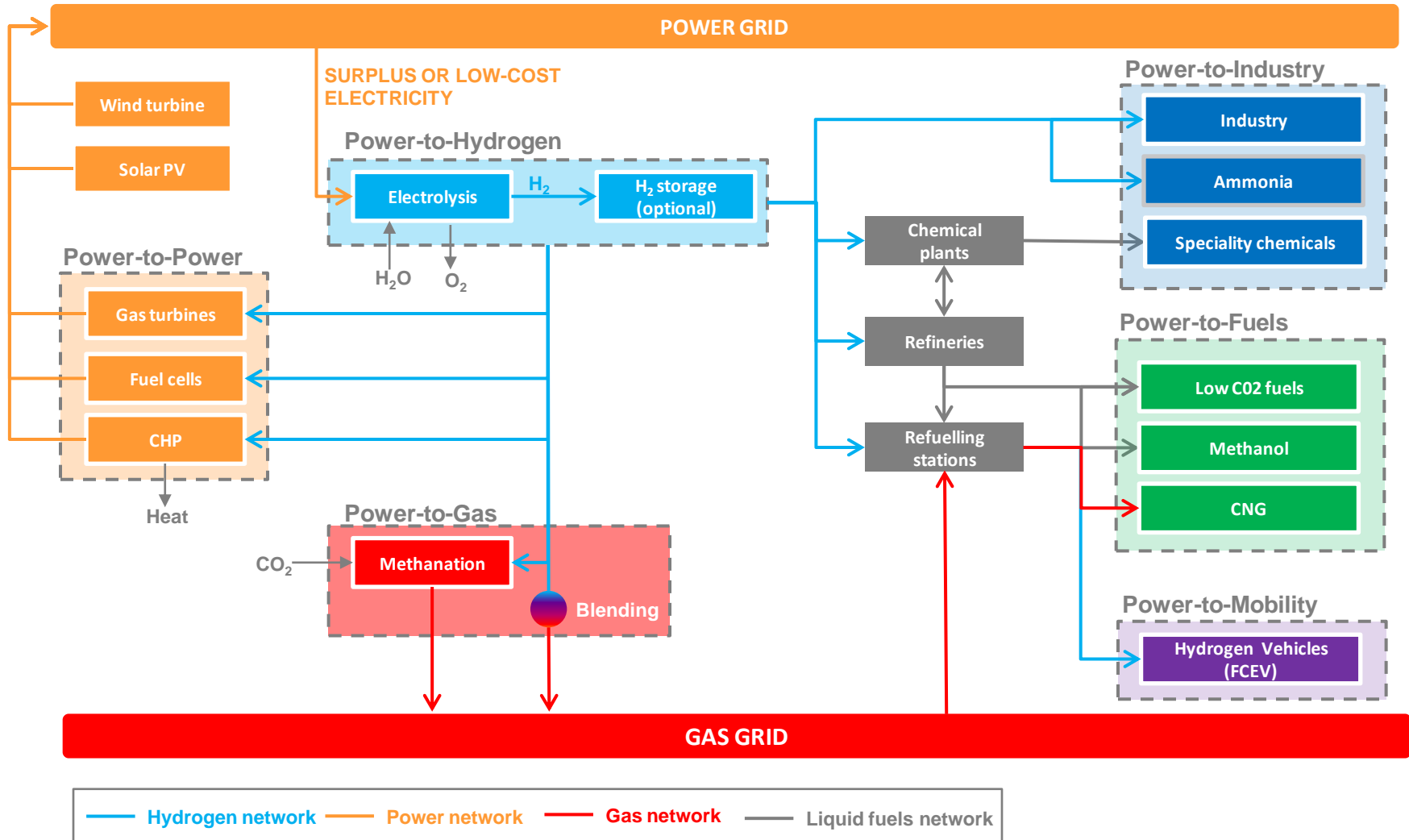




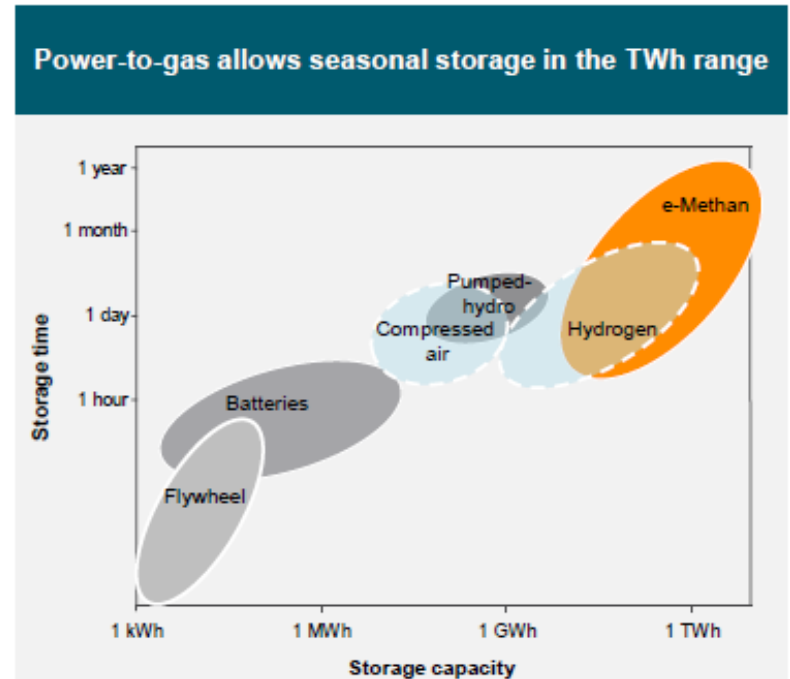
