



# **Power to X - Short Overview about Activities and Projects in Germany**

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# Short Introduction of AREVA H<sub>2</sub>Gen

# AREVA H<sub>2</sub>Gen Company Overview

## ► 2014 : The merge of :

- ◆ An industrial start-up



owned by



- ◆ The electrolysis division of former



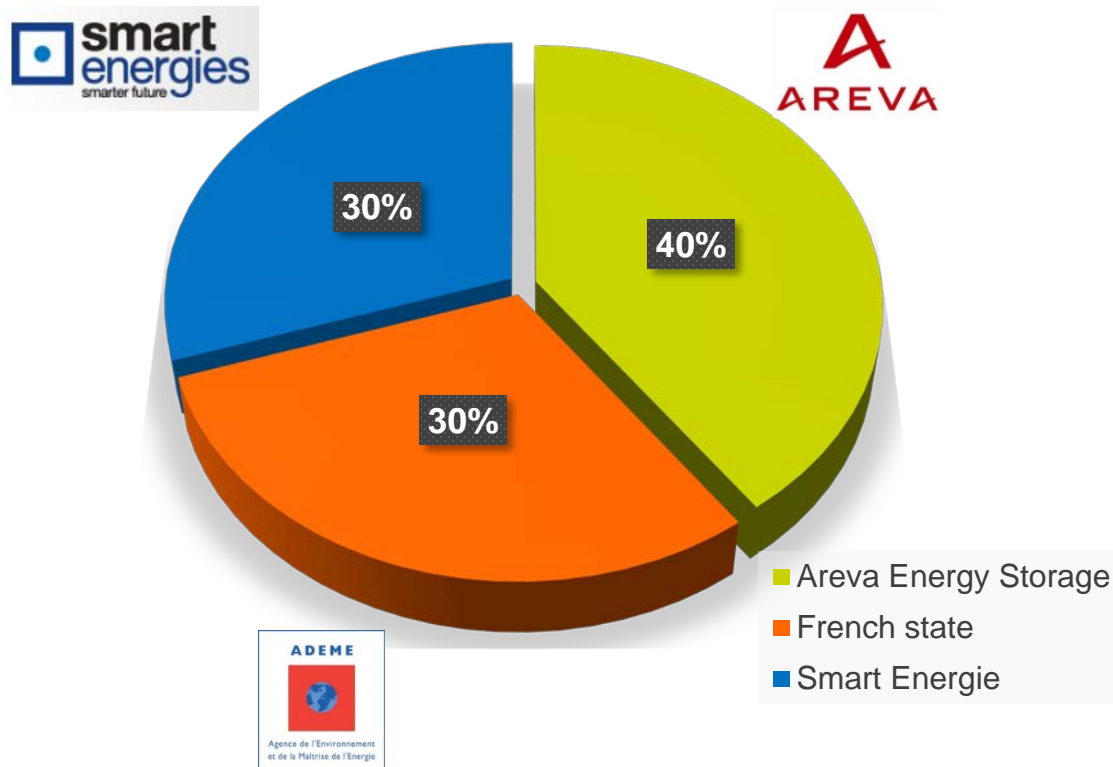
## ► And venture capital funds from the French State



