Risk-preparedness in the electricity sector

On 30 November 2016, the European Commission adopted a proposal for a regulation on risk-preparedness in the electricity sector. This proposal addresses shortcomings in the existing legislation, notably a lack of regional coordination, and differing national rules and procedures. It would replace the existing legislation, and establish common rules on crisis prevention and crisis management in the electricity sector. Regional interdependencies would be taken into account in the preparation of national risk-preparedness plans and in managing crisis situations. The proposed regulation would enhance transparency by requiring an ex-post evaluation of crisis situations.

In the European Parliament, the proposal was referred to the Committee on Industry, Research and Energy (ITRE), which adopted its report in February 2018. In November 2018, Council and Parliament reached an agreement in trilogue negotiations. The ITRE committee approved the text on 23 January 2019 and it needs now to be voted in plenary.


Introduction

The proposed regulation on risk-preparedness in the electricity sector is part of a legislative package entitled 'clean energy for all Europeans' (often referred to as the clean energy package) that the European Commission presented on 30 November 2016. The package comprises legislative proposals that aim to make the European electricity market fit for more flexibility, decarbonisation and innovation, by providing for undistorted market signals. Energy security, based on solidarity and trust, is the first dimension of the European energy union strategy.

The main objective of the proposed regulation is to improve the identification of possible crisis situations, the preparation of crisis-management plans and the handling of a crisis situation. Crisis situations can arise in a number of ways, including the accidental unavailability of infrastructure (power plants or transmission lines), extreme weather leading to demand peaks (heat wave or cold spell), water shortages affecting the cooling of thermal and nuclear power plants, physical or cyber-attacks on energy infrastructure, and fuel shortages. A number of developments increase the risk to electricity systems: decentralised and variable generation may lead to less predictability, and climate change may contribute to more frequent extreme weather events and water shortages. Moreover, networked information technologies, such as smart grids, smart meters and smart homes, may create vulnerabilities that could be exploited by state and non-state actors who are acquiring increasingly strong capabilities to carry out cyber-attacks. Due to the more and more interconnected nature of the European electricity network, a crisis affecting one country can spread to its neighbours. Crisis-management measures taken in one country can affect interconnected electricity systems beyond its borders.

The proposed regulation, by replacing the current Directive 2005/89/EC, seeks to establish a common methodology for identifying crisis scenarios, harmonised national risk-preparedness plans containing both national and regional measures, and regional cooperation in handling of actual crisis situations (hence the change of legal instrument from directive to regulation, the latter being more appropriate for harmonisation and consistency). Moreover, the proposed regulation aims to improve information exchange, transparency and accountability in the management of electricity crisis situations.

Context

The proposal is linked with other legislative proposals in the clean energy package reforming the EU internal electricity market. The issue of ensuring security of electricity supply through adequate generation and flexibility resources is addressed by the proposed electricity directive (recast) that opens the market to active customers and energy communities, and the proposed electricity regulation that introduces provisions for system adequacy assessments and capacity remuneration mechanisms. EU energy policy generally takes the approach that well-functioning electricity markets should ensure the security of supply.2 Price limitations should be avoided so that electricity prices reflect actual demand and supply, and thus

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1 In this context, ‘regional’ refers to regions that comprise more than one Member State and have a common regional operational centre, as defined in the proposed recast Electricity Regulation.

2 The legislative proposal defines security of electricity supply as ‘the ability of an electricity system to guarantee an uninterrupted supply of electricity to consumers with a clearly defined level of performance’. 
incentivise investments in generation capacity, interconnected transmission networks and flexibility of demand (demand response). The proposed electricity regulation sets out rules and responsibilities for carrying out regional and European resource adequacy3 assessments. The focus is on making sure that enough capacity, flexibility and interconnections are available to balance expected supply and demand. The market can possibly be supplemented by capacity mechanisms where these are necessary to address market failures. The rules for the creation of capacity mechanisms set out in the proposed electricity regulation require that a clear need must be demonstrated, and EU state aid rules must be respected. In order to facilitate cross-border management of the electricity grid and cooperation of transmission system operators in case of a crisis, regional operational centres would be established by the proposed electricity regulation. Their tasks also include the regular assessment of relevant risks. The clean energy package also contains a proposal for a new regulation on the Agency for the Cooperation of Energy Regulators (ACER) (recast), which updates its tasks in line with the proposals for the electricity regulation, electricity directive and risk-preparedness.

