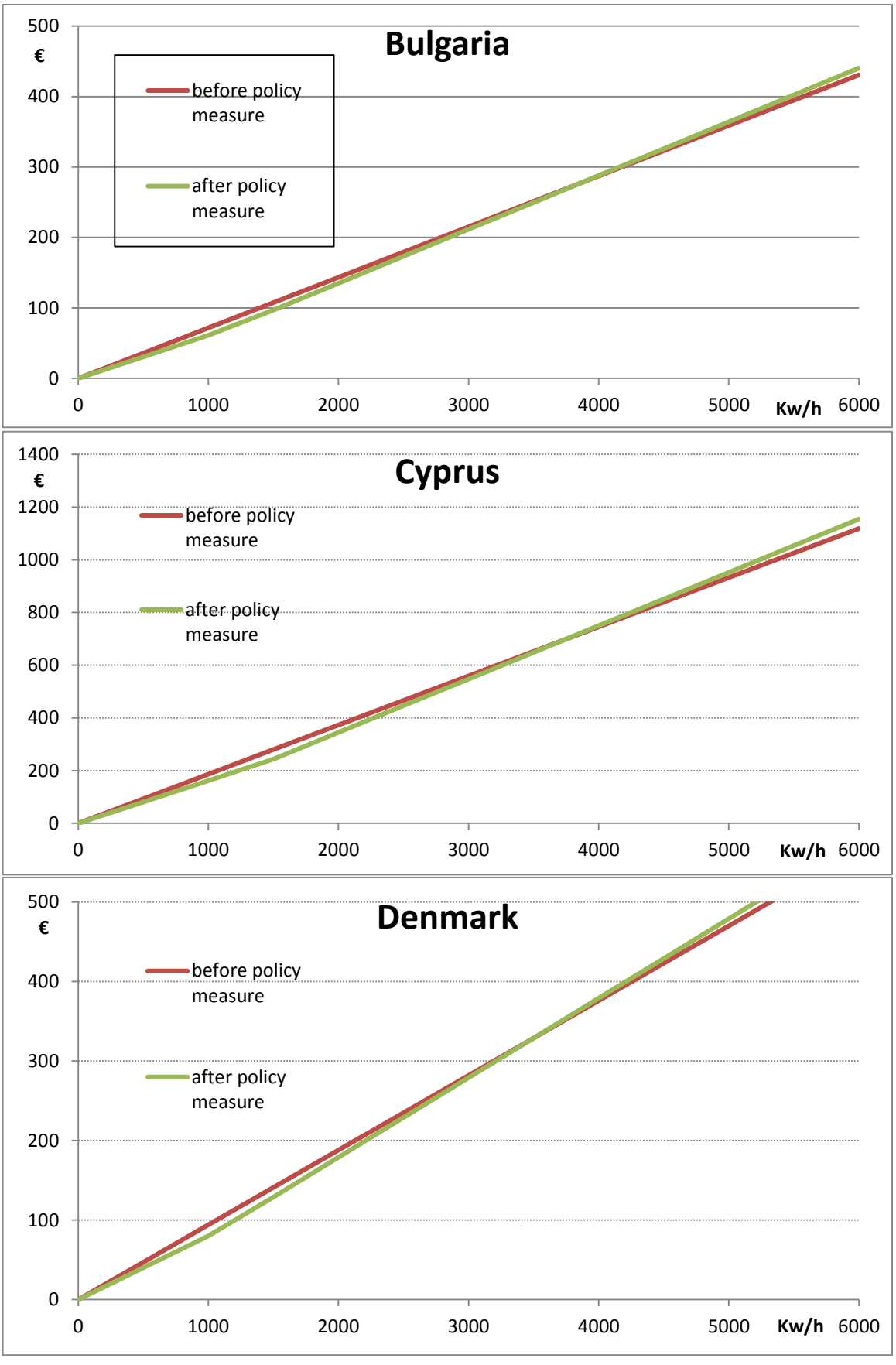
Under Option 2a the electricity consumption is subsidised for all households for the first 30% and the costs are evenly spread across all consumers.

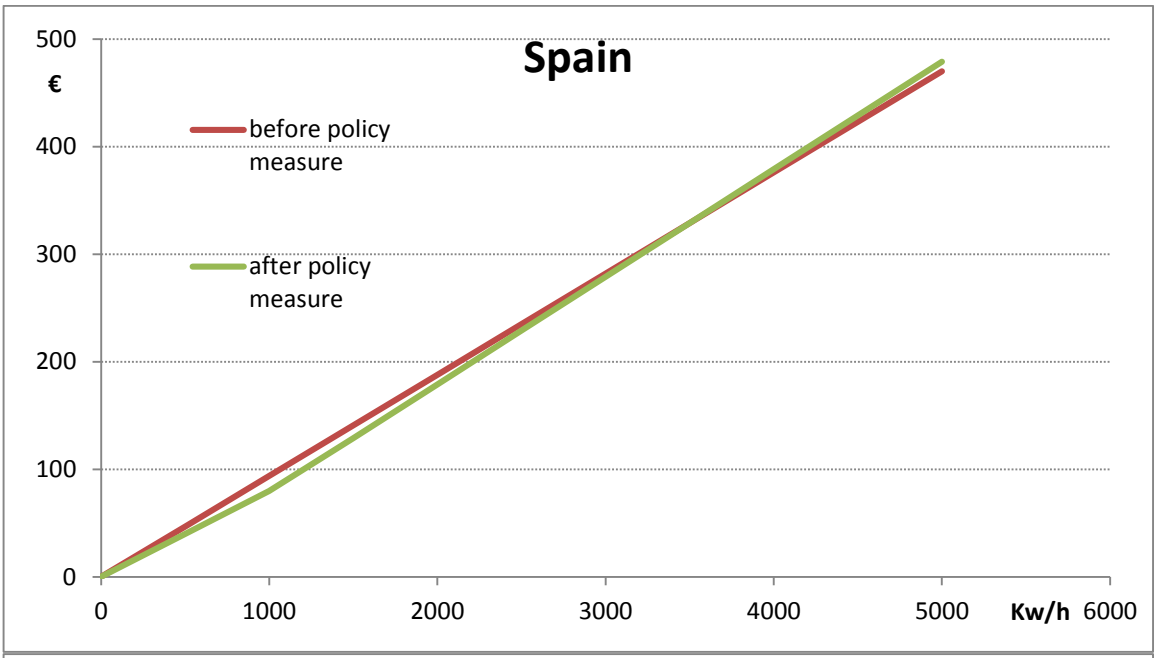
The impacts on the final consumer bill are presented per Member State in the graphs below – there is very little impact on the final bill of the households due to the fact that the discount is available to all households and is also financed by all households.

However, the average final bill would be lower for households consuming less electricity than the average and higher for households consuming more than the average. Therefore, this option might incentivise households to lower their energy consumption but it could also penalise lower income households which use more electricity than the average due to poor building insulation, lower energy efficient appliances or higher than average people per household.

[163] Eurostat, 2014, Average prices excluding all taxes and levies - based on average consumption

Figure 19: Option 2a cross-country comparison of average annual electricity costs per household before and after the introduction of a subsidised amount of electricity

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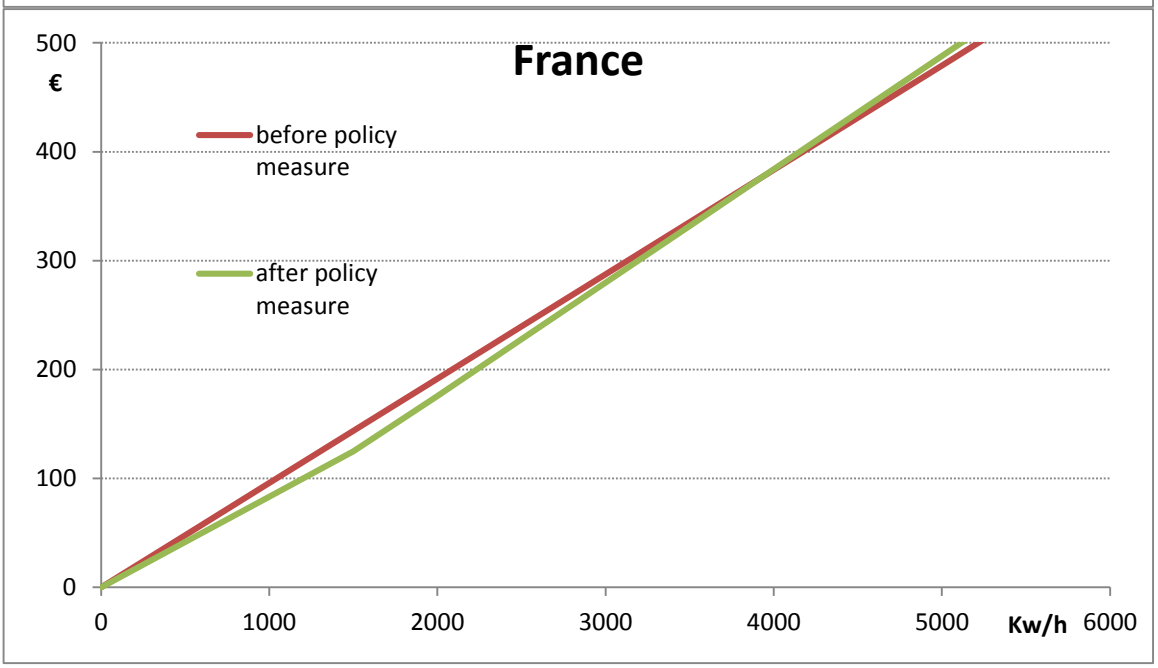
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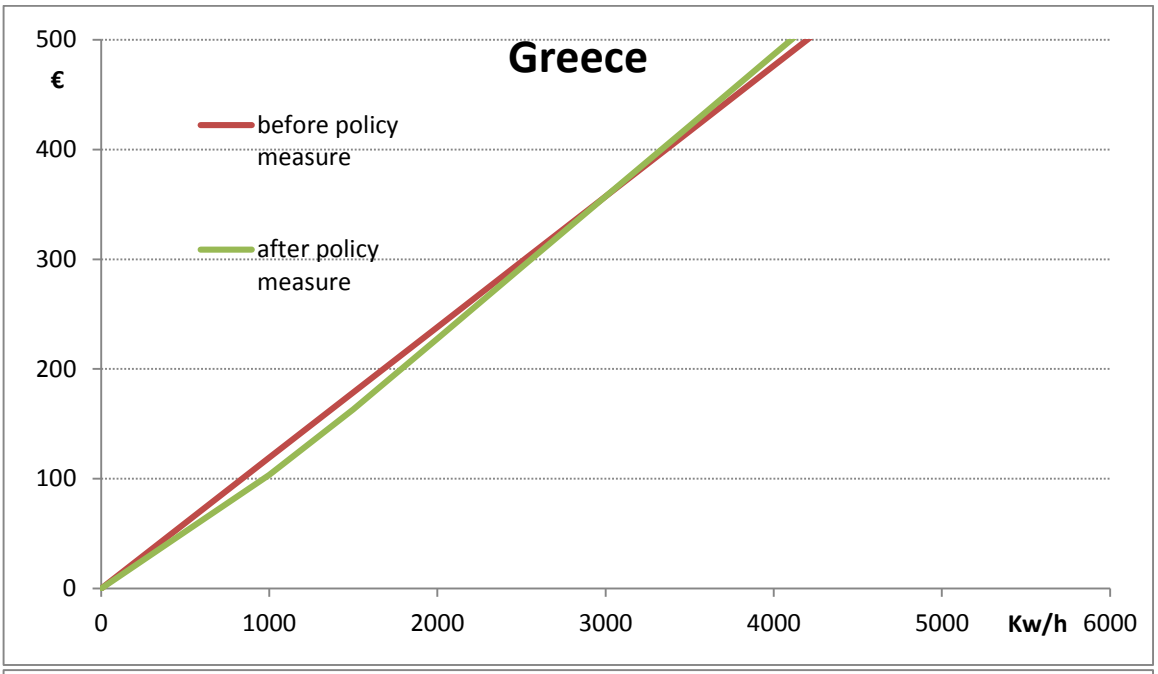

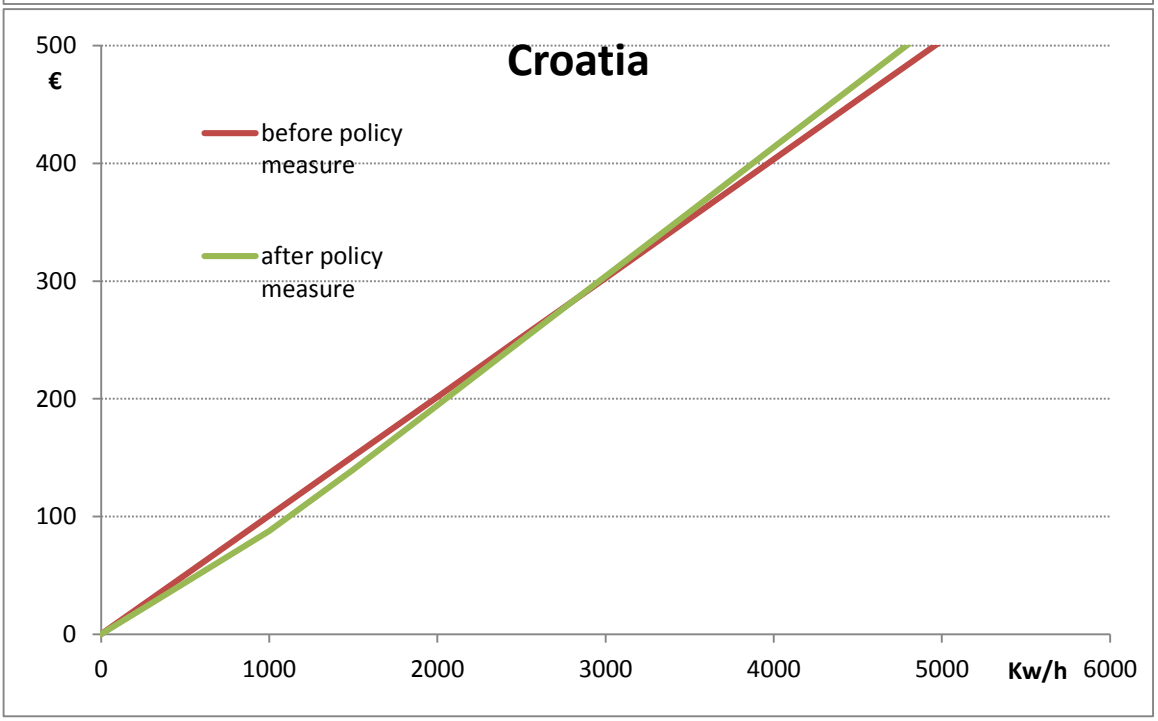

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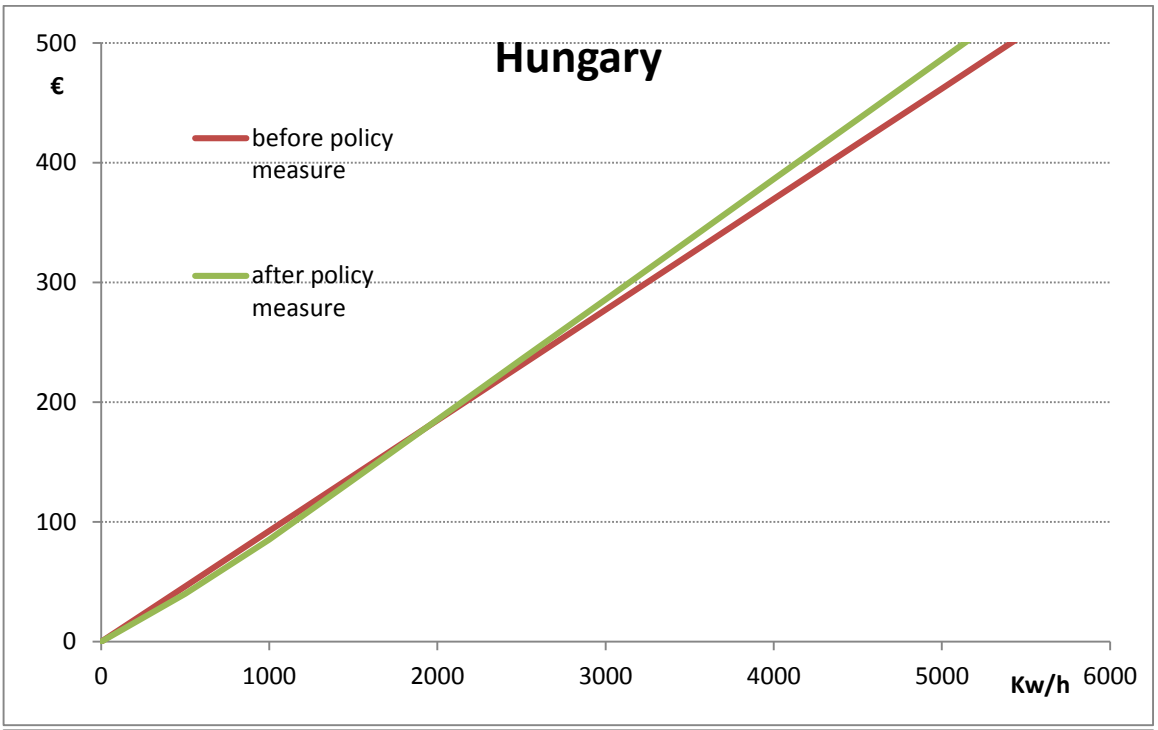
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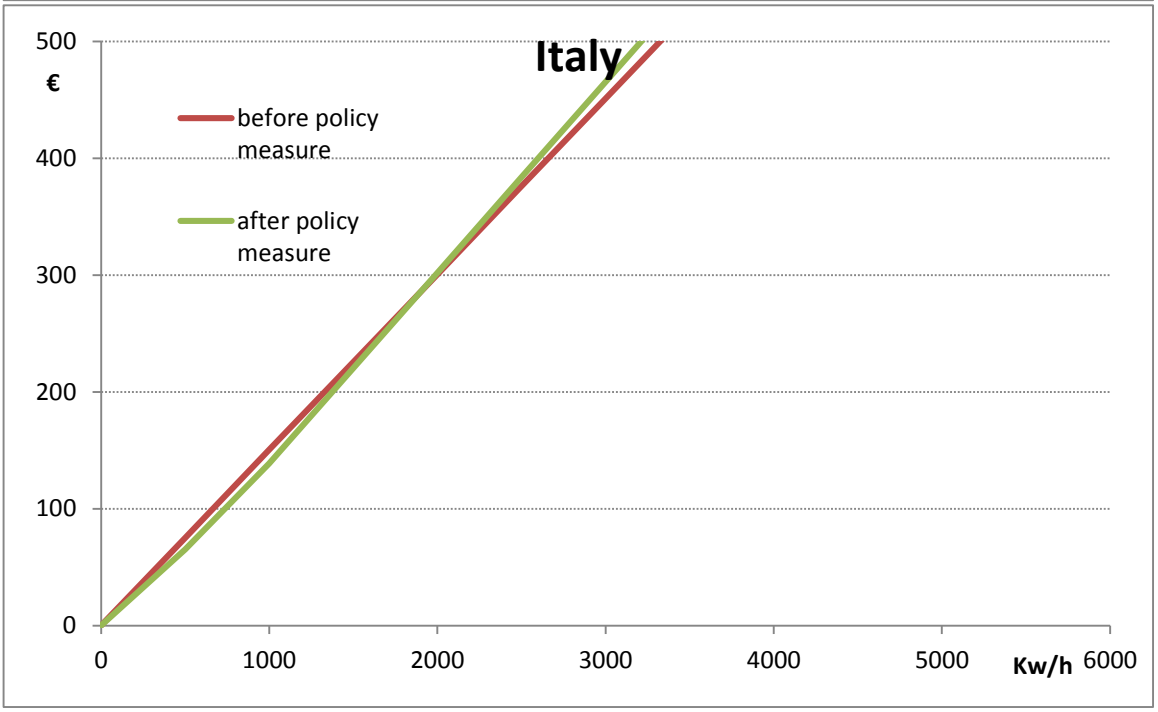
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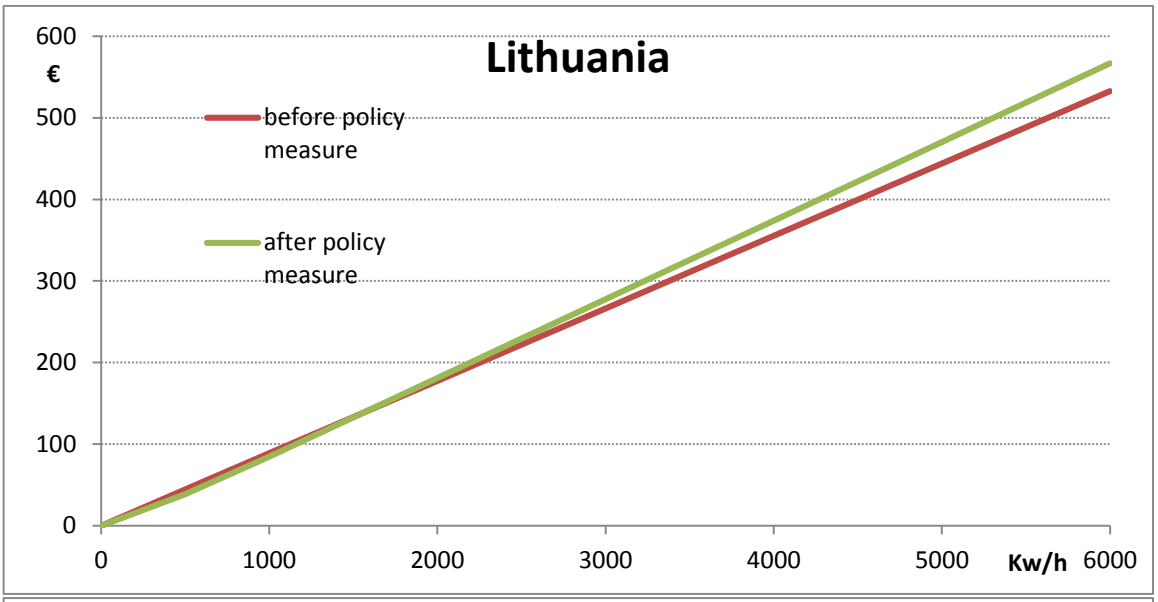

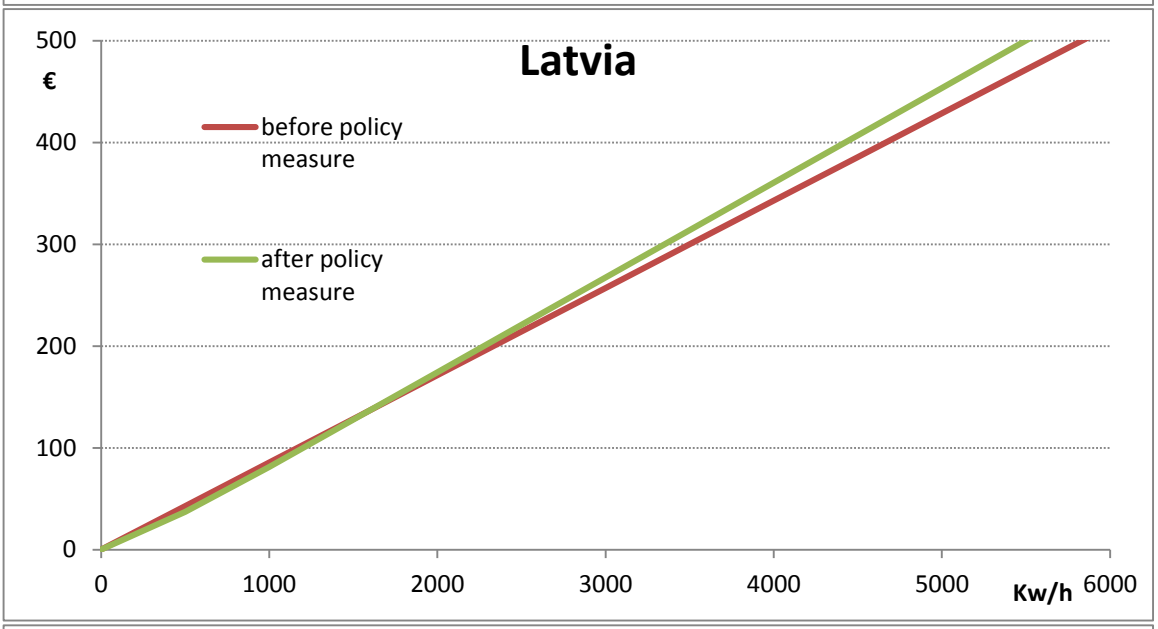

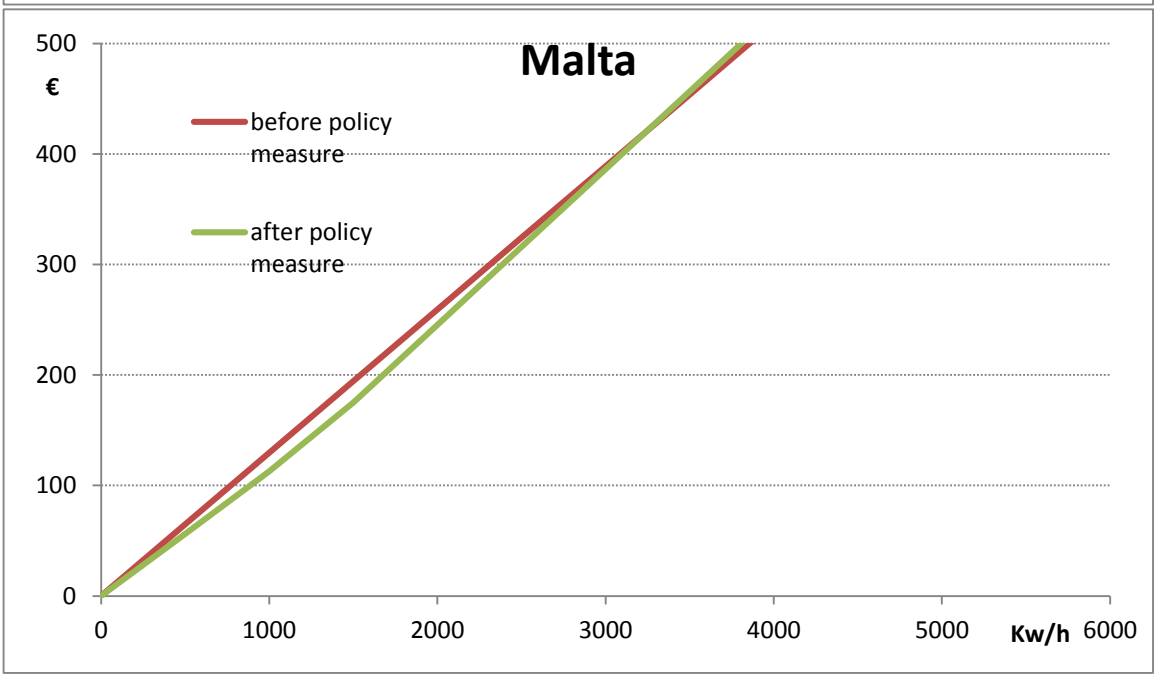

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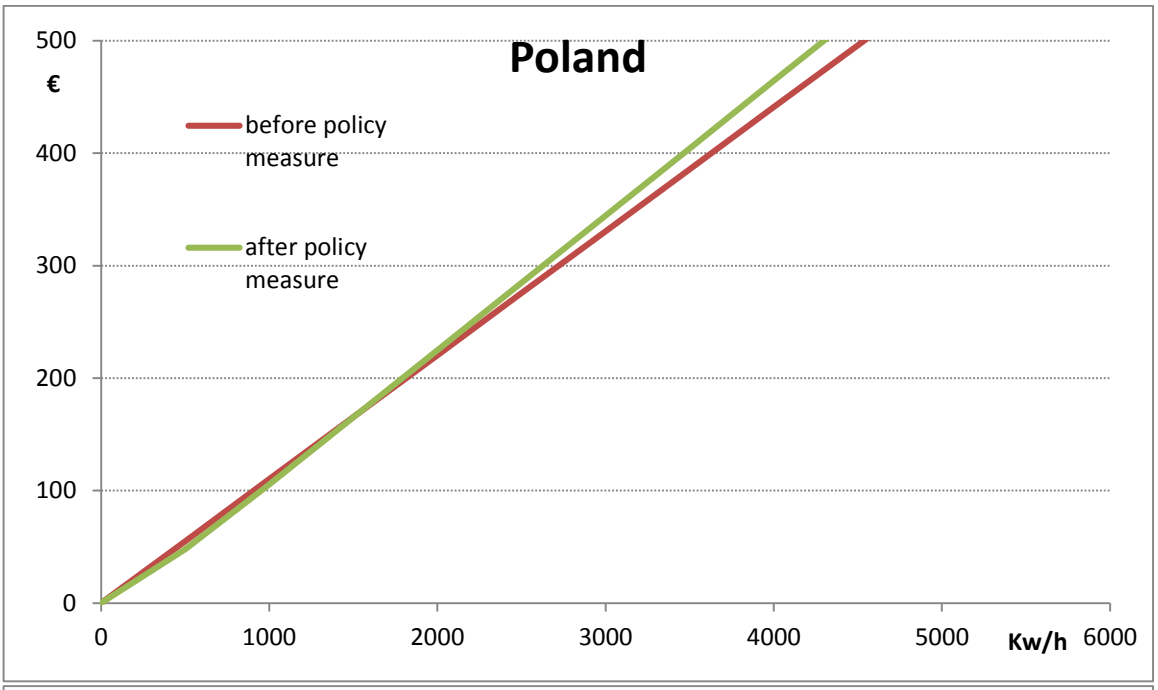

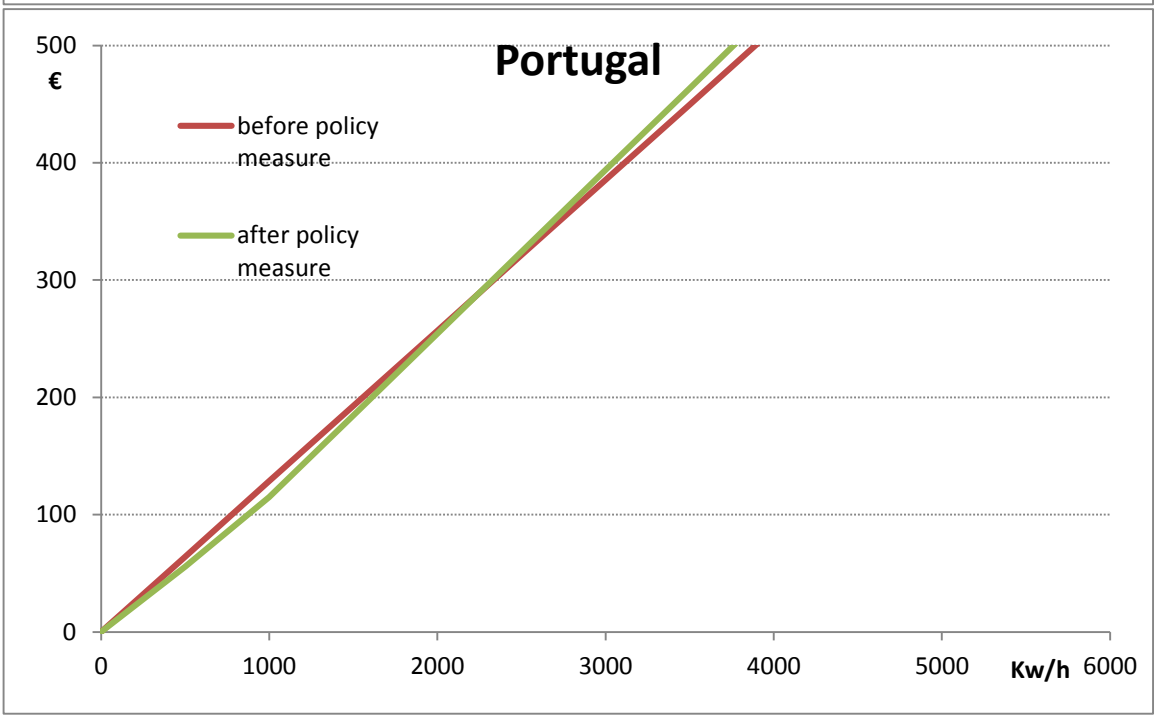

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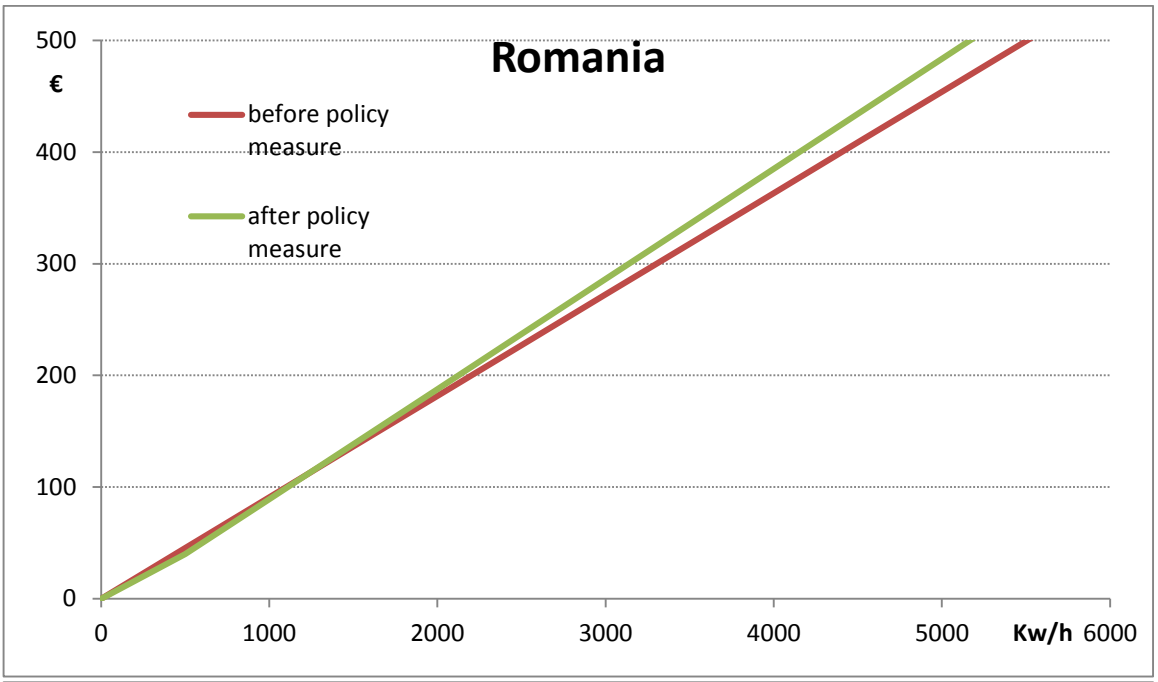

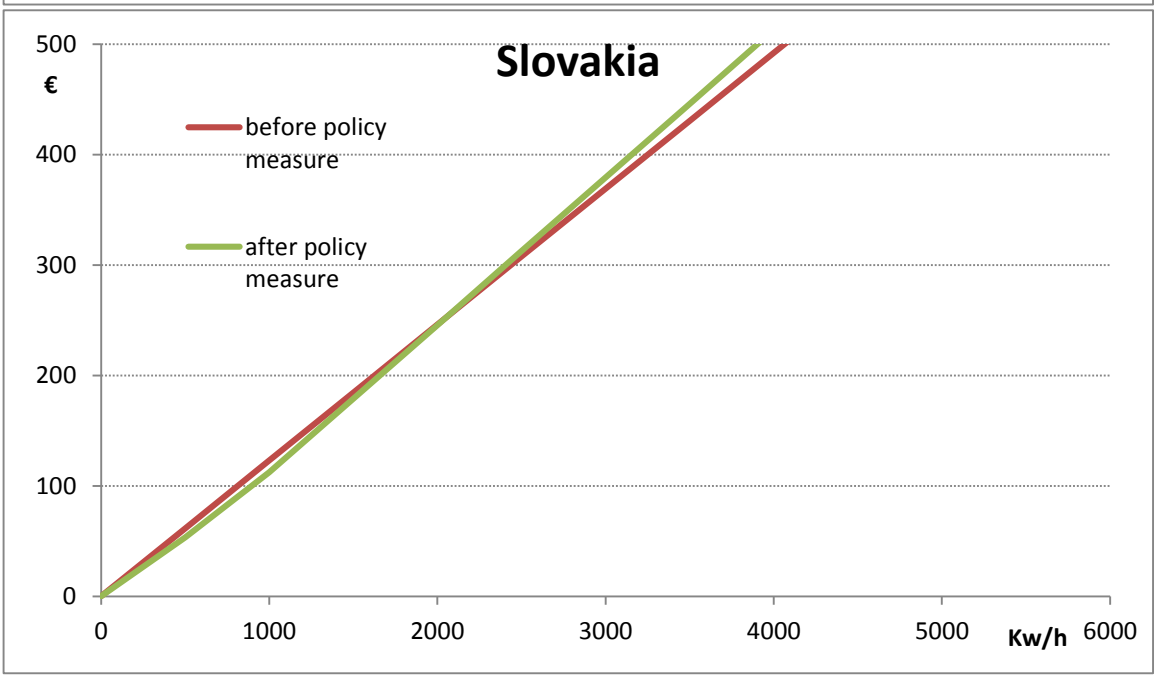

Benefits

In comparison to Option 1 the benefits linked to price deregulation under Option 2a can be expected to be fewer as a greater share of the retail market is covered by regulated prices under Option 2a.

However, in comparison to the current situation, if the consumption threshold beyond which prices are de-regulated was lowered across Member States currently applying price regulation, the net effect of the measure would be beneficial in terms of introducing more competition in the retail energy markets.

Comparison between Option 1 and Option 2a

Option 1 specifically targets the support measures for vulnerable consumers, such that the discounted rate for purchasing electricity is only available to vulnerable consumers. Option 1 also allows greater benefits from the energy market opening in terms of more competition, more consumer choice, better quality of services and more innovation. On the contrary, under Option 2a a lower amount of energy will be subsidised but the subsidy/support will be delivered to all households, regardless of their situation. This means lower support for vulnerable consumers under Option 2a, as shown in Table 8 which indicates the total amounts of electricity subsidised for vulnerable consumers under Option 1 and 2a. At the same time Option 2a delivers lower degree of market opening and therefore lower competition within the market and fewer benefits associated with market competition.

