

Prospectus for a CEPS Task Force on Creating a Market for Flexibility in the Electricity Sector

Chair	Jacques de Jong (Clingendael International Energy Programme)
Rapporteurs	Arndt Hassel, Christian Egenhofer, Jaap Jansen, Eleanor Drabik (CEPS)
First Meeting	April 27, 2017
Second Meeting	May 31, 2017
Third Meeting	to be determined

1. Introduction

The objective to reach 27% renewables by 2030, which was decided by the European Council in October 2014, would translate into a share of at least 45% of renewable electricity by 2030¹ compared to a share of 27% in 2014². According to the EU's "Energy Roadmap 2050"³, by 2050 renewable energy would contribute 64-96% to the electricity mix. Most renewable electricity can be expected to come from intermittent sources (wind and solar power). Accommodating such high shares of intermittent renewables will require flexible resources and infrastructure, as has been continuously highlighted by the European Commission.

Flexibility is necessary to ensure that demand and supply can be matched at every given point in time to keep the electricity system stable. Flexibility in the electricity sector can therefore be described as the capability to dynamically compensate supply peaks and shortages as well as bottlenecks in the grid. The higher the share of intermittent renewables, the more flexible resources are needed.

Flexible resources can include flexibility in demand (e.g. power-to-heat, demand response or interruptible loads, facilitated by digital infrastructure) and in supply (e.g. hydro, gas or certain coal plants) as well as storage (e.g. pumped storage, batteries and other storage

¹ F. Genoese, C. Egenhofer (2015), "Reforming the Market Design of EU Electricity Markets – Addressing the Challenges of a Low-Carbon Power Sector", CEPS Task Force Report

² Eurostat, SHARES 2014 (as of Feb 7, 2017)

³ COM(2011) 885 final

technologies). Flexible infrastructure can include transmission and distribution capacity as well as information and communication technology (ICT, e.g. smart meters).

Adequate functioning of the electricity markets and notably a market for flexibility would facilitate market-driven investment as well as efficient utilisation of flexible resources and infrastructure. In light of the electricity market reform launched in the “Clean Energy for All Europeans” package, this CEPS Task Force seeks to bring together all stakeholders to discuss a ‘market for flexibility’ to identify workable and practical ways forward.

2. Background

Different pathways to a more flexible electricity sector are possible. Below, a non-exhaustive list of options is provided (categorised by market-related and infrastructural aspects).

2.1 Market-related options

- **Market integration** helps to reduce net volatility in supply and demand, decreasing the overall need for flexible resources. Implementation and expansion of the existing interconnector target would be beneficial.
- The **coupling of balancing and intra-day markets** can allow for better exploitation of existing flexible resources.
- **Scarcity pricing** could enable higher remuneration of flexible resources, if price floors and ceilings were removed.
- **Higher temporal resolution** of energy-only market prices can decrease the need for balancing activities of grid operators. At retail level, dynamic pricing and/or aggregation would be a prerequisite for demand participation.
- **Higher geographical resolution** of prices as well as **grid-adapted price zones** could better reflect grid constraints and give a price signal for grid-adaptive investment.
- **More cost-reflective grid charges** can lead to system-beneficial decisions by prosumers.

2.2 Technological options

Flexible demand and supply differ in their nature. Conceptually, supply flexibility could be used to fill gaps in times when there is little production from intermittent renewables. Flexible demand could adapt to the level of supply available.

Flexible supply resources:

- Conventional generation (including gas, coal and hydro)
- Electricity storage (incl. pumped-storage hydroelectricity, batteries/electric vehicles, other technologies)
- Renewable generation (conditional)

Flexible demand resources:

- Power-to-X (gas, liquid, heat etc.), sector coupling
- Demand participation (industrial scale and household/business scale)
- Electricity storage

Centralised vs. decentralised flexibility are two important poles of future electricity system development. Existing flexible resources (gas power plants, hydroelectricity) are largely centralised. In the future, centralised renewable electricity generation (like off-shore wind parks) or new forms of centralised demand flexibility (like power-to-gas installations) could provide flexibility. Increasing the amount of centralised flexibility could lead to a higher need for transmission and distribution grid investment. Decentralised flexibility, like battery storage or demand participation, would necessitate higher investments into digital infrastructure. Electricity storage (e.g. in electric vehicles) or demand participation of households/businesses could only access the markets for flexibility if there were the necessary information and communication technology (smart meters) installed widely.