A PEM electrolyser division within the AREVA Group

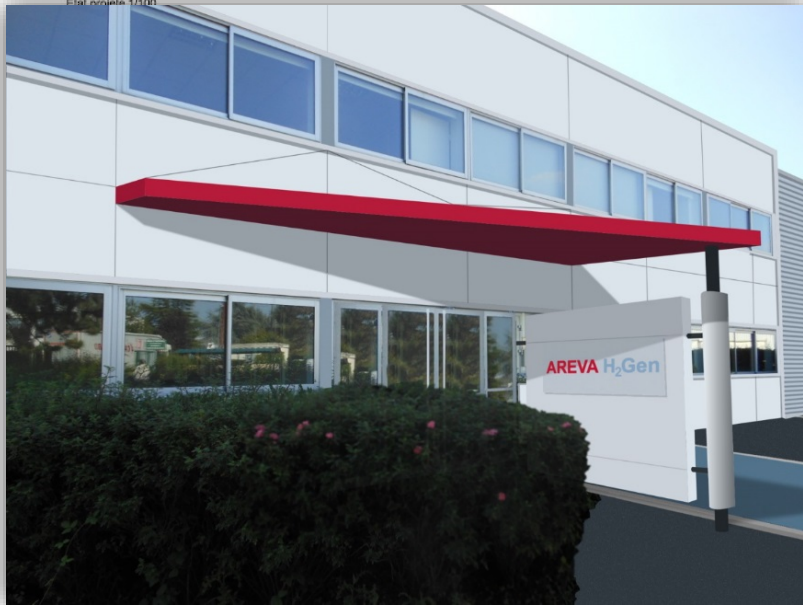
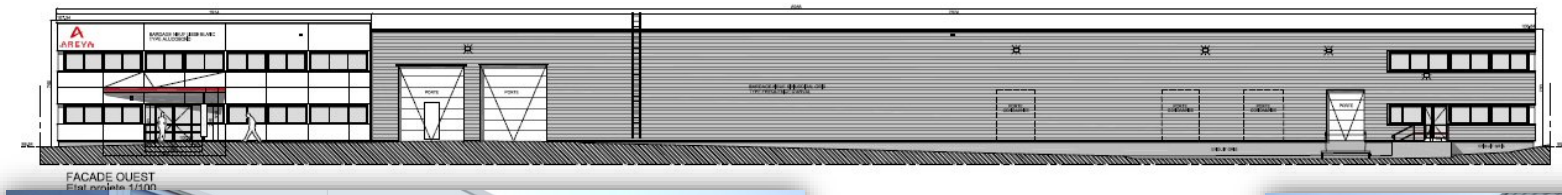
# AREVA H<sub>2</sub>Gen Capital Structure

► 3 shareholders :



# AREVA H<sub>2</sub>Gen Localisation & Factory

- ▶ A factory of 1500m<sup>2</sup> in Les Ulis – Greater Paris
- ▶ Worldwide network of partners
- ▶ A subsidiary in Germany (AREVA H2Gen GmbH in Cologne & Berlin)



## Tertiary sector (offices):

- 600 m<sup>2</sup>

## Production area :

- 1 500 m<sup>2</sup>
- Leverage capability 20 T

## Production capacity :

- 24 to 36 electrolyzers a year
- 2,5 MW Grid Access

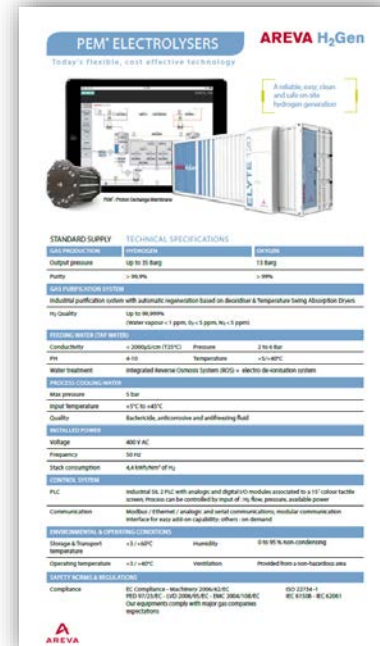
## Laboratories :

- 500 m<sup>2</sup>
- 10 test benches



# AREVA H<sub>2</sub>Gen Product Line

- ▶ A commercial product line from 5 to 240 Nm<sup>3</sup>/h at 15 and 35 Bar
- ▶ Customs solutions multi MW projects :
  - ◆ Grid balancing services
  - ◆ Renewable hydrogen for petro-chemicals