Table 8: Comparison of residential TWh subsidised in comparison to total residential TWh consumed

			Option 1	Option 2a		
	Share of vulnerable households	Total HH consumption	Total electricity subsidised for vulnerable consumers	Total electricity subsidised - vulnerable households	Total electricity subsidised non-vulnerable households	Total electricity subsidised for all households
		TWh	TWh	TWh	TWh	TWh
BG	41%	10.6	4.3	1,3	1,9	3.2
CY	28%	1.4	0.4	0,1	0,3	0.4
DK	3%	10.1	0.3	0,1	2,9	3.0
ES	11%	70.7	7.8	2,4	18,8	21.2
FR	6%	149.4	8.8	2,6	42,2	44.8
GR	33%	17.2	5.6	1,7	3,5	5.2
HR	10%	5.6	0.5	0,2	1,5	1.7
HU	12%	10.4	1.2	0,4	2,8	3.1
IT	18%	64.3	11.6	3,5	15,8	19.3
LT	27%	2.7	0.7	0,2	0,6	0.8
LV	17%	1.7	0.3	0,1	0,4	0.5
MT	22%	0.6	0.1	0,0	0,1	0.2
PL	9%	28.0	2.5	0,8	7,6	8.4
PT	28%	11.9	3.4	1,0	2,6	3.6
RO	12%	11.9	1.5	0,4	3,1	3.6
SK	6%	4.9	0.3	0,1	1,4	1.5
EU-16 Totals	**13%**	**401,5**	**49,4**	**14,8**	**120,4**	**135,2**

Source: INSIGHT_E

While the total subsidised energy is much higher in the case of Option 2a, the amount of energy subsidised for vulnerable customers is lower which indicated a lack of targeting of the measure.

As regards administrative costs for implementing the measures, the blanket approach (lack of identification of a targeted group of beneficiaries) used in Option 2a does not require resources for the identification of vulnerable households. However, these administrative

costs linked to the identification of vulnerable consumers can be expected to be minimal as authorities responsible for identifying socially vulnerable groups are already operating in all Member States.

Finally, a comparison of costs between these two options needs to take into account that, in the case of Option 1, costs associated with the implementation of social tariffs would be limited in time due to the temporary nature of the measure, while in the case of Option 2a there is no foreseen end-date for subsidising a specific amount of energy consumption.

Option 2b

Option 2b consists of requiring Member States to progressively phase out below-cost price regulation for households by a deadline specified in new EU legislation

Costs

This option allows price regulation defined at levels that cover the costs incurred by the energy undertakings, therefore no subsidisation is necessary. This option does not involve financing of any new measure therefore a quantitative estimation of costs cannot be performed.

Main costs would be linked to the adoption and implementation of roadmaps foreseeing gradual achievement of cost-reflectiveness of price regulation in the Member States concerned. The main and key challenge for the implementation of this option would be to define methodologies for defining cost coverage of energy prices at EU level in a context where cost structures of market actors are opaque. Moreover, ensuring cost-reflectiveness by regulation would imply considerable regulatory and administrative impact.

Benefits

The main benefits of this option would be to limit the distortive effect of price regulation and tackle tariff deficits.

However it is necessary to point to the potential risks associated with energy prices being regulated below costs, such as the accumulation of tariff deficits.

In a study[164] carried out at the request of the European Parliament, a hypothetical case study shows that in a country where the retail market price for electricity is 0.20 euro per kWh for domestic customers and the regulated tariff is set at 0.18 euro per kWh, the tariff deficit would be 0.02 euro per kWh. If there are 15 million domestic customers with an average annual electricity consumption of 3 000 kWh, of whom 80 per cent are supplied at the regulated tariff, the result would be a total tariff deficit of 720 million euro per year. One may compare the size of the country in this hypothetical illustrative case (15 million domestic customers) with a country of the size of Spain or Poland.

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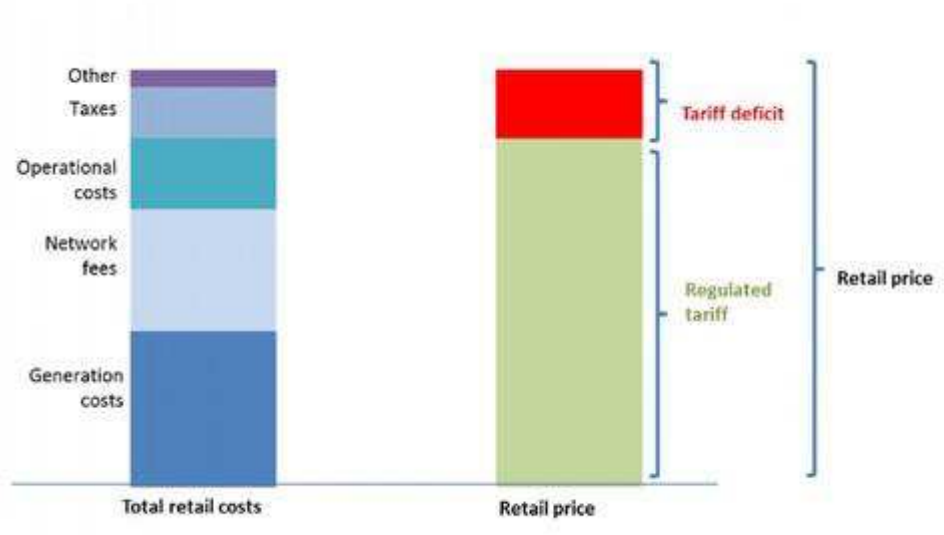
[164] "*Cost of Non-Europe in the Single Market for Energy*" (2013) Institute for European Environmental Policy at the request of the European Parliament, available at: http://www.europarl.europa.eu/RegData/etudes/etudes/join/2013/504466/IPOL-JOIN_ET(2013)504466(SUM01)_EN.pdf

Figure 20: Tariff deficit



Source: European Parliament[165]

Regulated end-user prices reflecting actual costs would ensure remuneration for the suppliers/generators providing them some economic incentives for investment in new and existing generation capacities and in demand reduction measures.

This option could be implemented by progressively increasing the level of regulated prices in countries where they are not cost covering with the objective of achieving cost covering and contestable end user prices. Provided that the level of regulated prices will ensure cost coverage incurred by the suppliers subject to price regulation plus a reasonable profit margin, such measure would stimulate the competition on the retail market by encouraging new entries and allowing existing non-regulated suppliers to gain more market share by proposing better offers to customers. Such incentives would however be limited, directly dependent on the profit margin allowed through the chosen methodology.

It can be expected that benefits linked to enhanced competition on the retail market resulting from the implementation of this option would be more limited compared to Option 1 or 2a mainly due to the lack of limitation of allowed price regulation (as regards the scope of beneficiaries or the regulated amount of energy) which would result in a more important market distortion.

One example of above costs price regulation is through a cost-of-service regulation[166], under which a company is allowed to charge end customers its total incurred costs (investment costs plus operation costs), where the investments costs include a fair return on investment.

This example was studied by Pérez-Arriaga[167] who identified that the main advantage of this type of regulation is that it ensures that customers do not overpay and investors are not

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165 *"The Cost of Non-Europe in the Single Market for Energy" (*2013) European Parliament

166 "*Regulation of the Power Sector*" (2013) Ignacio J. Pérez-Arriaga

167 "*Regulation of the Power Sector*" (2013) Ignacio J. Pérez-Arriaga

undercompensated at any given time. However there are also important risks and disadvantages linked to such approach, as shown in the table below.

Cost-of-service regulation	
Pros	**Cons/risks**
Ensures a fair price at any given time (customers do not overpay and investors are not undercompensated) Ensures regulatory stability Guarantees cost recovery (via suitable remuneration), providing a favourable investment climate, reducing capital costs Guarantees high levels of security of supply for electricity customers.	Possible cost inflation due to : - Information asymmetries: utilities have much more precise cost and demand data than the regulator, who needs them in the tariff review process. Information may therefore be manipulated by regulated companies to bring in higher revenues that cannot subsequently be recorded as earnings, but which can be earmarked for certain cost items (such as higher salaries or a larger headcount). - Lack of incentives for efficient management: keeping costs as low as possible (for a given amount and quality of service) calls for some effort from company managers. Under the traditional system of regulation, managers have no incentive to make this effort since, if costs grow, revenues are in principle automatically adjusted to absorb the difference. - Regulator capture: utilities usually have a wealth of resources that can be deployed to influence regulator decisions in their favour. This undue influence on regulatory decisions, called ‘‘regulator capture’’, may be exerted in a variety of ways, including all forms of lobbying, communication campaigns, regulator hire by the regulated utilities and vice versa (so-called revolving doors).

Source: "Regulation of the Power Sector" (2013) Ignacio J. Pérez-Arriaga

It becomes clear that, while this type of price regulation might appear as keeping end customer prices under control while allowing a fair remuneration for energy utilities, it is not exempted from risks of abuse by utilities. Therefore, the objective of protecting customers from possible abuse by utilities in setting the price which is sometimes invoked as justification for maintaining some form of price regulation does not seem to be fully ensured by implementing this option.

7.2.6. *Subsidiarity*

Different national approaches to opening of the market for electricity and gas supply to households prevent the emergence of a genuine internal energy market for household customers. More specifically, we observe a wide range of criteria for defining the beneficiaries of price regulation (consumption threshold, in some cases combined with vulnerability criteria).

Under the EU acquis (Art. 14 TFEU, Protocol on SGEI), the Commission has assumed the role of the guardian of both free competition and general interest. The interpretation of the Treaty by the Court of Justice has in some cases allowed a restriction on competition if necessary for the accomplishment of special tasks. Moreover, the adopted and proposed legislation in the field of regulated public services shows how both free competition and

restrictions on competition can have a place if required for the accomplishment of special tasks.

The balance between both aspects is subject to the principle of proportionality, implying that the restriction on competition should be no greater than is required to accomplish the special tasks. In defining the proportionality principle, EU legislation can specify the scope of beneficiaries for price regulation (consumption threshold) or the cost coverage condition.

EU action obliging Member States to progressively adopt less restrictive measures to achieve the objectives of general interest justifying price regulation is necessary in order to minimize the negative effect of regulated prices which represent an important barrier to retail competition, including cross-border. The added value of EU action with respect to the deregulation of end-user electricity and gas prices has been highlighted by the European Parliamentary Research Service in a study on "The Cost of Non-Europe in the Single Market for Energy"[168] which considers the possibilities for gains and/or the realisation of a 'public good' through common action at EU level in specific policy areas and sectors. This study identifies regulated end-user prices among the areas that are expected to benefit most from deeper EU integration, where the EU added value is potentially significant.

7.2.7. *Stakeholders' opinions*

Public consultation

The outcome of a public consultation carried out by the European Commission from 22 January 2014 to 17 April 2014 has confirmed that market-based customer prices are an important factor in helping residential customers and SMEs better control their energy consumption and costs (129 out of 237 respondents considered that it was a very important factor while other 66 qualified it as important for the achievement of the said objective).

Moreover, out of 121 respondents who considered that the level of competition in retail energy markets is too little, 45 recognised regulation of customer prices as one of the underlying drivers.

National Regulatory Authorities

ACER identifies price regulation as one of the barriers to entering retail energy markets, in particular in Member States where regulated prices are set below cost levels, which hampers the development of a competitive retail market. It shows that even in other Member States where end-user prices are set with reference to wholesale prices, which is the preferred approach, they may negatively impact the customers' propensity to switch.

Therefore, ACER recommends that, where justified, regulated prices should be set at levels which avoid stifling the development of a competitive retail market. They must be consistent with the provisions of the Third Package, and should be removed as soon as a sufficient level of retail competition is achieved.

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[168] http://www.europarl.europa.eu/RegData/etudes/etudes/join/2013/504466/IPOL-JOIN_ET(2013)504466(SUM01)_EN.pdf

The body representing the EU's national regulatory authorities in Brussels, **CEER** (The Council of European Energy Regulators), identifies as well regulated end-user prices among the barriers to entry for energy suppliers into retail gas and electricity markets across the EU. It shows that in the situation where regulated prices are set below cost, or with a too limited margin to cover the risk of activity, they discourage investments and the emergence of newcomers.

In their reply to the question *"Do you consider regulated end-user prices as a significant barrier to entry for energy suppliers in your MS and have you taken initiatives to remove it?"* included in a questionnaire[169] addressed by CEER to NRAs in 2016, NRAs from countries with price regulation considered them as a significant barrier to entry for alternative suppliers. All Member States, where NRAs consider regulated prices as a significant barrier, are planning to remove them, at least for non-household customers.

In general, NRAs emphasised the need to *"facilitate the phasing out of regulated end user prices, as soon as practicable, whilst ensuring that customers are properly protected where competition is not yet effective"*, as expressed in the conclusions of the ACER / CEER Bridge to 2025.

As part of a roadmap for phasing-out regulated prices, most of the concerned NRAs state that regulated prices should first be aligned with supply costs. They also point out the role of the NRA to define the appropriate methodology and to control end-user prices evolution.

Some NRAs suggest that the final decision for end-user prices withdrawal should depend on the level of competition in the market, which could be assessed by the NRA, like the number of market participants and their market share, the transparency of structure and rules of market functioning, a non-discriminatory treatment on the market.
Eventually, some NRAs note the need to protect vulnerable and low income household customers.

Suppliers

EUROGAS[170] supports the distinction between regulated end-user prices and social tariffs. It states that specific, time-limited and appropriate regulated end-user prices may be necessary in circumstances where market forces are not yet in place (in pre-competitive markets notably to ensure headroom for new entrants and to protect customers from market abuse). They should then be generally widely available for customers in those Member States, irrespective of their economic position and should not be set below market price or below cost, to minimise distortions and barriers to entry. Social tariffs where they exist can and should also be organized without market distortions. Member States should not be able to use energy poverty definitions in such a way as to block market development.

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[169] *"Benchmarking report on removing barriers to entry for energy suppliers in EU retail energy markets"* (2016) CEER, available at http://www.ceer.eu/portal/page/portal/EER_HOME/EER_PUBLICATIONS/CEER_PAPERS/Customers/Tab6/C15-RMF-70-03_BR_barriers_to_entry_for_suppliers_1-Apr-2016.pdf

[170] Eurogas press release available at: http://www.eurogas.org/uploads/media/2015-June_-_15PP282__Eurogas_Position_Paper_on_Vulnerable_Customers.pdf

In their contribution to the discussions within the workshop on the issue of electricity and gas price (de)regulation organised by the European Commission in the context of the on-going work on the future Electricity Market Design on 3 June 2016, **EURELECTRIC** agreed that regulated prices represent a barrier to entry to new suppliers and that they discourage competition on services.

The European Parliament

In its April 2016 opinion on the Commission's Communication on Delivering a New Deal for Energy Customers, the Parliament's **Committee on Industry, Research and Energy (ITRE)**: " Considers that phasing out regulated energy prices for customers should take into account the real level of market competition in the Energy Union Strategy context, which should ensure that customers have access to safe energy prices"

In its April 2016 opinion on the Commission's Communication on Delivering a New Deal for Energy Customers, the Parliament's **Committee on the Internal Market and Customer Protection (IMCO)** " Urges the Commission to take concrete action to better link wholesale and retail energy markets, so as to better reflect falling wholesale costs in retail prices and to achieve a gradual phasing-out of regulated prices, and to promote responsible customer behaviour, by encouraging Member States to seek other means to prevent energy poverty; recalls that prices set by the market benefit customers; ".

Consumer Groups

In their contribution to the discussions within the workshop on the issue of electricity and gas price (de)regulation organised by the European Commission in the context of the on-going work on the future Electricity Market Design, **BEUC** has argued that price regulation should be a transitional tool before a certain level of competition is achieved on the retail market. In any case, it stated that prices should be fixed at contestable levels to allow alternative suppliers to compete. Moreover, an adequate market design should be the prerequisite for price deregulation.

Fejl! Brug fanen Hjem til at anvende Heading 2 på teksten, der skal vises her.

7.3. Creating a level playing field for access to data

7.3.1. *Summary table*

Objective: Creating a level playing field for access to data.		
Option: 0	Option 1	Option 2
BAU Member States are primarily responsible on deciding roles and responsibilities in data handling.	- Define responsibilities in data handling based on appropriate definitions in the EU legislation. - Define criteria and set principles in order to ensure the impartiality and non-discriminatory behaviour of entities involved in data handling, as well as timely and transparent access to data. - Ensure that Member States implement a standardised data format at national level...	- Impose a specific EU data management model (e.g. an independent central data hub) - Define specific procedures and roles for the operation of such model.
Pro Existing framework gives more flexibility to Member States and NRAs to accommodate local conditions in their national measures.	Pro The above measures can be applied independently of the data management model that each Member State has chosen. The measures will increase transparency, guarantee non-discriminatory access and improve competition, while ensuring data protection.	Pro Possible simplification of models across EU and easier enforcement of standardized rules.
Con The current EU framework is too general when it comes to responsibilities and principles. It is not fit for developments which result from the deployment of smart metering systems.	Con	Con High adaptation costs for Member States who have already decided and implementing specific data management models. Such a measure would disproportionally affect those Member States that have chosen a different model without necessarily improving performance. A specific model would not necessarily fit to all Member States, where solutions which take into account local conditions may prove to be more cost-efficient and effective.
Most suitable option(s): Option 1 is the preferred option as it will improve current framework and set principles for transparent and non-discriminatory data access from eligible market parties. This option is expected to have a high net benefit for service providers and consumers and increase competition in the retail market.		

7.3.2. *Description of the baseline*

Legal Framework

Annex I (paragraph 1(h)) of the Electricity Directive set some basic requirements regarding data access from consumers and suppliers, and for the party responsible for data management. It also provides that data should be shared by explicit agreement and free of charge.

Article 41 of the Electricity Directive provides that Member States shall be responsible for setting responsibilities of TSOs, DSOs, suppliers, customers and other market participants with respect to contractual arrangements, commitments to customers, data exchange and settlement rules, data ownership and metering responsibility.

Assessment of current situation

Access to consumption data will support the deployment of distributed energy resources and the development of new flexibility services. This is true not only in relation to flexibility that system operators may use when planning and operating their networks, but also to flexibility that will be used in the wholesale markets for achieving wider system benefits.

Currently different models for the management of data have been developed or are under development across the EU (e.g. data handled by DSO, TSO, or an Independent Data Hub). The activity of handling metering data is closely linked to the traditional metering activity. In the majority of Member States DSOs are responsible for installing and operating the smart metering infrastructure and they are also responsible for collecting consumption data and consequently being involved in the handling process of these data. From a European policy perspective it is important to ensure the impartiality of the entity which handles data and to ensure uniform rules under which data can be shared.

Table 2 presents the responsible entity in each Member State for the metering activity (market regulated/non-regulated), and the responsible entity for the roll-out of smart metering infrastructure, as well as for access to data[171].

[171] *"Benchmarking smart metering deployment in the EU-27 with a focus on electricity"*. COM(2014) 356 final

Table 2: Data handling model in Member States with smart metering systems (implemented or planned)

Wide-scale roll-out (at least 80% of consumers by 2020)	Metering Market	Deployment Strategy	Responsible party - implementation and owneship	Responsible party - access to metering data	Financing of roll-out
Austria	Regulated	Mandatory	DSO	DSO	Metering & Network tariffs
Denmark	Regulated	Mandatory	DSO	Central Hub	Network Tariffs
Estonia	Regulated	Mandatory	DSO	Central Hub	Network Tariffs
Finland	Regulated	Mandatory	DSO	DSO	Network Tariffs
France	Regulated	Mandatory	DSO*	DSO	NA
Greece	Regulated	Mandatory	DSO	DSO	NA
Ireland	Regulated	Mandatory	DSO	DSO	Network Tariffs
Italy	Regulated	Voluntary + Mandatory	DSO	DSO	DSO resources + network tariffs
Luxembourg	Regulated	Mandatory	DSO	DSO	Network Tariffs
Malta	Regulated	Voluntary	DSO	DSO	Network Tariffs
Netherlands	Regulated	Mandatory w/ opt-out	DSO	DSO	Network Tariffs
Poland	Regulated	Mandatory	DSO	Central Hub	Network Tariffs
Romania	Regulated	Mandatory	DSO	DSO	Network Tariffs
Spain	Regulated	Mandatory	DSO	DSO	Network Tariffs + SM rental
Sweden	Regulated	Voluntary	DSO	DSO	DSO resources + network tariffs
United Kingdom - GB	Competitive	Mandatory	Supplier	Central Hub	Funded by suppliers

Source: COM(2014) 356 final

According to the above data in the majority of Member States the DSO is the responsible party for metering activity and smart meters, as well as for data access. However, regarding data access more recent information indicates that some Member States such as Finland and Sweden are planning a central data hub under the responsibility of the TSO.

In general it is observed, that in countries with a high number of DSOs (e.g. SE, FI) it seems to be more effective to introduce a central hub which will collect information from several DSOs and provide access to these data to third parties. In such cases it is expected that transparency and efficiency in the market will increase, while data will be easily available to retailers and consumers.

However, different data handling models do not exclude responsibility and involvement of DSOs, in most of the cases they are responsible for smart meters and participate in the data handling process. This means that even if they are not assuming a central role in data handling (e.g. the case of France or Italy), they will collect consumption data and communicate these data to a central hub.

Requirements of Article 1(h) of Annex I have been subject to formal actions against several Member States.

7.3.3. *Deficiencies of the current legislation*

The Evaluation illustrates how one of the main objectives of the Electricity Directive was to improve competition through better regulation, unbundling and reducing asymmetric information. In general, unbundling measures contribute to the contestability of the retail market and thus facilitate market entry by third party suppliers.

The implementation of smart metering systems in 17 Member States will generate more granular consumption data and new business opportunities in the retail market. Data management models for handling those data are accompanied by procedures which facilitate the retail market and improve processes such as switching, billing, settlements etc.

The existing provisions of the Electricity Directive provide a general framework under which each Member State can decide its data management model and procedures of data handling. This framework however needs to be enhanced and updated in terms for instance of eligible market parties who should be allowed to access consumers' data, authorization of parties which handle data, simple procedures and interoperable data format. Indeed, Section 7.3.6 and Annex IX of the Evaluation show that the current legislation was not designed to address currently known challenges in managing large, commercially valuable consumption data flows.

7.3.4. *Presentation of the options*

Under **Option 0** (BAU) Member States are responsible to develop their own data handling model in line with rules of the Third Package and the related data protection legislation. Member States are responsible for developing their own data handling models in line with rules of the Third Package and the related data protection legislation.

A stronger enforcement and/or voluntary cooperation (Option 0+) has not been considered as the existing EU framework provide only minimum requirements which need to be updated in line with the developments in the retail market and the introduction of smart metering systems, while voluntary cooperation would only deliver a set of best practices that Member States could share, but it would not be adequate for setting the necessary principle for a transparent and non-discriminatory exchange of data.

Under **Option 1** Member States will continue to be responsible for the development of the data management model; however, more explicit requirements will be introduced regarding responsibilities in data handling based on appropriate definitions and principles. Also, criteria and measures will be introduced to ensure the impartiality and non-discriminatory behaviour of entities involved in data handling, as well as timely and transparent access to data. Member States will also have to implement a standardised data format in order to simplify retail market procedures and enhance competition. Measures under this option will also ensure data protection in line with the requirements of Regulation (EU) 2016/679 on the protection of personal data and Recommendation 2014/724/EU on the Data Protection Impact Assessment Template for smart grids and smart metering systems.

Under **Option 2** each Member State will have to implement a specific data management model and procedures described in EU legislation.

7.3.5. *Comparison of the options*

a. *The extent to which they would achieve the objectives (effectiveness);*

The main objective is to ensure that data handling models support equal data access and facilitate retail market competition.

Option 0 would mean no further measures from the existing framework set in the Electricity Directive. Member States would be practically completely responsible for setting the general framework and the detailed regulation on data management models, access rules and principles, roles and responsibilities of market actors etc.

Data access is highly important for supporting new services and for facilitating competition, especially where smart metering systems exist. Option 0 would not guarantee that national frameworks will accommodate all necessary elements in order for instance to allow data access to a minimum of service providers besides suppliers.

Moreover, the current framework does not include any measures in order to avoid privileged access to information from service providers which are affiliated to operators which collect and store data (e.g. DSOs).

Option 1 seeks to address deficiencies of Option 0 by enhancing the existing framework and set minimum requirements in terms of eligible market parties which should have access to data, specific principles, and ensuring consumers' privacy. Moreover, this option will set some minimum safeguards in order to avoid privileged access to data of commercial value. The level of effectiveness of this option will depend on the specific implementation in each Member State and the detailed national rules, as measures under this option will set the basic EU framework.

Option 2 is considered to be less effective compared with the other two options as it will entail full harmonisation of data management models and rules across EU Member States. As in many Member States (e.g. UK, IT, FR, FI, NL, AT etc.) the data management models have been already implemented or planned, the imposition of a different model (e.g. independent data hub), would entail a restructuring of the existing models.

The above policy options were developed in the context of the Digital Single Market[172] and the Energy Union which include the strong and efficient protection of fundamental rights in a developing digital environment. One of the objectives should be to ensure widespread access and use of digital technologies while at the same time guaranteeing a high level of the right to private life and to the protection of personal data as enshrined in Articles 7 and 8 of the Charter of Fundamental Rights of the EU.

The policy options proposed (from compliance with data protection legislation and the Third Package - Option 0; to further introduction of specific requirements on data handling

[172] In the context of the Digital Single Market the Commission will propose a European free flow of data initiative with the aim to promote free movement of data in the European Union. The initiative will tackle restrictions to data location and access to encourage innovation. The Commission will also launch a European Cloud initiative, covering certification, switching of cloud service providers and a research cloud (https://ec.europa.eu/digital-single-market/en/economy-society-digital-single-market).

responsibilities based on principles of transparency and non-discrimination - Option 1; and implementation of a specific data management model to be described in EU legislation - Option 2) seek to ensure the impartiality of the entity which handles data and to ensure uniform rules under which data can be shared. Access to a consumer's metering or billing details can only happen when authorised by that consumer and under the condition that the personal data protection and privacy are guaranteed.

The policy options are fully aligned and further substantiate the fundamental rights to privacy and protection of personal data of Articles 7 and 8 of the Charter of Fundamental Rights of the EU, as well as with the General Data Protection Regulation (EU Regulation 2016/679 modifying Directive 95/46/EC) and with Commission Recommendation 2014/724/EC on the Data Protection Impact Assessment Template for Smart Grid and Smart Metering Environments.

b. Key economic impacts and benefit/cost ratio, cost-effectiveness (efficiency) & Economic impacts

Option 1 is expected to yield higher net benefits in comparison with option 0, as it will set principles for an open and more competitive retail market. Moreover, specific procedures of the market such as switching are expected to improve with stricter requirements on the data format.

An overall positive effect on the energy market can be expected. Active and well-aware consumers are more likely to make informed decisions, from choosing their energy supplier to consumption decisions. More consumers might switch their supplier, which will foster competition in the retail market. Active consumers might also consider third party services such as applications to reduce or optimise their energy consumption, which would amplify the market for third party activities. Different initiatives and business models could simplify the interaction between consumers and third parties, and therewith further increase the market potential of third party services[173].

Moreover, direct feedback for example on real time consumption data and energy prices, could have a substantial impact on energy savings. Evidence from Ireland and the UK show that energy savings can reach up to 2.5% and 8.8% in peak hours[174].

A main benefit of ensuring interoperability between different data systems is the easy access to new markets for commercial actors such as energy suppliers or aggregators. Ensuring for instance uniform formats for consumption data reduces entry barriers for commercial actors seeking to establish in other Member States. This could enhance competition in the supplier and aggregator market. Ensuring interoperability would imply

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[173] Like for instance the Green Button initiative in US where consumers can easily give access to their consumption data to third parties who automatically receive a standardized data-package for that consumer; the initiative positively affected the overall business case of third parties (*"Green Button: One Year Later*" (2012) IEE Edison Foundation). Another example of such initiative is the Midata initiative in UK (http://www.gocompare.com/money/midata/) which concerns energy and other sectors; as energy firms are increasingly taking on board the need to provide customers with downloadable data to better understand their gas and electricity usage, Midata initiative aims to further encourage this practice across all energy suppliers and to make it easier to upload this data to comparison sites.

[174] Intelligent Energy Europe (2012): "*European Smart Metering Landscape Report 2012"*; Ofgem (2011): "*Energy Demand Research Project: Final Analysis"* (study conducted by AECOM for Ofgem).

agreeing to a common standard at national level, which would induce some costs such as administrative costs for defining and concurring on the new format, especially to data administrators (DSOs or data hubs) who will have to adapt their system to a new common format. Depending on the case such costs might be significant, as a number of existing data handling systems and the involved entities would have to adjust to the new standards (suppliers, DSOs, third parties, data administrators). However, it is expected that on an aggregated level these costs will not exceed benefits.

The implementation of **Option 2** would entail high administrative costs. Determining a mandatory data handling model will imply administrative costs of defining and designing such a model, and more importantly high sunk costs for existing data handling models and additional costs for establishing a new one, both in terms of personnel costs and IT infrastructure. Designing and building a new data handling model is a complex procedure and may well take several years of planning and implementation. In Denmark, the central data hub took more than 4 years to design and develop in its simple form, and 7 years in its enhanced form, and is estimated to a cost of approximately 165 million euros, where approximately 65 million euros accrued to the data hub administrator (the TSO), and around 100 million euros accrued to DSOs and energy suppliers. Therefore, the costs of redesigning already implemented data handling models across the EU are therefore likely to be substantial.

c. Simplification and/or administrative impact for companies and consumers

Option 2 for data management would result in high administrative costs affecting existing structures as well as possibly energy companies and consumers.

d. Impacts on public administrations

Impacts on public administration are summarized in Section 7 below.

e. Trade-offs and synergies associated with each option with other foreseen measures

Options 1 and 2 for data management are clearly also associated with demand response and smart metering. Smart meters will provide granular data which should be accessible from service providers for settlement or support of services. A well-functioning data management model is therefore crucial for the provision of demand response services.

f. Likely uncertainty in the key findings and conclusions

There is a medium risk associated with the uncertainty of the assessment of costs and benefits of the presented options. However, it is considered that this risk cannot influence the decision on the preferred option as there is a high differentiation among the presented options in terms of qualitative and quantitative characteristics.

g. Which Option is preferred and why

Option 1 is the preferred option as it will improve current framework and set principles for transparent and non-discriminatory data access from eligible market parties. This option is expected to have a high net benefit for service providers and consumers and increase competition in the retail market.

Box 1: Impacts on different groups of consumers

The benefits of the measures contained in the preferred option (Option 1), described in detail in the preceding pages, accrue evenly to all consumers. The measures can therefore be considered neutral in nature i.e. they do not redistribute surplus between higher- and lower-income ratepayers.

7.3.6. *Subsidiarity*

The EU has a shared competence with Member States in the field of energy pursuant to Article 4(1) of the Treaty on the Functioning of the European Union (TFEU). In line with Article 194 of the TFEU, the EU is competent to establish measures to ensure the functioning of the energy market, ensure security of supply and promote energy efficiency.

Uncoordinated, fragmented national policies in the electricity sector may have direct negative effects on neighbouring Member States, and distort the internal market. EU action therefore has significant added value by ensuring a coherent approach in all Member States.

An effective EU framework for data management which puts in place rules and principles will give to electricity consumers more choices, better access to information and will facilitate competition in the electricity market. Moreover, through effective data management models and efficient procedures consumers will have access to more energy service providers and actively participate in the electricity market. Active participation of consumers and facilitation of demand response and energy efficiency service will contribute to the completion of the internal energy market and support security of supply.

Envisaged measures do not aim to alter the structure of existing or planned national data management models, but to set requirements which will enhance fundamental consumer rights and support a competitive internal energy market.

7.3.7. *Stakeholders' opinions*

3.2.7.1. *Results of the consultation on the new Energy Market Design*

According to the results of the public consultation on a new Energy Market Design[175] the respondents view active distribution system operation, neutral market facilitation and data hub management as possible functions for DSOs. Some stakeholders pointed at a potential conflict of interests for DSOs in their new role in case they are also active in the supply business and emphasized that the neutrality of DSOs should be ensured. A large number of the stakeholders stressed the importance of data protection and privacy, and consumer's ownership of data. Furthermore, a high number of respondents stressed the need of specific rules regarding access to data.

Governance rules for DSOs and Models of data handling

Question: *"How should governance rules for distribution system operators and access to metering data be adapted (data handling and ensuring data privacy etc.) in light of market and technological developments? Are additional provisions on management of and access by the relevant parties (end-customers, distribution system operators, transmission system*

[175] https://ec.europa.eu/energy/en/consultations/public-consultation-new-energy-market-design

operators, suppliers, third party service providers and regulators) to the metering data required?"

Summary of findings:

The majority of stakeholders consider access to data by consumers and relevant third parties under specific rules as an important element for the development of an open and competitive retail market. Moreover, it is crucial to ensure data privacy and ownership of data by consumers.

Regarding the data handling models, regulators and the majority of stakeholders from the electricity industry believe that DSOs should act as neutral market facilitator. Some stakeholders from the electricity industry suggest that the DSOs should undertake the role of the data hub, providing an effective way to govern the data generated by smart meters. On the other hand, IFIEC and few other stakeholders do not see favourably the role of DSOs as market facilitator, the involvement of a third party is perceived to better support neutrality and a level playing field.

National governments are divided on the best suitable model for data access and data handling, around half of them advocate as the most favourable solution central data hubs. Most of the Member States consider that the role of DSO and the model for data handling should be best decided at national level.

Member States:

Given the central role of DSOs in metering and handling of data, Member States point out the necessity for neutrality and independence of the DSO vis-à-vis other energy stakeholders, while they consider that coordination between DSOs and TSOs should be enhanced. Data need to be accessible in real-time or close to real-time for consumers and relevant third parties, while data security and privacy is one of the most important aspects for the acceptance of smart meters and the successful roll-out.

Some Member States promote central data hubs to collect and handle data (e.g. Denmark, Estonia, Finland, Germany, Slovakia, and Sweden).

Some Member States (Czech Republic, France, Netherlands, and Slovakia) believe that due to different local conditions in terms of available technologies and national regulatory frameworks, detailed arrangements regarding data handling should be defined at member State level through national legislation, and no further legislation is required at EU level regarding the role of DSOs and the responsibilities for data handling.

On the other hand the Danish government considers that EU regulation should more specifically define a minimum level of privacy and issues such as consumers' control over their own data and non-discriminatory access to data by market players, while harmonising the roles of market players and the kind of data they have access to. The Finnish government also calls for a clarification of the role of DSOs in the operation of storage facilities and questions whether there is a need to revise unbundling rules.

Regulators:

Regulators stress the importance of neutrality in the role of the DSOs as market facilitators. To achieve this will require to:

- Set out exactly what a neutral market facilitator entails;
- When a DSO should be involved in an activity and when it should not;

- NRAs to provide careful governance, with a focus on driving a convergent approach across Europe.

Regulators consider that consumers must be guaranteed the ownership and control of their data. The DSOs, or other data handlers, must ensure the protection of consumers' data.

Electricity consumers:

The majority of stakeholders (BEUC, CEFIC, CEPI) agree that consumers should have access to real time information, historical information, accurate billing and easy switch of provider. Some of them (CEFIC, EURACOAL) believe that the DSOs should play a central role in providing end-users with the necessary information. All electricity consumer stakeholders agree that data protection must be assured.

IFIEC considers that DSOs should not play the role of market facilitator, the involvement of a third party is perceived to better support neutrality and a level playing field. Moreover, coordination of TSOs and DSOs and potentially extended role of DSOs with respect to congestion management, forecasting, balancing, etc. would require a separate regulatory framework. However, IFIEC express concerns that some smaller DSOs might be overstrained by this. Extended roles for DSO should be in the interest of consumers and only be implemented when it is economically efficient.

EUROCHAMBERS believes that due to different regional and local conditions a one size fits all approach for governance rules for distribution system operators is not appropriate. The EU could support Member States by developing guidelines (e.g. on grid infrastructures and incentive systems).

Energy industry:

Most stakeholders (CEDEC, EDSO, ESMIG, ETP, EUROBAT, EWEA, GEODE) believe that the role of DSOs should focus on active grid management and neutral market facilitation. Some respondents state that the current regulatory framework prevents DSOs from taking on some roles, such as procurer of system flexibility services and to procure balancing services from third parties, and such barriers should be eliminated.

All stakeholders agree that the provision of data management services should be carried out in a neutral and non-discriminatory manner with all appropriate protections for data security, data privacy and the right of the consumers to control third party access to their data. On this regard, GEODE highlights the need to have a clear distinction between personal data (which belongs to the customer) and non-personal data which should be provided to any relevant party who requests it, on a non-discriminatory basis.

According to Eurelectric, EWEA, ETP and GEODE, DSOs operating as data hub could provide an effective way to govern the data generated by smart meters.

Eureletric believes that the need for guaranteeing security of information and preventing cyber-attacks could also be better ensured when there is only one entity in charge of managing information flow. Mindful of the different unbundling situations in place in the EU, DSOs should be responsible for data handling up to the metering point in a fully unbundled context. Moreover, regulatory authorities should make sure that data management beyond the meter takes place in a condition that ensures customer privacy and it should be up to the consumers whether to receive their data through an intermediary (a market party) or retrieve it from a web platform linked to the data hub. Costs connected with data management should be recovered via network tariffs.

According to RGI, for privacy reasons most data should remain in the meter itself. Data should be stored in and regulated by a public server in an aggregated and formatted way only dealing with the strictly necessary information. TSOs should have access to relevant data, reflecting the actual energy portfolio and installed capacity per source at any given time.

Also SEDC envisages that DSOs should be neutral market facilitators where unbundling is fully implemented. However, in this scenario DSOs should not be active in markets such as for demand response, as this would undermine their neutrality.

In relation to a possible EU intervention on the topic, GEODE suggests that Commission should lay down generic principles rather than specific provisions, taking into account that different Member States implement different models on the treatment of smart metering data.

3.2.7.2. *Public consultation on the Retail Energy Market*

According to the results of the 2014 public consultation on the Retail Energy Market[176] the majority of the respondents consider that DSOs should carry out tasks such as data management, balancing of the local grid, including distributed generation and demand response, and connection of new generation/capacity (e.g. solar panels).

81% of the respondents agreed that allowing other parties to have access to consumption data in an appropriate and secure manner, subject to the consumer's explicit agreement, is a key enabler for the development of new energy services for consumers.

3.2.7.3. *Electricity Regulatory Forum - European Parliament*

Relevant conclusions of the 31st EU Electricity Regulatory Forum:

- *"The Forum supports the cooperation of TSOs and DSOs on data management, considering it an important step in finding common solutions to system operation and system planning. It acknowledges the need to identify at EU-level a set of common principles, roles, responsibilities and tasks concerning data management, which will enable the development of new services and the active participation of consumers in the future energy system while ensuring data protection and leaving room for implementation at national level."*

European Parliament resolution of 26 May 2016 on delivering a new deal for energy consumers (2015/2323(INI)):

"29. Believes that consumers should have easy and timely access to their consumption data and related costs, to help them make informed decisions; notes that only 16 Member States have committed to a large-scale roll-out of smart meters by 2020; believes that where smart meters are rolled out Member States should ensure a solid legal framework to guarantee an end to unjustified back-billing and a rollout that is efficient and affordable for all consumers, particularly for energy-poor consumers; insists that the

[176] https://ec.europa.eu/energy/en/consultations/consultation-retail-energy-market

benefits from smart meters should be shared on a fair basis between grid operators and users;"

"33. Underlines that the collection, processing and storage of citizens' energy-related data should be managed by entities managing data access in a non-discriminatory manner and should comply with the existing EU privacy and data protection framework which lays down that consumers should always remain in control of their personal data and that these should only be provided to third parties with the consumers' explicit consent; considers, in addition, that citizens should be able to exercise their rights to correct and erase personal data;"

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Fejl! Brug fanen Hjem til at anvende Heading 2 på teksten, der skal vises her.