Security of oil and gas supply

Security of supply for other forms of energy is ensured by specific EU legislation. For oil supply, Directive 2009/119/EC on oil stocks requires EU Member States to hold minimum oil reserves. For gas supply, Regulation (EU) 2017/1938 on the security of gas supply aims to foster a coordinated response to crisis situations in a spirit of solidarity, and defines privileged customers whose gas supply should not be cut off in a crisis situation. These include households as top priority, essential social services and district heating, as well as gas-fired power plants which may be critical in case of an electricity crisis or required to ensure the production or transport of gas.

Existing situation

Directive 2005/89/EC on electricity supply security established a framework to safeguard security of electricity supply, but left implementation to the Member States. Its objectives are an adequate level of generation capacity, an adequate balance between supply and demand, and an appropriate level of interconnection between Member States. Member States must ensure that transmission system operators set rules on network security and maintain operational network security. Transmission system operators shall ensure transmission reserve capacity for operational security. To maintain a balance between supply and demand, Member States shall encourage the establishment of a wholesale market that provides appropriate price signals, and may take additional measures to facilitate new generation capacity and entry of new generation companies, enable more flexible supply contracts, and encourage demand management technologies and energy conservation measures. Transmission system operators shall ensure generation reserve capacity for short-term balancing of supply and demand.


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3 ‘Resource adequacy’ is the ability of the electricity system to offer sufficient generation and flexibility to ensure reliable electricity supply at all times. It generalises the concept of ‘generation adequacy’, which refers to the availability of sufficient generation to meet electricity demand at all times.
security of supply and allows them to take safeguard measures in the event of a crisis situation in the electricity sector. The third energy package also introduced new mechanisms for regulatory oversight, in particular through cooperation amongst energy regulators and the establishment of an Agency for the Cooperation of Energy Regulators (ACER) through Regulation (EC) No 713/2009. ACER is mainly responsible for promoting cooperation between national regulatory authorities, monitoring progress in the implementation of the 10-year network development plans, and monitoring the internal markets in electricity and gas. Also in this third energy package, Regulation (EC) No 714/2009 on conditions for access to the network for cross-border exchanges in electricity established a European network of transmission system operators for electricity (ENTSO-E). Its tasks include elaborating rules for the operation of the electricity transmission network, and coordinating grid operation through the exchange of operational information and the development of common safety and emergency standards and procedures. ENTSO-E is also responsible for drafting a 10-year network development plan every two years, which is then reviewed by ACER.

Operational security is addressed in the rules for operating the electricity system that are developed by ENTSO-E. Regarding security of supply, the system operation guideline and the network code on emergency and restoration offer technical rules for transmission system operators (TSOs) to ensure system security and handle emergency situations. They must still be formally approved through a comitology procedure.

Related legislation on cybersecurity and critical infrastructure also addresses the security of electricity supply. Directive (EU) 2016/1148 on the security of network and information systems (often referred to as the ‘NIS directive’) sets out general rules on cybersecurity, while a specific network code on cybersecurity will be developed. Council Directive 2008/114/EC establishes a common procedure for identifying European critical infrastructure (ECI), such as power plants and transmission infrastructure, and for protecting them against terrorist attacks and other physical risks.

In 2012, a new expert group, the Electricity Coordination Group, was established as a forum for information exchange and cooperation among Member States, in particular as regards security of supply. It discussed generation adequacy assessments in the EU.

Parliament’s starting position

The European Parliament generally supports a market-based approach towards ensuring the security of electricity supply in the EU. In its resolution of 13 September 2016 ‘Towards a new energy market design’, it underlined that a reformed electricity market design is required to achieve ‘sustainable and efficient electricity supply’, and stressed that ‘security of supply and decarbonisation will require a combination of liquid short-term (day-ahead and intraday) markets and long-term price signals’.