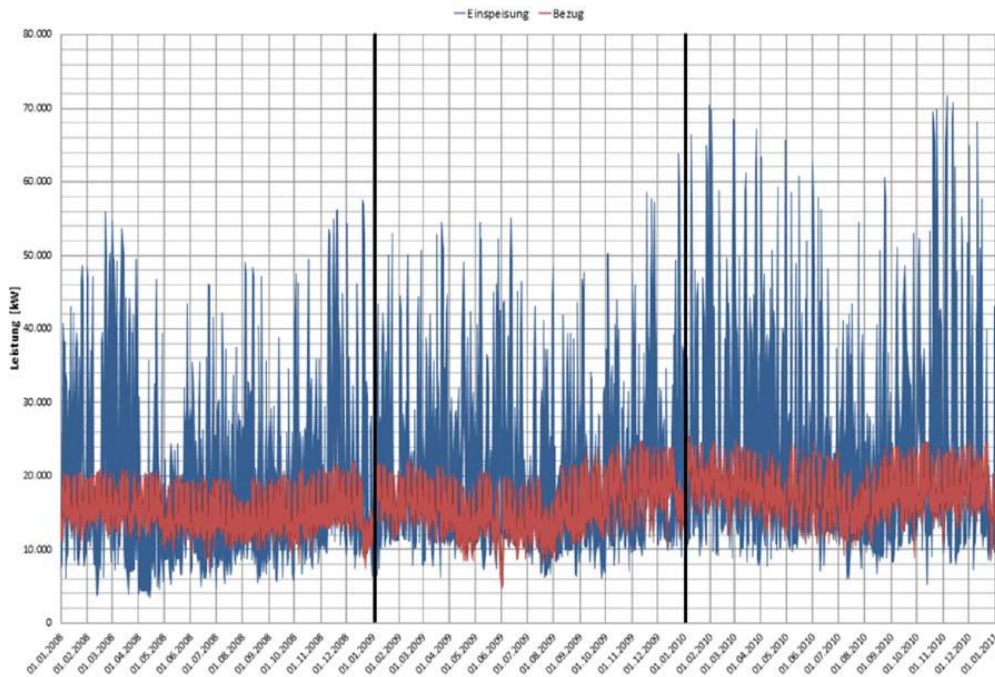
POWER-TO-GAS:
OPPORTUNITIES IN
BELGIUM?

