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## ***G4V- Grid for vehicles***

# ***European Roadmap Towards the Infrastructure Enabling the Mass Market of Electric Vehicles***

***Presentation of the final results  
30 June 2011, Brussels***

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# Welcome and introduction

**Thomas THEISEN**  
**Project Leader G4V**  
**RWE**

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# Energy and Research Aspects in Relation with EV Integration

**Henrik DAM**  
**DG Research**  
**European Commission**



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# Research and energy policy aspects in relation to EV mobility

**European Commission, DG Research & Innovation**

Henrik Dam

**Research Programme Officer**



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# Important EU energy policies

- ✓ **An Energy Policy for Europe (Spring 2007 European Council)**
  - ✓ *- 20% green house gases, 20% Efficiency, 20 % renewables*
  - ✓ *2050 objectives*
- ✓ **European Strategic Energy Technologies Plan – SET Plan (November 2007)**
  - ✓ *Communication: Investing in Low Carbon Technologies (autumn 2009)*
- ✓ **Recovery Package (2008-2009)**
- ✓ **3rd Internal Energy Market Package (2009)**
- ✓ **Communication: Smart Grids: from innovation to deployment, 12th April 2011**
- ✓ **Energy efficiency directive, 22nd June 2011**



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# Important EU energy policies

- ✓ **20% Renewable Energy by 2020**
  - ✓ *Translates to about 35% of renewable electricity*
  - ✓ *Developing grid infrastructure*
  - ✓ *Providing priority access or guaranteed access to RES-electricity*
  - ✓ *Guarantee transmission and distribution of RES-electricity*
  - ✓ *Priority to RES-electricity in dispatching*
  - ✓ *Market and Operations to minimise curtailment of RES-electricity*



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# Important EU energy policies

## ✓ Recovery Package

✓ *Private-Public Partnerships – Green Car, Efficient Buildings, Factories of the Future*

✓ *FP7 Calls to be published 19/7-2011*

## ✓ 3rd IEM Package

✓ *Cross-border issues, ACER, ENTSO-E*

✓ *Promotion of Smart Metering*

✓ *Provision for financing R&D through tariffs*



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# Important EU energy policies

- ✓ **Smartgrid communication, 12th April**
  - ✓ *Actions on Smart Grids standards*
  - ✓ *request to Member States on action plans with targets for the implementation of Smart Grids*
  - ✓ *Continuous support for innovation and its rapid application*
- ✓ **Energy efficiency directive, 22nd June 2011**
  - ✓ *giving fresh momentum to energy efficiency*
  - ✓ *Incl. enabling metering data to be made available to a third party acting on behalf of the final customer*
  - ✓ *Incl. enabling final customer to consult and use the applicable time-of-use tariffs with realtime pricing, peak time pricing and peak time rebates*



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# Main framework, smartgrids, EV & Research

- ✓ **FP7 Programme and projects**
  - ✓ *E.g. MERGE, Green eMotion*
- ✓ **SET Plan European Electricity Grids Initiative (EEGI)**
  - ✓ *Roadmap 2010-18 and detailed implementation plan 2010-12. Total budgeted costs for RD & D: 2 B€*
  - ✓ *D8 of this roadmap targets "Integration of electric vehicles" with an estimated budget of 100 M€.*
- ✓ **Smartgrid European Technology Platform (Smartgrid ETP)**
- ✓ **European Green Car Initiative (EGCI)**
  - ✓ *PPP from recovery package (2008-9)*
  - ✓ *Developed a European Roadmap for Electrification of Road Transport*
  - ✓ *Projects co-funded by FP7*



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## In summary

- ✓ **EC policies on energy and research support electric vehicles**
- ✓ **Smartgrids are necessary to reach the objectives**

**Thanks for your attention !!**



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# Background, Objectives and Structure of the G4V Project