As regards risk-preparedness, the resolution of 15 December 2015, ‘Towards a European energy union’ called on the Commission to ‘consider carrying out electricity stress tests’ and the resolution of 15 December 2015 on achieving the 10% electricity interconnection target notes that the increasing role of ICT makes...
electricity systems more vulnerable to cyber threats, and asks the Commission to evaluate electricity system security risks and, if needed, to formulate an action plan.

**Council starting position**

The [message from the presidency](#) of 19 May 2016 on electricity market design and regional cooperation calls for a more coordinated and efficient approach to energy supply security, including regional system adequacy assessments in addition to national ones, and regular exchange of information on policy developments. It proposes to develop a common methodology to assess generation adequacy and further work on a harmonisation of norms and indicators for security of supply. In addition, it sees a need to develop a ‘more common approach to preparing for and managing crisis situations within the EU, while taking into account the existing well-functioning regional solutions’.
Proposal

Preparation of the proposal

The inception impact assessment states that the existing framework for the security of electricity supply suffers from differing national rules and procedures, which may endanger security of supply, and from a lack of cross-border cooperation and coordinated action by national authorities. An evaluation of the existing legislation published as part of the clean energy package concludes that the Security of Electricity Supply Directive was quickly superseded by newer EU rules, has had only limited impact on the security of electricity supply and fails to address emergency-related aspects.5

A public consultation, held from July to October 2015, received 75 replies (29 companies, 28 associations, 11 Member States and Norway, the International Energy Agency and 5 individuals). For the results, see the section on stakeholders’ views below.

The impact assessment accompanying the proposal concludes that the Security of Electricity Supply Directive is no longer fit for purpose, as it is focused on national plans that do not reflect today’s interconnected electricity market; there is a lack of information-sharing and transparency; and there is no common approach to risk identification and assessment. The impact assessment considered four options: 0) no action; 1) common minimum EU rules; 2) common minimum EU rules plus regional cooperation; and 3) full harmonisation and full decision-making at regional level. It found that option 2 is preferable because it enhances comparability and transparency across Member States, and addresses risks at regional level without being too intrusive. According to the impact assessment, the regional approach minimises electricity cuts due to crisis situations,6 reduces the overall cost of the system, increases administrative burdens slightly, and allows Member States to learn from each other and create synergies. The initial appraisal of the impact assessment by EPRS is generally positive, but notes its length and complexity and questions whether the sequential process set out in the better regulation guidelines has been followed.

The changes the proposal would bring

By contrast with the existing directive, which addresses the security of electricity supply in a broad way (including system adequacy), the proposed regulation is focused specifically on crisis prevention and crisis management in the electricity sector. It sets out a common approach that should be appropriate to a cross-border electricity market with interconnections between Member States. The existing Security of Electricity Supply Directive would be repealed. The proposed regulation also covers Article 4 (monitoring of security of supply) and Article 42 (safeguard measures in the event of a crisis situation) of the current Electricity Directive (2009/72/EC).

5 An evaluation carried out by the European Commission in 2010 came to similar results. The evaluation report concluded that although Member States have correctly implemented the security of electricity supply Directive, the legal framework does not ensure a minimum level of cooperation and coordination and allows differing national policy approaches.

6 The analysis indicated that the 'expected energy not served' (electricity not supplied due to blackout as a percentage of annual demand) is 0.02% in case of regional cooperation, compared to 0.36% in case of non-cooperation.
Member States would have to designate a competent authority to carry out the tasks defined in the proposed regulation.

**Common methodology for risk assessment**

The European network of transmission system operators for electricity (ENTSO-E) would develop a methodology for identifying crisis scenarios, accounting at least for rare or extreme natural events, exceptional accidental hazards, consequential hazards such as fuel shortages,\(^7\) and malicious attacks. Member States would identify crisis scenarios at national level, while ENTSO-E would identify the most relevant crisis scenarios at regional level. Member States would inform the Electricity Coordination Group if they see risks to security of supply arising from the ownership of infrastructure. Regional scenarios would be submitted to the Electricity Coordination Group for consultation. National and regional scenarios would be updated every three years.