7.4. Facilitating supplier switching

7.4.1. *Summary table*

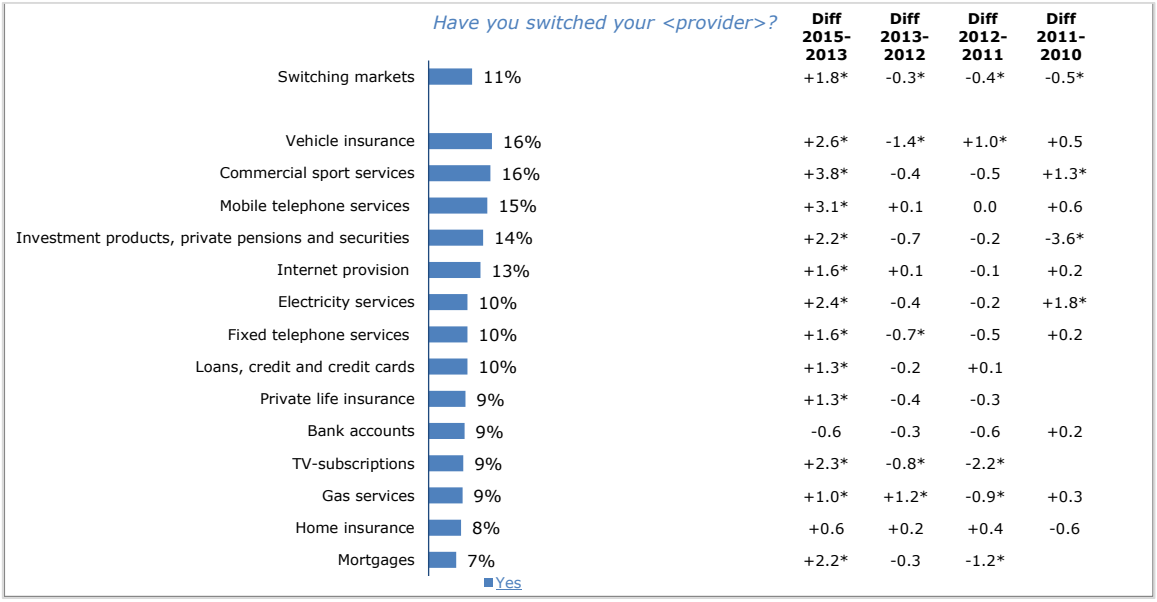
Objective: Facilitating supplier switching by limiting the scope of switching and exit fees, and making them more visible and easier to understand in the event that they are used.			
Option 0	**Option 0+**	**Option 1**	**Option 2**
BAU/Stronger enforcement	Stronger enforcement, following the clarification of certain concrete requirements in the current legislation through an interpretative note.	Legislation to define and outlaw all fees to EU household consumers associated with switching suppliers, apart from: 1) exit fees for fixed-term supply contracts; 2) fees associated with energy efficiency or other bundled energy services or investments. For both exceptions, exit fees must be cost-reflective.	Legislation to define and outlaw all fees to EU household consumers associated with switching suppliers.
Pros: - Evidence may suggest a degree of non-enforcement of existing legislation by national authorities. - No new legislative intervention necessary.	Pros: - Non-enforcement may be due to complex existing legislation. - No new legislative intervention necessary.	Pros: - Considerably reduces the prevalence of fees associated with switching suppliers, and hence financial/psychological barriers to switching.	Pros: - Completely eliminates one financial/psychological barrier to switching. - Simple measure removes doubt amongst consumers. - The clearest, most enforceable requirement without exceptions.
Cons: - Continued ambiguity in existing legislation may impede enforcement. - The vast majority of switching-related fees faced by consumers are permitted under current EU legislation.	Cons: - The vast majority of switching-related fees faced by consumers are permitted under current EU legislation. - Certain Member States might ignore the interpretative note.	Cons: - Marginally reduces the range of contracts available to consumers, thereby limiting innovation. - An element of interpretation remains around exceptions to the ban on fees associated with switching suppliers.	Cons: - Would further restrict innovation and consumer choice, notably regarding financing options for beneficial investments in energy equipment as part of innovative supply products e.g. self-generation, energy efficiency, etc. - Impedes the EU's decarbonisation objectives, albeit marginally.
Most suitable option(s): Option 1 is the preferred option, as it represents the most favourable balance between probable benefits and costs.			

7.4.2. *Description of the baseline*

The evidence presented in this annex draws extensively on survey data, as well as data from a mystery shopping exercise. The aim of the mystery shopping exercise was to replicate, as closely as possible, real consumers' experiences across 10 Member States[177] selected to cover North, West, South and East Europe countries. A total of 4,000 evaluations were completed between 11 December 2014 and 18 March 2015[178]. Whilst data from the mystery shopping exercise is non-exhaustive, the methodology enables the controlled sampling of a very large topic area[179], as well as providing insights that would not be apparent in a desktop evaluation of legislation and contractual terms. Using a behavioural research approach rather than a traditional survey allowed us to identify what people actually do, rather than what they say they do.

Switching rates[180] for energy – a proxy for consumer engagement in the market – vary considerably between Member States (0-15%), with electricity and gas comparing unfavourably with many other consumer sectors such as vehicle insurance and mobile telephony.

Figure 1: Switching provider by market - EU28



Source: Market Monitoring Survey, 2015

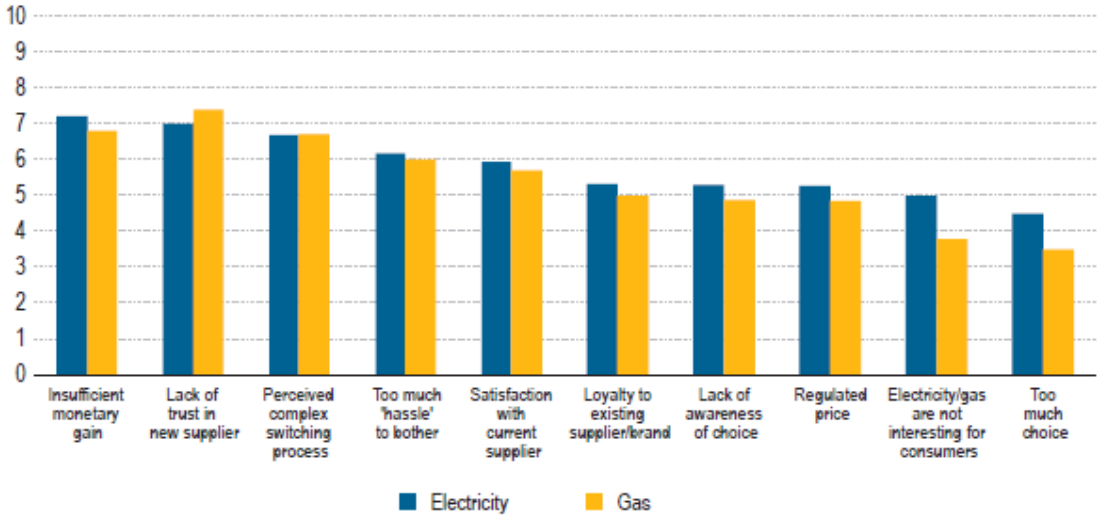
[177] The Czech Republic, France, Germany, Italy, Lithuania, Poland, Slovenia, Spain, Sweden and the UK.

[178] "Second Consumer Market Study on the functioning of retail electricity markets for consumers in the EU" (2016) European Commission.

[179] For example, there were over 400 electricity and gas supply offers in Berlin alone in 2014 (source: ACER Database), making a comprehensive examination of all supply offers in the EU28 impracticable.

[180] The percentage of consumers changing suppliers in any given year.

Figure 2: Factors preventing electricity and gas consumers from switching – 2014 (1 – not at all important)

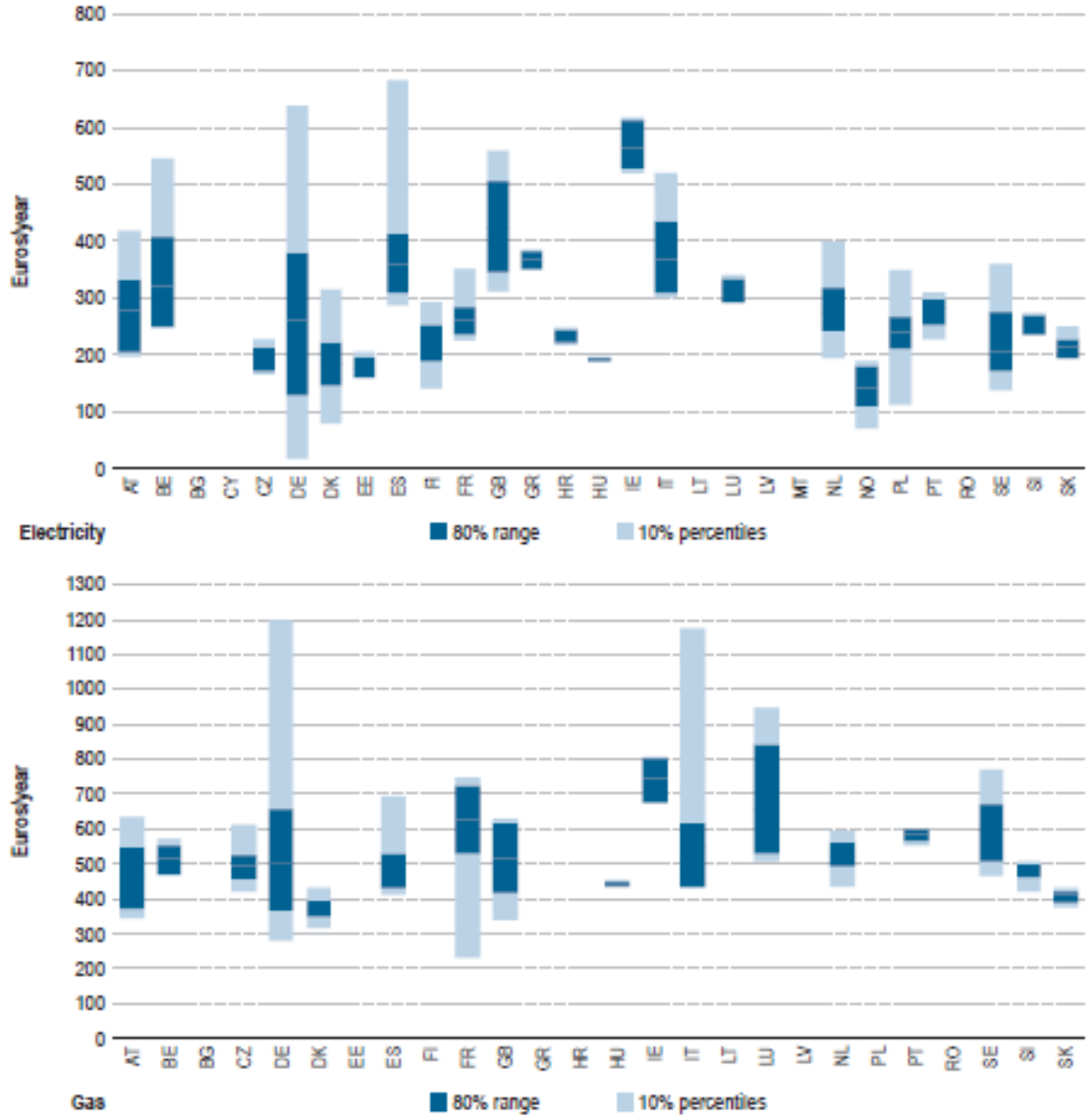


Source: ACER Questionnaire, February–April 2015

Consumer associations and NRAs report that insufficient monetary gain is the prime obstacle to switching (Figure 2 above). An ACER questionnaire suggests that the perceived minimum annual savings required by electricity consumers to switch in Belgium, Germany, Italy, Latvia, Poland and Slovenia lie in the range of 0–100 euros, whilst in the United Kingdom, the Netherlands, Portugal and Sweden, this was estimated be 100–200 euros. The switching trigger ranges were the same for gas consumers, with the exception of Italy, where switching trigger is estimated to be in the range of 100–200 euros.

Given that the difference in price between most offers in the market lie within comparable ranges to switching triggers (Figure 3 below), switching suppliers is a marginal decision for many household consumers. This highlights the importance of the broad variety of fees that consumers may be charged when they switch, as these diminish the (perceived) financial gains of moving to a cheaper tariff in what is already a marginal decision for many consumers.

Figure 3: Dispersion in the energy component of retail prices for households in capitals – December 2014



Source: ACER Retail Database (November–December 2014) and ACER calculations

Whilst the data indicates that switching is free for most EU consumers, a minority still face switching-related charges. First of all, exit (termination) fees may apply when leaving a fixed-term or fixed-price contract early[181]. The legitimacy of such fees are acknowledged in EU legislation (see Section 7.4.3 below), and they are often put in place to recoup the costs of equipment, discounts and/or other incentives provided at the beginning of the contract. A mystery shopping exercise in ten Member States revealed that whilst 77% of electricity suppliers stated that consumers would face no charges for switching, 17% were warned that they may be charged an exit fee (Table 1), a figure corroborated by ACER data suggesting that exit fees are still common in at least 11 Member States for electricity and 3 Member States for gas (Figure 4).

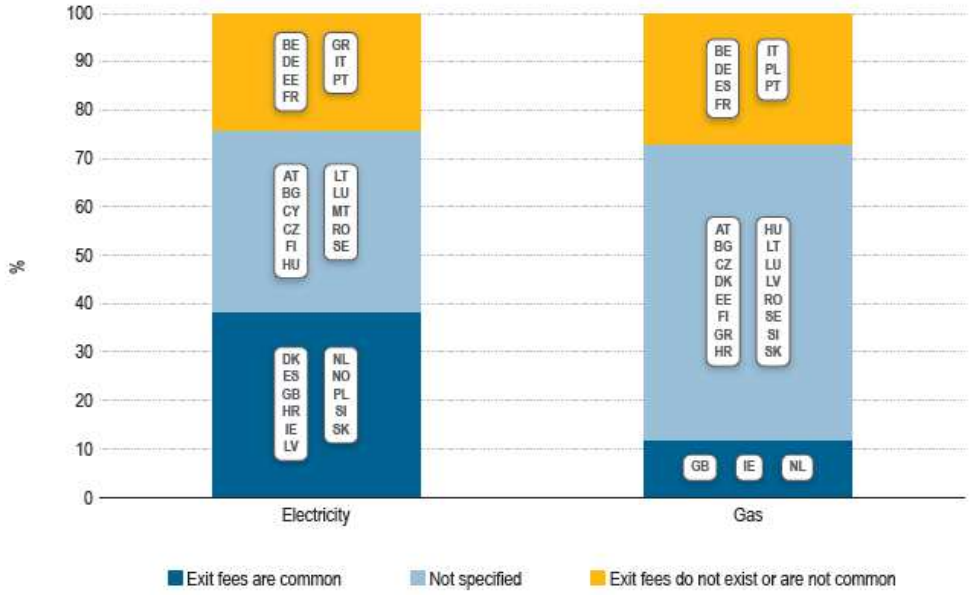
[181] As sometimes occurs in Member States including NL and UK.

Table 1: Electricity providers' response when asked if there are any charges when switching electricity provider

	CZ	DE	ES	FR	UK	IT	LT	PL	SE	SI	Total
You will not be charged for the change	60%	94%	83%	89%	59%	86%	80%	67%	66%	80%	77%
A fee for cancelling your current energy deal (e.g. exit fee for fixed rates)	40%	5%	11%	5%	38%	1%	0%	28%	32%	14%	17%
Another extra charge	0%	0%	7%	4%	3%	11%	8%	4%	2%	2%	4%
No response	0%	1%	0%	1%	0%	1%	12%	1%	0%	4%	2%

Source: "Second Consumer Market Study on the functioning of retail electricity markets for consumers in the EU" (2016) European Commission

Figure 4: Existence of exit fees imposed by suppliers when switching offers - 2014



Source: ACER Questionnaire (February–April 2015) and ACER Database (November–December 2014).

Notes: Based on the offer data shown or as indicated by the respondents in the Questionnaire. Although MSs are listed in the Figure, the information drawn from the offer data may refer only to the capital city.

Aside from exit fees, however, the same mystery shopping exercise revealed that 4% of mystery shoppers were told they may be charged other fees related to switching, including administrative costs, start-up costs for a new or short-term service, or security deposits (Box 1 below). This finding is notable because EU legislation ensures that consumers "are not charged for changing supplier"[182]. As checks by the Commission indicate that this legislation has been correctly transposed into Member State law, the finding suggests either legal failures in the EU legislative text that prevent it from fulfilling its intention and/or non-enforcement by national authorities.

[182] This reading was recently supported by the body representing the EU's national regulatory authorities – the Council of European Energy Regulators – who write: *"The 3rd Energy Package Directives clearly state that switching should be completely free for the customer."* "*Position on early termination fees*" (2016) CEER, Ref: C16-CEM-90-06.

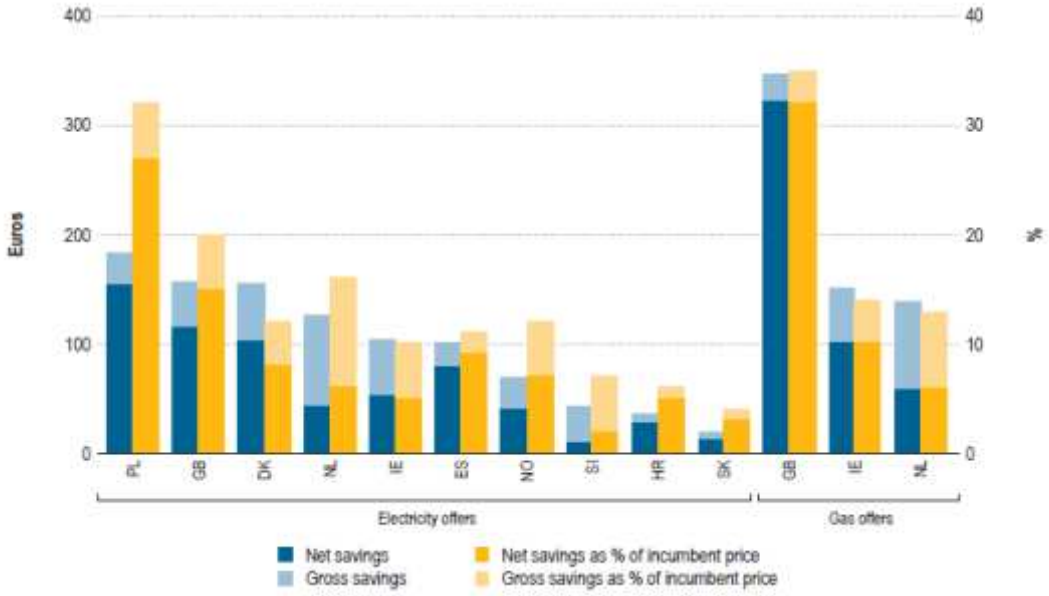
Box 1: Examples of "extra charges" when switching mentioned by electricity providers (when being contacted by phone)

- Administration cost (EUR 35) – France
- A service fee (EUR 27.90) – France
- A fee for starting up the service (EUR 27.16) – France
- An administration cost added on the first electricity bill (EUR 27.59) – Italy
- An activation fee – Italy, Poland
- An extra charge of EUR 20.54 on the first bill; no explanation was provided for this charge – Italy
- A security deposit (EUR 70) – Italy
- A deposit (EUR 77) – Italy
- A fee for contracts of less than one year – Spain
- A yearly charge of 300 SEK/year (or 25 SEK/month) for each new contract – Sweden

Source: "Second Consumer Market Study on the functioning of retail electricity markets for consumers in the EU" (2016) European Commission

In total, therefore, the results from these ten representative Member States suggest that around one fifth of electricity consumers in the EU would face some sort of fee associated with switching suppliers. As for the magnitude of switching-related charges, Figure 5 under indicates that average exit fees fall between 5 and 90 euros, depending on the capital city sampled. Electricity and gas consumers on fixed-price and fixed-term contracts in Amsterdam were the most affected by exit fees, and these could significantly reduce their saving potential from 16% (without exit fees) to 6% (with first-year exit fees included) with respect to the average incumbent standard offer for electricity consumers, and from 13% to 6% with respect to the average gas standard incumbent price. Exit fees could also considerably reduce potential savings for electricity consumers in Ljubljana, Dublin, Copenhagen, London and Warsaw.

Figure 5: Potential effect of exit fees on annual savings to be made from switching away from the incumbent in Europe - 2014 (% and euros)[183]



Source: ACER.

While the possibility of charging exit fees may provide suppliers with more flexibility in the tariffs they are able to offer, they make comparisons more difficult for consumers and reduce the incentive for switching. Furthermore, behavioural economic theory suggests that all fees associated with switching can disproportionately discourage consumer action because of a decision making bias called 'loss aversion' – a tendency to strongly prefer avoiding losses (one-time switching fees) to acquiring gains (the long-term savings of moving to a cheaper tariff)[184]. This means the reduced incentives presented in Figure 5 will appear much more significant in the eyes of most household consumers – twice as large if findings from benchmark behavioural studies carry over into this real-world context[185]. As a result, three Member States (Belgium, France and Italy) have outlawed altogether contract exit fees for household consumers in the energy sector.

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[183] Calculated on the basis of offer data for capital cities from the ACER Retail Database and the information from the consumer organisations. For those countries where standard offers are variable and where consumers typically incur exit fees while on fixed-term, fixed-price contracts, the above figure should be considered illustrative. 'Net' savings equal the difference between the incumbent price and the lowest offer, minus average exit fees typically imposed on fixed-term offers (i.e. savings for consumers after exit fees have been paid for). 'Gross' savings equal the difference between the incumbent price and the lowest offer. The data presented include information from the questionnaire (i.e. an assessment of the existence and the level of exit fees in Member States and the information collected on the basis of offer data in the ACER database to show the potential effect of exit fees in those MSs where these exist. The exit fees shown in the above figure are the averages of all exit fees incurred by consumers breaking away from contracts in the first year, and might be higher than those incurred when breaking away in the 2nd or 3rd year. In the case of electricity offers in Oslo and Warsaw, exit fees are estimated at 5% of the final standard offer.

[184] "*Choices, Values and Frames*" (1984) Kahneman, D., and A. Tversky, American Psychologist, 39, 341-350.

[185] "*Loss Aversion in Riskless Choice: A Reference-Dependent Model*" (1991) Tversky, A., and D. Kahneman, Quarterly Journal of Economics, 106 (4), 1039–1061.

Box 2: Switching energy suppliers in Belgium

As from 13 September 2012, the Belgian Electricity Act was amended (see Article 18, Section 2 and 3 of the Electricity Act) and suppliers were no longer permitted to charge households and SMEs (non-residential users with a maximum annual usage of 100,000 kWh in natural gas and 50,000 kWh in electricity) a fee for the early termination of a contract, provided that a one-month notice period is observed.
The abolition of early termination, or exit fees seems to have had a positive impact on the market with regard to the number of users switching to a different electricity and gas provider. Switching jumped markedly in all Belgian regions for bot electricity and gas around the time of the legislative change. This has led NEON – the Europe-wide network of energy ombudsmen and mediation services – to suggest that the ban on switching fees may have been to credit for this.

	2011	2012	2013	2014
Brussel - elektriciteit	4,1%	8,3%	14,3%	9,6%
Vlaanderen - elektriciteit	8,2%	16,5%	15,4%	11,9%
Wallonië - elektriciteit	8,6%	11,6%	13,6%	12,7%
Brussel - aardgas	4,7%	9,3%	18,3%	10,5%
Vlaanderen - aardgas	9,2%	18,9%	18,7%	13,9%
Wallonië - aardgas	11,0%	15,0%	21,2%	15,9%

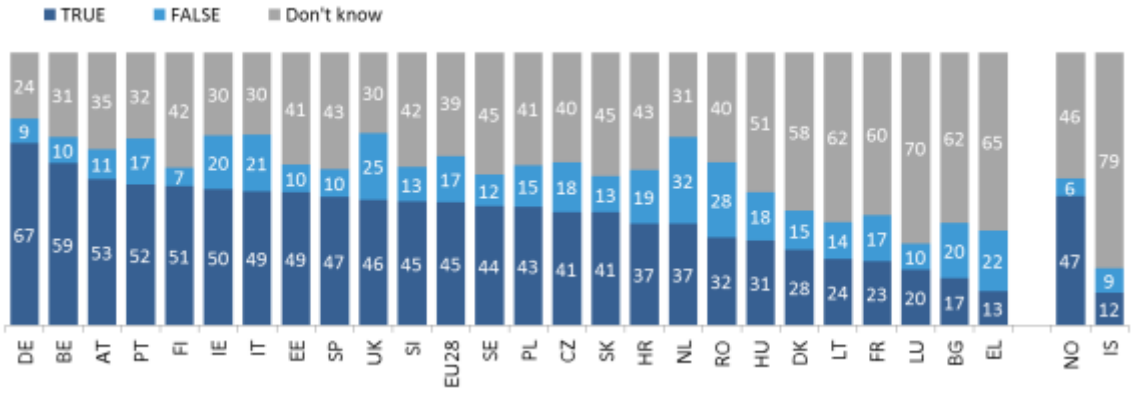
The Belgian Ombudsman also found that the number of complaints with regard to switching providers has significantly fallen since the amendment of the act on 25 August 2012, from 14% (1,854 complaints) in 2014 to 8% in 2012 (1,250 complaints), 3% in 2013 (347 complaints) and 3.5% in 2014 (318 complaints).

Source: NEON, The National energy Ombudsman Network

One final factor to take into account is a high level of uncertainty amongst consumers over whether they *could* be charged for switching – a fact that may be discouraging many from looking into the possibility of switching because of the perceived complexity of it. Whereas the evidence suggests only around 20% of consumers in the EU would actually face some sort of fee associated with switching suppliers, 39% of consumers surveyed[186] did not know whether or not they would be charged. This does not include 17% that responded with certainty that they could be charged a fee for switching.

[186] 29,119 interviews were conducted across 30 countries (EU28, Iceland and Norway). "*Second Consumer Market Study on the functioning of retail electricity markets for consumers in the EU*" (2016) European Commission.

Figure 6: Knowledge of switching rules – no charge when changing electricity company, by country[187]



Source: "Second Consumer Market Study on the functioning of retail electricity markets for consumers in the EU" (2016) European Commission

A lack of information relevant to switching in bills is one explanation for this. Whereas customers in the majority of Member States are currently provided with information on the consumption period, actual and/or estimated consumption, and a breakdown of the price, there is a greater diversity of national practices with regards to other information, including switching information, and the duration of the contract[188].

Another explanation is incomplete information from suppliers themselves. Table 2 below shows that mystery shoppers in ten representative Member States were often unable to find any information on switching rules whatsoever on electricity companies' websites.

[187] Question: "The following are statements regarding consumer rights in the energy sector. Please indicate whether each statement is true or false: "If you decide to change your electricity company, you will not be charged for the change"".

[188] For more details, see the Thematic Evaluation on Metering and Billing.

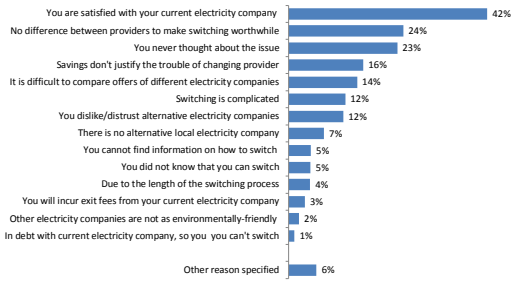
Table 2: Switching rules found on electricity companies' websites[189]

	SI	DE	UK	FR	PL	CZ	IT	LT	SE	ES	Total
	50	100	75	75	100	50	75	50	50	75	700
You will not be charged for the change	82%	57%	21%	52%	50%	36%	45%	30%	10%	24%	42%
The new provider must make the change within three weeks (or less), provided you respect the terms and conditions of the original contract	10%	13%	26%	13%	6%	8%	1%	10%	12%	3%	10%
Within six weeks (or less) after you switch, you should receive the final closure account from your previous provider	10%	11%	24%	4%	7%	2%	0%	2%	2%	4%	7%
It might be that you'll incur a fee for cancelling your current energy deal	10%	5%	17%	0%	6%	8%	1%	0%	16%	5%	7%
None of the above	14%	38%	42%	43%	47%	52%	54%	66%	66%	69%	49%

Source: "Second Consumer Market Study on the functioning of retail electricity markets for consumers in the EU" (2016) European Commission

High uncertainty levels indicate that the current prevalence of switching-related charges may be having a much broader impact on switching rates than would be expected if only consumers directly affected by such charges were considered. Whereas only 3% of survey respondents stated that one of the main reasons they had not tried to switch was that they would incur an exit fee from their electricity company, 16% stated that the savings would not justify the trouble linked to changing electricity companies, 14% that it is difficult to compare offers, and 12% that they perceive switching as being too complicated – each a response that could have been influenced by the uncertain prospect of switching-related charges.

Figure 7: Main reasons for not trying to switch electricity company[190]



Source: "Second Consumer Market Study on the functioning of retail electricity markets for consumers in the EU" (2016) European Commission

Given the persistently low levels of switching and consumer engagement in the energy sector (Figure 1), there may therefore be scope to further restrict the use of fees charged to consumers for changing suppliers. This would remove a key monetary barrier to greater consumer engagement. It would make it easier for consumers to control their bills and harder for suppliers to lock consumers into disadvantageous contracts. Such action would therefore be consistent with other provisions in the Electricity and Gas Directives which

189 Question: "Which of the following statements about the switching process were found on the website? (multiple answers allowed)".

190 Question: "What are the main reasons for not trying to switch your electricity company? (up to three responses)".

state: “Member States shall ensure that the eligible customer is in fact easily able to switch to a new supplier”.

Without intervention, switching-related fees in the range of 5 to 90 euros would likely continue to affect an estimated 20% of electricity consumers in the EU, with uncertainty over their applicability influencing the decision-making of well over half of all EU electricity consumers. A lack of action to limit these fees would amount to ignoring a key barrier to consumer engagement.

Although there is less evidence on switching-related fees in the gas sector, Figures 4 and 5 suggest they are prevalent in fewer Member States, and that their magnitude is similar.

7.4.3. *Deficiencies of the current legislation*

The consumer protection provisions in the Electricity and Gas Directives regulate switching fees. Largely unchanged since their 2001/2003 introduction, these provisions state that “customers are not to be charged for changing supplier”.

The following text regarding contract exit fees was added in 2007: contracts must specify “whether withdrawal from the contract without charge is permitted”. It weakened the initial provision by affirming the permissibility of certain switching-related charges without explicitly addressing whether the legislation addressed all switching-related charges in categorically exhaustive manner.

As addressed in Section 7.1.1 and Annex IV of the Evaluation, the current framework therefore remains both complex and open to interpretation with regard to the nature and scope of certain key obligations.

7.4.4. *Presentation of the options*

Option 0: Stronger enforcement

Stronger enforcement to tackle the switching fees currently imposed contrary to EU legal requirements.

Option 0+: Clarifying certain concrete requirements in the current legislation through an interpretative note, coupled with stronger enforcement

This option involves making it explicit that the existing Third Package provision stating that consumers "are not charged for changing supplier" applies to contract switching fees. This would seek to remove any legal uncertainty and improve Member State compliance.

Option 1: Legislation to outlaw the use of switching fees and to limit the use of exit fees in electricity and gas supply contracts in the EU

In concrete terms, the preferred measures will include the following:

i. Define switching fees and contract exit fees in the legislation.

ii. Ban all switching fees, and ban exit fees in open-ended supply contracts and fixed term contracts that have come to the end of the agreed term.

iii. For fixed-term contracts, permit exit fees if the contract has not ended, but ensure the cost-reflectiveness and proportionality of these fees to avoid undue consumer detriment. Clarify that consumers should always have the possibility to exit the contract, if they are prepared to pay the exit fee.

iv. Define exceptions to accommodate certain on-bill repayment of upfront investments in, *inter alia*, energy efficiency financed by suppliers or energy service providers.
v. Introduce transparency provisions so that fees are presented in an easily understandable manner (e.g. amortisation schedule) in contracts and pre-contractual information.
vi. Clarify that commercial and industrial supply contracts would not be affected.

Option 2: Legislation to categorically outlaw the use of all switching and exit fees in electricity and gas supply contracts to EU household consumers

In concrete terms, the preferred measures will include the following:
i. Define switching fees and contract exit fees in the legislation.
ii. Ban all fees defined in i).

7.4.5. *Comparison of the options*

This section compares the costs and benefits of each of the Options presented above in a semi-quantitative manner.

In general, the costs of implementing each of the above measures can be estimated to a reasonably certain degree using tools such as the standard cost model for estimating administrative costs. However, no data or methodology exists to accurately quantify all the benefits of the measures in terms of direct benefits to consumer (consumer surplus) or general competition. As such, this Section aims to illustrate the possible direct benefit to consumers assuming certain conditions. It also highlights important qualitative evidence from stakeholders that policymakers should also incorporate into their analysis of costs and benefits.

Option 0: Stronger enforcement

An estimated 4% of EU consumers face switching-related charges that may be illegal under EU law. Stronger enforcement would see these increasingly phased out. Whilst we cannot measure the economic benefits of this option, we can estimate its benefit to consumers given some simple assumptions.

If we assume that:
- One in fifty of the households currently affected by illegal electricity switching fees make a switch as a direct result of an enforcement drive[191];
- Gas household consumers see no benefits[192];

[191] This is a highly uncertain figure, affected by several variables that have not been studied in depth, including the speed and effectiveness of EU enforcement action, and public awareness of consumer rights.
[192] This is a conservative estimate. Whilst the evidence suggests they may be less prevalent, and Figure Figures X and Y indicate they are certainly present.

- The annual financial benefit of switching for these households amounts to 82 euros, which is the average difference in price between the incumbent's standard offer and the cheapest offer in the capital city in the EU[193];
- The financial advantage of switching as a result of these measures persists for four years[194];
- All EU households within each Member State are able to benefit from these changes equally in relative terms[195];
- A discount rate of 4% for the consumer benefits year on year;

then Option 0 would result in an increase in consumer surplus **of between 13.7 million euros and 48.4 million euros annually** (depending on the year of implementation), and **415 million euros in total for the period 2020-2030**.

In spite of these considerations, it is unlikely that Option 0 would most effectively address the problem of poor consumer engagement. First, a great degree of uncertainty surrounds the estimation above associated with the speed and effectiveness of EU enforcement action.

In addition, the effectiveness of Option 0 is significantly limited by the fact that the provisions of the Electricity and Gas Directives state that consumer supply contracts must specify "whether withdrawal from the contract without charge is permitted". A further 17% of consumers will therefore continue to be directly affected by contract exit fees that are legal under current legislation.

There are **no implementation costs** associated with Option 0.

Option 0+: Clarifying certain concrete requirements in the current legislation through an interpretative note, coupled with stronger enforcement

This option would make it easier for suppliers and national authorities to interpret current switching rules and to determine whether certain fees are compatible or incompatible with the Third Package. Consumers would also have access to more and clearer information regarding the legal situation surrounding such fees and could become better aware of the types of fees used in their contracts. This option would make it easier for suppliers and national authorities to interpret current switching rules and to determine whether certain fees are compatible or incompatible with the Third Package. Consumers would also have access to more and clearer information regarding the legal situation surrounding such fees and could become more aware of the types of fees used in their contracts.

Whilst the economic benefits of this measure cannot be estimated, we can expect its benefits to consumers to be similar to Option 0 (**415 million euros in total for the period**

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[193] The weighted average was not used because the large potential savings available to DE consumers skewed this figure to over EUR 150. "*Market Monitoring report 2014*" (2015) ACER, http://www.acer.europa.eu/Official_documentsreality, /Acts_of_the_Agency/Publication/ACER_Market_Monitoring_Report_2015, p.59.

[194] A conservative assumption given the implied average time between switches is upwards of 15.5 years for electricity consumers and 18 years for gas consumers.

[195] In reality, households will react differently depending on consumers' needs, skills, motivations, interests, lifestyle, and access to resources such as accurate online comparison tools. However, we have no reliable data to quantify these differences in this specific context.

2020-2030) or higher, reflecting the greater legal certainty engendered by the EU guidance issued compared with Option 0.

However, as with Option 0, a further 17% of consumers are directly affected by contract exit fees that are legal under current legislation.

It is unlikely that voluntary cooperation between Member States would address this problem, as it is domestic in nature with no common gains to be had through supra-national coordination.

There are **no implementation costs** associated with Option 0+.

Several **stakeholders** support the principle of better implementation of the existing switching fee provisions in the Electricity and Gas Directives, including the European Parliament's ITRE Committee and NRAs. Others, such as consumer groups and ombudsmen, argue that there should be no fees associated with switching.

Option 1: Legislation to outlaw the use of switching fees and to limit the use of exit fees in electricity and gas supply contracts in the EU

This option may considerably reduce the prevalence of both switching and exit fees for the category of consumers most likely to be confused by such fees – household consumers.

If we assume that:

- One in one-hundred of the 17% of households currently affected by exit fees in their electricity supply contracts make a switch as a direct result of this intervention[196];
- The annual financial benefit of switching for these households amounts to 82 euros, which is the average difference in price between the incumbent's standard offer and the cheapest offer in the capital city in the EU[197];
- Gas household consumers see no benefits[198];
- The financial advantage of switching as a result of these measures persists for four years[199];

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196 This is a highly uncertain figure as we have no clear and comprehensive picture as to: i) the proportion of consumers who may be charged exit fees even though they are on indefinite contracts; ii) the proportion of consumers whose exit fees would be considered disproportionate, and therefore not permitted under this option; iii) the extent to which consumers benefitting from this measure would be aware of it; iv) how those aware of the legislative change would respond to the increased financial incentive to switch.

197 The weighted average was not used because the large potential savings available to DE consumers skewed this figure to over EUR 150. "*Market Monitoring report 2014*" (2015) ACER, http://www.acer.europa.eu/Official_documentsreality, /Acts_of_the_Agency/Publication/ACER_Market_Monitoring_Report_2015, p.59.

198 This is a conservative estimate. Whilst the evidence suggests they may be less prevalent, Figures 4 and 5 indicate they are certainly present.

199 A conservative assumption given the implied average time between switches is upwards of 15.5 years for electricity consumers and 18 years for gas consumers.

- All EU households within each Member State are able to benefit from these changes equally in relative terms[200];
- A discount rate of 4% for the consumer benefits year on year;

then Option 1 would result in an increase in consumer surplus **of between 29 million euros and 102.8 million euros annually** (depending on the year of implementation), and **881 million euros in total for the period 2020-2030** on top of any gains brought by improved enforcement (estimated at 415 million euros for options 1 and 2).

Whilst these consumer benefits are subject to great uncertainty due to the unknown extent to which they would increase consumer switching, Belgium's experience (See Box) would seem to indicate that restricting contract exit fees has a significant potential to increase consumer engagement – in the short-term at least.

In terms of **implementation costs**, Option 1 would most notably limit innovation and consumer choice around certain elements of consumer supply contracts, most notably by preventing exit fees from being charged in indefinite contracts. Whilst unquantifiable, these implementation costs would likely be limited. Consumers wishing to benefit from lower prices in exchange for greater consumer loyalty could still opt for fixed-term contracts.

In addition, Option 1 would permit the on-bill repayment of upfront investments in energy efficiency. Such financing through, for instance, energy performance contracting[201] will play an important part in meeting the EU's ambitious energy efficiency targets, and is a priority under Commission plans.

Apart from consumer groups and ombudsmen, **most stakeholders would seem to support this option**, including suppliers and NRAs. This is because it incrementally builds upon the existing provisions of the Electricity and Gas Directives, helping to achieve the legislators' intention more effectively.