2.3 Objectives

Although it will be up to the CEPS Task Force to agree on the terms of reference and final agenda, we propose to discuss and identify practical ways towards a market for flexibility. Practically, we propose that the Task Force

- assesses the on-going EU policy discussions and share knowledge among stakeholders
- thinks through ideas and proposals for policy challenges that need to be addressed in order to create an enabling framework for flexibility
- works out a set of concrete recommendations to be presented to EU and member state policy-makers

2.4 Stakeholder groups

The debate on flexibility is relevant to a wide spectrum of stakeholders, including:

- Electricity market representatives (generators, flexibility providers, grid operators, exchanges)
- Gas market representatives (utilities, grid operators, storage etc.)
- Digital energy industry
- Fuels industry
- Power plant tech industry
- Power-to-fuel industry
- Heating/cooling industry
- Electric mobility/battery industry
- EU institutional representatives
- Member state representatives
- Regulators
- Experts from academic research
- Civil stakeholders and NGOs

3. Why a CEPS Task Force and how does it work?

A CEPS Task Forces constitutes a forum where representatives from a wide spectrum of stakeholders meet, discuss solutions proposals and make recommendations to some of the

biggest challenges for the EU. The new CEPS Task Force will meet two to three times for full-day meetings typically from 10:30h to 16:30h. Speakers are normally recruited from the Task Force members, although external speakers can be invited to tap into additional knowledge. Speakers typically speak no longer than 5 to 10 minutes to allow for sufficient discussion time. The meetings will be chaired by Jacques de Jong, Senior Fellow at Clingendael International Energy Programme and former Electricity Regulator in the Netherlands. The rapporteurs will be Christian Egenhofer, Associate Senior Research Fellow, Jaap Jansen, Non-Resident Research Fellow, Eleanor Drabik, Researcher and Arndt Hassel, Research Assistant, all from CEPS.

At the end of the Task Force, we will publish a CEPS Task Force Report that will present policy recommendations. The report will be based on discussions in the meetings, supplemented by research carried out by the rapporteurs. The draft CEPS Task Force Report will be circulated after the second meeting to be discussed and approved by the CEPS Task Force and then published and circulated among EU, member states and international policy makers. The report will contain the general tone and direction of the discussion, but its recommendations do not necessarily reflect a full common position agreed by all members of the Task Force, nor do they necessarily represent the views of the institutions to which the members belong.

4. Conditions for participation

The CEPS Task Force is primarily designed for CEPS Corporate Members but participation is open to non-members as well, albeit at a higher fee. The fee covers participation in all workshops, documentation, lunches and three copies of all reports produced. Upon request by participants, CEPS will mail additional copies of the final CEPS Task Force Report to persons identified by participants. Participation fees:

- Non-Members: € 5.000
- CEPS Corporate Members: € 2.500
- Members of ECH Energy Transition Initiative: free of charge
- Members of ECH Forum: free of charge⁴
- EU Institutions, governments, academics, NGOs etc.: free of charge

For information please contact⁵ Christian Egenhofer, Jorge Núñez Ferrer, Monica Alessi or Arndt Hassel from CEPS.

For the detailed programme, please see the Work Programme below. For Registration, please return the Registration Form in the Appendix.