ENTSO-E would also develop a methodology for short-term adequacy assessments\(^8\) (seasonal, week-ahead, intraday), using a probabilistic approach. ENTSO-E would consult stakeholders on the methodologies and the crisis scenarios. The methodologies would be approved by ACER, which would amend them where necessary. They would be updated regularly. ENTSO-E would carry out seasonal adequacy outlooks, while the regional operational centres would carry out short-term (week-ahead to intraday) adequacy assessments.

**National risk-preparedness plans**

Each Member State’s competent authority would draft a risk-preparedness plan containing national and regional measures to prevent or mitigate crises, on the basis of the identified crisis scenarios, and after consultation of stakeholders. Regional measures would have to be agreed with Member States in the region concerned. The proposed regulation provides a content plan and a template. Plans would include measures to prevent simultaneous crises in a region and ensure regional crisis management. Market rules and operational rules would have to be respected in the plans. The plans would be reviewed by the competent authorities in the region and the Electricity Coordination Group before adoption, and sent to the Commission and made public (while respecting confidentiality). They would be updated at least every three years. The plans would be adopted within two years after entry into force of the proposed regulation. Annual crisis simulations would be carried out in each region by the competent authorities in cooperation with the regional operational centres and with the involvement of stakeholders.

**Managing crisis situations**

In the event of an electricity crisis, the Member State concerned would inform the Commission and neighbouring Member States. In cases where the seasonal adequacy outlook or another source indicates that a crisis event may occur, the Member State concerned would give early warning to the Commission.

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\(^7\) For identifying the risk of a gas supply disruption, ENTSO-E would use the scenarios developed pursuant to the proposal for security of gas supply regulation.

\(^8\) The short-term adequacy assessments complement the long-term resource adequacy assessment (proposed in the recast Electricity Regulation), which would help to assess the need for capacity mechanisms.
and to the Electricity Coordination Group. Member States would have to provide information about the causes of the crisis and measures taken or planned. In such cases, Member States would have to closely follow the risk-preparedness plan. Member States would cooperate in preventing and managing electricity crisis situations, in a spirit of solidarity. They would offer each other assistance if necessary, and receive compensation for such assistance. They would have to comply with the rules governing the internal electricity market and system operation, and use non-market based measures only as a last resort, provided they are necessary, proportionate, non-discriminatory and temporary.

### Main actors and their tasks under the proposed regulation

**Member States:** identify national crisis scenarios; develop risk-preparedness plans based on the identified scenarios; review and approve draft risk-preparedness plans of other Member States in the same region; carry out annual crisis simulations; follow risk-preparedness plans in case of an actual electricity crisis or early warning; and carry out ex-post evaluations after crisis situations.

**ENTSO-E:** develop methodology for identification of crisis scenarios; identify regional crisis scenarios; develop methodology for short-term adequacy assessments; and carry out seasonal adequacy outlooks.

**ACER:** approve methodologies developed by ENTSO-E.

**Electricity Coordination Group:** review draft risk-preparedness plans and monitor security-of-supply measures.

### Evaluation and transparency

No later than six weeks after a crisis situation, national competent authorities would provide an evaluation report analysing the causes of the crisis, the measures taken, the impact and possible ways to improve the risk-preparedness plan.

### Monitoring by the Electricity Coordination Group

The Electricity Coordination Group would be given new tasks in monitoring the results of the 10-year network development plan in electricity, ensuring coherence of the risk-preparedness plans, analysing the results of the European risk assessments and the performance of the Member States in safeguarding security of supply, and assessing the results of seasonal outlooks, national crisis scenarios and ex-post evaluation reports.

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9 The performance of Member States should be assessed using the indicators of ‘expected energy not served’ (energy not delivered to customers during a crisis situations) and ‘loss of load expectation’ (duration of electricity blackouts).
Cooperation with the Energy Community

In order to coordinate the measures of EU Member States with electrically connected neighbouring countries, Member States and the contracting parties of the Energy Community\textsuperscript{10} are invited to cooperate closely.