This option would best clarify the legal situation and be the most enforceable measure. Given the very significant effect on switching rates similar measures have had in Belgium (See Box 2), this measure would also lead to a sizeable increase in consumer engagement in many Member States in which contract exit fees are common.

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[200] In reality, households will react differently depending on consumers' needs, skills, motivations, interests, lifestyle, and access to resources such as accurate online comparison tools. However, we have no reliable data to quantify these differences in this specific context.

[201] "Energy performance contracting" means a contractual arrangement between the beneficiary and the provider of an energy efficiency improvement measure, verified and monitored during the whole term of the contract, where investments (work, supply or service) in that measure are paid for in relation to a contractually agreed level of energy efficiency improvement or other agreed energy performance criterion, such as financial savings.

If we assume that:

- One in four of the estimated 3% of household consumers who report that they have not tried to switch because they would be charged a fee actually make a switch as a result of a complete ban on such fees[202];
- The annual financial benefit of switching for these households amounts to 41 euros, which is half of the average difference in price between the incumbent's standard offer and the cheapest offer in the capital city in the EU[203];
- Gas household consumers see no benefits[204];
- The financial advantage of switching as a result of these measures persists for four years[205];
- All EU households within each Member State are able to benefit from these changes equally in relative terms[206];
- A discount rate of 4% for the consumer benefits year on year;

then Option 2 would result in an increase in consumer surplus **of between 64 million euros and 227 million euros annually** (depending on the year of implementation), and **1.9 billion euros in total for the period 2020-2030** on top of any gains brought by improved enforcement (estimated at 415 million euros for options 1 and 2).

Whereas **the implementation costs of Option 2 are unquantifiable, they may be significant**. This is because Option 2 would strongly restrict the range of contracts available to consumers, which may impede competition, as well as the provision of a legitimate class of products.

If implemented poorly, Option 2 could also impede the development of innovative financing options for beneficial investments in energy assets for households. Such products may require certain forms of termination fees in order to allow companies to recoup upfront investment costs provided as part of an integrated energy service product e.g. solar panels or energy efficiency upgrades. This option could therefore be in significant tension with other EU policy priorities, including its energy efficiency, renewable deployment, and self-consumption policies. For example, one of the objectives of the EED was to identify and remove regulatory and non-regulatory barriers to the use of energy performance contracting and other third-party financing arrangements for energy savings.

Whereas several **stakeholders** support an outright ban on switching fees – notably consumer groups and energy ombudsmen – NRAs believe the decision on whether or not

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202 See Figure 7. This estimate is based on survey responses, and has been discounted to conservatively reflect possible unreliability in what consumers report.

203 We conservatively assume that the savings to consumers available in this option are significantly reduced because the cheapest option available in the market – the benchmark price used in the other options – is usually a fixed term contract, which may require the consumer to accept a contract exit or termination fee in return for consumer loyalty. As this option entails banning all exit fees, it is unlikely that suppliers would be able to offer consumers the same level of financial savings in such contracts.

204 This is a conservative estimate. Whilst the evidence suggests they may be less prevalent, Figure 4 and Figure indicate they are certainly present.

205 A conservative assumption given the implied average time between switches is upwards of 15.5 years for electricity consumers and 18 years for gas consumers.

206 In reality, households will react differently depending on consumers' needs, skills, motivations, interests, lifestyle, and access to resources such as accurate online comparison tools. However, we have no reliable data to quantify these differences in this specific context.

to completely ban them should be taken at the national level. ACER and electricity suppliers support the legitimacy of termination fees for fixed term contracts.

Conclusion

The analysis indicated that each of the Options above is likely to result in a net benefit. However, Option 1 is the preferred option, as it represents the most favourable balance between probable benefits and costs. Whereas the potential benefits of Option 2 are greater, so are the potential implementation costs in terms of both reduced competition and tension with the EU's sustainable energy policies.

7.4.6. *Subsidiarity*

Consumers are not taking full advantage of competition on energy markets due, in part, to obstacles to switching. Well designed and implemented consumer policies with a European dimension can enable consumers to make informed choices that reward competition, and support the goal of sustainable and resource-efficient growth, whilst taking account of the needs of all consumers. Increasing confidence and ensuring that unfair trading practices do not bring a competitive advantage will also have a positive impact in terms of stimulating growth.

As a result of current EU provisions, national legal regimes remain fragmented as regards switching-related fees. Further restricting such fees would diminish an important barrier to customer mobility. The possibility of easy and free-of-charge switching would exert more competitive pressure on energy suppliers to improve quality and reduce prices.

The options here envisage clarifying the legislation and further limiting the use of exit fees across different kinds of consumer contracts (fixed-term, indefinite, supply contracts bundled with energy services) and to different degrees.

The legal basis for the legislative options proposed (Options 1 and 2) is therefore likely to be Article 114 TFEU. This allows for the adoption of "measures for the approximation of the provisions laid down by law, regulation or administrative action in Member States which have as their object the establishment and functioning of the internal market". In doing this, in accordance with Article 169 TFEU, the Commission will aim at ensuring a high level of consumer protection.

Without EU action, the identified problems related to the lack of an EU-wide market will continue to lead to consumer detriment.

Option 0+
The guidance option does not significantly change the legal *status quo*. Member State authorities would continue, to have a significant degree of discretion in deciding if a termination/switching fee is allowed or not.

From a subsidiarity perspective, this option allows member States to decide on the extent to which they wish creating an environment where customers are encouraged to switch more freely, as this – in theory, at least – may not always result in lower overall prices depending on the national situation.

From the perspective of proportionality, however, this option would not achieve the objective of the Article of the Treaty taken as their legal basis – the establishment and functioning of the internal market.

Option 1
The principles of subsidiarity and proportionality are best met through this Option, as it is not overly prescriptive and will concretely reduce levels of consumer detriment that are, at present, not addressed at a national level by Member State authorities.

This option aims primarily at clarifying and not strengthening existing legislation. As switching and exit fees are already addressed in EU provisions, the subsidiarity and proportionality principles have clearly been assessed previously and deemed as met.

Box 1: Impacts on different groups of consumers

The benefits of the measures contained in the preferred option (Option 1), described in detail in the preceding pages, accrue predominantly to consumers who are engaged in the market – those who compare offers and are likely to change suppliers if they find a better deal. Whilst facilitating switch will also increase consumer engagement levels, and whilst the increased competition engendered by easier switching will lead to more competitive offers on the market, disengaged consumers, including consumers who may be vulnerable, will not reap as many direct benefits from this policy intervention

Option 2
Banning exit fees in EU legislation would help to create a level playing field for consumers within Member States and between Member States. At this point, however, it would be disproportionate to impose a complete ban on exit fees as it would have a limiting effect on innovation and choice. It would limit the range and number of offers available to consumers, for example, fixed-term, fixed-price contracts that offer a lower cost per kWh.

7.4.7. *Stakeholders' opinions*

Public Consultation
222 out of 237 respondents to the Commission's Consultation on the Retail Energy Market[207] believed that transparent contracts and bills were either important or very important for helping residential consumers and SMEs to better control their energy consumption and costs.

When asked to identify key factors influencing switching rates, 89 respondents out of 237 stated that consumers were not aware of their switching rights, 110 stated that prices and tariffs were too difficult to compare due to a lack of tools and/or due to contractual conditions, and 128 cited insufficient benefits from switching.

Only 32 out of 237 respondents agreed with the statement: "There is no need to encourage switching". 98 disagreed and 90 were neutral.

National Regulatory Authorities
ACER identifies exit fees as a potential barrier to switching, since they tend to increase the threshold for consumers to switch due to the perceived diminished potential savings

[207] Held from 22 to 17 April 2014. https://ec.europa.eu/energy/en/consultations/consultation-retail-energy-market

available. However, ACER highlights that exit fees in fully competitive retail markets are applied to cover the costs incurred by suppliers due to early contract termination. ACER argues that offers which include exit fees should be made fully transparent (including on price comparison tools) and that exit fees need to be objectively justified.

The body representing the EU's national regulatory authorities in Brussels, **CEER**[208], supports the distinction between exit fees, which it deems to be a contractual matter, and all other switching-related fees. CEER has stated that it should not be possible for energy suppliers to charge an exit fee to customers who respect the end date of their fixed term energy contract. It also deems that other switching-related fees are not permissible under EU law. However, it argues that any decision on whether to abolish exit fees needs to be taken at the national level, as creating an environment where customers are encouraged to switch more freely may not always result in lower overall prices.

Ombudsmen

According to **NEON**, the National Energy Ombudsmen Network, EU regulations and directives already provide that supplier switching should be easy and quick, without extra charges. However, mistrust in the market, indecision and the perceived lack of benefits remain the main obstacles to more switching. As it is the case in France and Belgium, NEON believes that consumers should be allowed the right to change supplier whenever they want, without paying termination or exit fees.

Consumer Groups

BEUC has argued for greater transparency on exit fees, stating that a summary of the key contractual conditions, including conditions for switching, should be provided to consumers in concise and simple language alongside with the contract[209]. BEUC has also stated that it is: "concerned about the application of termination fees representing a lock in situation of the consumer and an anti-competitive measure as these fees often prevent consumers from changing the supplier. Switching should not be subject to any termination fee or penalty"[210].

BEUC, **EURELECTRIC** and **Eurogas** recently released joint statement on improved comparability of energy offers[211]. In it, they call for the following key information is provided to customers by suppliers in one place in a short, easily understandable, prominent and accessible manner:

- Product name and main features including, where relevant, information on environmental impact, clear description of promotions (e.g. temporary discounts) and additional services (e.g. maintenance, insurance, etc.)
- Total Price (fixed/variable) - which includes all cost components - and conditions for price changes
- Contract duration, notice period (renewal/withdrawal - where relevant) and conditions for termination, including, where relevant, fees and penalties

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208 The Council of European Energy Regulators.

209 http://www.beuc.eu/publications/beuc-x-2015-102_mst_beuc_response_to_public_consultation_on_a_new_energy_market_design.pdf

210 http://www.beuc.eu/publications/beuc-x-2015-068_mst_building_a_consumer-centric_energy_union.pdf

211 http://www.eurelectric.org/media/263669/joint_statement_-_improved_comparability_of_energy_offers_-2016-030-0116-01-e.pdf

- Payment frequency and method options (e.g. cash/ cheque/ direct debit/ standing order/ prepayment)
- Supplier's contact details (e.g. customer service's address, telephone number and/or email, including, where relevant, identification of any intermediary)

Suppliers

In their contribution to the discussions within the Citizens' Energy Forum in 2016, **EURELECTRIC** and its members welcomed the intention of the Commission and NRAs to work towards removing barriers to switching supplier. EURELECTRIC believes that all barriers should be considered, including non-commercial barriers, i.e. technical and regulatory. In terms of commercial barriers, a distinction should be drawn between fixed term contracts and variable contracts. Many customers are on variable tariffs with no end date and these do not have exit fees. In contrast, according to EURELECTRIC, exit fees need to be allowed to for fixed term deals – provided they're proportionate to the costs incurred by the supplier – as they help cover the costs suppliers face when customers leave early, much like for broadband or mobile phone contracts. Such contracts can be cheaper because suppliers have more certainty about how many customers they have and how much energy to buy in advance. If exit fees were banned for such contracts, the prices of fixed term deals would be likely to go up to the detriment of customers. EURELECTRIC believes that in any case where exit fees do apply to fixed term contracts, they must be clearly communicated to customers up-front.

BEUC, **EURELECTRIC** and **Eurogas** also recently released joint statement on improved comparability of energy offers, which can be read above. It notably includes the recommendation that termination fees be provided along with other key information on the offer "in one place in a short, easily understandable, prominent and accessible manner".

The European Parliament

In its April 2016 opinion on the Commission's Communication on Delivering a New Deal for Energy Consumers, the Parliament's **Committee on Industry, Research and Energy (ITRE)**: "Insists that the provisions on switching, as set out in the Third Package, should be fully implemented by Member States, and that national legislation must guarantee consumers the right to change suppliers in a quick, easy and free-of-charge way, and that their ability to switch should not be hindered by termination fees or penalties". Furthermore, ITRE calls for better information to consumers about their rights, and for further measures to make switching between providers easier.

In its April 2016 opinion on the Commission's Communication on Delivering a New Deal for Energy Consumers, the Parliament's **Committee on the Internal Market and Consumer Protection (IMCO)** called for: "the full implementation of the third energy package, including the right to change suppliers free of charge and better information to consumers about their rights, and for further measures to make switching between providers easier and faster, including a shortened switching period and effective and secure data portability in order to prevent the lock-in of consumers".

The Committee of the Regions

In its April 2016 opinion on the Commission's Communication on Delivering a New Deal for Energy Consumers, the **Committee of the Regions** suggests that information campaigns for switching suppliers should be launched by energy regulators, local authorities and consumer organisations. The Committee also encourages the EU to adopt an ambitious regulation on reducing the transfer time for customers switching from one provider to another, and making the transfer procedure automatic.

7.5. Comparison tools

7.5.1. *Summary table*

Objective: Facilitating supplier switching by improving consumer access to reliable comparison tools.		
Option 0+	**Option 1**	**Option 2**
Cross-sectorial Commission guidance addressing the applicability of the Unfair Commercial Practices Directive to comparison tools	Legislation to ensure every Member State has at least one 'certified' comparison tool that complies with pre-specified criteria on reliability and impartiality	Legislation to ensure every Member State appoints an independent body to provide a comparison tool that serves the consumer interest
Pros: - Facilitates coherent enforcement of existing legislation. - Light intervention and administrative impact. - Cross-sectorial consumer legislation already requires comparison tools to be transparent towards consumers in their functioning so as not to mislead consumers (e.g. ensure that advertising and sponsored results are properly identifiable etc.). - Cross-sectorial approach addresses shortcomings in commercial comparison tools of all varieties. - Cross-sectorial approach minimizes proliferation of sector-specific legislation.	Pros: - Fills gaps in existing legislation vis-à-vis energy comparison tools. - Limited intervention in the market, in most cases. - Allows certifying all existing energy comparison tools regardless of ownership. - Proactively increases levels of consumer trust. - Ensures EU wide access. - The certified comparison websites can become market benchmarks, foster best practices among competitors	Pros: - NRAs able to censure suppliers by removing their offers from the comparison tool. - No obligation on private sector. - Reduces risks of favouritism in certification process. - Proactively increases levels of consumer trust.
Cons: - Does not apply to non-profit comparison tools. - Does not proactively increase levels of consumer trust. - The existing legislation does not oblige comparison tools to be fully impartial, comprehensive, effective or useful to the consumer.	Cons: - Existing legislation already requires commercial comparison tools to abide by certain of the criteria addressed by certification. - Requires resources for verification and/or certification. - Significant public intervention necessary if no comparison tools in a given Member State meet standards.	Cons: - To be effective, Member States must provide sufficient resources for the development of such tools to match the quality of offerings from the private sector. - Well-performing for-profit tools could be side-lined by less effective ones run by national authorities.
Most suitable option(s): Option 1 is the preferred option because it strikes the best balance between consumer welfare and administrative impact. It also gives Member States control over whether they feel a certification scheme or a publicly-run comparison tool best ensures consumer engagement in their markets.		

7.5.2. *Description of the baseline*

Online comparison tools – websites that compare different energy offers – play an important role in helping consumers to make an informed decision about switching suppliers. Comparison tools (CTs) have become increasingly widespread, and can now be found in almost every MEMBER STATE (Table 1).

Table 1: Estimated number of energy comparison tools in Member States[212]

[212] Excluding CY and MT. Source: CEER, "*Study on the coverage, functioning and consumer use of comparison tools and third-party verification schemes for such tools*", (2014) European Commission, http://ec.europa.eu/consumers/consumer_evidence/market_studies/comparison_tools/index_en.htm.

Member State	*Number of energy CTs*	*Of which Govt. Operated*	*Comment*
** denotes estimate based on weighted average of figures from NRAs who reported data, or desktop research*			
AT	2*	1	
BE	11	3	Accreditation under review.
BG	0	0	
CZ	2*	0*	
DE	10	0	German consumer organisations under the umbrella of a market watchdog have conducted a survey about CT's in February 2016 and provided a test report and ranking, which can be found here.
DK	2	2	
EE	0	0	
EL	3*	0*	
ES	7	1	The NRA is legally entitled to run a CT. All suppliers are obliged to send the commercial offers to the CT. The NRA CT would meet accreditation standards. The consumer organization also has a CT, but only for its affiliates. The NRA has no powers to monitor the functioning of private CTs. It can be estimated than very few of them would meet accreditation standards, perhaps between 0 and 3, depending on the requirements for the accreditation.
FI	4	1	No specific accreditation standards are applied. The CT (www.sahkonhinta.fi) operated by the NRA, however, is free of charge, neutral, easy to access and comprehensive (all suppliers are obliged to report their public offers there). One of the commercial CTs uses the price data that is published by the NRA.
FR	8	2	
HU	3	0	There are several running service provider businesses concentrating exclusively on businesses. In addition Hungary is considering implementing a comparison tool - taking into account the level of price competition - would primarily focus on businesses and would be run by the Hungarian NRA.
HR	1*	0*	
IE	2*	0	Accreditation scheme in place
IT	9	2	
LV	0	0	
LT	0	0	ACER reports no price comparison tools in this Member State.
LU	1	1	
NL	14	0	No accreditation scheme. ACM developed a 'guidance' document for all companies offering electricity and/or gas contracts, including price comparison websites. The guideline is based on general consumer law and sector specific energy legislation. The goal of the guideline is to ensure that consumers are offered energy products that are tailored made to their situation, contains information they can easily understand, and compare with other offers. ACM can intervene whenever a price comparison website does not comply with the aforementioned legislation.
PL	1	1	Offers available on CT, are updated by NRA on the basis of information from suppliers. Suppliers are obliged to send NRA new offers immediately after deciding on the introducing their offer into the market (but not later than 2 days before the offer starts). However data concerning distribution is entered by particular DSO on the basis of distribution tariffs and their changes.
PT	2	1	
RO	0	0	

Member State	*Number of energy CTs*	*Of which Govt. Operated*	*Comment*
** denotes estimate based on weighted average of figures from NRAs who reported data, or desktop research*			
SE	4	1	The regulated CT is under supervision and checked regularly. The other CTs are not regulated, supervised nor does the regulator control the prices or how the prices are published. There is no specific legislation for these CTs.
SI	1*	1	
SK	1*	0*	
UK	34	1	33 comparison tools make up over 90% of the market in GB, with the remaining proportion of the market made up of 100's of smaller switching services.
Total	122*	18*	

Source: CEER and DG ENER research

A recent study found that 64% of consumers who had compared the tariffs of different electricity companies said they had used a comparison tool to do so, compared to 38% who had visited company websites, and 8% who had contacted companies by phone[213]. It also showed that comparison tools significantly increased the number of cheaper offers consumers were able to identify compared with contacting individual providers directly[214]. Overall, 23% of consumers surveyed in the EU have used a comparison tool to compare energy offers in the last 12 months[215].

Comparison tools are likely to become even more important as the retail market for energy matures. Between 2012 and 2014, 'choice' for consumers in European capitals widened, with a greater variety of offers being available. However, the ability of consumers to compare prices can be hampered by the complexity of pricing and the range of energy products, as well as by an increasing number of offers and their bundling with additional charge free or payable services[216].

In a retail market characterized by persistently low levels of consumer engagement, comparison tools are an effective means of reducing search costs for consumers, and presenting them with accurate market information in a manner that is clear and comprehensive.

However, the majority of comparison tools are operated for profit, leading to situations where their impartiality and the consumer interest may not be ensured. Most comparison tools do not charge consumers for access to their sites and therefore the bulk of their products are obtained via commercial relationships with the vendors they list. They get paid via subscription fees, click-through fees, or commission fees. Some comparison sites

[213] Non-exclusive figures i.e. respondents could choose more than one means of comparison.

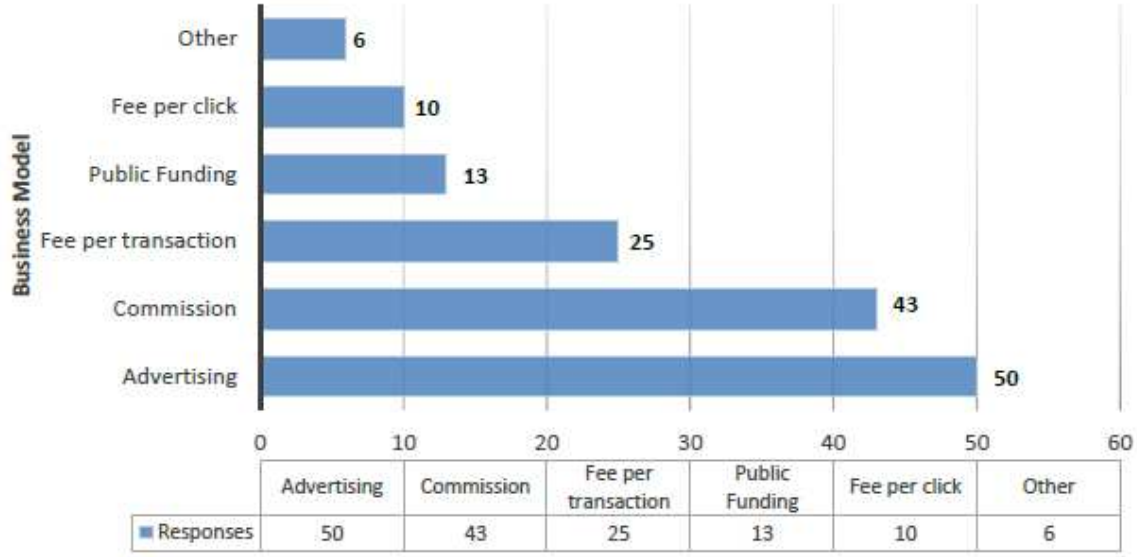
[214] From twice to twenty times, depending on the Member State. "*Second Consumer Market Study on the functioning of retail electricity markets for consumers in the EU"* (2016) European Commission.

[215] However, this figure varies widely across the EU with up to 45% of UK consumers using comparison tools to compare energy offers compared to only 2% of consumers from Luxembourg. "*Study on the coverage, functioning and consumer use of comparison tools and third-party verification schemes for such tools*" (2013) European Commission,, http://ec.europa.eu/consumers/consumer_evidence/market_studies/comparison_tools/index_en.htm

[216] "*Market Monitoring report 2014*" (2015) ACER, http://www.acer.europa.eu/Official_documents/Acts_of_the_Agency/Publication/ACER_Market_Monitoring_Report_2015 p.40, 100.

list sellers at no cost and get their revenue from sponsored links or sponsored ads. A lesser used model is where some Comparison Tools charge consumers to obtain access to its information, while firms do not pay any fees (Figure 1).

Figure 1: Business models of EU comparison tools (including non-energy)



Source: "Study on the coverage, functioning and consumer use of comparison tools and third-party verification schemes for such tools" (2013) European Commission, pp. 99, 102

Recent reports of unscrupulous practices have damaged consumer trust in both comparison tools and the switching process more generally (Box 1). Indeed, a third of respondents to a recent EU survey somewhat or strongly agreed that they did not trust price comparison websites because they were not independent and impartial and thus questioned the independence of such tools. Perhaps for this reason, the same study found: "Comparison tools did not appear keen to divulge details on how they generated income"[217].

Identified issues include:

i) the default presentation of deals by some websites;
ii) the misleading language used to provide consumers with a choice of which presentation to pick;
iii) the lack of transparency about commission arrangements; and
iv) inadequate arrangements for regulatory oversight.

[217] Less than half of Comparison Tools were willing to disclose details on their supplier relationship, description of business model or the sourcing of their price and product data. "*Study on the coverage, functioning and consumer use of comparison tools and third-party verification schemes for such tools*" (2013) European Commission, pp. xix, 191.

Box 1: UK House of Commons report into energy comparison tools[218]

The UK has the largest number of energy comparison websites of any Member State, with 34 such tools controlling a 90% share of the market. In 2015, the House of Commons Energy and Climate Change Committee published a report criticising energy comparison tools for "hiding the best deals from consumers by concealing tariffs from suppliers that do not pay the website a commission." The report concluded that "all deals should be made available by default to the consumer" and strongly objected to "any attempt to lure consumers into choosing particular deals by the use of misleading language." In addition it highlighted "the lack of transparency about commission arrangements between the websites and suppliers" as a shortcoming in the UK energy comparison tool market.

Source: UK House of Commons, Energy and Climate Change Committee

The existing consumer *acquis* could be made to work better (see Section below), and is an *ex-post* safety net that is enforced on a case-by-case basis by relevant national courts and authorities. There may therefore be benefit in putting in place a specific *ex-ante* quality assurance mechanism to guarantee a high level of quality information and transparency to consumers, to spread the uptake of best practices, and to boost consumer confidence in these tools. In addition, while comparison tools are indeed widespread, there is the need to ensure a more universal coverage of reliable comparison tools throughout the internal market.

7.5.3. *Deficiencies of the current legislation*

Section 7.3.5 and Annex V of the Evaluation show that the relevance of the existing legislation is challenged by the fact that it is not adapted to reflect new ways of consumer-market interaction, such as through comparison tools.

The 2005 Unfair Commercial Practices Directive[219] (UCPD) addresses comparison tools in so far as it requires them to provide enough information to ensure that consumers are not misled. As such, comparison tools qualifying as traders under the UCPD must ensure that they carry out comparisons in a transparent way. They must not provide false or deceiving statements, nor must they omit information about products if this causes the average consumer to take a decision they might not have taken otherwise. The UCPD particularly requires all traders to clearly distinguish a natural search result from advertising.

Indeed, the full implementation of the UCPD would help address two of the issues with energy comparison tools identified in the Section above, namely: The misleading language used to provide consumers with a choice of which presentation to pick; and the lack of transparency about commission arrangements.

In spite of this legislation, however, there may be scope for further EU action to address this area.

Firstly, because the UCPD is a cross-sectorial and principle-based piece of legislation, its provisions may not address all of the problems we observe in comparison tools. For example, whilst the UCPD states that comparison tools should not mislead consumers, it

[218] In one such case, some comparison websites were found to be hiding the best deals from consumers by concealing tariffs from suppliers that did not pay these websites a commission. "*Protecting consumers: Making energy price comparison websites transparent*" (2015) UK House of Commons, Energy and Climate Change Committee, http://www.publications.parliament.uk/pa/cm201415/cmselect/cmenergy/899/899.pdf.

[219] Articles 6 and 7, in particular.

does not oblige them to be effective, impartial or useful to the consumer, nor does it require comparison tools to cover an entire market. A comparison tool that only displayed biased rankings would be in compliance with the UCPD as long as it clearly stated that this was the case.

Secondly, Member States may have difficulties in interpreting the provisions of the UCPD – as well as the 13 other pieces of legislation and official guidance that may apply (Box 2) – and relating this body of legislation to energy comparison tools in particular. Clearer provisions could therefore improve implementation.

Box 2: List of applicable legislation and official guidance documents

- Directive 2005/29/EC (Unfair Commercial Practices Directive)
- SEC(2009) 1666 (Guidance on Unfair Commercial Practices Directive)
- Directive 2011/83/EU (Consumer Rights Directive)
- Guidance Document concerning Directive 2011/83/EU (Guidance on Consumer Rights Directive)
- Directive 2006/114/EC (Misleading and Comparative Advertising Directive)
- Directive 2000/31/EC (E-Commerce Directive)
- Directive 98/6/EC (Price Indication Directive)
- Council Directive 93/13/EEC (Unfair Contract Terms Directive)
- Directive 2002/22/EC (Citizens' Rights Directive)
- Directive 2014/92/EU (Payment Accounts Directive)
- Regulation (EC) No 1008/2008 (Air Services Regulation)
- Directive 2009/72/EC (Electricity Directive)
- Directive 2009/73/EC (Gas Directive)
- Directive 2008/48/EC (Consumer Credit Directive)
- Directive 2007/64/EC (Payment Services Directive)
- Directive 2002/65/EC (Distance Marketing of Consumer Financial Services Directive)

Finally, whereas the UCPD and most other applicable consumer protection legislation only applies to commercial comparison tools, there is also a need to ensure the quality of comparison tools operated by national authorities and non-profit organizations.

As for the Third Package, consumer bills and pre-contractual information formed the basis of consumer comparability at the time of its drafting, as consumers would manually measure up individual offers against their current supply contract. The legislation therefore addressed these points in order to promote consumer interests. Since then, the use of online websites for comparison as well as marketing purposes has risen significantly across the EU, challenging the relevance of the sector-specific energy *acquis*, which does not address comparison tools at all.

7.5.4. *Presentation of the options*

Option 0+ (Non-regulatory approach): Cross-sectorial Commission guidance addressing the applicability of the Unfair Commercial Practices Directive to commercially operated comparison tools

The Unfair Commercial Practices Directive expressly prohibits activities that materially distort the consumer's economic behaviour to the point where their ability to make an informed decision is impaired. This has implications for the following issues relevant to energy comparison tools, *inter alia*:

- Identification of advertising and sponsored results;
- Criteria for ranking;
- The disclosure of relationship with suppliers (assessed on a case-by-case basis);
- Displaying the same information for all products.

Building on the principles of reliability and impartiality endorsed by the Multi-Stakeholder Dialogue on Comparison Tools, the Commission has therefore very recently published updated guidance on how to apply the Directive to comparison tools in all sectors[220].

In addition, various other cross-sectorial consumer protection Directives require the disclosure of price and product data sourcing[221]. Stronger enforcement of the existing *acquis* therefore has significant potential to address the shortcomings addressed above. Accordingly, a 2013 Commission study on comparison tools found that the *"*[e]*nforcement of existing legal instruments appears to be first a priority"*[222].

14 different EU legal instruments and guidance documents may currently apply to comparison tools, depending on their ownership characteristics and which consumer sector they operate in. This means that both consumers and comparison tool operators are unlikely to be fully familiar with their respective rights and obligations. Further consolidated guidance can be considered here, too.

Option 1: Legislation to ensure every Member State has at least one 'certified' comparison tool that complies with pre-specified criteria on reliability and impartiality

Under this option, a designated national authority would certify energy comparison tool websites that meet certain criteria for reliability with some form of 'trustmark' as part of a voluntary scheme.

These criteria would include: impartiality; quality and accuracy of information; type of information/characteristics to be compared; transparency on the criteria used for comparisons; transparency on ranking methodologies; transparency on funding; and (near) complete coverage of the market. As these criteria would be based on recommendations contained in the Council of European Energy Regulator's 'Guidelines of Good Practice on Price Comparison Tools', they would be a product of the expert opinion of EU NRAs, as well as an extensive public consultation process[223].This sector-specific approach would plug gaps in the existing legislation, and was recently also taken to improve comparison tools in the banking sector with the 2014 Payment Account Directive.

Box 3: Fourteen CEER recommendations for comparison tools

Independence: Comparison Tools in the energy sector should be independent from energy supply companies (1), National Regulatory Authorities (NRAs) should maintain a role by assisting self-regulation, establishing accreditation/regulation or by creating Comparison Tools (2).

Transparency: Comparison Tools should disclose the way they operate, their funding and their owners/shareholders (3).

[220] See updated Guidance on the UCPD, http://ec.europa.eu/consumers/consumer_rights/unfair-trade/comparison-tools/index_en.htm.

[221] "*Study on the coverage, functioning and consumer use of comparison tools and third-party verification schemes for such tools"* (2013) European Commission, pp. 289.

[222] *"Study on the coverage, functioning and consumer use of comparison tools and third-party verification schemes for such tools"* (2013) European Commission, pp. 287.

[223] "*Guidelines of Good Practice on Price Comparison Tools*",(2012) CEER, Ref: C12-CEM-54-03, http://www.energy-regulators.eu/portal/page/portal/EER_HOME/EER_PUBLICATIONS/CEER_PAPERS/Customers/Tab3/C12-CEM-54-03_GGP-PCT_09Jul2012.pdf.

Exhaustiveness: All prices and products available for the totality of customers should be shown as a first step. If not possible, the Comparison Tool should clearly state this before showing results. After the initial search, the option to filter results should be offered to the customer (4)

Clarity and Comprehensibility: Costs should always be presented in a way that is clearly understood by the majority of customers, such as total cost on a yearly basis or unit kWh-price including amount and duration of discounts and whether prices are an estimation based on historic or estimated consumption (5). Fundamental characteristics of all products, for example fixed price products, floating price products or regulated end user prices, should be presented on the first page of the result screen. This differentiation should be easily visible to the customer. Explanations of the different types of offers should be available to help the customer understand their options (6). The price Comparison Tool should offer information on additional products and services, if the customer wishes to use that information to help choose the best offer for them (7).

Correctness and Accuracy: Price information used in the comparison should be updated as often as necessary to correctly reflect prices available on the market (8).

User Friendliness: The user should be offered help through default consumption patterns or, preferably, a tool that calculates the approximate consumption, based on the amount of the last bill or on the basis of other information available to the user (9).

Accessibility: To ensure an inclusive service at least one additional communication channel (other than the Internet) for getting a price comparison should be provided free of charge or at minimal cost (10). Online Comparison Tools should be implemented in line with the Web Accessibility Guidelines (WCAG) and should ensure that there are no barriers to overcome to access the comparison (11).

Customer Empowerment: Where the Comparison Tool is run by an NRA/public body they should promote the service to customers. Where the NRA/public body is regulating/accrediting/actively monitoring privately run Comparison Tools they should consider establishing a marker or logo (12). Comparison Tool providers should provide background information on market functioning and market issues if the customer wants this information or provide links to useful independent sources of information (13). Information provided to customers should be clearly written and presented using consistent or standardised terms and language (14).

The main administrative costs would fall upon national competent authorities who would be charged with developing accreditation systems, monitoring compliance, and imposing sanctions. However, the legislation would allow costs to be charged to website operators seeking accreditation under this scheme. Such costs may be covered by, for example, increased sales at the level of an accredited (and thus trustworthy) comparison tool.

In Member States where comparison tools are not widely used, it may be difficult to find one that meets the criteria for certification. The legislation would therefore allow a public authority such as the NRA to establish a comparison tool conforming to the certification criteria.

However in more mature markets, existing providers are likely to be willing and able to fulfil accreditation requirements in order to gain further recognition in the market and strengthen their reputation with consumers.

Option 2: Legislation to ensure every Member State appoints an independent body to provide a comparison tool that serves the consumer interest

Examples of such independent bodies could include NRAs, consumer authorities, or independent consumer groups. The establishment and funding of such comparison tools would be left to the discretion of the Member State, however the comparison tool must conform to the same certification criteria put forward in Option 1 to ensure its reliability.

7.5.5. *Comparison of the options*

This Section compares the costs and benefits of each of the Options presented above in a semi-quantitative manner.

In general, the costs of implementing each of the above measures can be estimated to a reasonably certain degree using tools such as the standard cost model for estimating administrative costs[224]. However, no data or methodology exists to accurately quantify all the benefits of the measures in terms of direct benefits to consumer (consumer surplus) or general competition. As such, this Section draws on behavioural experiments from a controlled environment to evaluate the impact of some policy options on consumer decision-making. Where appropriate, it aims to illustrate the possible direct benefit to consumers assuming certain conditions. It also highlights important qualitative evidence from stakeholders that policymakers should also incorporate into their analysis of costs and benefits.

Option 0+: Cross-sectorial Commission guidance addressing the applicability of the Unfair Commercial Practices Directive to commercially operated comparison tools

The cross-sectorial approach addresses shortcomings in commercial comparison tools of all varieties, and minimizes the proliferation of sector-specific legislation. It helps national authorities and comparison tool operators understand the relevant EU legislation, addressing any possible cases of non-compliance. It also leads to a lighter administrative impact in the Member States.

In spite of these considerations, **it is unlikely that Option 0+ would most effectively address the problem of poor consumer engagement**.

Whereas stronger enforcement of the existing *acquis* has significant potential to address the shortcomings identified above, the existing *acquis* does not oblige comparison tools to be fully impartial, nor does it oblige existing comparison tools to cover (almost) the whole market in a given Member State. It does not apply to non-profit comparison tools, and better enforcement alone would not be as effective in boosting consumer confidence as a proactive accreditation scheme. Moreover, this option would not ensure that all EU consumers have access to a certified comparison tool – an aspect that is highly desirable given the important role comparison tools play in engaging energy consumers and the current disparity in the coverage of energy by comparison tools in various Member States (Table 1).

It is unlikely that voluntary cooperation between Member States would address this problem, as it is domestic in nature with no common gains to be had through supra-national coordination.

Accordingly, NRAs, ombudsmen, consumer groups, and even industry associations representing electricity and gas suppliers all support firmer action than Option 0+ proposes. Indeed, the only major stakeholder that partially supports the soft-law approach embodied in Option 0+ appears to be the European Parliament's Committee on the Internal Market

[224] http://ec.europa.eu/smart-regulation/guidelines/tool_53_en.htm

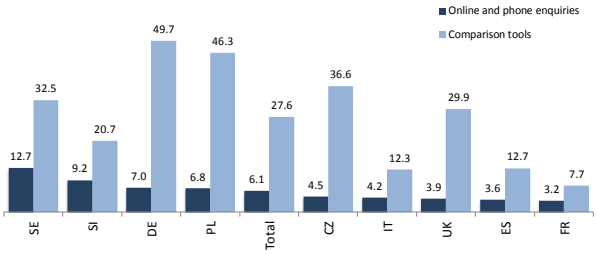
and Consumer Protection. But even here, the Committee also calls for EU-wide access to an energy comparison tool – something that cannot be ensure without legislative changes.

There are **no implementation costs** associated with Option 0+.

Option 1: Legislation to ensure every Member State has at least one 'certified' comparison tool that complies with pre-specified criteria on reliability and impartiality

The **economic benefits** of Option 1 will primarily be indirect, and come in terms of greater competition (lower prices, higher standards of service and a broader variety of products on the market). Comparison tools reduce the cost of comparing the market for consumers and help to lower information asymmetries[225]. Indeed, a behavioural experiment showed that comparison tools increased the number of cheaper offers consumers were able to identify by between two and twenty times (depending on the Member State) compared with contacting individual providers directly. Given that insufficient financial gain is the main consideration for not switching, this option should therefore help to reduce consumer 'stickiness' and create a more level playing field for suppliers.

Figure 2: Number of cheaper offers found (mean) – Contacting providers vs. using comparison tools



Source: "Second Consumer Market Study on the functioning of retail electricity markets for consumers in the EU" (2016) European Commission.

In addition, Option 1 will directly result in **greater consumer surplus**. Consumer protection will be strengthened as suppliers and companies managing comparison tools will be required to improve levels of transparency. For example, tools will not be restricted to displaying the offers that are of greatest financial interest to either party. Customer mobility through transparent publication of all offers will be improved, as will customer trust through certification.