Hany AOUAD

WHAT IS POWER-TO-GAS?



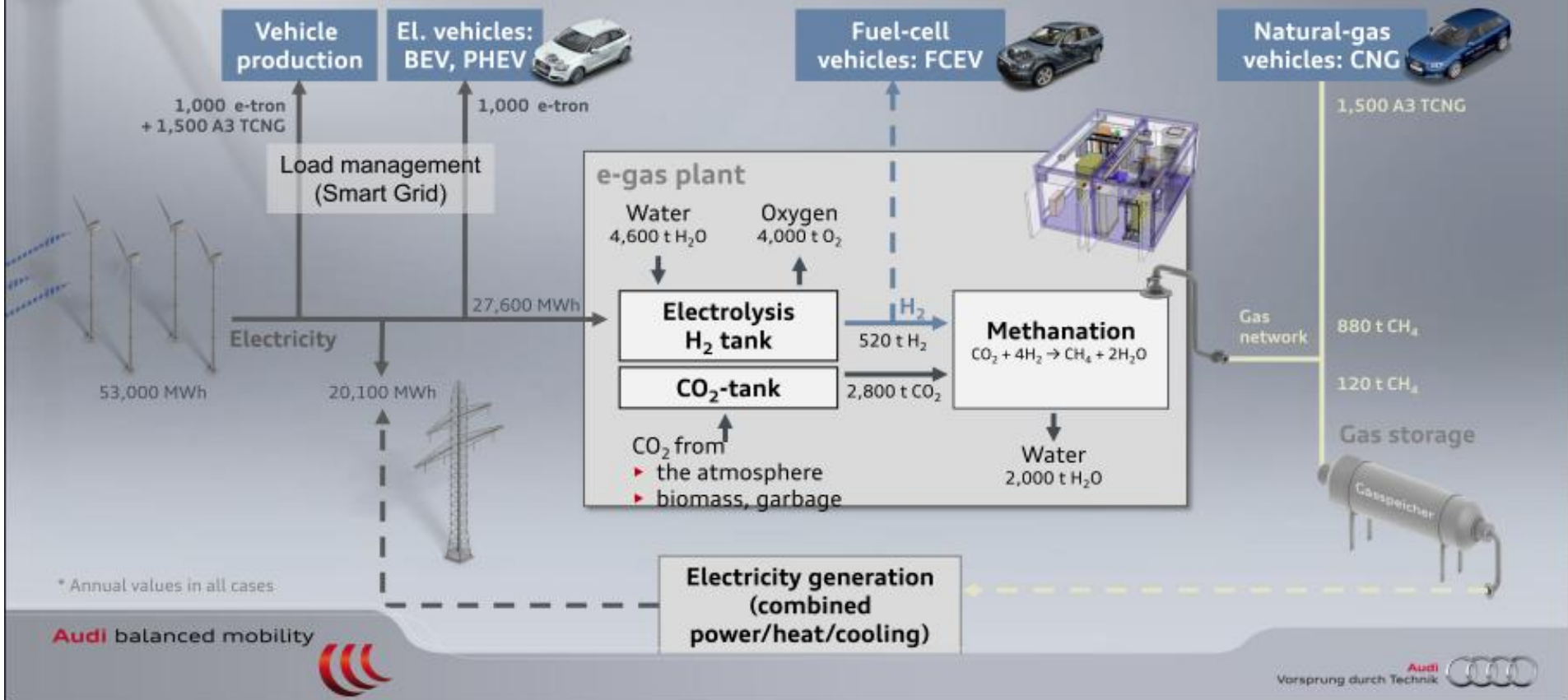
WHY POWER-TO-GAS ?