⁴ Conditions for the participation in ECH Energy Transition Initiative OR ECH Forum: Please contact Christian Egenhofer or Jorge Núñez Ferrer (see footnote 6)

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5. Work Programme

First Meeting "What Market Design to Enable Adequate Flexibility"

Brussels, 27 April 2017

Venue: CEPS, Place du Congrès 1, 1000 Brussels

Agenda

(Speakers are being invited and confirmed)

The 27% renewables target by 2030 will most likely translate into a share of at least 45% renewable electricity (vs. 27% in 2014). By 2050, renewable energy might contribute somewhere between 64-96% of the electricity mix. Since most of this renewable energy can be expected to come from intermittent sources (wind and solar power), adequate infrastructure for flexibility will be required. This includes flexible supply and demand resources (e.g. gas power plants, electricity storage), transmission and distribution capacity (power lines) and information and communication technology (e.g. smart meters). Adequate functioning of the electricity markets is a prerequisite both to enable efficient dispatch of flexible resources and to provide a price signal for investment

10:00 - 10:30 Registration

Session 1: Kick-Off

10:30 -10:35 Welcome by Christian Egenhofer, CEPS

10:35 -10:45 Welcome by Chair **Jacques de Jong**, Clingendael International Energy Programme

10:45 - 10:55 Opening Addresses by **Dominique Ristori**, Director General, DG Energy, European Commission

10:55 - 11:30 Followed by open discussion

Session 2: Setting the Scene

11:30 - 11:45 The EU's future flexibility needs, **Karsten Neuhoff**, German Institute for Economic Research (DIW)

11:45 - 12:30 Comments by:

- **Michel Matheu**, EDF
- **Markus Becker**, General Electric
- **Sarah Bell**, Tempus Energy
- **Rémy Garaude Verdier**, Enedis

12:30 – 13:15 Followed by open discussion

13:15 - 14:15 **Lunch**

Session 3: Market remuneration for flexible resources and cross-border aspects

14:15 - 15:00 Introduction by **Manuel Barritaud**, IEA

Comments by:

Bert den Ouden, Flexible Power Alliance Network (intraday markets)

EEX (new and old products)

Martin Godfried, ACER (integration of balancing markets)

15:00 – 15:45 Open discussion

Session 4: Terms of Reference

15:45 - 16:00 Proposal for final terms of reference and next steps, **Christian Egenhofer**, CEPS

16:00 - 16:20 Discussion

16:20 - 16:30 Conclusions, next steps, end of meeting

Second Meeting

Date: May 31, 2017

Topic: "Creating a level playing-field for flexibility options"

Sessions:

- **Demand flexibility and sector coupling** (e.g. power-to-X, interruptible loads, demand response)
- **Role of conventionals** (gas, hydro, coal)
- **Decentralised vs. centralised flexibility and the evolution of the grid** (transmission and distribution grid, aggregation, storage, self-consumption)

Third meeting (optional)

Date: to be determined

- **Any remaining topics to be discussed**
- **Agreement on policy recommendations**
- **Discussing Task Force Report draft**

Registration form

for the CEPS Task Force on “Creating a Market for Flexibility in the Electricity Sector”

Person attending the meetings

Salutation: First name: Last name:

Job title:

E-mail: Telephone:

Company / Institution

Company / Institution name:

Postal address:

Postcode: City: Country:

Contact Person:

E-mail: Telephone:

Billing information

Tax register number (VAT for Europe):

Your reference, Customer Purchase Order No. or Cost Code N:

Department:

Postal address:

Postcode: City: Country:

Contact person:

Telephone: Fax:

E-mail: Other:

Members of ECH Forum / ECH Energy Transition Initiative

Free of Charge

CEPS Corporate Members

Reduced Fee | EUR 2,500 (+21% VAT)

Non-members

Full Fee | EUR 5,000 (+21% VAT)

Date:

Signature:

Return to: Isabelle Tenaerts | isabelle.tenaerts@ceps.eu | +32 (0) 2 229 39 56 | Centre for European Policy Studies | 1 Place du Congrès | 1000 Brussels | Belgium

More information: If you would like to become a member or need more information, please contact *Christian Egenhofer* (christian.egenhofer@ceps.eu, +32 (0)2 229 39 60) or *Jorge Núñez Ferrer* (jorge.nunez@ceps.eu, +32 (0) 498 100535).

Discounted fees for this Task Force will be considered for non-members if they decide to become member of CEPS.