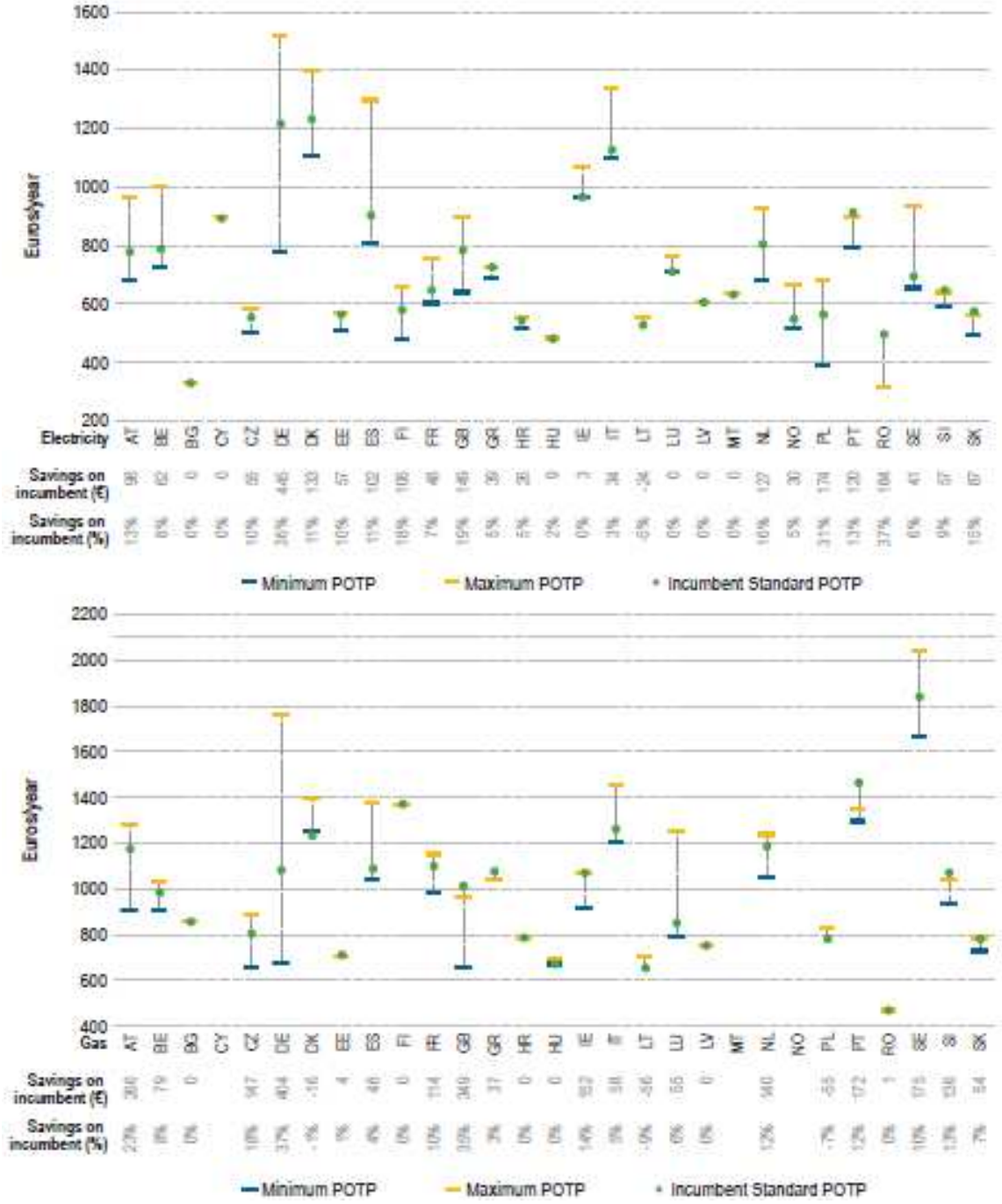
For this reason, the vast majority of consumers prefer comparison tools with third party verification. In a behavioural test carried out within the recent study on price comparison

[225] Comparison tool users surveyed for a recent EU study reported that they used these tools because they offered them a quick way to compare prices (mentioned by 69%) and allowed them to find the cheapest price (68%). Vast majorities of consumers agreed that price comparison websites are the quickest way to compare prices (in total, 90% agreed), are easy to use (87%), and are useful to find out information about specific products/prices (84%). "*Study on the coverage, functioning and consumer use of comparison tools and third-party verification schemes for such tools*" (2013) European Commission,

tools 78% of respondents chose an energy comparison tool that included third party verification over 22% that chose tools with no verification[226].

[226] 12,000 respondents from 15 Member States: CZ, DE, DK, FR, GR, HR, HU, IT, LV, NL, PL, UK, RO, SE, SI. The experiment tested (a) consumer choice of a comparison tool at the initial online search stage using a mock search engine; (b) consumer choice of a comparison tool from a short list; and, (c) consumer choice of a product or service on an individual comparison tool. The experiment was framed for the electricity sector and travel sector (hotels). "*Study on the coverage, functioning and consumer use of comparison tools and third-party verification schemes for such tools*" (2013) European Commission, p. 205.

Figure 3: POTP price spread and annual savings available from switching from the incumbent standard offer



Source: ACER Retail Database (November–December 2014) and ACER calculations

Whilst the economic benefits of Option 1 in terms of increased competition cannot be quantified[227], one dimension of consumer surplus – the direct financial benefits to

[227] EU retail markets differ on too many dimensions to make a comparative approach reliable. And too many factors affect key retail indicators to make the results of a longitudinal study into comparison tools reliable.

consumers of easier and more effective switching as a result of this measure – can be estimated using the following assumptions.

If we assume that:

- The 14 Member States that already have accreditation schemes or at least one government-operated comparison tool (AT, BE, DK, ES, FI, FR, IE, IT, LU, PL, PT, SE, SI, UK) would see no additional benefits from this intervention because they already fulfil its requirements[228];
- The average switching rates for electricity and gas in each of the other Member States (BG, CZ, DE, EE, EL, HR, HU, LT, LV, NL, RO, SK)[229] increased by 0.1% as a result of the intervention[230];
- The annual financial benefit of switching in these Member States amounts to the difference in price between the incumbent's standard offer and the cheapest offer in the capital city (Figure 3 above).[231];
- The financial advantage of switching as a result of these measures persists for four years[232];
- Apart from increasing the switching rate, there were no other benefits of this intervention in term of improving the ability of switching customers to identify a better offer[233];
- All EU households within each Member State are able to benefit from these changes equally in relative terms[234];
- A discount rate of 4% for the consumer benefits year on year;

then Option 1 would result in an increase in consumer surplus **of between 27.8 million euros and 98.3 million euros annually** (depending on the year of implementation), and **843 million euros in total for the period 2020-2030**. The main **implementation costs** would fall upon national competent authorities who would be charged with developing

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228 This is a conservative assumption, as it may be that the certification criteria put in place by Option 1 could improve the functioning of some existing certification schemes and government-run comparison tools.

229 CY and MT were not included in this analysis.

230 Reflecting the increased consumer confidence in comparison tools, which greatly reduce the costs of comparing the market. 27% of consumers surveyed strongly agreed, and 48% somewhat agreed, that they trusted comparison tools more when they were affiliated with a third-party verification scheme. And when respondents in a behavioural experiment were offered the choice between energy comparison tools that carried no verification and ones that did, the sites that carried verification schemes were selected 3.5 times more often than the ones that did not. "*Study on the coverage, functioning and consumer use of comparison tools and third-party verification schemes for such tools*" (2013) European Commission, pp. 191, 205.

231 This proxy correlates well with the results of a mystery shopping exercise in which respondents were asked to report the actual annual savings they would benefit from if they moved to the cheapest electricity tariff they were able to find. "*Second Consumer Market Study on the functioning of retail electricity markets for consumers in the EU*" (2016) European Commission.

232 A conservative assumption given the implied average time between switches is upwards of 15.5 years for electricity consumers and 18 years for gas consumers.

233 A conservative assumption in light of Figure 2.

234 In reality, households will react differently depending on consumers' needs, skills, motivations, interests, lifestyle, and access to resources such as accurate online comparison tools. However, we have no reliable data to quantify these differences in this specific context.

accreditation systems or comparison websites, monitoring compliance, and imposing sanctions.

Box 4: The costs of Elpriskollen.se - the Swedish NRA's comparison tool[235]

Initial investment (2008): 1,000,000 SEK (EUR 107,000)

IT system upgrade (2014): 280,000 SEK (EUR 29,400)

Website upgrade (2015): 600,000 SEK (EUR 63,600)

Annual running costs:

License: 28,000 SEK (EUR 2,996)

Servers and storage: 72,000 SEK (EUR 7704)

Application support and CGI: 150,000 SEK (EUR 16,050)

1 to 1.7 fulltime positions, depending on the year: EUR 66,768 - EUR 113,506

This equates to c. EUR 110,000 in start-up costs and EUR 105,143 - EUR 151,881 in running costs, factoring in the annualized costs of periodic website and IT system upgrades.

Box 5: The costs of operating Ofgem's confidence code for comparison tools[236]

The UK currently has 12 websites that are accredited by a full-time, 3-person team at Ofgem. This small team deals with ad hoc stakeholder engagements associated with the day-to-day operation of the confidence code, as well as performing continuous internal audits of accredited websites throughout the year.

In addition, each accredited website undergoes an external audit every year by an external consultant (19 hours per site), and every new site registered undergoes a substantial external audit (70 hours per site).

This equates to around EUR 214,335 in annual running costs, assuming one new site is accredited each year

Assuming:

- All Member States currently without any comparison tools (EE, BG, LV, LT, and RO) set up a state-run comparison tool to fulfil their obligations under Option 1;
- The costs of each of these comparison websites for electricity and gas is 50% higher than the cost of the Swedish NRA's electricity price comparison website, which deals with electricity alone (Box 4)[237];

[235] Labour costs assume 2,080 work hours per man-year at EUR 32.10 for professionals, as per the standard cost model.

[236] Labour costs assume 2,080 work hours per man-year at EUR 41.50 for managers, EUR 32.10 for professionals and EUR 23.50 for technicians or associate professionals, as per the standard cost model. Calculations assume that Ofgem's confidence code team consists of one of each of the aforementioned categories, and that external consultants charge at the rate of managers.

[237] This is a conservative estimate given the significant labour cost differences between SE and these Member States that would make setting up and operating a comparison website cheaper in other Member States.

- All other Member States that would have to make changes under this option (CZ, DE, EL, HR, HU, NL, SK) set up an accreditation scheme to fulfil their obligations;
- The costs of the UK's accreditation scheme for energy comparison tools (Box 5) can help us estimate the cost of accreditation schemes in these Member States;
- The costs of administering accreditation schemes is directly proportional to the size of the market in terms of households[238];
- The cost of voluntary accreditation schemes to comparison tools is zero[239];
- A discount rate of 4% for the consumer benefits year on year;

then Option 1 would result in **start-up costs of 802,500** euros **running costs of between 1 million euros and 1.63 million euros annually** (depending on the year of implementation), and a **total cost of between 13.3 euros and 16.5 million euros for the period 2020-2030**.

As regards stakeholder views, Option 1 would likely enjoy broad support amongst all stakeholder groups. Whilst many stakeholders support the principle that comparison tools should be independent and accurate without explicitly addressing the means of achieving this, some – notably including industry groups and the European Parliament's ITRE Committee, and the Committee of the Regions – explicitly call for certification.

Option 2: Legislation to ensure every Member State appoints an independent body to provide a comparison tool that serves the consumer interest

As with Option 1, Option 2 would likely result in indirect and unquantifiable **economic benefits** in terms of greater competition. It would also result in **greater consumer surplus**.

It would ensure EU-wide access to comparison tools free from any commercial interest that could affect their impartiality. It would also have the additional benefits that national authorities would be able to censure suppliers by removing their offers from the comparison tool, there would be no obligation on the private sector, and no risk of claims of favouritism in a certification process.

When asked which organizations would be the most appropriate to run comparison tools, 51% of comparison tool users thought that they should be run by consumer organisations. 13% selected a national authority or regulator as the most suitable organisation, and 8% preferred to entrust this task to a private organisation[240]. Given these results, one might expect Option 2 to lead to greater levels of consumer trust than Option 1.

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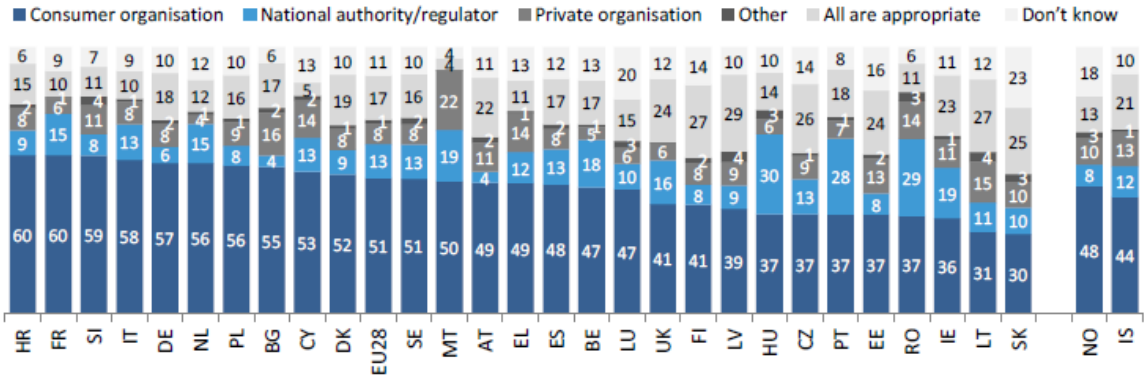
238 A conservative estimate, given that the UK appears to have a disproportionately large number of comparison tools for the size of its market (Table 1).

239 As the scheme is voluntary, comparison tools can be expected to only to make the changes necessary to qualify for accreditation if they judged this would be in their long-term financial interest anyway.

240 *"Study on the coverage, functioning and consumer use of comparison tools and third-party verification schemes for such tools*" (2013) European Commission, p. 203.

Figure 4: Most appropriate organisation to run comparison tools (by country)[241]



"*Study on the coverage, functioning and consumer use of comparison tools and third-party verification schemes for such tools*" (2013) European Commission

If we assume that:

- The average switching rates for electricity and gas in each of the 13 Member States at least one government-operated comparison tool (BG, CZ, DE, EE, EL, HR, HU, IE LT, LV, NL, RO, SK)[242] increased by 0.13% as a result of the intervention – 30% more than option one[243];
- The annual financial benefit of switching in these Member States amounts to the difference in price between the incumbent's standard offer and the cheapest offer in the capital city (Figure 3 above)[244];
- The financial advantage of switching as a result of these measures persists for four years[245];
- Apart from increasing the switching rate, there were no other benefits of this intervention in term of improving the ability of switching customers to identify a better offer[246];
- All EU households within each Member State are able to benefit from these changes equally in relative terms[247];
- A discount rate of 4% for the consumer benefits year on year;

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241 Question: "Comparison tools can be run by different types of organisations. Among the following organisations, which one do you think is the most appropriate?" '.

242 CY and MT were not included in this analysis.

243 Reflecting Figure 4. However, this estimate is highly uncertain in light of the fact that it assumes that Member States would provide sufficient resources for the development of publicly run comparison tools to match the quality of offerings from the private sector.

244 This proxy correlates well with the results of a mystery shopping exercise in which respondents were asked to report the actual annual savings they would benefit from if they moved to the cheapest electricity tariff they were able to find. "*Second Consumer Market Study on the functioning of retail electricity markets for consumers in the EU*" (2016) European Commission.

245 A conservative assumption given the implied average time between switches is upwards of 15.5 years for electricity consumers and 18 years for gas consumers.

246 A conservative assumption in light of Figure 2.

247 In reality, households will react differently depending on consumers' needs, skills, motivations, interests, lifestyle, and access to resources such as accurate online comparison tools. However, we have no reliable data to quantify these differences in this specific context.

then Option 2 would result in an increase in consumer surplus **of between 56 million euros and 128 million euros annually** (depending on the year of implementation), and **1.1 billion euro in total for the period 2020-2030**. However, there is a **greater degree of uncertainty in these figures** when compared with the workings for Options 1, in light of possible variance in the effectiveness of such publicly-run comparison tools.

The main **implementation costs** would fall upon national authorities who would be charged with developing and managing energy comparison websites[248]. Privately-run comparison sites may also lose market share to comparison tools run by a government-funded body, although these impacts are impossible to estimate.

Assuming:

- All 13 Member States without a state-run comparison tool (BG, CZ, DE, EE, EL, HR, HU, IE LT, LV, NL, RO, SK) set one up to fulfil their obligations under Option 2;
- The costs of each of these comparison websites for electricity and gas is 50% higher than the cost of the Swedish NRA's electricity price comparison website, which deals with electricity alone (Box 5)[249];
- A discount rate of 4% year on year;

then Option 2 would result in **start-up costs of 2.09 million euros**, **running costs of between EUR 1.36 million and EUR 2.96 million euros annually** (depending on the year of implementation), and a **total cost of between 20.6 million euros and 28.9 million euros for the period 2020-2030**.

As regards stakeholder views, Option 2 may not enjoy broad support amongst all stakeholder groups and Member States. Whilst all stakeholders emphasize the independence of comparison tools, and some explicitly support certification (Option 1), none have voiced their exclusive support for a publicly run and funded energy comparison tools.

Conclusion

Option 1 is the preferred option. By proportionately updating the existing acquis, establishing a mechanism to proactively build consumer trust, and ensuring all EU consumers have access to a comparison tool, it strikes the best balance between consumer welfare and administrative impact. It also gives Member States control over whether they feel a certification scheme or a publicly-run comparison tool best ensures consumer engagement in their markets.

Box 1: Impacts on different groups of consumers

The benefits of the measures contained in the preferred option (Option 1), described in detail in the preceding pages, accrue predominantly to consumers who are engaged in the market, and in particular those who compare offers using the Internet. Whilst reliable comparison tools will also increase consumer engagement levels, and whilst the increased competition engendered by comparison tools will lead to more competitive offers on the market, disengaged consumers and consumers who do not use the Internet, including consumers who may be vulnerable, will not reap as many direct benefits from this policy intervention.

[248] The costs to suppliers in terms of notifying such sites of their is not considered significant.

[249] This is a conservative estimate given the significant labour cost differences between SE and these Member States that would make setting up and operating a comparison website cheaper in other Member States.

7.5.6. *Subsidiarity*

Consumers are not taking full advantage of competition on energy markets due, in part, to obstacles to switching. Well designed and implemented consumer policies with a European dimension can enable consumers to make informed choices that reward competition, and support the goal of sustainable and resource-efficient growth, whilst taking account of the needs of all consumers. Increasing confidence and ensuring that unfair trading practices do not bring a competitive advantage will also have a positive impact in terms of stimulating growth.

Comparison websites are an effective means of reducing search costs for consumers and presenting them with accurate price and market information. Although they have become increasingly important in recent years, the majority of comparison websites are operated for profit, leading to situations where their impartiality and the consumer interest may not be ensured. Recent reports of unscrupulous practices have damaged consumer trust in comparison websites, suggesting the need to boost consumer confidence in such tools.

The options here revolve around improving the accessibility and reliability of comparison websites, both commercial and not-for-profit, through improved legislative guidance, certification schemes and/or differing obligations on Member States to ensure the availability of such websites. Similar legislative provisions on comparison tools already exist in other sectorial legislation (i.e. financial sector with the 2014 Payment Accounts Directive[250]).

The legal basis for the legislative options proposed (Options 1 and 2) is therefore likely to be Article 114 TFEU. This allows for the adoption of *"measures for the approximation of the provisions laid down by law, regulation or administrative action in Member States which have as their object the establishment and functioning of the internal market"*. In doing this, in accordance with Article 169 TFEU, the Commission will aim at ensuring a high level of consumer protection.

Without EU action, the identified problems related to the lack of an EU-wide market will continue to lead to consumer detriment.

Option 0+

These options would fulfil the subsidiarity principle as they do not involve legislative change and the subsidiarity of the existing legislation has been assessed previously.

However, consumer protection will continue to be compromised as consumers will not have the assurance of comparison tool independence or of full transparency of all offers available on the market. This is because of shortcomings inherent in the existing legislation.

[250] Directive 2014/92/EU of the European Parliament and of the Council of 23 July 2014 on the comparability of fees related to payment accounts, payment account switching and access to payment accounts with basic features. Text with EEA relevance.

Option 0+ would therefore not meet the proportionality principle as it would not achieve the objective of the Article of the Treaty taken as their legal basis – the establishment and functioning of the internal market.

Option 1
The principles of subsidiarity and proportionality would be best met through this Option as it would concretely improve the functioning of the internal market and reduce levels of consumer detriment, whilst leaving national authorities broad flexibility to tailor measures to the characteristics of their markets and their available resources.

Option 2
The principles of subsidiarity and proportionality may not be respected in this Option as it may be excessive in terms of the implied impact on certain Member State authorities who would need to establish an independent body to provide a comparison tool service.

Moreover, it is not clear that customer mobility or consumer protection would improve with the introduction of such a body in all Member States as the reliability and user-friendliness of at least some private sector comparison tools may already be of a high standard.

7.5.7. *Stakeholders' opinions*

Public Consultation
When asked to identify key factors influencing switching rates, 110 out of 237 respondents to the Commission's Consultation on the Retail Energy Market[251] stated that prices and tariffs were too difficult to compare due to a lack of tools and/or due to contractual conditions.

178 out of 237 agreed that ensuring the availability of web-based price comparison tools would increase consumers' interest in comparing offers and switching to a different energy supplier. 40 were neutral and 4 disagreed.

Only 32 out of 237 respondents agreed with the statement: *"There is no need to encourage switching"*. 98 disagreed and 90 were neutral.

National Regulatory Authorities
ACER has argued that having reliable web comparison tools in place (allowing comprehensive and easy ways to compare suppliers) can facilitate consumer choice and consumer engagement by addressing the perceived complexity of the switching process. It has therefore recommended that: *"To improve consumer switching behaviour and awareness further, National Regulatory Authorities (NRAs) could become more actively involved in ensuring that the prerequisites for switching, such as transparent and reliable online price comparison tools and transparent energy invoices, are properly implemented."*

CEER[252] sees price comparison tools as a crucial instrument to provide information to

[251] Held from 22 to 17 April 2014. https://ec.europa.eu/energy/en/consultations/consultation-retail-energy-market

[252] The Council of European Energy Regulators.

electricity and gas customers. There are a range of routes to setting standards for comparison tools. NRAs or another public body may establish their own comparison tools or they may regulate private comparison tools. Alternatively, self-regulation by comparison tools providers may be appropriate. Whatever the route, CEER's position is that it is important that comparison tools are independent from energy supply companies, that they are accurate and that they ideally present the full range of offers available.

In 2012, following an extensive consultation process, CEER published 14 recommendations covering the following aspects of comparison tools in the energy sector: Independence; transparency; exhaustiveness; clarity and comprehensibility; correctness and accuracy; user-friendliness; accessibility; and empowering customers[253].

Ombudsmen

According to **NEON**, the National Energy Ombudsmen Network, regulators are best placed to define the criteria of transparency and reliability of price comparisons tools and to assess them. NEON insisted on referring to the 2012 CEER Guidelines of Good Practice on Price Comparison Tools and the 15 recommendations they contain[254].

Bodies in charge of providing information to consumers (single point of contact) and organisations in charge of alternative dispute resolution (or an independent ombudsman), as well as consumer associations (i.e. impartial bodies with no advertising or consumer champion role, thanks to their independence from suppliers) are according to NEON best placed to develop neutral and reliable tools. This may also be the case of private companies, as long as they do not favour certain suppliers that would fund them or with which they have special agreements. For all tools implemented, an annual auditing of the regulator would be necessary: the list of approved comparison tools and a summary of the auditing may be published and accessible online.

If the regulator sets up a price comparison tool, another authority should be responsible for carrying out auditing, even from another Member State (peer review).

Consumer Groups

BEUC believes it is essential that the consumer gets clear and independent information on different offers. Regardless of who is running the comparison website, it must be ensured that the information consumers get is impartial, up to date, accurate and provided in a user friendly way and free of charge. The comparison tool should also enable consumers to compare their current contract with new offers in an easy way.

At the same time, BEUC strongly believes there should be at least one independent comparison tool for electricity and gas services in every Member State. In order to secure the success of such a comparison tool, it is paramount to secure also a legal basis for collection of price data. In addition, whilst comparison tools are increasingly used by

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253 http://www.energy-regulators.eu/portal/page/portal/EER_HOME/EER_PUBLICATIONS/CEER_PAPERS/Customers/Tab3/C12-CEM-54-03_GGP-PCT_09Jul2012.pdf

254 http://www.energy-regulators.eu/portal/page/portal/EER_HOME/EER_PUBLICATIONS/CEER_PAPERS/Customers/Tab3/C12-CEM-54-03_GGP-PCT_09Jul2012.pdf

consumers, the proliferation of comparison tools and the influence they can have on consumers' decisions have given rise to concerns about their trustworthiness.

According to BEUC, if the transparency and reliability of comparison tools is not guaranteed, if the full scale and high quality of the information they provide is not ensured or if they do not comply with existing legislation, comparison tools can become a source of consumer detriment and risk misleading and thereby undermining consumers' trust in the market[255].

According to **Citizens' Advice** (UK) comparison tools can be operated by a regulator, a consumer body or a private business that is appropriately regulated. The focus should rather be on the establishment of key principles to the effect that the sites display information in a way that is accurate, consistent, transparent, comprehensive and unbiased. The tool must have all tariff data available from all suppliers in the market and include information about termination fees, etc. The comparison should be based on the customer's actual usage.

Suppliers

In their contribution to the discussions within the Citizens' Energy Forum in 2016, **EURELECTRIC** considered that it is the task of regulators to make sure that comparison tools are neutral, do not limit innovation and do not favour any specific supplier, either directly (for example, if they collect different fees from different suppliers) or indirectly (for example, if their IT systems are not able to process all offers). EURELECTRIC and its members have repeatedly argued in favour of certifying comparison tool with e.g. a trust mark from the regulator, and stressed their full support for the Commission's initiatives to work with NRAs to develop transparency and reliability criteria for comparison tools where these do not exist yet.

Eurogas also welcomed the role that price comparison websites can play in national energy markets, and argued that consumers should have access to such price comparison services. For Eurogas, both price comparison websites operated by commercial entities as well as non-commercial bodies operated by the NRA can provide "independent" services to consumers. In order to ensure that this is the case, Eurogas supports an accreditation system for such websites. According to Eurogas, experience in Member-States such as the UK and the Netherlands suggests that price comparison websites develop over time, with private companies establishing comparison services.

Whatever approach is adopted, Eurogas states that the funding of these sites should be transparent. Regulation should be proportionate and would benefit from referring to the 2012 CEER Guidelines of Good Practice on Price Comparison Tools[256]. Moreover, for recommendations and best practices on price comparison tools, reference should be made

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255 http://www.beuc.eu/publications/beuc-x-2015-068_mst_building_a_consumer-centric_energy_union.pdf

256 http://www.energy-regulators.eu/portal/page/portal/EER_HOME/EER_PUBLICATIONS/CEER_PAPERS/Customers/Tab3/C12-CEM-54-03_GGP-PCT_09Jul2012.pdf

to the 2012 Report of the CEF Working Group on Transparency in EU Retail Energy Markets[257].

The European Parliament
In its April 2016 opinion on the Commission's Communication on Delivering a New Deal for Energy Consumers, the Parliament's **Committee on Industry, Research and Energy (ITRE)**: "Recommends developing guidelines for price comparison tools to ensure that consumers can access independent, up-to-date and understandable comparison tools; believes Member States should consider developing accreditation schemes covering all price comparison tools, in line with CEER guidelines."

In addition, ITRE: "*Recommends the creation of new platforms to serve as independent* [comparison tools] *to provide greater clarity to consumers on billing; recommends that such independent platforms provide consumers with information on the percentage share of energy sources used and the different taxes, levies and add-ons contained in energy tariffs in a comparable way to empower the consumer to easily seek more suitable offers in terms of price, quality and sustainability; suggests that this role could be assumed by existing bodies such as national energy departments, regulators or consumer organisations; recommends the development of at least one such independent price comparison tool per Member State.*"

In its April 2016 opinion on the Commission's Communication on Delivering a New Deal for Energy Consumers, the Parliament's **Committee on the Internal Market and Consumer Protection (IMCO)** called on the Commission: *"to ensure the implementation of the Unfair Commercial Practices Directive and for better cooperation between national authorities of Member States investigating such practices"*. It also welcomed "*the Commission's intention to consider incorporating laws specifically concerning energy into the Annex to the Regulation on Consumer Protection Cooperation*", although this measure was not eventually pursued by the Commission.

IMCO also called for: "*European Union guidelines on independent, up-to-date and easy-to-use price comparison tools, in particular to improve transparency, reliability, and competition between all market players and to make it accessible and easier for consumers to compare offers including types of contracts, prices and types of energy sources.*" It finally supported: *"access for all consumers to at least one price comparison tool for energy services."*

The Committee of the Regions
In its April 2016 opinion on the Commission's Communication on Delivering a New Deal for Energy Consumers, the **Committee of the Regions** supports the idea of ensuring that each consumer has access to at least one independent and verified comparison tool. According to the Committee, these comparators must be clear, comprehensive, trustworthy and independent, easy to use and free of charge. They should allow existing contracts to be compared with offers available on the market. Whereas suppliers tend to diversify their offers by including services in energy supply contracts, comparison tools must make it

[257] https://ec.europa.eu/energy/sites/ener/files/documents/2012111314_citizen_forum_meeting_working_group_report.pdf

possible to compare the different "packages" on offer, while at the same time enabling the "supply" element of the various packages to be compared on its own.

7.6. Improving billing information

7.6.1. *Summary table*

Objective: Ensuring that all consumer bills prominently display a minimum set of information that is essential to actively participating in the market.			
Option: 0	Option 0+	Option 1	Option 2
BAU/Stronger enforcement	Commission recommendation on billing information	More detailed legal requirements on the key information to be included in bills	A fully standardized 'comparability box' in bills
Pros: - 77% of energy consumers agree or strongly agree that bills are "easy and clear to understand". - Allows 'natural experiments' and other innovation on the design of billing information to be developed by Member State. - Recent (2014) transposition of the EED means premature to address information on energy consumption and costs.	Pros: - Low administrative impact - Gives Member State significant flexibility to adapt their requirements to national conditions. - Allows best practices to further develop.	Pros: - Ensures that the minimum baseline of existing practices is clarified and raised. - Allows best practices to further develop, albeit less than Option 0. - Improves comparability and portability of information. - Ensures consumers can easily find the information elements needed to facilitate switching. - Bill design left free to innovation.	Pros: - Highest legal clarity and comparability of offers and bills. - A level playing field for all consumers and suppliers across the EU. - Very little leeway for suppliers to differently interpret the legislation with regards to the presentation of information. - Ensures consumers can easily find the information elements needed to facilitate switching.
Cons: - Poor consumer awareness of market-relevant information can be expected to continue. - Does not respond to stakeholder feedback on need to ensure minimum standards.	Cons: - A recommendation is unenforceable and may be ignored by Member State/utilities. - Poor consumer awareness of market-relevant information can be expected to continue. - Does not respond to stakeholder feedback on need to ensure minimum standards.	Cons: - Limits innovation around certain bill elements. - Remaining leeway in interpreting legal articles may lead to implementation and enforcement difficulties.	Cons: - Challenging to devise standard presentation which can accommodate differences between national markets. - Highest administrative impact. - Prescriptive approach prevents beneficial innovation. - Difficult to adapt bills to evolving technologies and consumer preferences.
Most suitable option(s): Option 1 is the preferred option as it likely to leads to significant economic benefits and increased consumer surplus without significant administrative costs or the risk of overly-prescriptive legislation at the EU level.			

7.6.2. *Description of the baseline*

The evidence presented in this Annex draws extensively on survey data, as well as data from a mystery shopping exercise. The aim of the mystery shopping exercise was to replicate, as closely as possible, real consumers' experiences across 10 Member States[258] selected to cover North, West, South and East Europe countries. A total of 4,000 evaluations were completed between 11 December 2014 and 18 March 2015[259]. Whilst data from the mystery shopping exercise is non-exhaustive, the methodology enables the controlled sampling of a very large topic area[260], as well as providing insights that would not be apparent in a desktop evaluation of legislation and bills. Using a behavioural research approach rather than a traditional survey allowed us to identify what people actually do, rather than what they say they do.

Energy bills and annual statements be they paper or digital, are the most likely regular communications from suppliers to be noticed and read by consumers. They are therefore an important means through which consumers get information on their interaction with the market. As well as data on consumption and costs, they can also convey a host of other material which helps consumers to compare their current deal with other offers – the name and duration of their contract, for example.

The Electricity and Gas Directives contain the following key provisions related to metering and billing:

- Article 3 Billing and promotional material
  - 3(3) Access to comparable and transparent supply options (Electricity only)
  - 3(5)/3(6) Access to consumption data
  - 3(9) Disclosure of the overall fuel mix and environmental impact of the supplier (Electricity only)
- Annex I Consumer protection
  - 1.c) The transparency of applicable prices and tariffs
  - 1.d) Consumer payment methods
  - 1.i) Frequency of information on consumption and costs
  - 2. Intelligent metering systems (smart meter roll-out)

In addition, The Energy Efficiency Directive contains the following key provisions:

- Article10 Billing information (in conjunction with Annex VII)
  - 10(1) Consumption based billing (information) requirement in general (incl. as regards minimum frequency)
  - 10(2) Requirements on consumption information from smart meters
  - 10(3) General information and billing requirements pertinent to costs, consumption and payment
- Article 11 Cost of metering and billing information
  - 11(1) Metering and billing generally free of charges

[258] The Czech Republic, France, Germany, Italy, Lithuania, Poland, Slovenia, Spain, Sweden and the UK.

[259] *"Second Consumer Market Study on the functioning of retail electricity markets for consumers in the EU"* (2016) European Commission.

[260] For example, there were over 400 electricity and gas supply offers in Berlin alone in 2014 (source: ACER Database), making a comprehensive examination of all supply offers in the EU28 impracticable.

Whereas the EU *acquis* contains a relatively small number of general measures on energy billing, all Member States have legislation with further billing requirements. For example, UK electricity and gas suppliers must follow over 70 pages of rules on the information in bills as part of their current licensing requirements. In recognition of the likelihood of being overly prescriptive at present, the UK NRA is undertaking a pilot project to improve billing in the interest of consumers.

Box 1: Select requirements for UK domestic energy bills[261]

The following information must be grouped together, in a box, distinct from other information and included on page one of the Bill:
- The standardised title "Could you pay less?"
- Information on cheaper tariffs offered by the supplier and the savings available if the consumer were to switch.
- A Personal Projection* for the consumer's current tariff.
- A signpost to further tariff information.
- A standardised switching reminder "Remember – it might be worth thinking about switching your tariff or supplier".

The following information must be grouped together and included on page two of the Bill, in a box, distinct from other information, in the following order:
- The standardised title "About Your Tariff".
- The name of the customer's fuel, current tariff, payment method, any applicable tariff end date, exit fees and the customer's personalised usage in the last 12 months.

The following information must be provided anywhere on a bill:
- The standardised title "About Your TCR"**.
- The TCR for the customer's current tariff.
- A signpost to where to find independent advice on switching supplier.

* The Personal Projection is a standardised methodology that uses a consumer's actual or estimated consumption to estimate their projected cost for a particular tariff for the next year.

** The TCR or 'Tariff Comparison Rate' is used to assist consumers to make an initial comparison of alternative tariffs. It is similar in nature to the Annual Percentage Rate used to describe savings, loan and credit agreements.

Table 1 under presents an overview of billing practices and regulation per country. There is a large variation in how countries choose to approach the subject, in particular with regards to the extent to which the content of bills is specifically defined in national legislation. Three broad approaches can be identified:

[261] "*The Retail Market Review – Final domestic proposals Consultation on policy effect and draft licence conditions*", (2013) Ofgem, pp. 71-108, 130-163 https://www.ofgem.gov.uk/sites/default/files/docs/2013/03/the-retail-market-review---final-domestic-proposals.pdf. See also Gas and Electricity Markets Authority, 'Standard conditions of electricity supply licence' https://epr.ofgem.gov.uk//Content/Documents/Electricity%20Supply%20Standard%20Licence%20Conditions%20Consolidated%20-%20Current%20Version.pdf

- Highly prescriptive (HP) approaches relying on legal instruments or resolutions, which request a large amount of detail and/or give very specific instructions on what information to provide in electricity bills.
- Legislation which specifies the main information (MI) that must be included in bills, which is subsequently reinforced by guidance from the regulator (in terms of mandatory information and format, or best practice guidance).
- Legislation that specifies the main information, but leaves electricity providers broad freedom (BF) to communicate this within their own format.

In the following table, billing practices in each country are described, noting what are considered to be a highly prescriptive approach (HP), an approach enforcing communication of main information (MI) and, finally, an approach that allows broad freedom (BF).