- Storage of intermittent renewable power in a natural gas grid
- Limiting the extension of power grid to necessary size
- Supports stabilizing the power grid
- Source of green H₂ / methane

SCIENCE-FICTION OR REALITY : AUDI WERTLE

Coupled electricity-methane networks – a flexible system Audi pilot project with 6 MW e-gas plant in Northern Germany



SCIENCE-FICTION OR REALITY : AUDI WERTLE

The 6,3 MW plant in Werlte was officially opened June 25th, 2013

Opening ceremony



Mr. Hollerweger (Head of Overall Vehicle Development, Audi) and Mr. Flasbarth (President, Federal Environment Agency) opened the new e-gas plant

POWER-TO-GAS IN BELGIUM?

WITH CURRENT BELGIAN ENERGY POLICY, EXCESS OF RENEWABLE ELECTRICITY WILL REMAIN LIMITED (A FEW HUNDREDS HOURS) BY 2030-2050.

- Modest RES objective (13%) in Belgium by 2020, no long-term policy for 2030 and 2050
- Good electrical grid in place and good interconnections with The Netherlands and France

Figure 4. Electricity capacity, 20.6 GW (2013)

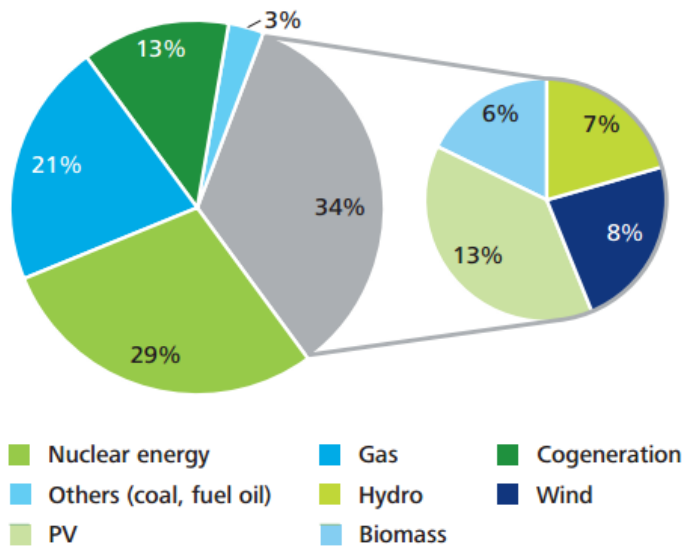
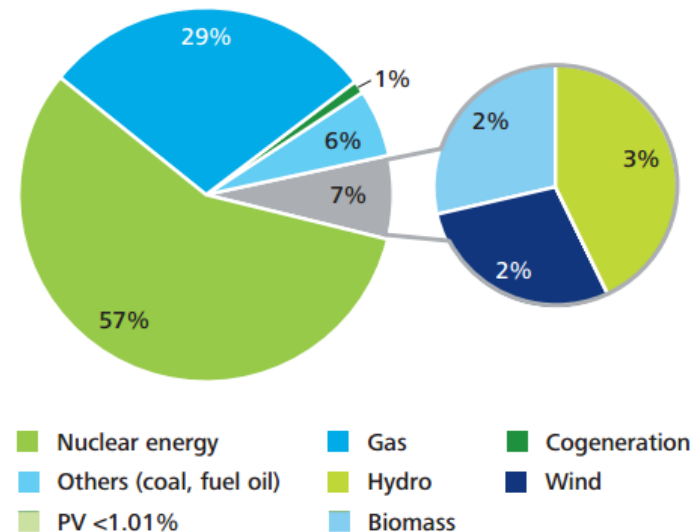


Figure 5. Net electricity production, 71 TWh (2013)