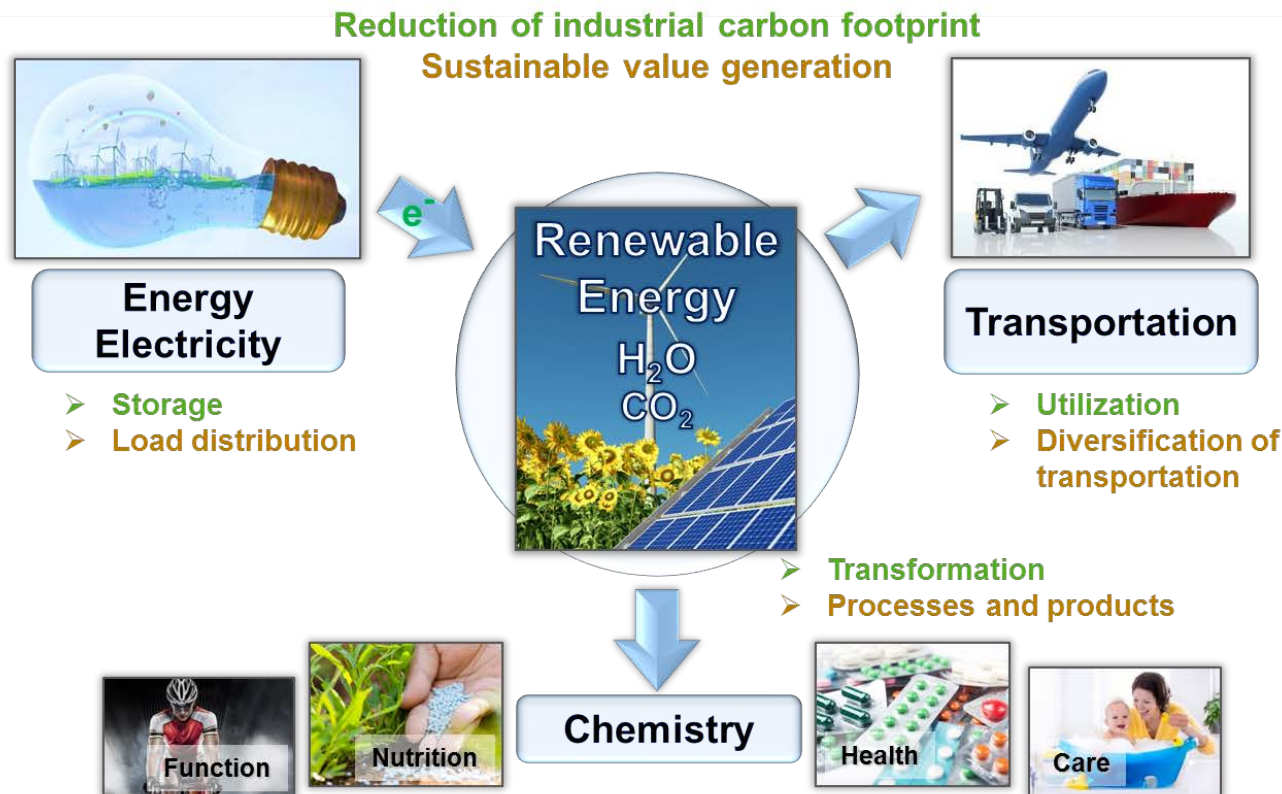


# **Power to X - Short Overview about Activities and Projects in Germany**

# Power to X - Kopernikus



# “Decarbonization” and “Power-to-X”



A. Bardow et al., "Power to What?", *Energy and Environmental Sciences*, **2015**, 8, 389.  
W. Leitner, F. Schüth, K. Wagemann, "Überschussstrom nutzbar machen", [www.dechema.wordpress.com](http://www.dechema.wordpress.com)

J. Klankermayer, W. Leitner, "Harnessing renewable energy with  $CO_2$  for the chemical value chain", *Phil. Trans. R. Soc. A*, **2016**, 374, 2061.  
S. R. Foit, I. C. Vinke, L. G. J. de Haart, R.-A. Eichel, "Power-to-Syngas", *Angew. Chem. Int. Ed.* **2016**, 55, 6892..

