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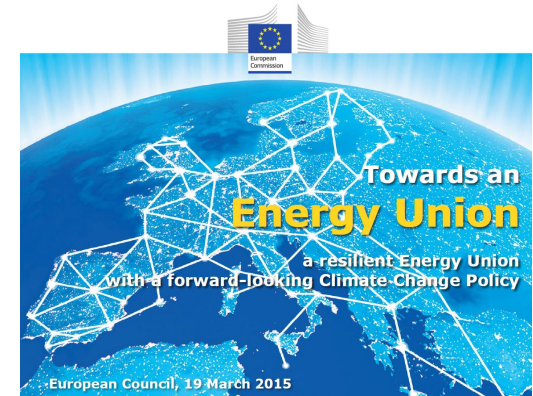


Academic perspective on sector integration

Leonardo Meeus

CEDEC, 20th of November 2019

Energy Union and sector integration



European Green Deal and sector integration

To help us achieve our ambition, **I will propose a European Green Deal in my first 100 days in office.**

This will include the **first European Climate Law to enshrine the 2050 climate-neutrality target into law.**



Sector integration via distribution grid planning




Forschungsprojekt Nr. 44/12
„Moderne Verteilernetze für Deutschland“
(Verteilernetzstudie)
Abschlussbericht
Studie im Auftrag des Bundesministeriums für Wirtschaft und Energie (BMWi)
12. September 2014

E-Bridge
Kompetenz im Energie

IAEW Institut für Elektrische Anlagen
und Energietechnik
10000 Berlin, 10245 Berlin, 10585 Berlin

OFFIS



ENEDIS
L'ELECTRICITE EN RESEAU

ADEeF
Association des Distributeurs d'Electricité en France

Economic assessment of smart grids solutions
Analysis carried out by the distribution network operators
Executive Summary 2017

The new paths of electricity



Gutachten
Digitalisierung der Energiewende
Topthema 2:
Regulierung, Flexibilisierung und
Sektorkopplung

Erstellt im Auftrag des
Bundesministeriums
für Wirtschaft und Energie

EY Building a better
working world

BET
ELECTRICITY MARKET ANALYSIS

wik

Sector integration via distribution grid planning

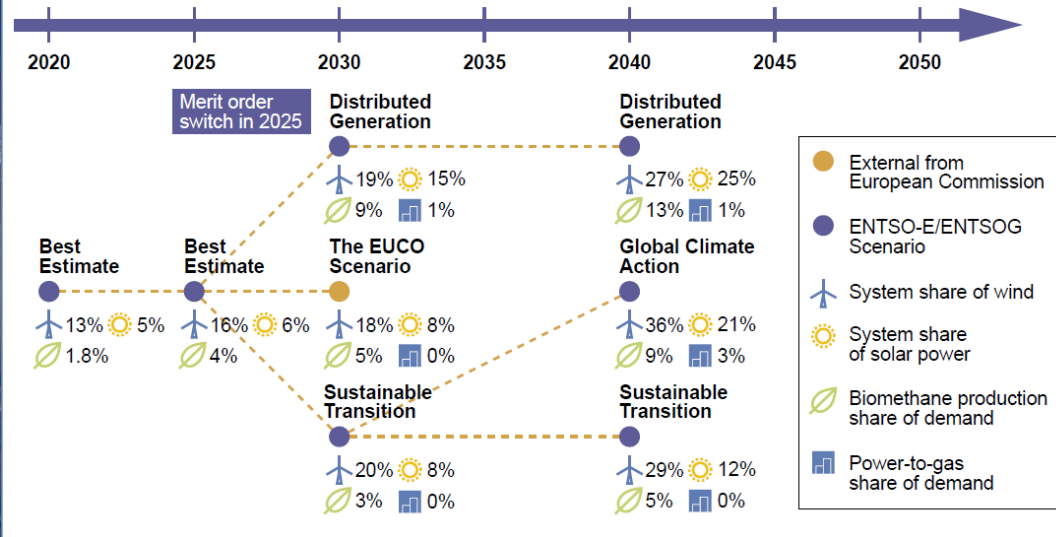


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Sector integration via transmission grid planning



Figure 1: The scenario building framework for TYNDP 2018. Renewable Energy Systems (RES) share of demand for electricity and gas



Sector integration and the “RES Peak” issue

- (i) demand response
- (ii) battery storage
- (iii) hydrogen
- (iv) pumped hydro storage
- (v) curtailment