Table 1: Billing practices and regulation per country[262]

Austria (MI)	Article 81 of EIWOG specifies which information should be presented on the electricity bill. This provision is further detailed by ordinances from the regulator, in which suggestions are given as to how to present the mandatory information, including the energy sources breakdown and the price components. The contents of the documents (e.g. electricity bill, contract, etc.) are detailed not only in the Electricity Act, but also in the Renewable Energy Act, the System Charges Order, the Electricity Duty Act, as well as in individual Federal states legislation. The 'DAVID-VO' Ordinance (Articles 1-5) specifies the information that electricity suppliers must give to customers.
Belgium (HP)	Law April, 29th 1999 'Loi relative à l'organisation du marché de l'électricite' details the mandatory information to be present in a consumer's bill. The information to be presented in the bill is highly regulated, with 10 mandatory headings and many mandatory sub-headings which detail the information to be provided.
Bulgaria (BF)	The Bulgarian Consumer Protection Act (Art. 4, Par. 1) outlines a minimum set of requirements for information to be provided to the customer such as: (1) information on the composition, (2) the supplier's contact details, (3) the trader's complaint handling process, and 4) arrangements for payment.
Croatia (MI)	Articles 49 and 63 of the Act on Electricity Market (Official Gazette, no. 22/13, 95/15 and 102/15) regulate billing. In Croatia, regulations specify that the supplier needs to deliver an electricity bill that contains the following elements: the share of the price that is freely negotiated, the share that is regulated and fees and other charges prescribed by special regulations.
Cyprus (MI)	Article 91 (1)(d)(iv) and Article 93 (1)(j) of the Electricity Law 206(I)/2015 regulate how the consumption of electricity should be communicated to consumers. The tariffs of the main energy provider are regulated by the Cyprus Energy Regulatory Authority (CERA) and they can be found on the website of the Electricity Authority of Cyprus (EAC).
Czech Republic (DF)	Bills for electricity, gas, heat supply and related services are governed by Act nr. 458/2000 Coll. in articles 11(a) and 98a. Electricity suppliers are to publish the conditions and price of electricity supply for households and residential customers in a way that can be accessed remotely. If increasing the prices for the supply of electricity, the supplier is obliged to notify the consumer in advance. In the case of electricity and gas, outstanding charges are billed at least once a year.
Denmark (MI)	Regulation of billing information is implemented in Executive Order no.486 of 2007 on electricity billing. However, the Danish Energy Regulatory Authority has presented an executive order which gives consumers the possibility to receive a simplified bill. The purpose of this order is to give consumers a better understanding of the price elements and

[262] *"Second Consumer Market Study on the functioning of retail electricity markets for consumers in the EU"* (2016) European Commission.

	an incentive to be active on the energy market. This order was implemented in Danish law in October 2015.
Estonia (MI)	Electricity Market Act §75 stipulates the following: "the seller shall submit an invoice for the electricity consumed to the customer once a month, unless agreed otherwise with the customer". It is mandatory for suppliers to include information not just on consumption but also on emissions and waste (nuclear and oil shale) as well as dispute resolution options.
Finland (MI)	Part III, Ch. 9, 69 § of the Electricity Market Act (588/2013) outlines the legal requirements with regards to billing imposed by the electricity provider. In the bill, the provider is to include details on how the price is broken down, information on the contract's duration and which dispute-solving tools consumers have at their disposal.
France (HP)	Article 4 of the Regulation 18 April 2012 covers electricity or natural gas bills, their payment modalities and reimbursement of overpayment (i.e. bill based on an estimation of the consumption). The bill must include information on over 16 different headings. The website 'Energie info', made available by the National Energy Ombudsman, illustrates and explains this mandatory content to consumers.
Germany (MI)	The right to receive clear information on one's energy contract before signing, and to be informed in advance if any changes are made to the contract, are provided for within German law (article 41 EnWG). The EnWG (Section IV art. 40) specifies the content that should be provided to consumers on their electricity bills. The German Institute for Transparency on Energy (DIFET) produces certificates for those suppliers that provide consumer-friendly bills.
Greece (BF)	The new Code of Electricity Supply regulates the tariffs of electricity suppliers. Specifically, this code describes what must be included in the bill and how the bill must be broken down into three different elements: (1) regulated charges; (2) competitive charges or supply charges; and (2) other charges.
Hungary (HP)	*Law 2013. évi CLXXXVIII. törvény az egységes közszolgáltatói számlaképről* regulates the content of bills. The law gives actual examples of the minimal information necessary on each bill and also gives examples as to which elements may be changed or added without infraction. The law also imposes such details as fonts and font sizes and provides in its annexes a detailed example of the respective bill in its actual detail. Additionally to the law, the electricity suppliers also regularly provide a dedicated Section on how to read the electricity bill.
Ireland (MI)	Statutory instruments S.I. No. 426/2014 Part 4, Art. 6, Art. 7 and S.I. No. 463/2011, Art. 9, regulate the communication of charges and consumption information to electricity consumers in Ireland. Under Irish law, suppliers must also inform customers of upcoming price changes at least one month before a price change comes into effect.
Italy (MI)	D.Lgs 93/11 Art. 43(2); L 125/07 Art. 1(6) and Art. 1(5) legislate the communication of charges and consumption information. Consumers should be informed of the components relating to supply cost (*servizi di vendita*), network cost (*servizi di rete*), general system charges (*oneri generali di sistema*), and taxes (VAT and other consumption taxes). The regulator has set up several tools in order to help the consumer understand his bill, most notably a dedicated webpage "Your Bill Explained" (*la bolletta spiegata*) and a consumer help-desk (*lo Sportello per il Consumatore*).
Latvia (MI)	According to Art. 31 3° of Electricity Market Law, the Public Utilities Commission (PUC) shall determine what kind of information and to what extent electricity supplier shall include in their bills and informative materials that are issued to the consumer. The regulations of the PUC determines that a bill shall include at least the electricity amount in kWh supplied in billing period, the amount charged for consumed electricity in euros and the average electricity price in euro per kWh during the billing period and fees for electricity distribution system services, other additional services and the mandatory procurements components and total fees for the billing period for consumers and other end-users to whom shall be issued invoices regarding electricity service supply.
Lithuania (BF)	Law on Energy of the Republic of Lithuania No. IX-884 and Law on Electricity of the Republic of Lithuania No VIII-1881. Article 31 regulate the communication of charges and consumption information to electricity consumers in Lithuania, as well as contractual conditions and changes to contracts. The consumer is entitled to receive information on conditions of service and electricity prices and tariffs, reports on prices, contract terms, conclusion and termination conditions.
Luxembourg (BF)	Article 2(5) of the Law of 1 August 2007 regulates the communication of charges and consumption information to electricity consumers in Luxembourg, as well as contractual

	terms. With respect to billing, the law states that electricity providers must transmit to residential customers transparent information on tariffs and prices.
Malta (MI)	Electricity Market Regulations (S.L. 545.16), Art. 8(3) regulates billing. Bills issued by Enemalta Corporation, Malta's electricity supplier, must include contact details of its subcontractor, ARMS Ltd, which is the company responsible for meter reading, billing, debt collections and customer care services. Households should receive bills calculated on actual consumption at least every six months. For households with a smart meter, these bills based on actual readings are more frequent. All bills show a breakdown of the price calculation, the total electricity consumption for that period as well as the average daily energy consumption, relevant tariffs and CO_2 emissions.
Netherlands (MI)	The Electricity Act, article 95, details the mandatory information to be provided on an energy bill and some associations provide recommendations for data presentation. The breakdown of an energy bill concerns supply costs ("*leveringskosten*"), network costs and metering costs, and then taxes ("*Belasting*"). While using green energy, some taxes are refunded ("*Belastingvermindering*").
Poland (MI)	The Energy Law, Art. 5. 6a - 6c. regulates the communication of charges and consumption information to electricity consumers in Poland. Electricity suppliers are to inform consumers about the fuel supply mix used in the previous calendar year and about a place where information is available about the impact of the production of energy on the environment (at a minimum in terms of carbon dioxide emissions and radioactive waste created). Electricity suppliers must also inform consumers about the amount consumed in the previous year and the place where information is available about the average electricity consumption for each connection group of recipients, energy efficiency improvement measures and the technical characteristics of energy-efficient appliances.
Portugal (BF)	Art. 54 d) and Art.55 c) and d) of Decree Law of 15 February 2006 regulate the communication of charges and consumption information to electricity consumers in Portugal. Under the law, consumers are entitled full and adequate information to enable their participation in the electricity market, access information in a transparent and non-discriminatory manner on applicable prices and tariffs, as well as complete and adequate information in order to promote energy efficiency and the rational use of resources.
Romania (HP)	Law 123/2012 (modified in 2014) ART.62 (1) h^{9}) and art. 145 (4) p) and Law 123/2012 (modified in 2014) ART. 66 (1),(2) regulate the content of bills. The Energy Authority ANRE has made available to the consumer an explanatory sample of the components that have to be included in the bill. This model has been adopted by electricity suppliers, who can also opt to display the same document at their websites, in order to inform consumers about the contents of their bill.
Slovakia (MI)	The supplier of electricity and gas is, according to the § 17 article 14 of the Law 251/2012, obliged to inform the customer on the invoice or attached material about the particular components of the energy supply including the unit price. Information about the composition of the price component has to include the unit price especially for electricity purchase including the commercial activity of the supplier, distribution, losses during distribution, system services, system operation and taxes.
Slovenia (MI)	Beside standard items that must be included in every invoice issued in Slovenia that are stipulated by the Value Added Tax Act (invoice date, number, invoice issuer's contact details, amounts billed, VAT rate,…), consumers also have to receive certain information in their electricity bills, stipulated within Article 42 of the Energy Act, including the proportion of energy source that supplier used in preceding year in a way comparison between different suppliers can be made, the reference source where publicly available data on environmental impacts, expressed in CO_2 emissions and amounts of radioactive waste resulting from the electricity production in the preceding year, and consumers' rights related to dispute resolution.
Spain (HP)	Law 24/2013 establishes the type of information that should be included in an electricity bill. This format is mandatory for the suppliers of last resort. The details of the information are formally listed in the resolution N.5655 of 23 May 2014 of the Ministry for the Industry, Energy and Tourism. The resolution illustrates in its annex a template to be followed when producing electricity bills, showing in explanatory graphs and in detailed tables the mandatory information and its granularity.
Sweden (BF)	The Electricity Act chapter 8, §14-16 specifies that an electricity supplier's billing shall be clear. It shall contain information on the measured consumption and current electricity prices that the billing shall be based on. The Swedish Energy Markets Inspectorate specifies in detail what shall be contained in electricity bills. The electricity cost consists of two

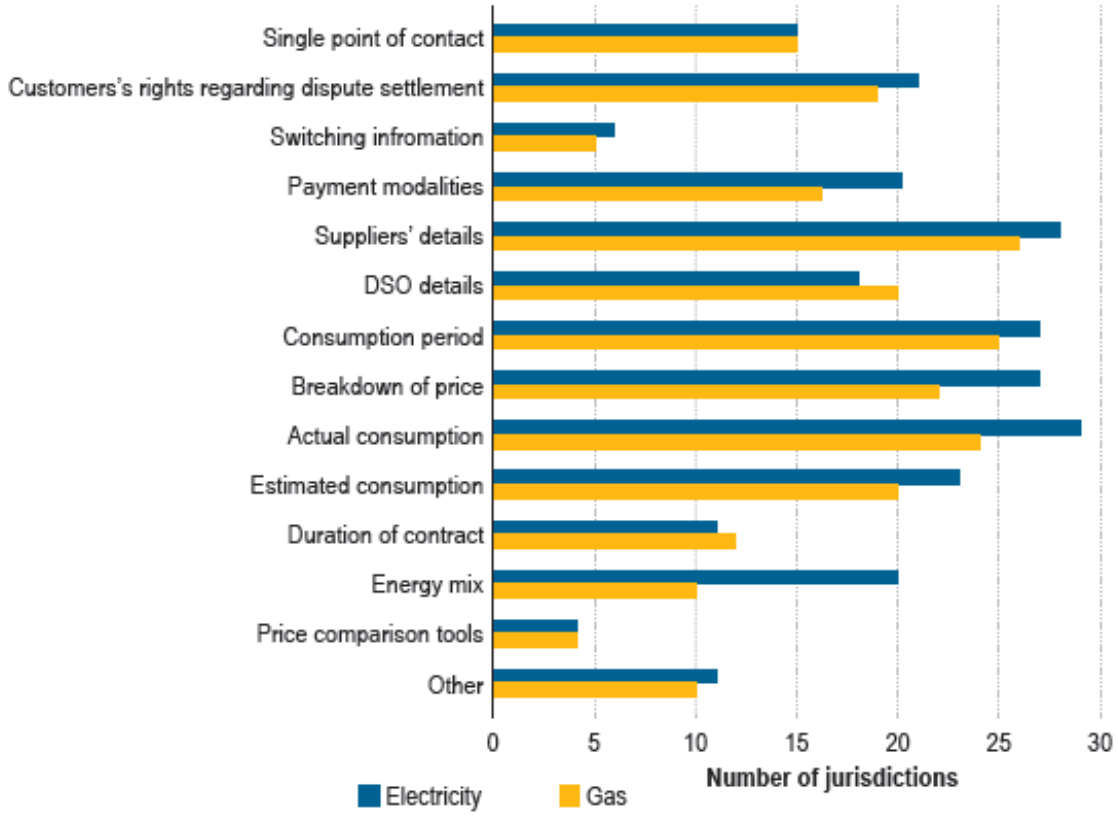
	parts: (1) a payment to the grid operator to stay connected and (2) payment for the actual electricity consumption and the electricity cost.
UK (MI)	The consumers' right to accurate consumption information is captured in Condition 31A of the Standard Licence which makes it incumbent on suppliers to provide customers with electricity consumption information in each bill (or, within the space of 30 days from a notice of increase in charges in cases where the latter is issued). In addition, suppliers must send an annual statement to all customers in a pre-defined format. Schedule 2ZB to the Electricity Act stipulates that licence-exempt suppliers must also provide consumption data to customers on an annual basis. Under Condition 12 of the Standard Licence, suppliers must take meter readings at least once every two years. Condition 21B of the Standard Licence allows customers to read their own meters as often as they choose. Suppliers are to reflect that reading in the subsequent bill. The structure of the bill is not fixed by any legislation.

In addition to EU and national legislative requirements, suppliers communicate and present information in different ways as a part of their non-price competition with other suppliers. For example, information may be presented in a certain format for branding purposes, or to target different customers with different kinds and levels of information to increase consumer satisfaction.

As a result of these three different factors – EU legislation, national legislation and commercial competition – there is therefore currently a broad divergence in Member States with regards to the individual elements in electricity and gas consumer bills and the total amount of information in these bills.

Figure 1 below from ACER summarizes the information provided to household customers on their bills. It includes general billing requirements put forward in Article 3 and Annex I of the Electricity and Gas Directives (for example, information on the single point of contact), as well as items not covered by EU law (price comparison tools). Whereas customers in the majority of Member States are currently provided with information on the consumption period, actual and/or estimated consumption, and a breakdown of the price, there is a greater diversity of national practices with regards to other potentially beneficial information, such as switching information, information about price comparison tools, and the duration of the contract.

Figure 1: Information on household customer bills in Member States – 2014



Source: CEER Database, National Indicators (2014-2015)

The results of a mystery shopping exercise on the information in energy bills covering ten representative Member States[263] provide a more detailed impression of the differences in billing practices within the EU. Mystery shoppers were instructed to analyse one of their own monthly, bi-monthly or quarterly electricity bills for a number of information elements identified as best practices by the Citizens' Energy Forum's Working Group on Billing[264] (Table 2) as well as a number of information elements addressed (although not always required) by the current Electricity Directive (Table 3)[265]. The exercise was carried out between 11 December 2014 and 18 March 2015.

[263] The Czech Republic, France, Germany, Italy, Lithuania, Poland, Slovenia, Spain, Sweden and the UK.

[264] "*Implementation of EC Good Practice Guidance for Billing*", (2010) CEER, http://www.energy-regulators.eu/portal/page/portal/EER_HOME/EER_PUBLICATIONS/CEER_PAPERS/Customers/Tab1/E10-CEM-36-03_EC%20billing%20guidance_8-Sept-2010.pdf.

[265] https://ec.europa.eu/energy/sites/ener/files/documents/20131219-e-billing_energy_data.pdf

Table 2: Information included on an electricity bill in a sample of ten Member States - I[266]

			Country									
Item	*Item in "billing" evaluation sheet*	% who found item on their bill (total)	CZ	DE	ES	FR	IT	LT[267]	PL	SE	SI	UK
Supplier's name	Provider's name	99%	96%	100%	100%	100%	100%	88%	100%	100%	100%	100%
Contact details (including their helpline and emergency number)	Telephone number of customer service/helpline	96%	92%	100%	100%	100%	100%	80%	93%	100%	100%	97%
	Postal address of provider	94%	92%	100%	97%	100%	100%	60%	100%	96%	100%	83%
	Email address of provider	69%	92%	95%	80%	27%	37%	40%	75%	84%	96%	60%
	Emergency number (e.g. to call in the event of an electrical emergency or power outage)	59%	68%	8%	97%	87%	93%	28%	35%	64%	40%	87%
The duration of the contract	Duration of the contract (e.g. 24 months)	22%	8%	50%	27%	17%	10%	0%	5%	40%	4%	50%
The deadline for informing the supplier about switching to another supplier	The period of notice to terminate your electricity contract (e.g. 30 days before the intended termination date)	19%	4%	50%	0%	57%	0%	12%	0%	28%	0%	27%
The tariff name	Tariff name/plan (e.g. *'Day & Night Fix'*)	80%	84%	65%	57%	87%	93%	60%	93%	80%	76%	100%
(A reference to) a clear price breakdown for the tariff (the base price plus all other charges and taxes)	A detailed price breakdown for your tariff (e.g. division of total price in base price, network charge, etc.)	79%	92%	65%	100%	83%	93%	8%	88%	92%	96%	73%

[266] *"Second Consumer Market Study on the functioning of retail electricity markets for consumers in the EU"* (2016) European Commission.

[267] Lithuania stands out as the country where mystery shoppers were the least likely to find each of the items on their bill. Mystery shoppers in Lithuania (note: all shoppers were clients of Lesto) reported that they do not receive an electricity bill; they declare usage themselves online (via www.manoelektra.lt - a site dedicated to Lesto customers) or by means of a paper bill book.

			Country									
Item	*Item in "billing" evaluation sheet*	% who found item on their bill (total)	CZ	DE	ES	FR	IT	LT[267]	PL	SE	SI	UK
The base price of one energy unit (in kilowatt hours or kWh) for the selected tariff	Base price per kWh of your tariff	82%	68%	65%	87%	93%	83%	68%	83%	92%	88%	93%
The switching code	Switching code/meter identification (EAN or MPAN code; a unique code for your electricity meter)	73%	96%	58%	87%	87%	67%	44%	78%	76%	72%	67%
The amount to be paid, for which billing period, by when and how	Amount to be paid	97%	100%	100%	97%	97%	100%	72%	100%	100%	100%	97%
	Billing period (e.g. 15 November – 14 December 2014)	95%	96%	90%	100%	97%	100%	80%	93%	100%	100%	97%
	Payment method (e.g. direct deposit, cheque, bank transfer)	84%	88%	100%	87%	87%	87%	64%	65%	92%	64%	100%
Clear information on how this amount has been calculated: is it based on an actual meter reading or estimated only?	% of shoppers stating that it not clear how the billing amount was calculated	5%	4%	18%	3%	0%	0%	8%	3%	4%	4%	3%
For calculations based on actual consumption: meter readings and consumption during the billing period (measured in kilowatt hours or kWh)	Details about consumption during billing period (in kWh)	89%	95%	67%	96%	100%	100%	73%	95%	87%	91%	95%
	Value of the meter reading at the end of the billing period	89%	90%	93%	96%	86%	88%	73%	95%	87%	82%	95%
	Value of the meter reading at the beginning of the billing period	88%	95%	93%	96%	86%	88%	73%	86%	83%	91%	90%
Where does the energy come from, how is it generated, how environment friendly is it ("the fuel mix")	Fuel mix/energy sources (e.g. wind power, biomass)	32%	48%	45%	20%	47%	43%	0%	18%	52%	40%	13%
Information on how to get tips on saving energy (e.g. a link to a website)	Tips on saving energy (e.g. link to a website)	26%	8%	48%	17%	23%	20%	36%	8%	24%	20%	57%
Information on how to obtain the bill in alternative formats (e.g. in large print) for consumers with disabilities	Information on how to obtain your bill in alternative format (e.g. paper/online, large print)	24%	16%	8%	23%	27%	53%	28%	5%	20%	16%	50%
Base *(note: figures in grey are based on a smaller sample):*		300	25	40	30	30	30	25	40	25	25	30

Fejl! Brug fanen Hjem til at anvende Heading 2 på teksten, der skal vises her.

Table 3: Information included on an electricity bill in a sample of ten Member States - II[268]

			Country									
Item	*Item in "billing" evaluation sheet*	% who found item on their bill (total)	CZ	DE	ES	FR	IT	LT	PL	SE	SI	UK
The contribution of each energy source to the overall fuel mix of the supplier over the preceding year	13a. Fuel mix/energy sources (e.g. wind power, biomass)	32%	48%	45%	20%	47%	43%	0%	18%	52%	40%	13%
Information concerning the consumer's rights as regards the means of dispute settlement available to them in the event of a dispute	8b. National contact information point (or single point of contact where you can obtain information about your energy rights)	28%	44%	43%	33%	43%	30%	4%	3%	16%	12%	53%
	8c. An energy mediator or third-party assistance	23%	36%	45%	23%	57%	0%	0%	3%	12%	0%	50%
Base:		300	25	40	30	30	30	25	40	25	25	30

[268] Shoppers were instructed to analyse a monthly or quarterly bill. In the Czech Republic and Germany, a considerable number of shoppers reported that they only receive an annual bill from their electricity company. In these countries, 88% (n=22) and 50% (n=20), respectively, of shoppers analysed an annual bill. "*Second Consumer Market Study on the functioning of retail electricity markets for consumers in the EU*" (2016) European Commission.

The results show a large variation across countries for selected items; for example, information about the period of notice to terminate a contract was not found on bills in Italy, Poland, Slovenia and Spain, while in Germany and France, at least half of shoppers had found such information on their bill (50% and 57%, respectively). These variations may reflect national differences in consumer preferences and the characteristics of local markets, as reflected in Member State rules and discretionary billing practices by suppliers. In addition, Table 3 illustrates the possible bad application of certain EU requirements. Only 28% of mystery shoppers (including experts) were able to find a contact point where they could obtain information about their energy rights, as required under Article 3(9)(c) of the Electricity and Gas Directives[269]. In addition, Article 3(9)(a) of the Electricity Directive requires suppliers to specify the contribution of each energy source to the overall fuel mix of the supplier over the preceding year in or with consumer bills[270]. However, more than a third (35%) of mystery shoppers in the same study disagreed that their electricity company informed them about how the electricity they used was produced (scores 0 to 4 on a scale to 10)[271].

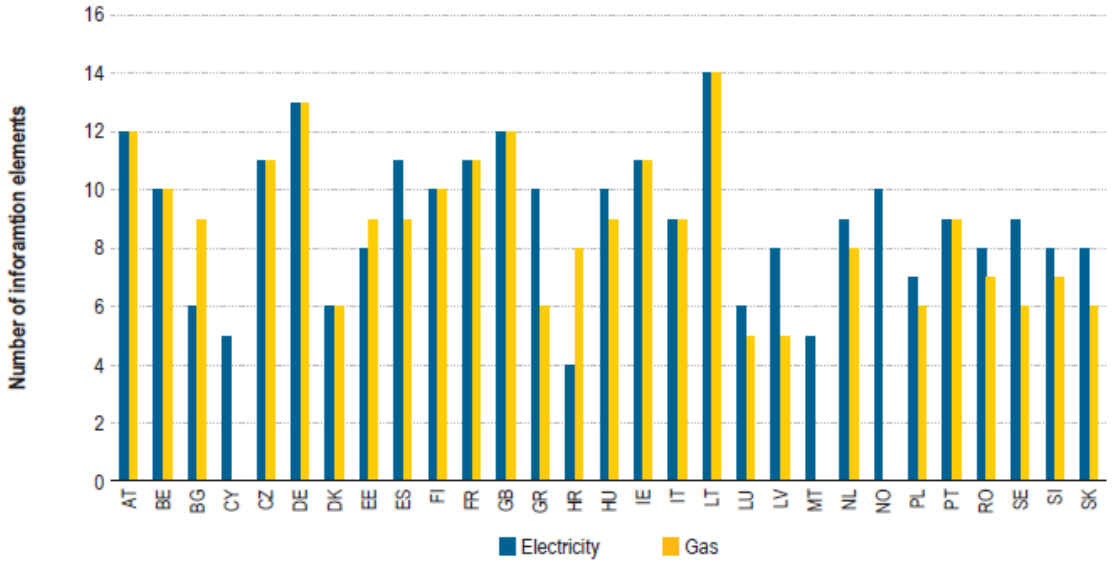
As transposition checks for the directives do not indicate particular irregularities around these articles. This points to possible interpretation issues or the bad application of the relevant measures by national authorities.

[269] *'Member States shall ensure that electricity suppliers specify in or with the bills and in promotional materials made available to final customers… the contribution of each energy source to the overall fuel mix of the supplier over the preceding year in a comprehensible and, at a national level, clearly comparable manner…'*

[270] *'Member States shall ensure that electricity suppliers specify in or with the bills and in promotional materials made available to final customers… information concerning their rights as regards the means of dispute settlement available to them in the event of a dispute.'*

[271] This was the case for a majority of respondents in nine EU-28 countries, with the highest level of disagreement observed in Bulgaria (78%). On the other end of the scale, the proportion of respondents who "strongly agreed" (scores 8 to 10) that their electricity company informed them about how the electricity they used was produced varied between 5% in Bulgaria and 46% in Austria. Germany joined Austria at the higher end of the country ranking with 45% of respondents who "strongly agreed".

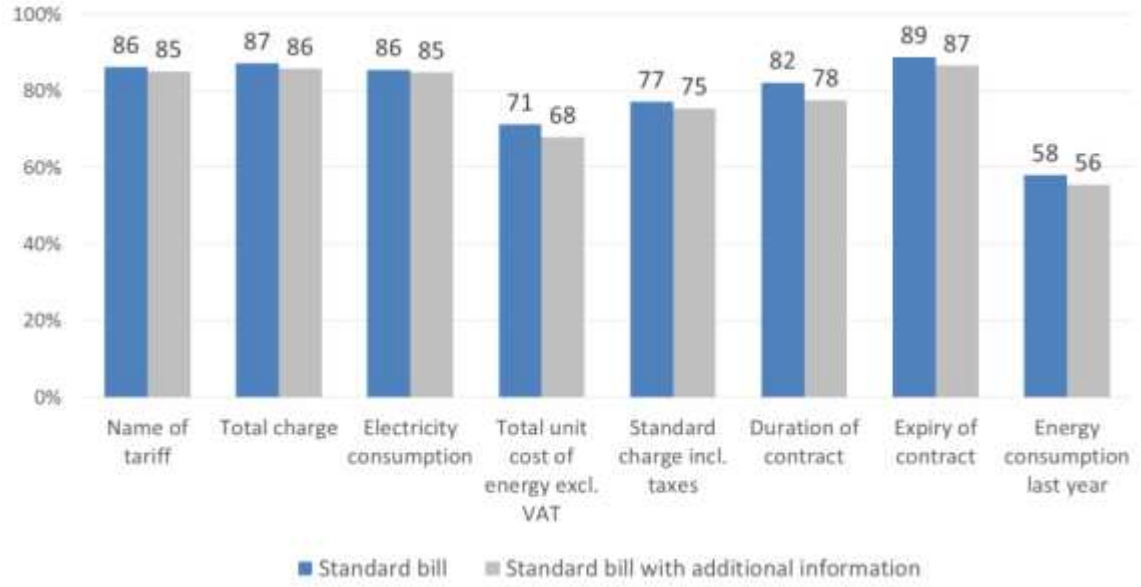
Figure 2: Information on household customer bills in Member States – 2014 (number of information elements)



Source: CEER Database, National Indicators (2014-2015)

To illustrate another dimension of divergence, Figure 2 above shows information load in consumer bills in different Member States. This can have a significant impact on consumers' ability to comprehend their bills – another issue flagged up by stakeholders and confirmed by a Commission behavioural experiment that showed that superfluous information in energy bills made it difficult for consumers to understand them (Figure 3).

Figure 3: Performance in bill comprehension task: standard bill vs standard bill with additional information



Source: "Second Consumer Market Study on the functioning of retail electricity markets for consumers in the EU" (2016) European Commission

To summarize, there is currently a broad divergence in Member States, both with regards to the individual elements in consumer bills and the total amount of information in these bills. The widespread divergence in national practices reflects differences in national legislation and marketing by suppliers, which are themselves a function of consumer

preferences and the characteristics of local markets. To a more limited extent, the divergence may also reflect the bad application of certain requirements of the Electricity and Gas Directives, particularly EU requirements on information on consumer rights and energy sources.

7.6.3. *Deficiencies of the current legislation*

As addressed in more detail in Section 7.1.1 and Annex V of the Evaluation, the Electricity and Gas Directives grant consumers the right to comparable and transparent supply options. They also state that consumers must be properly informed of their actual energy consumption and costs frequently enough to regulate their consumption. Building on these general provisions, the Energy Efficiency Directive puts in place requirements on the frequency of bills and the presentation of cost and consumption information in bills.

One of the major objectives of the Articles in the Electricity and Gas Directives relevant to billing was enabling easier and more effective consumer choice[272]. There exist various data that help us understand how EU consumers perceive their energy bills and the extent to which their bills are building awareness about energy use. These data are summarised in the remainder of this Section.

Consumer organisations responding to the latest ACER Market Monitoring Report stated that the average electricity and gas consumer in their countries is only able to compare prices to a limited extent. The average score was 4.8 and 5.0 on a scale from 1 to 10 for electricity and gas respectively[273].

These mediocre figures are backed by the 2016 Electricity Study that found that one in five consumers surveyed still disagree that the electricity bills of their electricity company were easy and clear to understand (Figure 4) – note the disparity in individual Member States concerning the level of understanding with Bulgaria performing worst and Cyprus performing best). This effect was even more pronounced among mystery shoppers from ten Member States who were quizzed with their current bills to hand. Here, between 20 and 54% of respondents disagreed with the statement “My bill is easy to understand” (Figure 5)[274].

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[272] Boost competition on retail markets and create consumer incentives to save energy were other major objectives. See the Thematic Evaluation on Metering and billing.

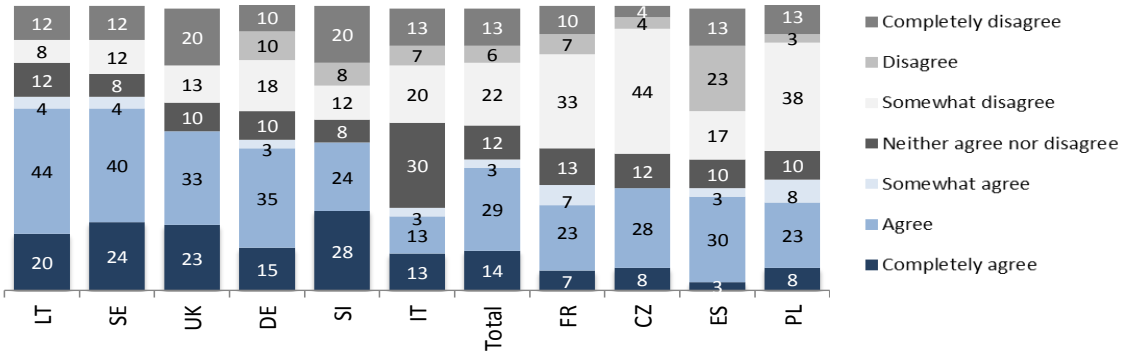
[273] "*Market Monitoring report 2014*" (2015) ACER, http://www.acer.europa.eu/Official_documents/Acts_of_the_Agency/Publication/ACER_Market_Monitoring_Report_2015.

[274] *"Second Consumer Market Study on the functioning of retail electricity markets for consumers in the EU*" (2016) European Commission.

Figure 4: Agreement with statement: "bills of my electrify company are easy and clear to understand", by country[275]

Source: "Second Consumer Market Study on the functioning of retail electricity markets for consumers in the EU" (2016) European Commission.

Figure 5: Agreement with the statement: "My bill is easy to understand"[276]



Q14. To what extent do you agree with the following statement: "my bill is easy to understand"?
%, Base: all mystery shoppers

Source: "Second Consumer Market Study on the functioning of retail electricity markets for consumers in the EU" (2016) European Commission.

The complaints data collected through the European Consumer Complaints Registration System indicates the largest share (28%) of consumer complaints reported to the Commission between 2011 and 2016 were related to billing (Figure 6). Whilst the complaints classified as relating to "unjustified" or "incorrect" invoicing/billing (10% of all electricity and gas complaints) are most likely related to billing on estimated rather than actual consumption[277], complaints about unclear invoices or bills make up around 1% of all electricity and gas complaints in the system. The category 'other billing complaints' relates to cases where users of the European Consumer Complaints Registration System did not encode a sub-category, or where their specific complaint could not be categorised according to the options presented below.

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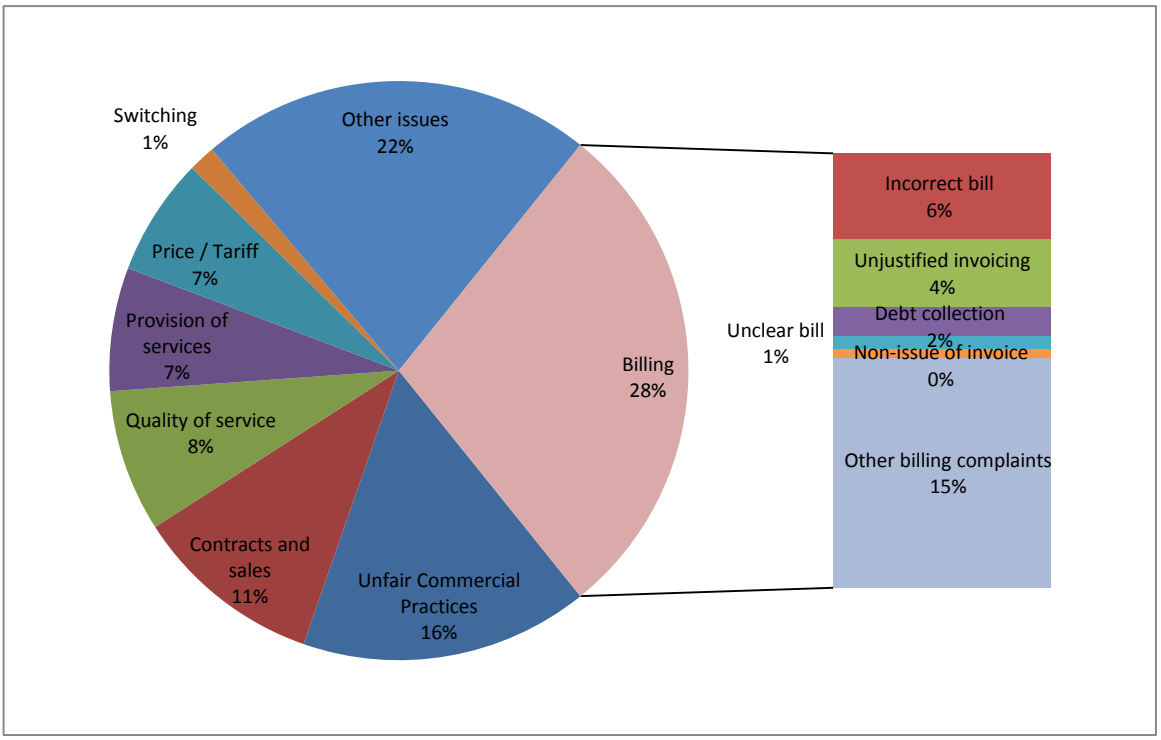
275 Question: "The following question deals with the quality of services offered in the electricity retail market. Please indicate how much you agree or disagree with each of the following statements, using a scale from 0 to 10, where 0 means that you "totally disagree" and 10 means that you "totally agree": Bills of [PROVIDER] are clear and easy to understand."

276 Agreement with the statement: "*My bill is easy to understand*."

277 See Thematic Evaluation on Smart Metering.

Figure 6: Electricity and gas consumer complaints, 2011-2016



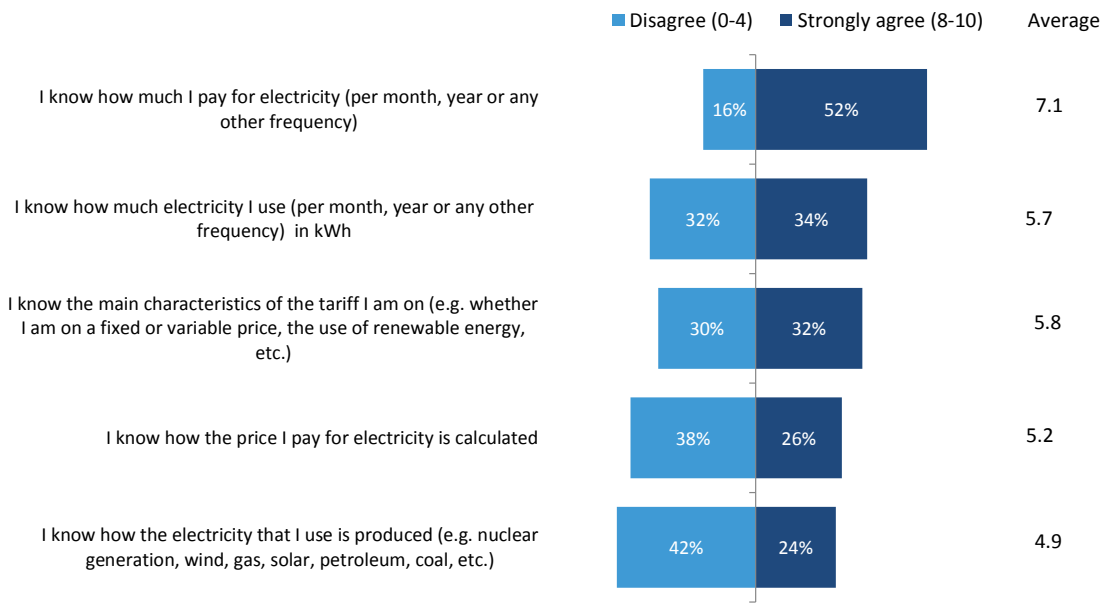
Source: DG JUST, European Consumer Complaints Registration System.

It therefore appears that whereas a significant percentage of EU consumers do indeed have difficulties understanding their energy bill, problems directly related to bill clarity have not led to a large number of consumer complaints compared with other issues such as back-billing, unfair commercial practices, and contractual clauses. However, looking at consumer complaints alone may be insufficient as complaint levels are influenced by consumer awareness and expectations, both of which may be low when it comes to energy bills.

Energy bills are the foremost means through which suppliers communicate with their customers. As such, consumers' ability to correctly answer simple questions about their own electricity use indirectly reveals the extent to which bills have been effective in providing information that could facilitate effective consumer choice. Figure 7 under shows that whereas the majority of EU consumers report that they know how much they pay for electricity, fewer were aware of their consumption in terms of kWh, what type of tariff they have, or their sources of electricity.

Whilst this finding may certainly reflect a lack of consumer interest in this information, the information facilitates effective consumer choice by helping consumers identify the best offer in the market and weigh the benefits of switching. Their omission from many bills, as the data presented in Table 2 and Table 3 over illustrates, may therefore be impeding the achievement of one of the stated objectives of the billing provisions in the Electricity and Gas Directives.

Figure 7: Self-reported awareness of electricity use[278]



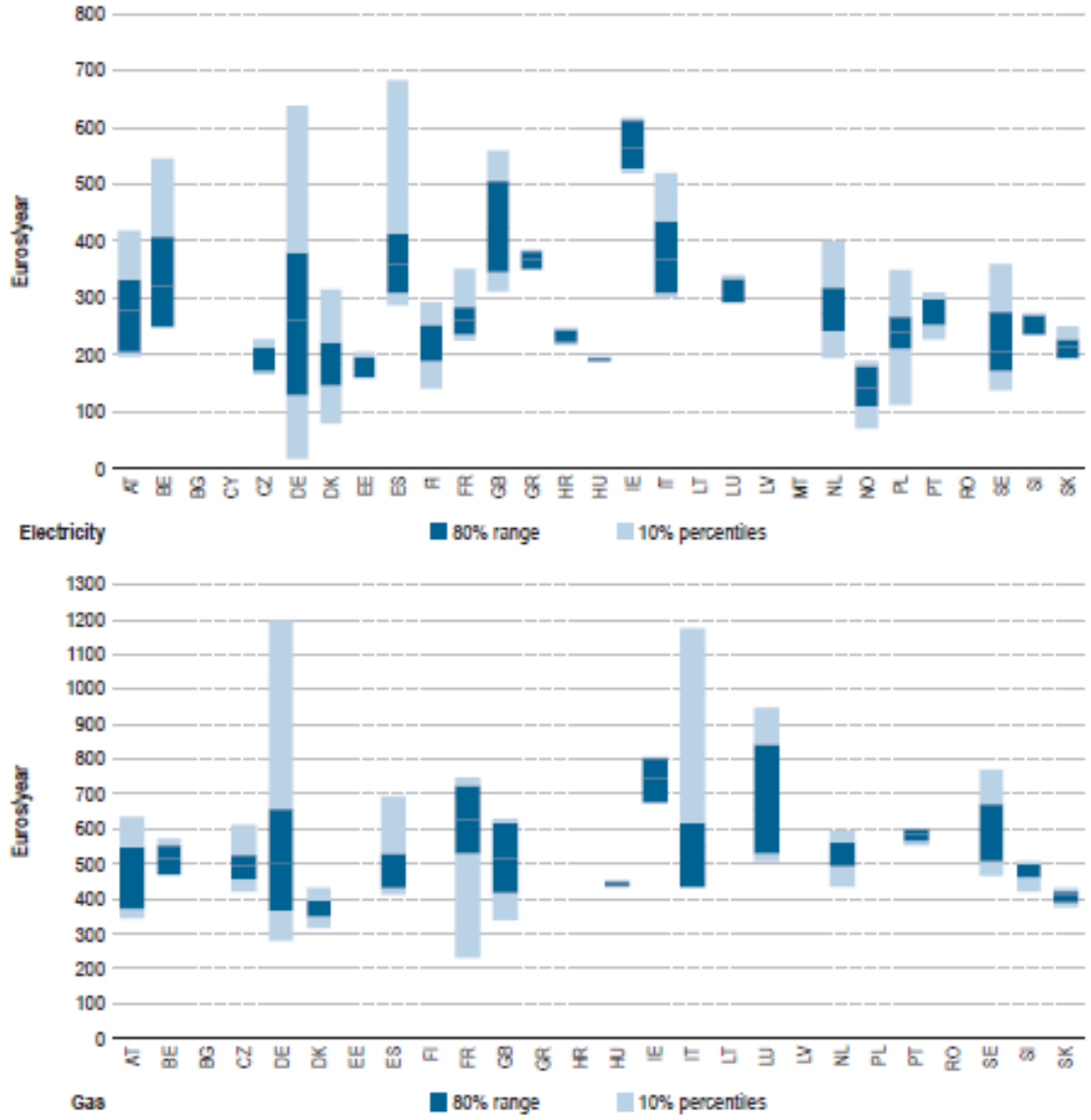
Source: "Second Consumer Market Study on the functioning of retail electricity markets for consumers in the EU" (2016) European Commission.