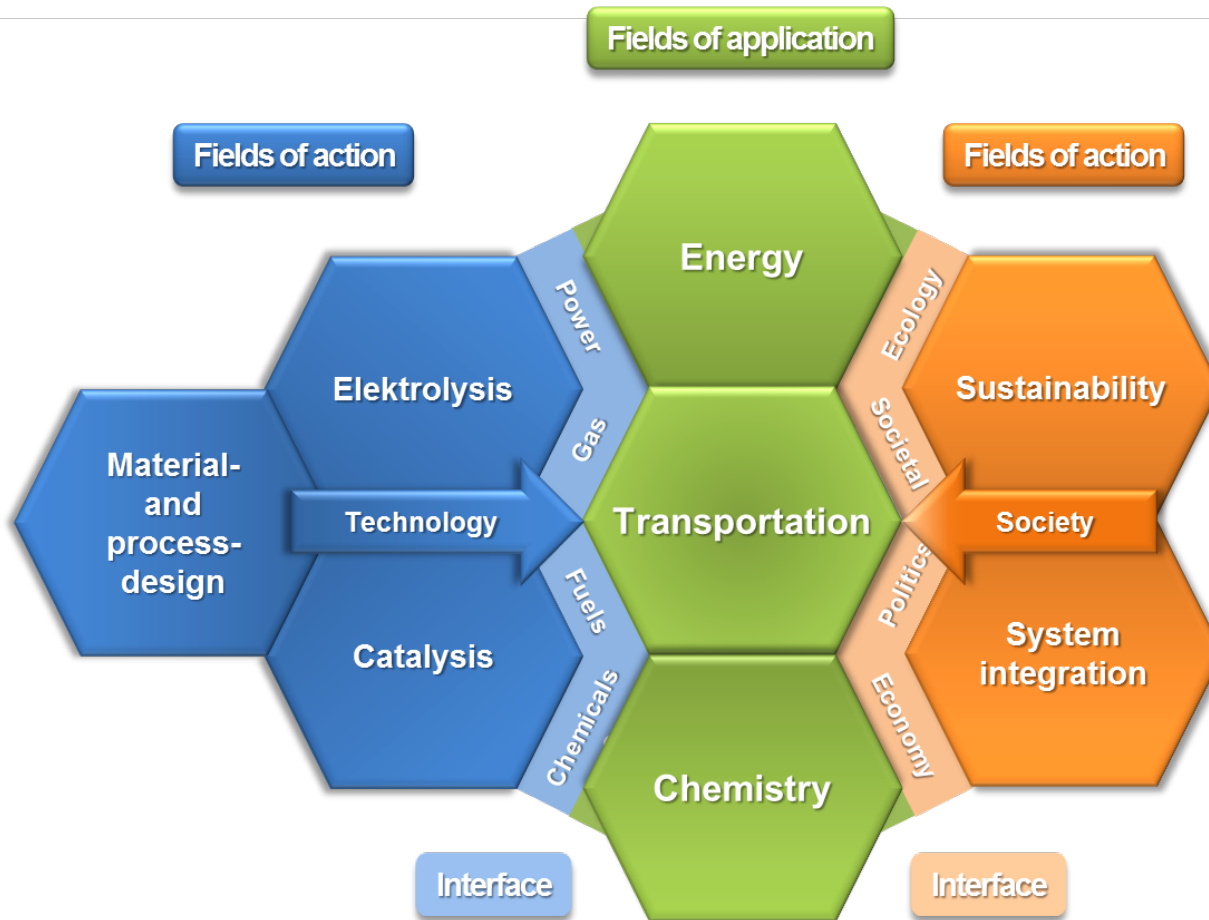
**P2X: Exploration, Validation and Implementation of „Power-to-X“ Concepts**

Source of images: [www.fotolia.com](http://www.fotolia.com)