WELFARE AND PRICE EFFECTS OF SECTOR COUPLING WITH POWER-TO-GAS

MARTIN ROACH & LEONARDO MEEUS



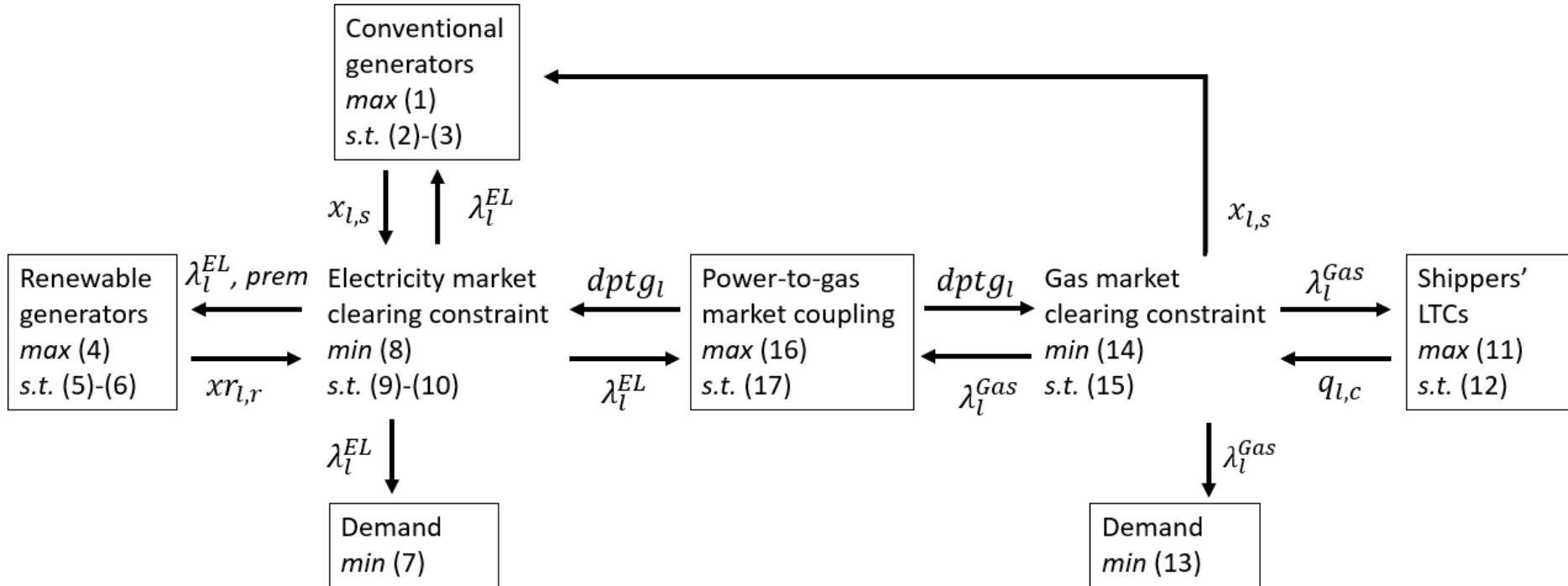
WORKING
PAPERS

RSCAS 2019/46
Robert Schuman Centre for Advanced Studies
Florence School of Regulation

The Welfare and Price Effects of Sector Coupling with
Power-to-Gas

Martin Roach and Leonardo Meeus

STYLIZED ELECTRICITY AND GAS MARKET COUPLED BY POWER-TO-GAS TECHNOLOGY



MAIN FINDINGS

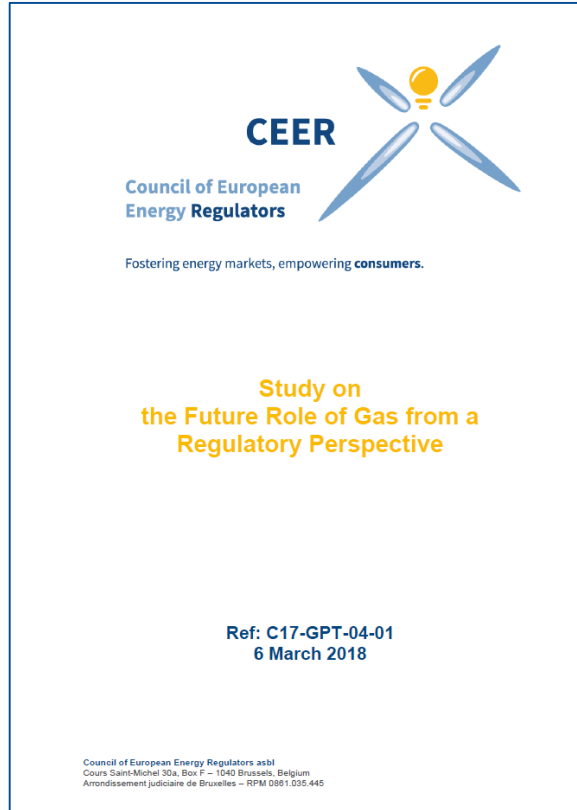
1) in scenarios in which PTG is profitable and welfare improving, electricity and gas consumers both benefit from lower prices. This suggests that these sectors have an incentive to cooperate around PTG. We had to analyse all the welfare and price effects to come to this important conclusion.

2) Second, even if it was not the focus of our analysis, we did discover another issue. In some scenarios, total welfare is maximized at the level of PTG investment that is loss-making for the PTG investor. The intuition is that subsidizing PTG can make sense to reduce the cost of RES subsidies. This then opens the debate for PTG investment support via subsidies and/or grid tariffs.

Model 2.0

- Increase detail of electricity and gas system
- Study the interaction between renewable electricity and gas targets and support schemes.

SECTOR INTEGRATION IMPLIES NEW NEEDS FOR INNOVATION, REGULATORY CLARITY ROLES AND RESPONSIBILITIES AND STANDARDS



- Innovation
 - Incentives for TSOs/DSOs
 - Green gas support schemes
- Grey areas in regulation
 - P2G infrastructure
 - LNG/CNG refueling infrastructure
- Network codes for green gas
 - Quality standards, connection and interoperability rules
 - Charges and tariffs



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