\textsuperscript{10} The Energy Community is a group of countries outside the EU that participate in the internal energy market and are committed to implementing the EU energy legislation. Its contracting parties are Albania, Bosnia and Herzegovina, Kosovo, Former Yugoslav Republic of Macedonia, Moldova, Montenegro, Serbia and Ukraine.
Views

Advisory committees

The proposal was sent to the European Economic and Social Committee (EESC) and the Committee of the Regions for mandatory consultation.

The EESC opinion on electricity market design (rapporteur Alfred Gajdosik, Various interests – Group III, Austria), adopted on 1 June 2017, welcomes the proposal for a risk-preparedness regulation, without making specific comments.

The Committee of the Regions, with Daiva Matonienė (ECR, Lithuania) as rapporteur, adopted its opinion on renewable energy and internal electricity market on 12 July 2017. It asks Member States to consult regional and local authorities during the development of risk-preparedness plans, and stresses the importance of regional cooperation for the more efficient management of the energy sector.

National parliaments

The deadline for the submission of reasoned opinions on the grounds of subsidiarity was 8 March 2017. No reasoned opinion was delivered, but seven national parliaments entered into political dialogue with the Commission about aspects of the proposal.

Stakeholders' views

Stakeholders submitted their views to the public consultation that was held in 2015. The majority of respondents were of the opinion that the current Security of Electricity Supply Directive is insufficient to address the interdependencies in the integrated European electricity market. Three quarters were in favour of requiring Member States to draw up risk-preparedness plans. Most stakeholders favour a common European approach, but a significant number said there should be room for tailor-made national responses that take account of the differences between national electricity systems. Although many stakeholders consider that more analysis is needed before deciding on the content of risk-preparedness plans, many gave indications of the requirements that plans should comply with. While most stakeholders insist that national governments should have the ultimate responsibility for ensuring security of supply, many consider that transmission system operators should take the leading role in drawing up the plans, preferably in cooperation with national ministries and/or regulatory authorities.

12 This section aims to provide a flavour of the debate and is not intended to be an exhaustive account of all different views on the proposal. Additional information can be found in related publications listed under 'EP supporting analysis'.
Legislative process

In the European Parliament, the proposal has been referred to the Committee on Industry, Research and Energy (ITRE). The rapporteur, Flavio Zanonato (S&D, Italy), presented his draft report in June 2017. The committee adopted the report with amendments on 21 February 2018. It recommended the following:

> assessments on the feasibility of assisting a neighbouring Member State should be limited to technical aspects, the compensation mechanisms should be defined ex-ante or in the early stages of a crisis, so as to avoid ex-post disagreements;

> ACER should draft Union-wide guidelines for preventing and handling crises situations, identifying both market and non-market measures and system operational rules, giving preference to measures with the least impact on the environment.

> Member States should submit their risk-preparedness plans to the Commission, which can approve the plans or require them to be amended or withdrawn if they are likely to distort the internal market, jeopardise the security of supply in other Member States, are not necessary or proportionate, or are in contradiction with EU climate policy objectives;

> ensure confidentiality of sensitive information on power system operation and on risk-preparedness plans;

> Member States may ask the Commission, with the technical assistance of ACER and ENTSO-E, to facilitate a regional agreement;

> where competent authorities cannot reach a regional agreement, the Commission is entitled to propose a cooperation mechanism for the conclusion of a regional agreement, but cannot impose it on Member States against their will;

> transmission and distribution system operators are to be explicitly involved in the identification, preparation, management, monitoring and ex-post evaluation process, since they are ultimately responsible for the safe and reliable operation of the system;

> in line with Parliament's position on the other legislative proposals related to the electricity market, all references to 'regional operational centre' are replaced by 'regional coordination centre'.

In Council, energy ministers held a first exchange of views on the package on 27 February 2017. Several ministers acknowledged the value of regional cooperation, 'but it was also underlined that no national powers should be transferred to the regional operational centres as proposed by the Commission.' On 4 December 2017, Council adopted its general approach, which deletes all references to regional operational centres; includes provisions for technical, legal and financial arrangements between Member States and fair compensation in case of assistance during a crisis; ensures the confidentiality of sensitive information; and introduces a derogation for Cyprus, which is not directly interconnected.