# Kopernikus Project: P2X

## Linking the Fields of Action and Application



P2X: Exploration, Validation and Implementation  
of „Power-to-X“ Concepts

AREVA H<sub>2</sub>Gen



## P2X: Guiding Principles

- High CO<sub>2</sub>-reduction at maximal added value
- Integration of decentralized and autarkic solutions
- Scalability and modularization
- Societal needs and acceptance
- Exportability



P2X: Exploration, Validation and Implementation  
of „Power-to-X“ Concepts

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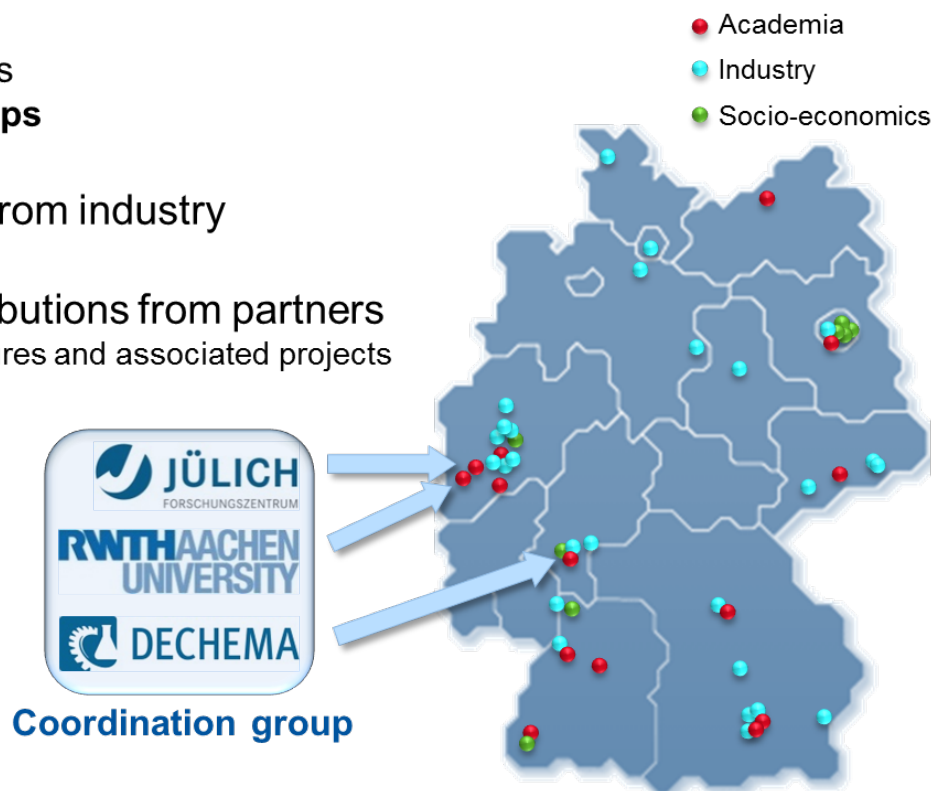
## P2X: Facts & Figures

- Total budget for 1<sup>st</sup> funding period (3 years): **38.3 Million €**

- 17 research institutes
- 26 partners from industry
- 3 civil society organizations
- **64 working groups**