Source: DELOITTE, Energy Country Profile Belgium 2014

POWER-TO-GAS ROADMAP FOR FLANDERS IN A NUTSHELL

- Duration: 16 months (10/2014 - 01/2016)
- Funding : Flemish Region, Belgium



- Project partners:



- Coordinator: Hydrogenics

More info: www.power-to-gas.be

POWER-TO-GAS ROADMAP FOR FLANDERS

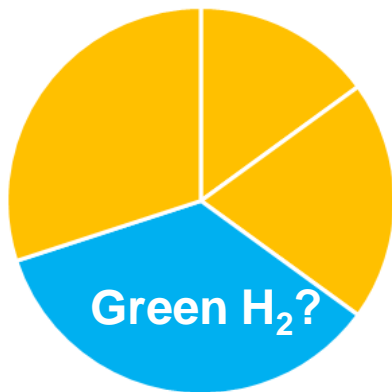
OBJECTIVES

- Analyze the **actual and future status of Power-to-Gas (PtG) in Flanders** (technology, economics, legal framework, market opportunities)
- Study various PtG **business cases** and identify **early markets**
- Elaborate a **roadmap** which will serve as the backbone for the actions of a **Power-to-Gas Cluster** in Flanders
- **Prioritize the actions** in order to create a **PtG framework** for the development of projects in Flanders and abroad
- Identify potential **demonstration projects** in Flanders

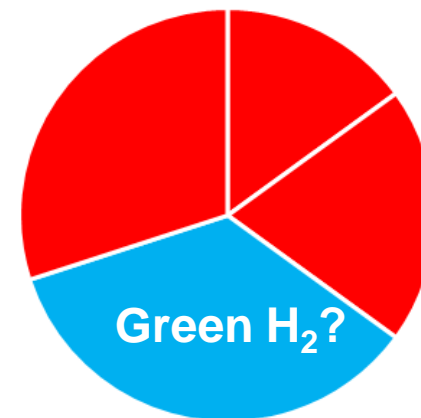
GREEN HYDROGEN MARKET ASSESSMENT

4 MAIN MARKET SEGMENTS

Energy storage



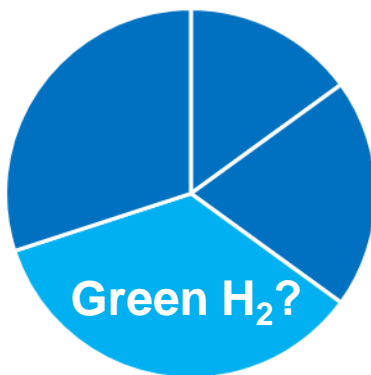
Green Gas



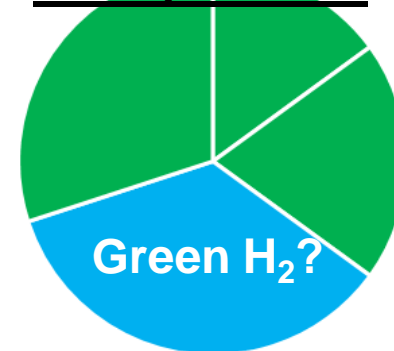
- How important will these markets be in 2015-2030-2050 ?

- What role (share) can Green Hydrogen play in these markets compared to competing cleantech technologies ?

Green Industry



Green Transportation



IN A NUTSHELL

- P2G produces green H₂ / methane from surplus renewable electricity
- Injection, storage and transport is possible through a wide existing natural gas network (with outstanding storage capacity)
- Several usages for converted electricity
- Direct H₂-injection in natural gas grids is possible up to a max. % depending on the location of the injection in the grid
- Methanation is an option to avoid max. H₂ injection %
- Reality, no science-fiction (cf. Audi Wertle)
- More an economical than a technical challenge
- The Belgian case : results Power-to-Gas Roadmap for Flanders expected early 2016
- Natural gas is the perfect backup in case of lack of renewable production. New fix/flex product available from Jan 1st 2016

FLUXYS