To summarize, the analysis presented in this Section indicates that there is scope to improve the extent to which the billing provisions in the Electricity and Gas Directives facilitate consumer choice. To help consumers accurately assess information, the legislation can provide some degree of standardisation to allow consumers to make accurate comparisons between offers, which is difficult to achieve through the market alone. Standardisation of some information can also be useful to build familiarity and help consumers recognise or retain important information.

As Figure 8 under illustrates, the difference in price between offers in the market can be significant, and so even marginal gains in consumers' ability to identify the best deal can result in a significant impact on consumer savings.

[278] Question: "Please indicate how much you agree or disagree with each of the following statements, using a scale from 0 to 10, where 0 means that you "totally disagree" and 10 means that you "totally agree"."

Figure 8: Dispersion in the energy component of retail prices for households in capitals – December 2014



Source: ACER Retail Database (November–December 2014) and ACER calculations.

7.6.4. *Presentation of the options*

Option 0: BAU with stronger enforcement

Whilst no additional legislation is proposed, the Commission actively follows up evidence suggesting possible cases of the bad application of EU law by Member States uncovered in the evaluation. Specifically, the following elements of the current legislation may not be being adhered to in certain Member States:

- Article 3(9)(a) of the Electricity Directive, which requires suppliers to specify the contribution of each energy source to the overall fuel mix of the supplier over the preceding year in or with consumer bills;
- Article 3(9)(c) of the Electricity and Gas Directives, which requires suppliers to include information on consumer rights in or with bills.

Option 0+: Non-regulatory approach; Commission Recommendation on billing information

This includes general principles such as:

- Making information which is essential for understanding the price which consumers pay for the service prominent, clear and easy to read on the bill. One way to achieve this is to present it in a standard "comparability box" that should feature prominently on the bill and include all the key information that consumers need to compare offers and switch suppliers.
- Ensuring that there is a link to a national authority competent to lead a billing review process and information campaigns.

Option 1: More detailed legal requirements on the key information

Specifically, this includes:

- Requiring electricity and gas suppliers to 'prominently display' in every household energy bill, both paper and electronic, eight key pieces of information[279] initially identified by the Citizens' Energy Forum Working Group on Billing in 2009[280]. Not all of these data are covered by the existing legislation, and their inclusion would help ensure that consumers have the minimum information necessary to interact with the market, whilst leaving Member States freedom to tailor the presentation of this information to national markets.
- Requiring the breakdown of energy costs presented to consumers to be in line with the new Regulation on electricity and natural gas price statistics i.e. three components (energy costs, network charges, taxes & levies) with standard definitions throughout the EU. This could help improve consumer awareness on the factors affecting price changes and enable the cross-border comparison of bills.

Option 2: A fully standardized 'comparability box' in bills

This option would be to develop a standard EU information box that would prescriptively present all the key information that consumers need to compare offers and switch suppliers prominently on the bill. It may also most require implementing legislation to define the format and contents of the information box.

7.6.5. *Comparison of the options*

This Section compares the costs and benefits of each of the Options presented above in a semi-quantitative manner.

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[279] i) The price to pay; ii) Consumption for current billing period, including comparison with previous year (as per EED); iii) The name of the energy supplier; iv) The contact details of the energy supplier; v) The tariff name; vi) Contract duration; vii) The customer's switching code or unique identification code for their supply point; viii) A contact point for alternative dispute resolution (as per current Electricity and Gas Directives).

[280] "*Implementation of EC Good Practice Guidance for Billing*", (2010) CEER http://www.energy-regulators.eu/portal/page/portal/EER_HOME/EER_PUBLICATIONS/CEER_PAPERS/Customers/Tab1/E10-CEM-36-03_EC%20billing%20guidance_8-Sept-2010.pdf.

In general, the costs of implementing each of the above measures can be estimated to a reasonably certain degree using tools such as the standard cost model for estimating administrative costs[281]. However, no data or methodology exists to accurately quantify all the benefits of the measures in terms of direct benefits to consumer (consumer surplus) or general competition. As such, this Section draws on behavioural experiments from a controlled environment to evaluate the impact of some policy options on consumer decision-making. Where appropriate, it aims to illustrate the possible direct benefit to consumers assuming certain conditions. It also highlights important qualitative evidence from stakeholders that policymakers should also incorporate into their analysis of costs and benefits.

Option 0: BAU with stronger enforcement

A good case can be made for a prudent, business-as-usual approach in this policy area. First, there appear to be implementation issues on certain bill items required under current EU legislation.

Secondly, even though there are clear issues around billing, a recent Commission survey showed that 77% of energy consumers either agreed or strongly agreed that their bills were "easy and clear to understand" (Figure 5), and unclear bills led to just 1% of the electricity and gas consumer complaints reported to the Commission (Figure 6). Even after factoring in the unreliability of some consumer report data, the absolute size of the problem itself does not therefore appear to be very significant.

And thirdly, national regulators and energy suppliers are implementing various ways of improving the billing experience. A business as usual approach would allow 'natural experiments' in this area to be developed, and the Commission to gather stronger evidence for a more targeted intervention at a later date.

In spite of these considerations, **it is unlikely that Option 0 would most effectively address the problem of poor consumer engagement**. Whilst adherence to certain billing requirements does seem to be lacking, this only relates to one or possibly two information items, and so even ensuring 100% compliance would therefore not result in significant change to energy bills. Whilst consumers report satisfaction with bill clarity, questionnaires reveal glaring shortcomings in their knowledge of basic market-relevant information that would help them identify the best offer in the market and weigh the benefits of switching – information that could be more effectively conveyed in bills.

Accordingly, consumer groups strongly support further legislative measures to ensure bills inform consumer better and help them to engage with the market. Indeed, all major stakeholder groups – except for energy suppliers and industry associations – indicate that there may be at least some scope for further EU action to ensure bills facilitate consumer engagement in the market.

There are **no implementation costs** associated with Option 0.

[281] http://ec.europa.eu/smart-regulation/guidelines/tool_53_en.htm

Option 0+: Non-regulatory approach e.g. a Commission Recommendation on billing information

This option can be discarded because a very similar set of recommendations have already been developed by the Commission-chaired Working Group on Billing (more details below). Whilst the group's findings were published and presented to the Citizens' Energy Forum in 2009, these recommendations have not been fully adhered to (Table 2), and it is unlikely that putting them in a non-binding Commission Recommendation would change this. It is thus unlikely that voluntary cooperation between Member States would address this problem.

Option 1: More detailed legal requirements on the key information

To recap, this option would involve ensuring that all EU suppliers use the same definitions of price components (energy, network charges, and taxes) when communicating with consumers. It would also involve prominently displaying the eight pieces of information presented in every EU energy bill. These eight items are drawn from a guidance document on billing originally proposed by a Commission-led Working Group in 2009[282]. The importance of the information items was then reaffirmed by a Working Group on e-Billing and Personal Data Management in 2013[283]. Whilst the former comprised of representatives from NRAs and the Commission, the latter also included representatives from consumer groups and industry. The identification and selection of these items is therefore based on comprehensive of stakeholder dialogue process.

The **economic benefits** of Option 1 will primarily be indirect, and come in terms of greater competition (lower prices, higher standards of service and a broader variety of products on the market). These benefits are unquantifiable.

In addition, Option 1 will directly result in **greater consumer surplus**, something that can be estimated using the following assumptions.

As a whole, EU households spend a total of 147 billion euros on electricity and 97 billion euros on gas annually, the average annual household bill being 773 euros for electricity and 795 euros for gas[284]. According to CEER, 6.3% of electricity consumers and 5.5% of gas consumers switched energy suppliers in 2014.

If we assume that:

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[282] "*Implementation of EC Good Practice Guidance for Billing*" (2010) CEER http://www.energy-regulators.eu/portal/page/portal/EER_HOME/EER_PUBLICATIONS/CEER_PAPERS/Customers/Tab1/E10-CEM-36-03_EC%20billing%20guidance_8-Sept-2010.pdf.

[283] "*Working Group Report on e-Billing and Personal Data Management"*, (2013) Report prepared for the 6th Citizens' Energy Forum, https://ec.europa.eu/energy/sites/ener/files/documents/20131219-e-billing_energy_data.pdf.

[284] Not including MT or CY. Based on latest data available: 2014 for BE, BG, CZ, DK, EL, HR, HU, IT, LV, PL, RO, and SK; 2013 for DE, ES, LU, NL, UK; 2012 for EE, FI, LT, SE and SI; 2011 for FR; 2010 for AT, IE and PT. Source: Eurostat.

- The average EU switching rates for electricity and gas remained unchanged at 6.3% and 5.5% respectively[285];
- The measures improved the ability of one out of every one-hundred customers who switched to identify a better offer[286];
- The measures benefitted consumers using comparison tools just as much as those comparing the market directly through suppliers[287];
- These consumers were able to save an additional 5 euros from both their electricity and gas bills a year as a result of the measures put in place[288];
- The financial advantage of being able to identify the best deal as a result of these measures persists for four years[289];
- All EU households are able to benefit from these changes equally in relative terms[290];
- A discount rate of 4% for the consumer benefits year on year;

then Option 1 would result in an increase in consumer surplus **of between 0.9 and 3.2 million euros annually** (depending on the year of implementation), and **27.6 million euros in total for the period 2020-2030**.

[285] This is a conservative assumption given that 40% more consumers would have access to their unique switching code with every bill (a piece of information important for switching) and significantly more consumers on fixed term contracts are likely to be aware of when their current contracts expired (24% of household consumers report that they only compare tariffs when they needed to renew their contracts). "*Second Consumer Market Study on the functioning of retail electricity markets for consumers in the EU*" (2016) European Commission.

[286] This equates to just 0.063% of electricity consumers and 0.055% of gas consumers in any given year – again, a conservative assumption. Taken as a whole, the eight information items in Option 1 aim to arm the consumer with all the most relevant information necessary to engage with the market, including helping consumers identify the best offer.

[287] One of the benefits of this intervention would also be to give consumers easy access to all information relevant to using comparison tools in every bill (switching code, tariff name, consumption).

[288] This figure seems proportionate given that the average 80% range of the dispersion of electricity and gas household offers in the market is around EUR 150 (Figure 8). Assuming that those switching would tend to be moving from a tariff at the more expensive side of this distribution to a tariff at the cheaper side of this distribution, this amounts to saying that the greater market awareness engendered by this intervention would enable consumers to identify an offer that was just c. 3% cheaper than the offer they would have otherwise identified without the intervention.

[289] A conservative assumption given the implied average time between switches is upwards of 15.5 years for electricity consumers and 18 years for gas consumers.

[290] In reality, households will react differently depending on consumers' needs, skills, motivations, interests, lifestyle, and access to resources such as accurate online comparison tools. However, we have no reliable data to quantify these differences in this specific context.

Table 4: The prevalence of eight key information items in consumer bills

Item	*Item in "billing" evaluation sheet*	*% who found item on their bill (total)*
i) The amount to be paid, for which billing period, by when and how (existing EU legal requirement)	Amount to be paid	97%
	Billing period (e.g. 15 November – 14 December 2014)	95%
ii) For calculations based on actual consumption: meter readings and consumption during the billing period (measured in kilowatt hours or kWh) (existing EU legal requirement)	Details about consumption during billing period (in kWh)	89%
	Value of the meter reading at the end of the billing period	89%
	Value of the meter reading at the beginning of the billing period	88%
iii) Supplier's name	Provider's name	99%
iv) Contact details (including their helpline and emergency number)	Telephone number of customer service/helpline	96%
	Postal address of provider	94%
	Email address of provider	69%
	Emergency number (e.g. to call in the event of an electrical emergency or power outage)	59%
v) The tariff name	Tariff name/plan (e.g. *'Day & Night Fix'*)	80%
vi) The duration of the contract	Duration of the contract (e.g. 24 months)	22%
vii) The switching code	Switching code/meter identification (EAN or MPAN code; a unique code for your electricity meter)	73%
viii) Information concerning the consumer's rights as regards the means of dispute settlement available to them in the event of a dispute (existing EU legal requirement)	National contact information point (or single point of contact where you can obtain information about your energy rights)	28%
	An energy mediator or third-party assistance	23%
Base *(note: figures in grey are based on a smaller sample):*		300

Source: "Second Consumer Market Study on the functioning of retail electricity markets for consumers in the EU" (2016) European Commission.

The **implementation costs** of Option 1 will most likely be modest because:

- All Member States have legislation with billing requirements that are more prescriptive than those in the EU *acquis* (Table 1);
- National legislation is periodically revised independently of EU requirements, and so minor EU requirements would not lead to significant additional implementation costs to national administrations;
- It is already an EU legal requirement to display three out of the eight pieces of information this measure proposes should be 'prominently displayed' (information on consumption, information on costs, and information on dispute settlement);
- Only one piece of information (the contract duration) would have to be added to around 80% of EU bills;
- Two pieces of information (the tariff name and switching code) can already be found in over 70% of bills;
- The remaining two pieces of information (the suppliers name and contact details) can already be found in over 95% of bills (Table 4);

- The requirement to use standardised definitions of energy price component would not result in any additional information requirements, *per se*.

This option would therefore result in the following one-time implementation costs to the 2752 electricity and 1595 gas suppliers in the EU[291]. No running costs are associated with this option due to the computerisation of billing systems.

Table 5: Option 1 implementation costs (all one-time costs)[292]

Obligation	Action	Suppliers concerned	Staff type	Hourly rate (EUR)	Man hours	Activity cost (EUR)
Ensuring 8 key information items are prominently displayed in every energy bill	Bill design	2174[293]	Professionals	32.10	16	1,116,566.40
	Bill design	1449[294]	Professionals	32.10	72	3,348,928.80
Ensuring that all EU suppliers use the same definitions of price components in bills	Understanding information obligation	3434[295]	Professionals	32.10	4	440,925.60
	Adjusting existing data	3434	Professionals	32.10	24	2,645,553.60
					Total	**7,551,974.40**

As regards stakeholder views, Option 1 would likely enjoy broad support amongst stakeholders, apart from energy suppliers and the industry associations who represent them. It responds to the input from consumer groups, the European Parliament and the Committee of the Regions that legislative action is necessary to ensure that energy bills meet minimum standards. It also accommodates feedback from NRAs that prescriptive or detailed EU requirements could reduce the scope for innovation among suppliers and could become outdated quickly.

Option 2: A fully standardized 'comparability box' in bills
To recap, this option would be to develop a standard information box that would prescriptively present key information in all EU energy bills.

The **economic benefits** of Option 2 would primarily be indirect, and come in terms of greater competition (lower prices, higher standards of service and a broader variety of products on the market). These benefits are unquantifiable.

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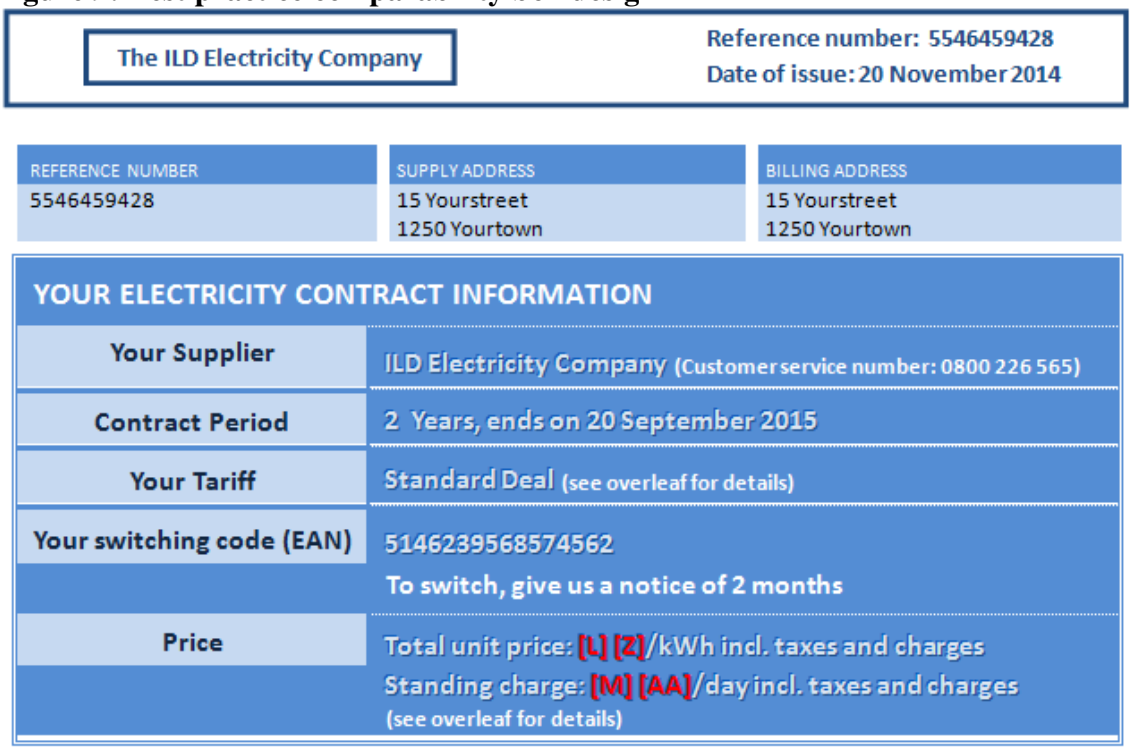
291 Source: CEER National Indicators Database (2015).
292 Derived from the standard cost model for estimating administrative costs.
293 This assumes that 50% of all suppliers would need to make minor changes to their bills to accommodate one additional piece of information (contract duration). 2 man days of work. Estimate based on the figures in Table 4
294 This assumes that 30% of all suppliers would need to make moderate changes to their bills to accommodate three additional pieces of information (contract duration, switching code, tariff name). 9 man days of work. Estimate based on the figures in Table 4.
295 79% of consumers found a breakdown of energy costs in their bills (Table 2). This legal requirement would only apply to suppliers providing a breakdown.

In addition, Option 2 would directly result in **greater consumer surplus**, something that can be estimated with the aid of the following behavioural experiments.

10,056 respondents completed behavioural experiments to test if bill presentation impacts consumer awareness and decision making. The behavioural experiment included a task on bill comprehension, in which respondents were shown a best practice bill with a comparison box or a standard bill and tested on how well they understood key pieces of information contained in the bill. Respondents were also tested on their ability to identify the best offer after having seen a best practice bill or a standard bill.

The "best practice" bill drew on the Working Group Reports on Billing, and Personal Data Management cited earlier, as well as the electricity bill model/prototype developed following input received from working group members, which makes suggestions for both the content and format of an electricity bill and encourages the use of a "comparability box".

Figure 9: Best practice comparability box design



Source: "Second Consumer Market Study on the functioning of retail electricity markets for consumers in the EU" (2016) European Commission.

The "standard bill" was developed based on the bills collected through desk research on actual providers in Europe. It does not have a comparability box and, although it provides consumers with the same information, the presentation of the information is not as clear (i.e. key information on tariff characteristics are not presented in a simple box on the first page of the bill).

Figure 10: Excerpt of standard bill

YOUR TARIFF INFORMATION	
TARIFF NAME	**STANDARD FIX**
Base unit price	[insert currency symbol/amount]/kWh
Standing Charge	[insert currency symbol/amount]/kWh
National levy(the Green Energy Fund)	[insert currency symbol/amount]/kWh
TOTAL UNIT COST WITHOUT VAT	[insert currency symbol/amount]/kWh
+ VAT at 20%	[insert currency symbol/amount]/kWh
TOTAL UNIT COST incl. VAT	[insert currency symbol/amount]/kWh

DATE	GENERAL METER NO 7546 - reading
Previous reading*	32250kWh (a)
15 August	33570kWh (a)
14 November	34100kWh (a)
Your consumption 15 August – 14 November 2014	530 kWh

**Abbreviations: "a": actual, "e": estimate*

Source: "Second Consumer Market Study on the functioning of retail electricity markets for consumers in the EU" (2016) European Commission.

In the comprehension exercise, respondents were asked eight questions about the information provided in the bill, each of which had a single correct answer (respondents could see the bill next to the questions they had to answer). Generally, viewing the bill in the best practice format helped respondents pick out the correct answer when compared to the standard bill. On average across all questions, 84% of respondents who saw the best practice bill selected the correct answers, compared to 79% of respondents who saw the standard bill. This result is statistically significant for all eight questions as illustrated in the table below.

Table 6: Shares of respondents who correctly answered the bill comprehension test questions, by basic bill type

Question	Best practice bill	Standard bill	Difference
What is the name of your tariff?	90%	86%	5 pp***
How much are you being charged in total?	90%	87%	3 pp***
How much electricity did you consume?	91%	87%	4 pp***
What is the total unit cost of energy excl. VAT?	77%	72%	6 pp***
What is the standing charge incl. taxes and charges?	82%	78%	4 pp**
What is the duration of your contract?	90%	80%	10 pp***
When does your contract expire?	90%	88%	2 pp*
How much energy did you consume last year?	60%	52%	8 pp***
Average across all questions	84%	79%	5 pp***

Source: "Second Consumer Market Study on the functioning of retail electricity markets for consumers in the EU" (2016) European Commission.

In the 'stay or switch' task, designed to test if the presentation format of consumers' bills impacts their propensity to switch to the cheapest tariff, best practice bills also led to better performance, albeit to a limited extent. Respondents viewing the "best practice" bill were

more likely to choose the cheapest deal compared to those viewing the "standard" bill (61% compared to 59%), this impact is small and only marginally statistically significant overall (Table 7).

Table 7: Share of respondents who selected the cheapest deal[296]

Bill type	All countries	CZ	DE	ES	FR	UK	IT	LT	PL	SE	SI
Best practice	61%	59%	64%	53%	59%	72%	52%	60%	59%	63%	59%
Standard	59%	59%	61%	51%	55%	70%	55%	58%	53%	57%	58%

Source: "Second Consumer Market Study on the functioning of retail electricity markets for consumers in the EU" (2016) European Commission.

If we assume that:

- The average EU switching rates for electricity and gas remained unchanged at 6.3% and 5.5% respectively[297];
- The measures improved the ability of two out of every one-hundred customers who switched to identify a better offer, reflecting the results in Table 7[298];
- The measures benefitted consumers using comparison tools just as much as those comparing the market directly through suppliers[299];
- These consumers were able to save an additional 5 euros from both their electricity and gas bills a year as a result of the measures put in place[300];
- The financial advantage of being able to identify the best deal as a result of these measures persists for four years[301];
- All EU households are able to benefit from these changes equally in relative terms[302];

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296 Note: Weighted base varies by treatment: Best practice = 5,042; Standard = 5,014.

297 As with Option 1, this is a conservative assumption given that 40% more consumers would have access to their unique switching code with every bill (a piece of information important for switching) and significantly more consumers on fixed term contracts are likely to be aware of when their current contracts expired (24% of household consumers report that they only compare tariffs when they needed to renew their contracts). "*Second Consumer Market Study on the functioning of retail electricity markets for consumers in the EU*" (2016) European Commission.

298 This assumes the size of improvement in decision making in the real world is as significant as the size of the effect in the experiment. However, many consumers in the real world would not even have access to all the information in the 'standard' bill in the behavioural experiment (see Table 2). The true effect can therefore be expected to be greater.

299 Whilst the behavioural experiment addressed the latter mode of comparison, one of the benefits of this intervention would also be to give consumers easy access to all information relevant to using comparison tools in every bill (switching code, tariff name, consumption).

300 This figure seems proportionate given that the average 80% range of the dispersion of electricity and gas household offers in the market is around EUR 150 (Figure). Assuming that those switching would tend to be moving from a tariff at the more expensive side of this distribution to a tariff at the cheaper side of this distribution, this amounts to saying that the greater market awareness engendered by this intervention would enable consumers to identify an offer that was just c. 3% cheaper than the offer they would have otherwise identified without the intervention.

301 A conservative assumption given the implied average time between switches is upwards of 15.5 years for electricity consumers and 18 years for gas consumers.

302 In reality, households will react differently depending on consumers' needs, skills, motivations, interests, lifestyle, and access to resources such as accurate online comparison tools. However, we have no reliable data to quantify these differences in this specific context.

- A discount rate of 4% for the consumer benefits year on year;

then Option 2 would result in an increase in consumer surplus **of between 1.8 and 6.5 million euros annually** (depending on the year of implementation), and **55.3 million euros in total for the period 2020-2030**.

However, there is significant uncertainty as to these benefits because it may prove difficult to devise a standard EU comparability box that can fully accommodate all differences between national energy markets. Such as box may downplay the non-quantitative value of energy services (green offers, or offers bundled with home insulation services) when compared to 'plain vanilla' supply contracts. Finally, the prescriptive approach would inhibit beneficial innovation by national regulators and suppliers, and make it difficult to adapt bills to evolving technologies and consumer preferences.

Indeed, the Commission-chaired Working Group on e-Billing and Personal Data Management found that bill design *"should not be imposed by regulation but rather be developed on the basis of better understanding of consumer interests also drawing on the results of behavioural research"*[303].

The **implementation costs** of Option 2 will most likely be significant because:

- All Member States have legislation with billing requirements that are relatively prescriptive, and that will need to be significantly revised (Table 1);
- All energy suppliers would need to significantly revise the design of their household bills in order to comply with the new EU requirements.

This option would therefore result in the following one-time implementation costs to public administrations as well as the 2752 electricity and 1595 gas suppliers in the EU[304]. No running costs are associated with this option due to the computerisation of billing systems.

[303] *Working Group Report on e-Billing and Personal Data Management"*, (2013) Report prepared for the 6th Citizens' Energy Forum, https://ec.europa.eu/energy/sites/ener/files/documents/20131219-e-billing_energy_data.pdf.

[304] Source: CEER National Indicators Database (2015).

Table 8: Option 2 implementation costs (all one-time costs)[305]

Obligation	Action	Entities concerned	Staff type	Hourly rate (EUR)	Man hours	Activity cost (EUR)
Incorporating comparison box into bills	Revising national legislation	28[306]	Legislators, senior officials, managers	41.50	320	371,840.00
	Understanding information obligation	4347[307]	Professionals	32.10	8	1,116,309.60
	Bill design	4347	Professionals	32.10	144	20,093,572.80
					Total	**21,581,722.40**

As regards stakeholder views, Option 2 would not enjoy as much support as Option 1. In particular, it would be resisted by NRAs as well as industry as it would significantly reduce the scope for beneficial innovation by national authorities and suppliers, as well as their ability to tailor information to specific national markets or consumer groups[308]. In addition, whilst consumer groups, the European Parliament and the Committee of the Regions have pushed for greater standardisation of the format of bills, it may prove impossible to devise a format that pleases all of these diverse stakeholders in practice.

Conclusion

Option 1 is the preferred option as it likely leads to significant economic benefits and increased consumer surplus without significant administrative costs or the risk of overly-prescriptive legislation at the EU level.

7.6.6. *Subsidiarity*

Consumers are not taking full advantage of competition on energy markets due, in part, to poor awareness of basic, market-relevant information that could be provided in energy bills.

The Options envisage reinforcing legal requirements on key information to include in consumers' bills. National legal regimes for billing remain fragmented with diverging content and format, and do not always facilitate comparison with offers and pre-contractual information, which would improve switching rates and effectiveness. There is also a need to standardise the definitions of energy costs, network charges, and taxes and levies used in all EU bills in order that consumers understand what they are paying for and are better aware of the extent to which they can control their energy costs.

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[305] Derived from the standard cost model for estimating administrative costs.

[306] All Member States. 40 man-days each.

[307] All electricity and gas supply companies. 18 man-days each.

[308] In a workshop on effective billing that the UK energy regulator, Ofgem, recently held, attendees generally agreed that the level of prescribed information on bills and other communications in the UK is too high, leading to consumers being overwhelmed with information, and that a one size fits all approach doesn't allow for tailored information to be provided to a consumer. See 'Memo: *Effective billing workshop*', (2015) Ofgem, https://www.ofgem.gov.uk/system/files/docs/2016/03/effective_billing_workshop_251115_.pdf.

Well designed and implemented consumer policies with a European dimension can enable consumers to make informed choices that reward competition, and support the goal of sustainable and resource-efficient growth, whilst taking account of the needs of all consumers. Increasing confidence and ensuring that unfair trading practices do not bring a competitive advantage will also have a positive impact in terms of stimulating growth.

The legal basis for the legislative options proposed (Options 1 and 2) is therefore likely to be Article 114 TFEU. This allows for the adoption of *"measures for the approximation of the provisions laid down by law, regulation or administrative action in Member States which have as their object the establishment and functioning of the internal market"*. In doing this, in accordance with Article 169 TFEU, the Commission will aim at ensuring a high level of consumer protection.

Option 0: BAU with stronger enforcement

Business as usual/stronger enforcement does not change the *status quo*. Member States would continue to have a significant degree of discretion in specifying the content of consumers' bills.

From a subsidiarity perspective, this option allows Member States to decide on the extent to which they wish to create an environment where customers are encouraged to switch more freely. If the *status quo* continues, this may not always result in lower overall prices, depending on the national situation.

From the perspective of proportionality, however, this option would not necessarily lead to sufficient improvements in the market.

Option 1: More detailed legal requirements on the key information

The principles of subsidiarity and proportionality are best met through this Option as it is not overly prescriptive and will concretely reduce levels of consumer detriment that are currently not addressed at a national level by all Member State authorities.

This option aims primarily at reinforcing existing legislation but without being overly prescriptive. As billing is already addressed in EU provisions, the subsidiarity and proportionality principles have clearly been assessed previously and deemed as met.

Box 1: Impacts on different groups of consumers

The benefits of the measures contained in the preferred option (Option 1), described in detail in the preceding pages, accrue predominantly to consumers who do not engage in the market or better control their energy consumption because of insufficient billing information or confusing bills. This may include certain vulnerable consumers, or those who are time poor.

Option 2: A fully standardized 'comparability box' in bills

Implementing a standardised comparability box for billing would help to create a level playing field for consumers within Member States and between Member States. At this point, however, it would be disproportionate to impose such a requirement as consumer research in this area is ongoing and current findings are inconclusive.

7.6.7. *Stakeholder's opinions*

Public Consultation

222 out of 237 respondents to the Commission's Consultation on the Retail Energy Market[309] believed that transparent contracts and bills were either important or very important for helping residential consumers and SMEs to better control their energy consumption and costs. 110 out of 237 believed that prices and tariffs that were difficult to compare were a key factor influence switching rates. And 66 out of 133 respondents who thought that bills did not provide sufficient information thought this was the case because they were not sufficiently transparent and meaningful.

43% of all 332 respondents to the Commission's Consultation on the Review of Directive 2012/27/EU on Energy Efficiency[310] think the EED provisions on metering and billing are sufficient to guarantee all consumers easily accessible, sufficiently frequent, detailed and understandable information on their own consumption of energy, versus 32% who opposed this view, and 25% who had no view. Most comments were provided by participants who did not think that the provisions are sufficient. Many argued that energy bills would remain too complex to be properly understood by most customers.

Citizens' Energy Forum, February 2016

The European Commission established the **Citizens' Energy Forum** in 2007. The Forum meets on an annual basis in London and is organised with the support of Ofgem, the UK regulatory authority. The overall aim of the Forum is to explore consumers' perspective and role in a competitive, 'smart', energy-efficient and fair energy retail market. The London Forum brings together representatives of consumer organisations, energy regulators, energy ombudsmen, energy industries, and national energy ministries.

The 8th Citizens' Energy Forum, organised by DG Energy in collaboration with DG Justice, took place in London on Tuesday 23 and Wednesday 24 February. In its conclusions, the forum: *"Call*[ed] *for improved and comparable pre-contractual information, including green offers, contract and billing information to increase consumer engagement."* It addition, the Forum: *"Call*[ed] *for phasing out regulated prices and more clarity on the costs of the components of energy bills to remove barriers to effective competition and allow consumers to choose from more diverse offers."*

European Commission Working Group on e-Billing and Personal Energy Data Management

Including representatives from national NRAs, consumer groups and industry, this **working group** concluded in December 2013 that data presented in e-bills and e-billing information, as well as in paper bills and consumption data presented on paper, needed to be correct, clear, concise and presented in a manner that facilitates comparison and

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[309] Held from 22 to 17 April 2014. https://ec.europa.eu/energy/en/consultations/consultation-retail-energy-market

[310] Held from 4 November 2015 to 29 January 2016. https://ec.europa.eu/energy/sites/ener/files/documents/Public%20Consultation%20Report%20on%20the%20EED%20Review.pdf

provides all relevant information to consumers – including complaint handling and contact points for consumer information e.g. on their energy bills and consumption.

It acknowledged that clear and accurate information on energy consumption, feedback devices, as well as information on historical consumption can help consumers to be better aware of their consumption.

It also suggested that information is presented to consumers in a 'tiered' manner from basic towards more complex data, enabling consumers to look for additional, e.g. more 'technical' data, in an educational manner[311].

National Regulatory Authorities
ACER suggests that there is still a lack of information relevant to switching suppliers on the bill in many Member States. However, it point out that too much information can also lead to too complex bills inhibiting the beneficial role of information to consumers.

The body representing the EU's national regulatory authorities in Brussels, **CEER**[312], points out that detailed requirements can reduce the scope for innovation among suppliers and could become outdated quickly (e.g. there are more people opting for electronic billing). To this end, it feels that minimum standards or slightly higher-level requirements might be more appropriate. It states that understandable billing information as well as readily comparable information are critically important for consumers and welcomes the proposal from the European Commission to identify, in collaboration with national regulators, minimum standards for key information in advertising and bills. It agrees that information on consumption patterns is important for consumers.

The Czech NRA **ERO** states that bills are very difficult to understand, not easy to read and overloaded. Consumers need clear and transparent information, to be able to compare offers, contract termination information, and information for switching.

The French NRA **CRE** suggests that the layout of energy bills should contain two levels: essential / minimal information and detailed information (including where relevant, meter reading, all tariffs, taxes and levies). In a consumer centric model, the exact layout should be the suppliers' responsibility. The breakout pages of the bill might not be relevant in the near future, with the development of web-only / paperless offers. Detailed legislation on paper bills is probably irrelevant in a forward looking perspective, considering the general trend in recurrent billing services. Paper bills should not be made compulsory. Paperless should be promoted as interactive relations allow the supplier to develop a higher competitive advantage.

The UK NRA **Ofgem** does not support prescription beyond ensuring that the key information is presented clearly. The layout of bills should be broadly left to suppliers. Testing and trials is the best route through which to identify the most effective way to present information on bills. It is important to ensure that consumers have access to key information and that this is not hidden away. In GB on key communications consumers are

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311 *Working Group Report on e-Billing and Personal Data Management"*, (2013) Report prepared for the 6th Citizens' Energy Forum, https://ec.europa.eu/energy/sites/ener/files/documents/20131219-e-billing_energy_data.pdf.

312 The Council of European Energy Regulators.

presented with a Tariff Information Label (TIL) that houses key information about their tariff and consumption. This provides them with easy access to the information they need to switch tariffs. Ofgem considers this to be a useful/effective tool for consumers. Ofgem has received feedback from a number of sources that consumers find their bills confusing and overly complex.

Consumer Groups

BEUC states that the current EU legislative provisions related to billing are insufficient. Bills should be clear and concise and include the necessary information for the consumer to compare offers and to switch supplier. BEUC welcomes the Commission's plan to put forward proposals to improve the information provided on the bill in order to facilitate comparability and switching among others.

Simpler bills are welcome by consumers. EU legislation should also prescribe the outcomes required for consumers (e.g. that consumers have the data required to switch). As bills are often packed with a lot of information, a way to avoid the overload and simplify the overall bill would be to provide only fundamental elements on the bill (for example in a standardized box). The bill could then include a reference to find more detailed but perhaps less crucial information online.

The first page of the bill should contain specific elements which are standardised. A comparability box showing the key information for switching is needed on the first page of the bill. The Commission should respect the consumer's choice not to play an active role. Clear and accurate bills require high level principles for bills at the EU level. Consumers have a diverse range of preferences and of accessible tools so the approach to information should be shaped by consumer research at the national level. The focus should be on less, simpler and more meaningful is better.

The Swedish consumer group **Konsumenternas** highlights that issues with the bill are often connected to lack of knowledge or understanding the difference between supply and distribution and the respective prices/tariffs. Billing should be subject to competition. Legal provisions on the clarity of bills are difficult to sanction by the regulator. Paper bills are likely to decrease in number and become less relevant.

The Portuguese consumer group **DECO** Highlights that while we already have a standardized information model of pre-contractual information, we don't have the same for energy bills. It could be useful to have a comparability box in the bill, which shows key elements (including energy used compared with previous year, contract end date etc.) and also have information about new promotions and discounts of the same supplier.

DECO believes that some elements that are similar on all energy bills should be standardised at EU level, namely:

1. Energy supplier identification
2. Customer/Consumer identification
3. Invoice date information
4. Invoice number information
5. Commercial supply/services identification (base product/campaign)
6. Specific offer conditions
7. Fees and taxes
8. Bundled Services
9. Payment Methods
10. Social Tariffs/Mechanisms for vulnerable consumers

11. Information about savings/sustainability and energy poverty measures.

Citizens Advice (UK) believes that a comparability box showing the key information for switching is needed on the first page of the bill. EU legislation should prescribe the outcomes required for consumers (e.g. that consumers have the data required to switch). This should be supported by actions to monitor and enforce this (e.g. with a link across to the indicators for market monitoring, including by CEER/ACER). The format and layout should be subject to consumer testing/consumer research. It is useful to provide consumers with information on similar properties in the area but the 'bill' may not be the best location. For instance, the information could be provided in a separate report, sent to the household, outside of the standard billing cycle.

Germany's **VZBV** believes that a clear requirement to show the price per kWh including taxes is missing in the regulation. A requirement to access the meter is missing in the regulation as well. Although legislations exists, these are partly insufficiently implemented from the consumer point of view (esp. in terms of understand ability).