- **8.3 Million €** contribution from industry

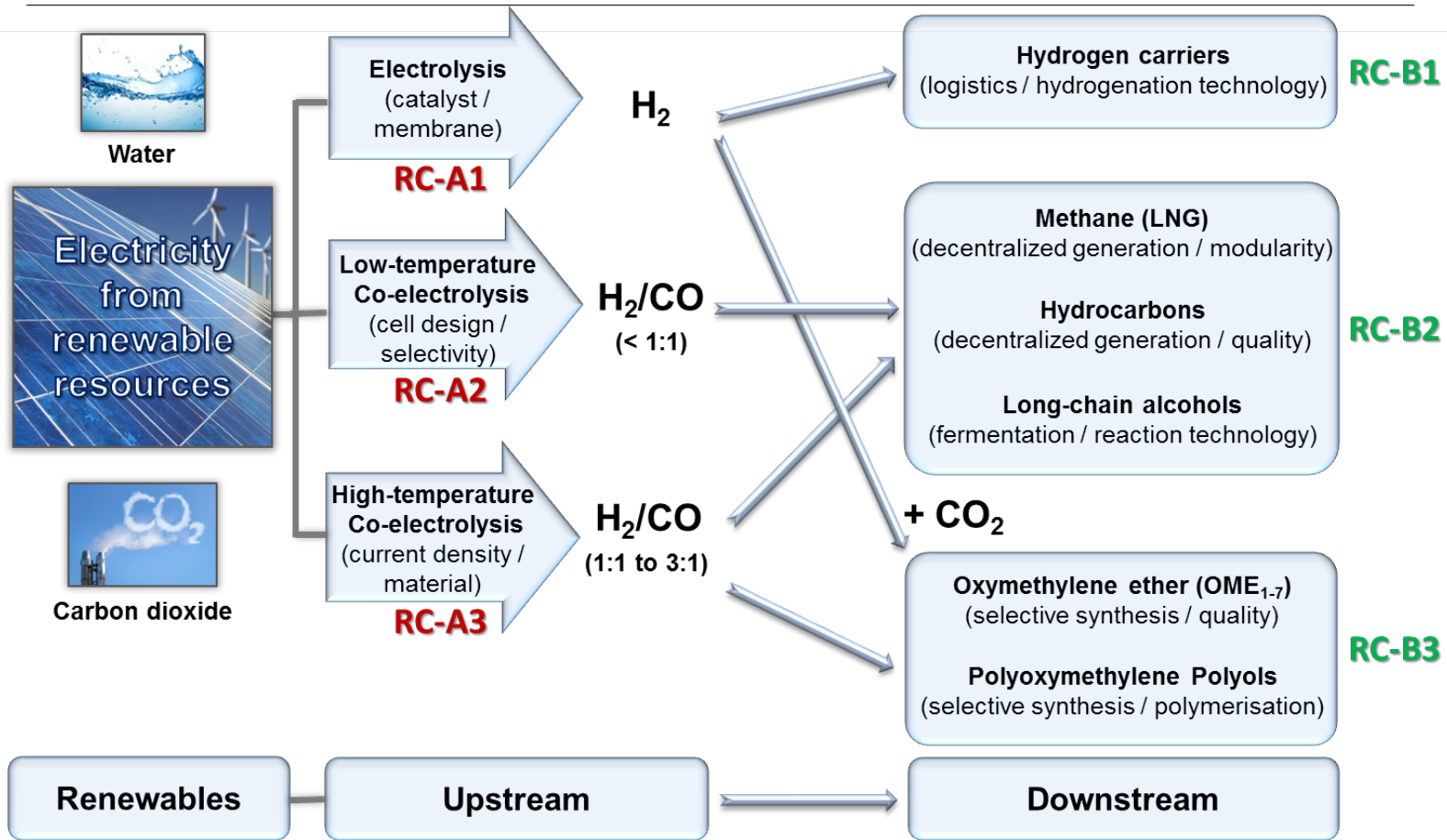
- Synergetic effects & contributions from partners through established infrastructures and associated projects