Thomas **WIEDEMANN**  
RWE



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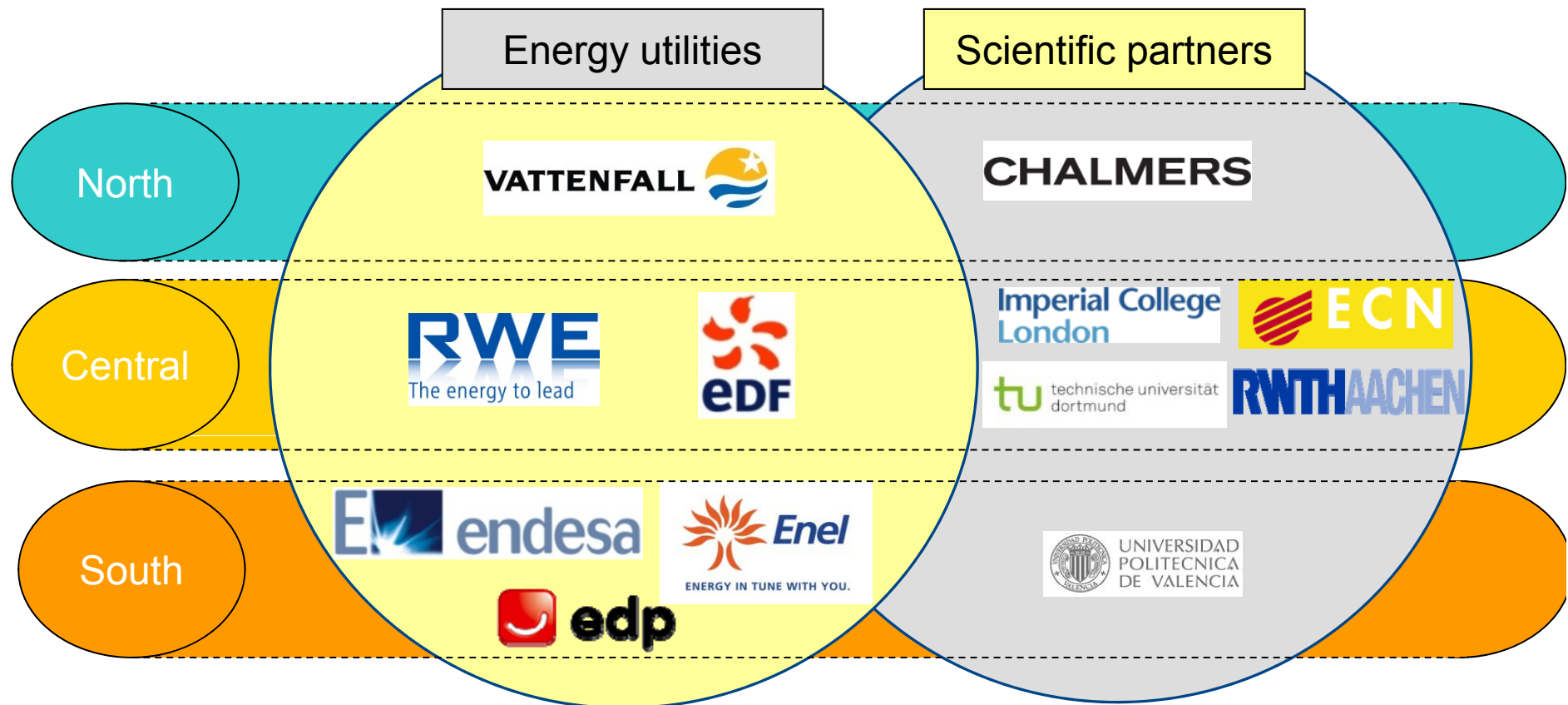
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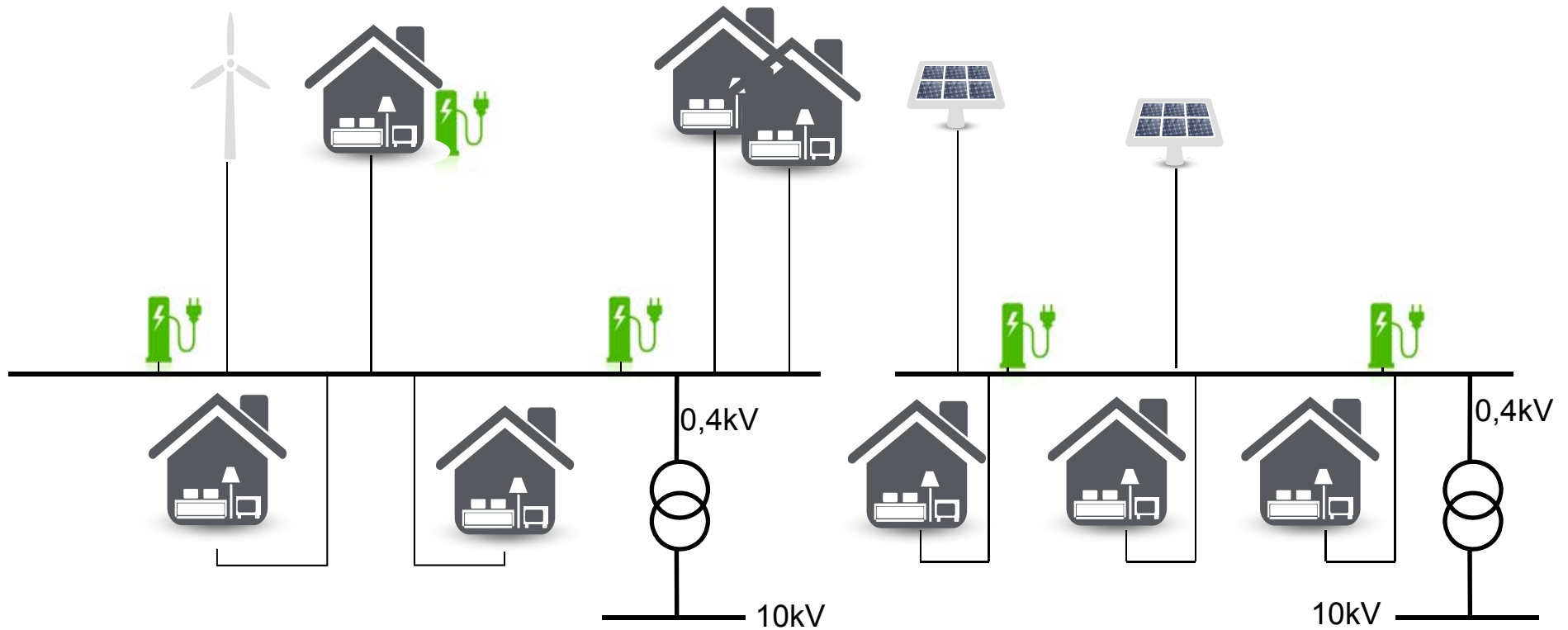
# The G4V consortium