Suppliers

EURELECTRIC states that many consumers across Europe complain that there is too much information on their bills, making them difficult to read. At the same time, regulation does not always allow suppliers to simplify or improve them to fit with specific consumer needs. In a competitive market, bill design should be left to suppliers (and other market parties) to diversify their brand and image. Suppliers also need flexibility to take into account the needs of different groups of consumers. Beside, EURELECTRIC thinks the main issue with bill is not about the "layout" per se but about its "regulated content" (e.g. taxes, legal wording, consumption estimation, etc.). Only the most critical elements could be standardised at national level if evidence suggests this is needed. Consumers also face problems with the high volume of regulated information on their bills. The primary purpose of a bill is to set out charges for energy and to allow the customer to understand how their consumption affects those charges. Giving evidence of how the lay-out of paper bills can create competitive advantage is not an easy thing to do. The point is that different consumer/consumer groups may have different needs and preferences as to what they'd like to see in their energy bill: level of details, format, use of graphs/tables, etc. This is why suppliers should be given enough flexibility to innovate. In any competitive market, differentiation is key to create competitive advantage. EURELECTRIC does not see any evidence which would support the need for further standardisation of elements of the energy bill at European level.

Eurogas states that EU legislation sets prescriptive requirements on billing frequency and use of meter readings which can and should be left to suppliers in competitive markets. Communications should also be able to adapt to changing technology, such as the increasing use of digital media, including smartphones and tablets. Suppliers in competitive markets are best-placed to work out how to engage customers. Graphs and tables may be equally useful in certain situations but it should be up to the competitive market to determine how to present information to customers in an engaging way. Consumers face problems with the high volume of regulated information on bills. The primary purpose of a bill is to set out charges for energy and to allow the customer to understand how their consumption affects those charges. To facilitate the readability of the bill, some information (such as general conditions) could be made available on the dedicated customer area and signposted on the bill.

CEDEC argues that before including new measures in the legislation it should be ensured that the current provisions are respected. New requirements should be conditional on technical feasibility and cost-effectiveness. The focus on measures that are technically feasible and cost effective must remain. Consumers find more difficult to identify and choose the cheapest deal if price structure of electricity offers is complex. In this sense, it would be useful to avoid too many pieces of information.

UK ENERGY highlights that all markets are different and it is the role of competition between market participants to determine what is most effective and appropriate for billing purposes. It believes suppliers need more flexibility to determine what information they provide to customers and how that information is provided with what frequency. Suppliers should have increased flexibility in the layout of the bill since this is one of the few and key contact points to engage with customers. The primary purpose of a bill is to set out charges for energy and to allow the customer to understand how their consumption affects those charges. It is unclear how a standardisation of the first page could keep pace with changing technologies and markets. Consumers increasingly want to receive communication in alternative formats such as online or via apps. It is unclear what benefits standardisation at European level would bring.

The European Parliament

In its April 2016 opinion on the Commission's Communication on Delivering a New Deal for Energy Consumers, the Parliament's **Committee on Industry, Research and Energy (ITRE)**: *"Recommends improving the frequency of energy bills and the transparency and clarity of both bills and contracts in order to aid interpretability and comparison, and to include in or alongside energy bills peer-based comparisons and information on switching; insists that clear language must be used, avoiding technical terms; requests the Commission to identify minimum information requirements in this respect, including best practices; stresses that both fixed charges and taxes and levies should be clearly identified as such in the bills, allowing the customer to distinguish them easily from the variable, consumption-related cost; recalls existing requirements for suppliers to specify in or with bills the contribution of each energy source to the overall fuel mix of the supplier over the preceding year in a comprehensible and clearly comparable manner, including a reference to where information can be found on the environmental impact in terms of CO_2 emissions and radioactive waste. Recommends that consumers should be notified in or alongside energy bills about the most suitable and advantageous tariff for them, based on historic consumption patterns, and that it should be possible for consumers to move to that tariff, if they so wish, in the simplest way possible. Considers that incentives and access to quality information are key in this respect and asks the Commission to address this in upcoming proposals."*

In its April 2016 opinion on the Commission's Communication on Delivering a New Deal for Energy Consumers, the Parliament's **Committee on the Internal Market and Consumer Protection (IMCO)** called for: *"the Commission to take further action to improve the frequency of energy bills and the associated meter readings, and their clarity, comparability, and transparency as regards types of energy sources, consumption, price structure and the processing of enquiries and complaints."*

The Committee of the Regions

In its April 2016 opinion on the Commission's Communication on Delivering a New Deal for Energy Consumers, the **Committee of the Regions**:

- calls on the European Union to examine the different components of energy bills, in order to put together a "standard" bill incorporating a number of elements that

are uniform, legible, clear and comparable at European level and which would allow consumers to optimise their energy use. In this regard, the European Committee of the Regions supports the Council of European Energy Regulators' initiative to set out harmonised definitions of different elements that should be included in energy bills;

- calls for standardisation to be accompanied in the final bill by information about the free tools and services that are available for comparing supply offers, as well as information and support for households and businesses with regard to the protection of consumers' rights;
- calls on Member States to create tools and services that make bills easier for households and businesses to understand, so that they can be analysed; and, where appropriate, to provide advice and support for end-users regarding the steps which may be necessary to rectify any irregularities identified or guide end-users towards supply contracts that are better suited to their needs;
- recommends that bills and any information issued by suppliers to their end-users should be sent in the format requested by the latter, i.e. via post or e-mail, without any discrimination;
- stresses that vulnerable consumers are particularly likely to encounter difficulties in identifying the best tariffs amongst the wide range of offers, and that they often seek the assistance of the closest level of governance. Consequently, the European Committee of the Regions calls upon the European Union to assist local and regional authorities in setting up support systems in the field of energy if this is not being done by the Member States.

8. DESCRIPTION OF RELEVANT EUROPEAN R&D PROJECTS

Technological developments are both part of the drivers that affect the present initiative and part of the solutions of the problems they affect.

Technological developments have created the opportunities for consumers to transit from being passive consumers of electricity to prosumers that can actively manage their consumption, storage and production of electricity and particiapte in the market. This provides opportunities for innovative business models of service provisions, often based on advanced technologies, based on enabling smaller consumers and distributed generation to interact with the market and have their resources being managed. At the same time, networks should be managed more actively in order to meet the challenges more decentralised generation brings about.

As the transition path is also created by technological progress and the solutions to the problems they entail are equally shaped by technology, the present annex provides for a sample of projects, supported by the EU through its 6th and 7th Framework Programme and Horizon2020, that have developed technologies and innovations that render these developments more concrete but also provide insights as to the direction the transition may take.

Project FP7-DISCERN

Title: Distributed Intelligence for Cost-Effective and Reliable Distribution Network Operation

The project linked with six large-scale smart grids demonstration projects financed at national level. The project developed methods to characterise outcomes and aimed to find ways to replicate solutions from one country to another.

Fact Sheet: http://cordis.europa.eu/project/rcn/106040_en.html

Web Site: http://www.discern.eu/

Important project outcome include:

The practical testing and tuning of performance metrics (Key Performance Indicators – KPI) and evaluation of their values based on actual measurements. The project concludes that use of the KPI framework is a valid approach for revealing the impact of a technical solution and its function(s) on a DSO grid, system or organisation and to set the expected set of outcomes. These can be used to analyse cost/benefit ratios at design stage and after implementation. Cost KPIs are a valid method for assessing cost structures for Use Cases, however as the creation of a common cost list to support impartial comparisons of the various Use Cases was found impractical within the constraints of DISCERN, the evaluation of costs and determination of initial investments relied on individual Use Case information, which by its nature incorporates company specific cost drivers

Project FP7-ITESLA

Title: Innovative Tools for Electrical System Security within Large Areas

The project developed methods and tools for the coordinated operational planning of power transmission systems, to cope with increased uncertainties and variability of power flows, with fast fluctuations in the power system as a result of the increased share of resources connected through power electronics, and with increasing cross-border flows. The project aims at enhancing cross-border capacity and flexibility while ensuring a high level of operational security.

Fact Sheet: http://cordis.europa.eu/project/rcn/101320_en.html
Web Site: http://www.itesla-project.eu/

Important project outcomes include:

- a platform of tools and methods to assist the cooperation of transmission system operators in dealing with operational planning from two days ahead to real time, particularly to ensure security of the system. These tools support the optimisation of security measures, in particular to consider corrective actions, which only need to be implemented in rare cases that a fault occurs, in addition to preventive actions which are implemented ahead of time to guarantee security in case of faults. The tools provide risk-based support for the coordination and optimisation of measures that transmission operators need to take to ensure system security. The platform also supports "defence and restoration plans" to deal with exceptional situation where the service is degraded, e.g. after storms, or to restore the service after a black-out. The platform has been made publicly available as open-source software.
- A clarification of the data and data exchanges that are necessary to enable the implementation of these coordination aspects.
- A framework to exchange dynamic models of power system elements including grids, generators and loads, and a library of such models covering a wide range of resources. These models are essential to produce accurate prediction of the rapid fluctuations that take place in the power grid after faults, and to prevent cascading failures.
- The tools and models allow to reduce the amount of necessary preventive measures. The reliance on risk-based approaches can avoid or mimimise costly preventive measures such as re-dispatching while the overall risk of failure is decreased.
- A set of recommendations to policymakers, regulators, transmission operators and their associations (jointly with the UMBRELLA project). These foster the harmonisation of legal, regulatory and operational framework to allow the exploitation of the newly developed methods and tools. They also

identify the need for increased formalised data exchange among TSO's to support the new methods and tools.

Project FP7-UMBRELLA

Title: Toolbox for Common Forecasting, Risk assessment, and Operational Optimisation in Grid Security Cooperations of Transmission System Operators (TSOs)

The project developed methods and tools for the coordinated operational planning of power transmission systems, particularly to cope with high shares of variable renewable energy. They aimed at enhancing cross-border capacity and flexibility while ensuring a high level of operational security.

Fact Sheet: http://cordis.europa.eu/project/rcn/101318_en.html
Web Site: http://www.e-umbrella.eu/

Important project outcomes include:

- The demonstration of probabilistic forecasting of power generation and power flows on a regional basis. These are important to plan ahead of time, the most effective methods for relieving expected congestions. Such forecasts will also be important for intraday trading on wholesale markets.
- Validated methods and tools for a coordinated optimisation of measures to ensure the security of the pan-European grid. Of particular importance is the to coordination of measures for relieving expected congestions, starting from low-cost measures such as switches to coordinated generation redispatching.
- The tools and models allow to reduce the amount of necessary preventive measures. The reliance on risk-based approaches can avoid or mimimise costly preventive measures such as re-dispatching while the overall risk of failure is decreased.
- a set of recommendations to policymakers, regulators, transmission operators and their associations (jointly with the ITESLA project). These foster the harmonisation of legal, regulatory and operational framework to allow the exploitation of the newly developed methods and tools. They also identify the need for increased formalised data exchange among TSO's to support the new methods and tools.

Project FP7-eHIGHWAY2050

Title: Modular Development Plan of the Pan-European Transmission System 2050

The project developed new methods for the top-down long-term foresight of the power system infrastructure in a 2050 perspective, and applied these to depict grid requirements under a number of scenarios, and outlined a "future proof" modular development pathway to this horizon.

Fact Sheet: http://cordis.europa.eu/project/rcn/106279_en.html
Web site: http://www.e-highway2050.eu/e-highway2050/

Important project outcomes include:

- a number of basis scenarios framing possible evolution of demand, generation and delivery infrastructure in the 2050 perspective
- a foresight of expected power system technology evolution in this time frame
- optimised grid architectures to efficiently respond to the delivery needs for each of the selected scenarios
- a modular development plan with intermediate steps that largely fit all the future pathways
- new methods for optimal long-term planning of power systems in the presence of major uncertainties
- a well-documented proposal for the clarification of the concept of "electricity highways" in the context of the EU energy infrastructure package. This proposal has largely been adopted in the process of selecting the second round of "projects of common interest" and has resulted in a substantial number of projects identified as "electricity highways" as part of a double label.

Project FP6 : VSYNC –

Title: Virtual Synchronous Machines (VSG's) For Frequency Stabilisation In Future Grids with a Significant Share of Decentralized Generation.

The project developed methodologies to enable a generator to behave like a "*Virtual Synchronous Generator*" (**VSG**) during short time intervals and contribute to the stabilisation of the grid frequency.

Cordis website: http://cordis.europa.eu/project/rcn/85687_en.html

Project website: http://www.vsync.eu/

Important project outcomes include:

- The Virtual Synchronous Generator technology can contribute to the stabilisation of the grid frequency at distribution level. The Vsync technology could allow PV to provide balancing services replacing the inertia of 'traditional' generators. As a result, the RES absorption capacity of the grid is increased.
- Today frequency control is handled by TSOs mainly with the help of generators connected to the transmission network. The provision of Ancillary Services of assets connected to the distribution grid is currently not standard practice and is not standardized. However, it is possible that these will be required or offered in future, due to increased system needs, increasing share of decentralized generation (also reducing the possibility to rely exclusively on large generation) and possible connection and reinforcement cost optimization at distribution..

IEE project REServiceS –

Title: Economic grid support from variable renewables

RESERVICES addresses changes in the future European power system:, in particular the need for development of an ancillary services market in which RES can participate.

IEE website: http://ec.europa.eu/energy/intelligent/projects/en/projects/reservices

Project website: http://www.reservices-project.eu/

Important project outcomes include:

- **Ancillary services** are grid support services required by the power systems (transmission or distribution system operators TSOs or DSOs) to maintain integrity, stability and power quality or the power system (transmission or distribution system). Ancillary services can be provided by connected generators, controllable loads and/or network devices. Some services are set as requirements in Grid Codes and some services are procured as needed by TSOs and DSOs to keep the frequency and voltage of the power system within operational limits or to recover the system in case of disturbance or failure.
- There are different procurement and remuneration practices for Ancillary services, and these practices are evolving. There are already markets for some services. Some services are mandatory (not necessarily paid for) and some services are subject to payments according to regulated (tariff) pricing or tendering process and competitive pricing.
- RES (in particular PV and wind) can provide ancillary services both at DSO and TSO level, from a technology point of view, but due to the way the markets are defined (and the way ancillary services are managed) in practice they cannot participate.

Project FP6 Integral

Title: Integrated ICT-platform based Distributed Control in electricity grids with a large share of Distributed Energy Resources and Renewable Energy Sources.

The INTEGRAL project demonstrated how Distributed Energy Resources and Demand Side Response in the distribution grid can be controlled and coordinated, based on commonly available ICT components, standards and platforms. The project treated the operating conditions of the grid with DER/RES aggregations in three different operating conditions:

- Normal operating conditions of DER/RES aggregations – Stakeholders involved: consumers, aggregators, utilities.
- Critical operating conditions of DER/RES aggregations – Stakeholders involved: consumers, DSO
- Emergency operating conditions – Stakeholders involved: DSO

Cordis website: http://cordis.europa.eu/project/rcn/86362_en.html

Project website: http://integral-eu.com/

Important project outcomes include

- The test field A of the INTEGRAL project (grid in normal operational conditions), the PowerMatching City, demonstrated that the control of DER through an automated market based concept by means of "agents" distributed in the grid and the Powermatcher application, satisfies the needs of consumers, aggregators and DSO. On the Data and communication aspects, the project demonstrated the absence of technological barriers as public networks were used for transport of private data by means of Virtual Private Networks (VPN), a proven technology to transfer encrypted data.
- The test field B (critical operation of the grid) demonstrated that DSO or aggregators can control the grid through controlling loads and generation of prosumers. Under critical conditions, the Demand Side Management (DSM) system disconnects the critical loads.
- The test field C (emergency operation of the grid) demonstrates that the self-healing concept helps to minimize the average outage time of the grid. It is a high automation levels that allows DSO reducing the average number of interruptions, enhancing hence the service quality of the grid.

Project FP7 SuSTAINABLE

Title: Smart distribution System operaTion for mAximising the Integration of renewable generation

The SuSTAINABLE project developed and demonstrated the efficient and cost-effective management of the grid with high penetration of RES configured as a virtual power plant through elaboration of data related to load forecast, grid infrastructure protection and renewable energy production forecast.

Cordis website: http://cordis.europa.eu/project/rcn/106534_en.html

Project website: http://www.sustainableproject.eu/Home.aspx

Important project outcomes include:

- Concerning data management, the project demonstrated that intelligent management supported by more reliable load and weather forecast can optimise the operation of the grid. The results show that using the distributed flexibility provided by DRD – Dynamic Response of Demand can bring an increase of RES penetration while, at the same time, avoiding investments in network reinforcement.
- Concerning DSO benefits, the results of the project demonstrated that the active management of the renewable generation can lead to a decrease in the investment costs of distribution lines and substations.

Project FP7 IDE4L

Title: Ideal Grid for All

The IDE4L project focuses on

- improving distribution network monitoring and controllability by introducing hierarchical decentralized automation solution for complete real-time MV and LV grid management,
- utilizing existing distribution networks more efficiently and managing fast changing conditions by integrating large number of distributed energy resources in distribution network through real-time automation and market based flexibility services,
- guaranteeing continuity and quality of electricity supply by distributed real-time fault location, isolation and supply restoration solution cooperating with microgrids, and
- improving visibility of distributed energy resources to TSOs by synthesizing dynamic information from distribution system and to commercial aggregators by validating and purchasing flexibility services.

Cordis website: http://cordis.europa.eu/project/rcn/109372_en.html

Project website: http://ide4l.eu/

Important project outcomes include:

- Concerning data management and interoperability, the project aims to create a single concept for distribution network companies to implement active distribution network today based on existing technology, solutions and future requirements.
- All data exchange and data modelling are based on international standards IEC 61850, DLMS/COSEM and CIM to enable interoperability, modularity, reuse of existing automation components and faster integration and configuration of new automation components.

IDE4L develops the entire system of distribution network automation, IT systems and functions for active network management.

- Fault location, isolation and supply restoration
- Congestion management
- Interactions between distribution and transmission network companies

Project FP7 NRG4Cast

Title: Energy Forecasting

NRG4Cast project developed advanced solutions for predicting behaviour of local energy networks for the three functions:

- Predicting energy demand on several network granularity levels (region, municipality, city, business, household and energy service provider),
- Predicting energy network failures on interlinked local network topologies,

Detecting short-term trends in energy prices and long-term trends in national and local energy policies.

Cordis website: http://cordis.europa.eu/search/result_en?q=nrg4cast

Project website: http://www.nrg4cast.org/

Important project outcomes include:

- From the data collection point of view, the project demonstrates (as other similar projects) that the optimization of the use of energy (and hence a higher business margin) in a distributed generation can be achieved with the support of IT dedicated tools. DSOs as well as other actors (utilities, municipalities, etc.) can use these tools in their activities.

Project FP7 EEPOS

Title: Energy management and decision support systems for Energy Positive neighbourhoods

EEPOS is a central energy management system for neighbourhoods that performs coordinated energy management. Additionally, it actively participates in energy trading with external parties on behalf of the neighbourhood members.

Cordis website: http://cordis.europa.eu/project/rcn/105854_en.html

Project website: http://eepos-project.eu/

Important project outcomes include:

- Regarding the right to self-produce, consume, store electricity and use flexibility, optimization of use of energy use can be achieved at neighbourhood or district level more effectively than at household level through ad hoc energy management systems (IT support as other similar projects).
- Consequence: Matching supply and demand automatically relieves grid unbalance providing hence indirectly grid services.

H2020: BRIDGE project network

The BRIDGE initiative collects policy recommendations from the use cases which are currently under demonstration in the ongoing H2020 energy projects.

Important findings for the market design initiative:

Balancing:

- barriers on access to the balancing market. It is observed that not all markets in practice allow load to be included. This is discriminatory for the energy storage assets demonstrated in the projects and does not allow the correct valorisation of their double operative nature.

Ancillary services:

- barriers on access to the ancillary market. Participants in the project include Energy Service companies that provide e.g. Frequency Response, Congestion management, Reserve and Ramping Duty. It is recommended that products for ancillary services should be consistent and standardized from transmission and down to the local level in the distribution network. Such harmonization will increase the availability of the services, enable cross-border exchanges and lower system costs.

Project H2020: SMARTNET

Title: Smart TSO-DSO interaction schemes, market architectures and ICT Solutions for the integration of ancillary services from demand side management and distributed generation

The project SmartNet aims at providing architectures for optimized interaction between TSOs and DSOs in managing the exchange of information for monitoring and for the acquisition of ancillary services (reserve and balancing, voltage regulation, congestion management) both at national level and in a cross-border context.

Cordis web site: http://cordis.europa.eu/project/rcn/200556_en.html

Project web Site: http://smartnet-project.eu/

Important project outcomes include:

- Validated acquisition of ancillary services from specific resources such as thermal inertia of indoor swimming pools and batteries in telecommunication base systems. In addition the project will demonstrate modalities to exchange monitoring signals between transmission and distribution networks. The architectures for dataflow and control signals will be tested in full replica lab considering various levels of responsibilities for the DSOs. These ranges from a model with extended central dispatch where TSO contracts ancillary services directly from DER owners connected to the DSO grid to a more decentralized model where TSO, DSO and BRPs contract ancillary services connected at distribution

level for their own need in a common market. The preferential architectures and data flow models will be defined during the course of the project that is running until the end of 2018.

Project FP7: ECOgrid-EU

Title: Large scale Smart Grids demonstration of real time market-based integration of DER and DR

ECOGRID-EU is a large-scale demonstration project which included 1,900 test households, out of which ~1,200 houses were equipped with home automation equipment and 500 were manually controlled households. The project focused on direct (resistance based) and indirect (heatpump) electricity heating applications for households since these has the highest volume potential for demand response

Cordis web site: http://cordis.europa.eu/project/rcn/103636_en.html

Project web Site: http://www.eu-ecogrid.net/

Important project outcomes include:

- Dynamic pricing needs a short time-interval, i.e. 15 minutes or less. It shows as well that this is technically possible: even a 5-minute period is technically possible although not cost-effective in the project setting.
- The FP7 project ECOGRID has successfully demonstrated a "real time" power market concept with 5 min time resolution. The concept provides the customers with real time prices and the local ICT control system in the houses make it possible to optimize the use of electricity by automated adjustment of the consumption. The concept included both a global price signal for balancing and a locational price signals for congestion management, although the latter wasn't fully validated. In the basic concept of the EcoGrid EU project, control of active power is generally done by leveraging the global real-time market price and its corresponding forecast. Based on this, price deviations for each of the local areas can be computed in order to relief active power issues within that area. The ICT concept consists of a new market place and local control schemes which are implemented by three different technology vendors, thereby allowing a wider base of appliances.
- It showed as well the importance of a reliable communication and automation channel, in particular for 'legacy equipment' (i.e. already installed heat pumps or electric heating).
- An important learning was that automated control has responded much better to price signals than manually controlled. A customer with manual control gave a 60 kW total peak load reduction while automated or semi-automated customers gave an average peak reduction of 583 kW.
- For the households equipped with fully automated demand response, the communication interface was the highest share of the equipment cost, but in future these costs could be virtually zero when appliances are cloud connected anyway.
- For the demonstration area (Bornholm in Denmark) wind power curtailment (virtually) was reduced by almost 80%, and the use of (virtual) spinning reserves has been reduced by 5.5%.
- In the replication roadmap it is shown that the Belgian market could give a EUR 2 million/year reduction of balancing cost if 10%, of the 18% of the households that have a hot water buffer tank, is used for demand response.

Project FP7 Grid4eu

Title: Large-Scale Demonstration of Advanced Smart GRID Solutions with wide Replication and Scalability Potential for EUROPE

Grid4EU aims at testing in real size some innovative system concepts and technologies in order to highlight and help to remove some of the barriers to the smart grids deployment and the achievement of the 2020 European goals. It focuses on how distribution system operators can dynamically manage electricity supply and demand, which is crucial for integration of large amounts of renewable energy, and empowers consumers to become active participants in their energy choices. It is organized around large-scale demonstrations networks located in six different countries,

Cordis web site: http://cordis.europa.eu/project/rcn/103637_en.html

Project web Site: http://www.grid4eu.eu

Important project outcomes include:

- Demonstration of enhanced functionalities of Online Tap Change Transformers (OLTC) that will enable higher levels of PV to be integrated in the downstream LV grid. This function consists in fine-tuning the voltage set point according to a set of parameters and inputs that includes real-time solar radiation, used as an indicator of the amount of PV energy being produced. This enhanced control allows varying the voltage set point that takes into account the amount of PV energy being produced, including reaction to real time perturbations (e.g. temporary reduction in PV production due to a cloud).
- Demonstration of technical viability of islanding in a segment of a distribution network to alleviate e.g. critical situations at TSO level.
- Demonstration of the "Network Energy Manager (NEM) that provides an integrated flexibility marketplace for the TSO and DSO to specify their flexibility needs to solve their respective grid operational constraints. These needs can be automatically computed by the NEM based on renewable production forecasts and individual load forecasts. The NEM also provides a portal for various DER and flexibility aggregators to offer their flexibility services to satisfy the requests. As a result, the NEM performs a global optimisation to address needs in the most economical way while still enforcing the technical constraints. This fully automated process notifies the aggregators of their awarded flexibility for implementation and activation for demand response, load shifting or storage device dispatch.

Project H2020: Futureflow

Title: Smart TSO-DSO interaction schemes, market architectures and ICT Solutions for the integration of ancillary services from demand side management and distributed generation

FutureFlow links interconnected control areas of four transmission system operators of Central-South Europe which today do face increasing challenges to ensure transmission system security: the growing share of renewable electricity units has reduced drastically the capabilities of conventional, fossil-fuel based means to ensure balancing activities and congestion relief through redispatching. Research and innovation activities are proposed to validate the enabling conditions for consumers and distributed generators to provide balancing and redispatching services, within an attractive business environment.

Cordis web site: http://cordis.europa.eu/project/rcn/200558_en.html

Project web Site: http://www.futureflow.eu/

Important project outcomes include:

- The project Futureflow will demonstrate in near-to-real-life conditions that balancing and redispatching service providers are able to provide cross-border balancing and redispatching services to control zones outside their Member State borders, including automatic frequency restoration reserve services. Each transmission system operator connected to the regional platform is able to perform its activities by using the offers from generators and consumers possibly located in the control area of another transmission system operator also connected to the regional balancing and redispatching platform.

Project FP7-AFTER

Title: A Framework for electrical power sysTems vulnerability identification, dEfense and Restoration

The AFTER project addresses the challenges posed by the need for vulnerability evaluation and contin-gency planning of the energy grids and energy plants considering also the relevant ICT systems used in protection and control. Project emphasis is on cascading events that can cause catastrophic outages of the electric power systems.

Cordis web site: http://cordis.europa.eu/project/rcn/100196_en.html

Project web Site: http://www.after-project.eu

Important project outcomes include:

- The FP7 project AFTER has developed a framework for electrical power systems vulnerability identification, defense and restoration. It uses a large set of data (big data) coming from on-line monitoring systems available at TSOs' control centres. A fundamental outcome of the tool consists in risk-based ranking list of contingencies, which can help operators decide where to deploy possible control actions.

Project FP7-SESAME

Title: Securing the European Electricity Supply Against Malicious and accidental threats

SESAME develops a Decision Support System (DSS) for the protection of the European power system and applies it to two regional electricity grids, Austria and Romania.

Cordis web site: http://cordis.europa.eu/project/rcn/98988_en.html

Project web Site: https://www.sesame-project.eu/

Important project outcomes include:

- SESAME, developed a comprehensive decision support system to help the main public actors in the power system, TSOs and Regulators, on their decision making in relation to network planning and investment, policies and legislation, to address and minimize the impacts (physical, security of supply, and economic) of power outages in the power system itself, and on all affected energy users, based on the identification, analysis and resolution of power system vulnerabilities.

Project H2020: Nobelgrid

Title: New Cost Efficient Business Models for Flexible Smart Grids

NOBEL GRID will develop, deploy and evaluate advanced tools and ICT services for energy DSOs cooperatives and medium-size retailers, enabling active consumers involvement –i.e. new demand response schemas – and flexibility of the market – i.e. new business models for aggregators and ESCOs.

Cordis web site: http://cordis.europa.eu/project/rcn/194422_en.html

Project web Site: http://nobelgrid.eu/

Important project outcomes include:

- The H2020 project NOBEL Grid will develop, deploy and evaluate advanced tools and ICT services for energy DSOs cooperatives and medium-size retailers, enabling active consumers and prosumers involvement. Particularly for domestic and industrial prosumers they will develop an Energy Monitoring and Analytics App. Demonstration and validation of the project solutions will be done in real conditions in five different electric cooperatives and non-profit sites in five EU members' states.

Project FP7-S3c

Title: Smart Consumer - Smart Customer – Smart Citizen

The S3C project's overall objective is to foster the 'smart' energy behaviour of energy customers in Europe by assessing and analysing technology and user-interaction solutions and best practices in scientific literature, test cases and pilot projects. Based on these insights, the S3C consortium has developed a practical toolkit for everyone who is involved or intends to become involved in the active engagement of end users in smart energy projects or rollouts.

Cordis web site: http://cordis.europa.eu/project/rcn/105831_en.html

Project web Site: http://www.s3c-project.eu/

Important project outcomes include:

- The project suggests that energy system actors (e.g. DSOs, suppliers, ESCOs, regulators) must adapt the way and the content of their communication with customers and citizens, taking into account the

diversity of consumer segments with different backgrounds and needs. The content of communication must be transformed into something more visual, tangible and understandable, showing exactly the benefits customers may experience (e.g. saved money, reduction of CO2 emission) instead of a purely technical information.

Project FP7-metaPV

Title: Metamorphosis of Power Distribution: System Services from Photovoltaics

The goal of the demonstrator was to explore in real life how PV systems can provide grid services for increasing the hosting capacity of existing grids. This was pursued by adding a significant amount of controllable inverters to a confined grid where the PV penetration was high already before. The demonstrator is split up in a low voltage (LV) and a medium voltage (MV) part. On LV, the project aimed to convince 128 households' consumers to install PV systems of an average PV generation capacity of 4 kW, for a total of 512 kW. On MV, the target was to realise 31 installations of on average 200 kW, for a total of 6,2 MW, located at commercial and industrial sites connected to the MV grid.

Notably, all PV inverters generate low voltage at their output; however, the so-called MV systems are directly connected to the medium voltage grid through a transformer..

Cordis web site: http://cordis.europa.eu/project/rcn/94493_en.html
http://cordis.europa.eu/project/rcn/107957_en.html

Project web Site: http://metapv.eu

Important project outcomes include:

- MetaPV demonstrated that remotely controllable inverters connecting PV-panels to the distribution grid can offer congestion management services to the distribution grid (in the form of voltage control obtained via reactive power modulation).
- For medium-voltage grids, the hosting capacity of the network can be increased by more than 50% at the cost of 10% of traditional grid reinforcement. For low-voltage grids, the same is also possible as long as the costs of sophisticated features for communication do not eat up the savings from the substituted grid reinforcement.

In MetaPV, the household received a commercial offer for the demonstrator. This offer was attractive, partly because the inverter was offered by the inverter manufacturer at the cost (not price). DSO paid for additional equipment needed (like hardware for data logging and communication, batteries, etc.). In exchange, the customers acknowledged that the installations made part of a demonstration and that DSO had the right to control them from time to time.

- MetaPV suggests that DSO makes a multiannual investment plan that takes into account flexibility (MetaPV suggests to do this through a cost-based analysis).
- The case of MetaPV raises the question if the DSOs have the right to use or impose functions to the customers where the PV inverters are placed. Direct control over the inverter is only granted (in special cases) in Austria and Germany whereas in several countries DSO can impose functions to PV inverters.

Project FP7-INTrEPID

Title: INTelligent systems for Energy Prosumer buildings at District level

INTrEPID developed technologies that enable energy optimization of residential buildings, allowing control of internal sub-systems within the Home Area Network and interaction with other buildings, local producers, and electricity distributors, as well as enabling energy exchange capabilities at district level. The project had three main objectives: A. Energy optimization, which is provided by the development of three INTrEPID technological components (Indoor Home networks, Supervisory control strategies and Energy Brokerage); B. Integration and validation of the integrated system. C. Dissemination and Exploitation.

Cordis web site: http://cordis.europa.eu/project/rcn/105992_en.html

Project web Site: http://www.fp7-intrepid.eu/ intrepid@telecomitalia.it

Important project outcomes include:

- A methodology to extract individual power consumption of home appliances with a measurement at a single point, using non-intrusive load monitoring (NILM) has been developed. NILM algorithms utilize machine learning to detect and extract features from the aggregated consumption data. For the households considered in the INTrEPID project, the algorithm disaggregates the individual consumption of major appliances, without the added cost of an individual meter per device. The tested algorithm performs well in the experiments and delivers on its promises in simple settings, where the models account for all of the loads. However, in the final scenario, the algorithm has to give up due to lack of models and detailed datasets. Producing the Markov models for the algorithm proves to be the biggest disadvantage of the algorithm. Attempts were made to construct these by manual inspection of the dataset, which did prove to be quite successful. However, it was necessary to make assumptions about the states of the refrigerator. For the general case this works quite well, but the possible defrost cycle was not taken into account, and only one program in the dish washer was considered. This indicates that exhaustive knowledge about the appliance is required, when reasoning about the number of states and transitions.
- This project shows that direct access to the meter should be considered for other parties to be able to develop innovative services based on NILM algorithm. It is therefore not good for innovation if all information from the smart meter has to go via the DSO first.
- The project also demonstrates that there are further dimensions to investigate when considering the data customer confidentiality

Project FP7- INCREASE

Title: Increasing the Penetration of Renewable Energy Sources in the Distribution Grid by Developing Control Strategies and using Ancillary Services

INCREASE focuses on how to manage renewable energy sources in LV and MV networks, to provide ancillary services (towards DSO, but also TSOs), in particular voltage control and the provision of reserve. INCREASE investigates the regulatory framework, grid code structure and ancillary market mechanisms, and propose adjustments to facilitate successful provisioning of ancillary services that are necessary for the operation of the electricity grid, including flexible market products

Cordis web site: http://cordis.europa.eu/project/rcn/109974_en.html

Project web site: http://www.project-increase.eu/

Important project outcomes:

- The market access for aggregators is improving in some EU countries, while others are still lagging behind. Often the regulatory frameworks are not supportive for demand response or participation of distributed renewable generation.
- Important adjustments of market regulations can be observed in a few countries, namely the reduction of the minimum bid sizes to allow small renewable generations to participate in tenders, and shorter scheduling periods. However in several EU countries no suitable frameworks to enable participation of flexibility aggregators yet exist.

Project FP7- evolvDSO

Title: Development of methodologies and tools for new and evolving DSO roles for efficient DRES integration in distribution networks

With the growing relevance of distributed renewable energy sources (DRES) in the generation mix and the increasingly pro-active demand for electricity, power systems and their mode of operation need to evolve. evolvDSO will define future roles of distribution system operators (DSOs) and develop tools required for

these new roles on the basis of scenarios which will be driven by different DRES penetration levels, various degrees of technological progress, and differing customer acceptance patterns.

Cordis web site: http://cordis.europa.eu/project/rcn/109548_en.html

Project web Site: http://www.evolvdso.eu/

Important project outcomes include:

- DSOs can create additional value by offering/using services to/from different stakeholders in the interest of the entire power system and its users. A sound regulatory framework can support them in these activities.
- Future markets and regulatory frameworks should recognize the need and should provide incentives for possible innovative flexibility levers to be procured and activated on distribution grid level. Different stakeholders may benefit from these flexibility levers. DSOs may need these services in different timeframes as alternatives for grid investment (long-term ahead, procured via tender) and/or conventional operational planning actions (short-term ahead, procured via a (flexibility) market platform). DSOs will have to gradually increase their network monitoring capacities, as well as their active involvement in flexibility services.

Future regulatory frameworks should set clear rules for the recognition of the costs (both CAPEX and OPEX, over all timeframes) associated with innovative smart grid solutions, taking into account their interaction with conventional solutions and the uncertainty on cost recovery.

- Future regulatory frameworks should continue to safeguard the availability of neutral, secure, cost-efficient and transparent data and information management on distribution grid level for all concerned stakeholders.
- Future electricity markets will need to take into account the location of system flexibility sources and their impact on distribution grids.

Project FP7- DREAM

Title: Distributed Renewable resources Exploitation in electric grids through Advanced heterarchical Management

DREAM is working on an innovative organisational and technological approach for connecting electricity supply and demand. Heterarchical principles, in which coordination is configurable, are used to coordinate users, producers and technical/commercial/financial operators to achieve benefits. These are expected to well exceed the technological investments required to final users. This will be pursued also through the introduction of a new layer in the energy market, placed at distribution level and allowing for cost-effective dynamic aggregations of users and local exchange/sales of capabilities (e.g. ancillary services from shed-able loads or from time-flexible use of electric power), while ensuring integration with upper level national energy marketplaces and their international interactions..

Cordis web site: http://cordis.europa.eu/project/rcn/109909_en.html

Project web Site: http://www.dream-smartgrid.eu/

Important project outcomes include:

- The intrinsic control capability made available at distribution network level through the innovative heterarchical paradigm of DREAM, will accommodate for improved real time local balancing of energy demand and provision, thus limiting the request of voltage and frequency regulation capacity at transmission and distribution control level.
- The net effect of additional local balancing capacity will be reflected into a reduction of network reinforcement requirements, and thus will increase the allowance for safe management of renewable and distributed energy resources at the same level of deployed reinforcements.

Project FP7-PlanGridEV

Title: Distribution grid planning and operational principles for electric vehicles mass roll-out while enabling integration of renewable distributed energy sources.

The increasing number of electric vehicles (EVs) (and their batteries) on the one hand and of distributed energy sources (DER) on the other, both connected to the low-voltage (LV) and the medium-voltage (MV) grid, are a major challenge for Distribution System Operators (DSOs) with regard to secure and reliable energy supply and grid operation. The project developed a planning tool for DSOs which copes with this new challenge and facilitates the transformation of the grid towards a smart grid (with controllable loads). With the help of the tool, investment strategies regarding the reinforcement of infrastructures can be downsized while the service quality and efficiency can be improved at the same time (reduction of peak loads and increased renewable energy supply). PlanGridEV developed architectures to build smart grids that support a successful and economical rollout of charging infrastructure. In addition to paving the way into a new way of mobility these architectures are able to activate new markets where the costumers' (EV users) can participate and benefit from (change from costumer to prosumer e.g. by offering battery capacity for grid stability services).

Cordis web site: http://cordis.europa.eu/project/rcn/109374_en.html

Project web site: http://www.plangridev.eu/

Important project outcomes include

- The new planning tool for DSOs: it considers the controllability of the loads (i.e. EVs) with the (estimated) electricity generation from renewable resources;
- Tests with controllable loads DER performed in a large variety of grid constellations have shown that peak loads could be reduced (up to 50%) and more renewable electricity could be transported over the grid compared to scenarios with traditional distribution grid scenarios; as a result, critical power supply situations can be avoided, and grids, consequently, do not call for reinforcement;
- Smart grids on LV/MV level require the introduction of more information and communication technologies (ICT) allowing the exchange of operation data and control schemes between independent market actors. PlanGridEV outlines changes of the regulatory framework allowing for a new market design embedded within a roadmap and tangible recommendations for (i) industry, (ii) grid operators and service providers, (iii) policy makers, and (iv) regulators with the aim that investments in grid intelligence can be rewarded via modified tariff systems and market borders can be broken down.