P2X: Exploration, Validation and Implementation  
of „Power-to-X“ Concepts



## P2X: Research Program



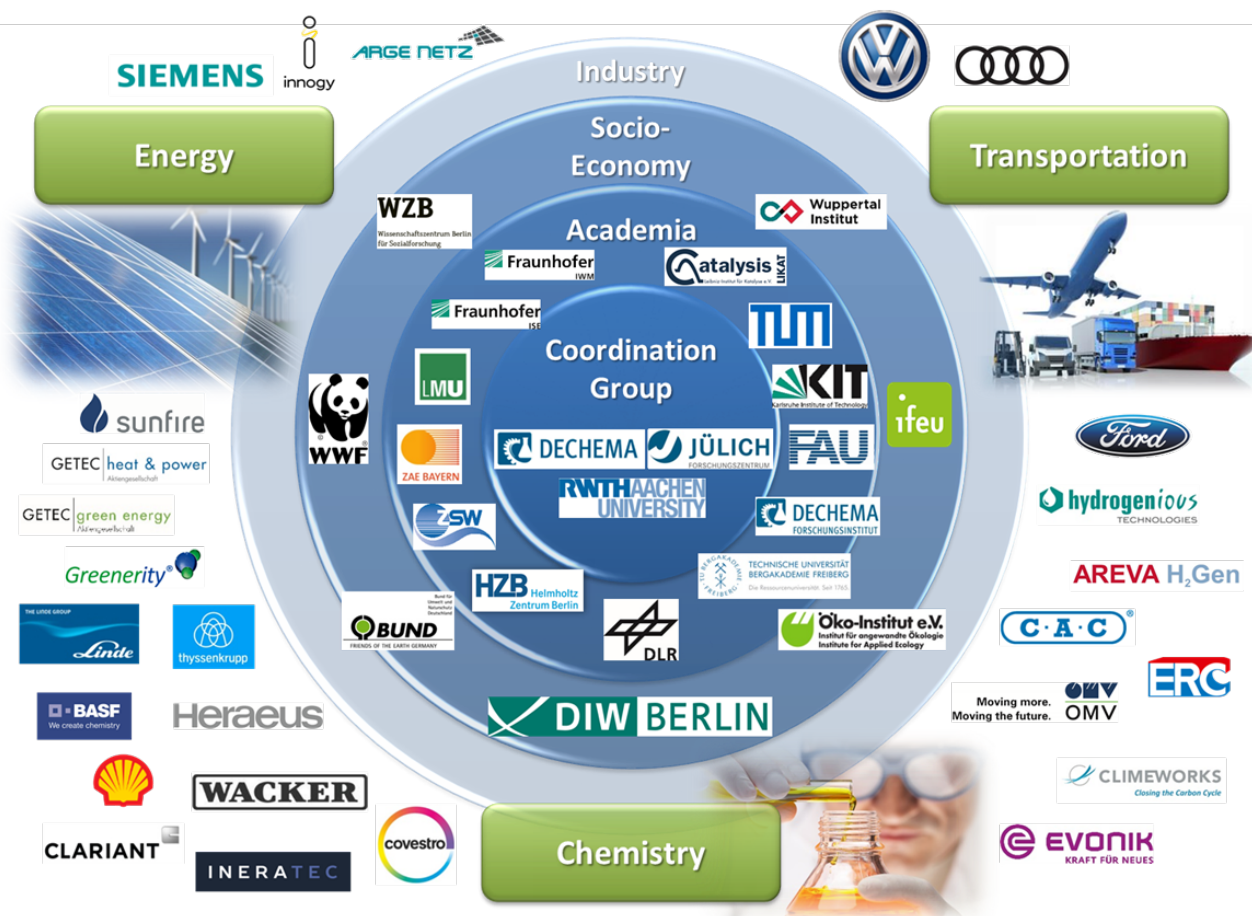
P2X: Exploration, Validation and Implementation of „Power-to-X“ Concepts