Trilogue negotiations started in June 2018 and were concluded with a provisional agreement on 22 November 2018. The agreed text clarifies and amends certain provisions of the legislative proposal, taking
on board most of the main elements of the Parliament and Council positions. All references to ‘regional operational centre’ are replaced by ‘regional coordination centre’, in line with other forthcoming legislation related to the electricity market.

The agreed text provides for stronger involvement of relevant stakeholders in risk assessment, identification of regional and national crisis scenarios and definition of methodologies. Stakeholders are also to be informed of the application of non-market measures to deal with an electricity crisis in a Member State. The deadlines for developing the methodologies, scenarios and risk-preparedness plans have been modified, compared to the Commission proposal, in order to allow enough time to deliver high-quality plans. Member States have to adopt and publish their first risk-preparedness plans within two and a half years after the entry into force of the regulation (instead of two years in the Commission proposal). Regional crisis scenarios and risk-preparedness plans are to be updated every four years (instead of three). Methodologies are to be updated only when significant new information is available (instead of ‘regularly’).

In the identification of regional electricity crisis scenarios, ENTSO-E will have to cooperate with the Electricity Coordination Group, Regional Coordination Centres, competent authorities and national regulatory authorities. The Electricity Coordination Group, in its formation composed of representatives of the Member States only, is to be consulted in defining or updating the methodologies for identifying crisis scenarios and for seasonal and short-term adequacy assessments. In addition to relevant Member States in the same region, directly connected Member States are to be consulted on risk-preparedness plans. The methodology for short-term and seasonal adequacy assessments must take into account the specificities of each Member State’s energy sector.

The contents of the risk-preparedness plans are amended, notably to include information about plans to develop the grid to cope with crisis situations. The plans may include bilateral measures in addition to regional measures. Bilateral measures may be agreed between Member States that are directly interconnected but not within the same region, and must be coordinated with regional measures.

The Commission must assess the risk-preparedness plans within four months and issue a legally non-binding opinion, after consultation with the Electricity Coordination Group. If the Commission requests changes to a national risk-preparedness plan, the Member State concerned has three months to amend the plan or explain why it disagrees with the Commission’s opinion. In case of disagreement, the Commission may, within four months, withdraw its request or convene the competent authority.

The provisions regarding cooperation and assistance in case of an electricity crisis are considerably expanded. Member States will be required to agree technical, legal and financial arrangements and fair compensation before offering assistance. The Commission may request ACER and ENTSO-E to provide technical assistance to Member States, with a view to facilitating an agreement, and may play a facilitating role in the preparation of the agreement on regional measures. The agreed text clarifies that non-market


14 The stakeholders are transmission and distribution system operators, industry and consumers, electricity producers or their trade bodies, national regulatory authorities, ENTSO-E, Regional Coordination Centres and other stakeholders. Subgroups of these stakeholders are listed in the various articles of the proposal, in function of their relevance.
measures are to be used only as a last resort. It introduces provisions for the treatment of confidential information.

The Commission must, after consulting the Electricity Coordination Group and ACER, provide guidance for the key elements of the fair compensation and other key elements of the technical, legal and financial arrangements, as well as general principles of mutual assistance.

ACER would be tasked with continuous monitoring of the measures for the security of electricity supply and regular reporting to the Electricity Coordination Group.

The Commission would have to review the legislation by September 2025 and submit a report that may include legislative proposals to amend the regulation.

Cyprus, as long as is not directly interconnected to any other Member State, is granted a derogation with regard to the identification of regional crisis scenarios, risk-preparedness plans as regards regionally coordinated cross-border measures, and cooperation and assistance in a electricity crisis.

The EU Member States’ Ambassadors (Coreper) endorsed the agreed text on behalf of the Council on 5 December 2018. The ITRE committee subsequently approved it on 23 January 2019, and the European Parliament is expected to vote on it in plenary in March 2019; thereafter it will be formally adopted by the Council.
References

EP supporting analysis

Other sources
Risk-preparedness in the electricity sector, European Parliament, Legislative Observatory (OEL).

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