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## P2X: Project Partners



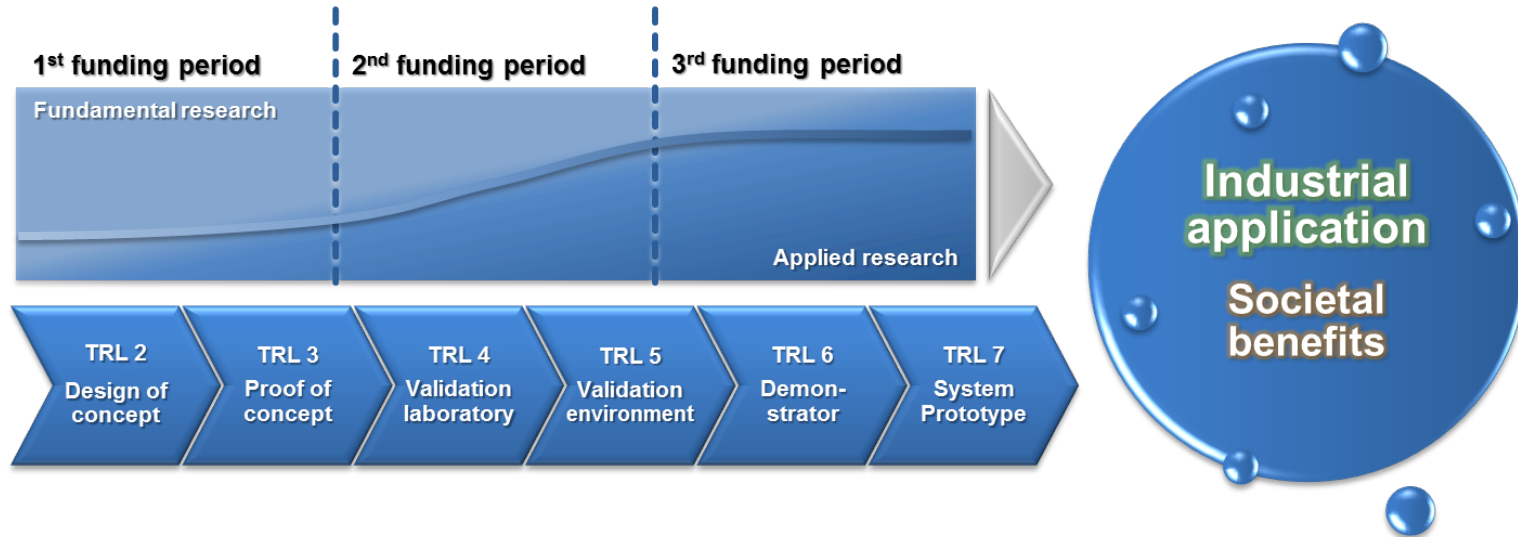
P2X: Exploration, Validation and Implementation of „Power-to-X“ Concepts

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AREVA H<sub>2</sub>Gen



## P2X: Project Timeline - Content



P2X: Exploration, Validation and Implementation  
of „Power-to-X“ Concepts



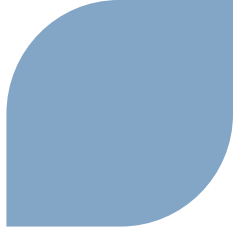


# **Power to X – Energy transition in the transport sector: sector coupling**




# Green light for the “energy transition in the transport sector” funding initiative





The funding initiative entitled “energy transition in the transport sector: sector coupling through the use of electricity-based fuels” has been launched today, serving to link together the energy sector, the transport sector and the maritime industry more closely with respect to technology and innovation policy. The Federal Ministry for Economic Affairs and Energy is providing around 130 million euros worth of funding over the coming three years, thereby setting incentives for the use of synergies through ambitious innovative and system-oriented research and development projects.



The focus of the funding initiative is on research projects which seek to produce and use alternative electricity-based fuels and to integrate the latest technologies into the energy sector. Electricity-based fuels can be used in passenger vehicles, lorries, sea-faring vessels, construction equipment or in stationary industrial engines. Based on a cross-sectoral approach, the Federal Ministry for Economic Affairs and Energy is also providing funding for research and development in the field of maritime systems using synthetic fuels and smart micro-grids in port areas.

State Secretary Beckmeyer said: “The new funding initiative seeks to link innovative energy technologies with maritime technologies. In this way, we are making progress on the energy transition in the transport sector. At the same time, the use of low-carbon and low-emission combustion engines is opening up new opportunities for German industry.”



**Thank you for your attention  
and have a great Meeting!**