12 partners from eight countries



# Why a project as “GRID-for-vehicles”?



- EV's as new **mobile** and **flexible** loads (and generators?)
  - opportunities and challenges



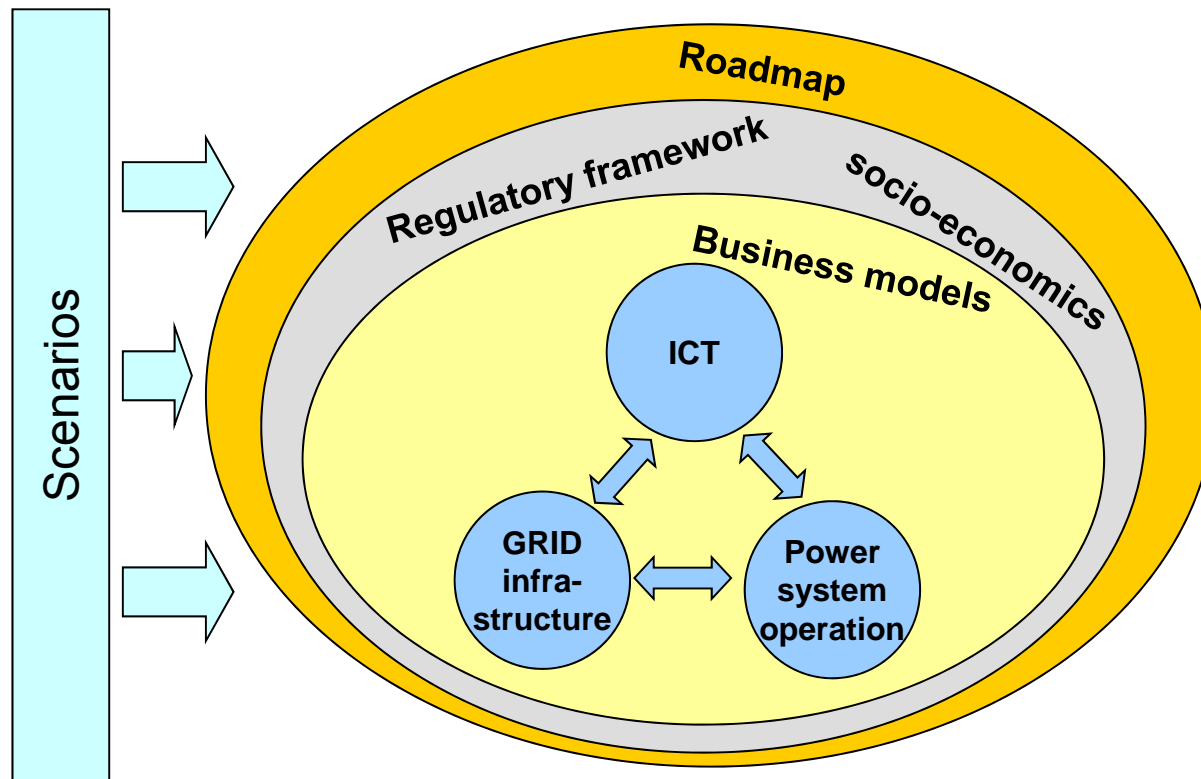
# Overview – the G4V-project



**time-horizon: 2030 and beyond**

Key – Question:

What needs to be started **now** in order to enable a mass market of EV?



- technical issues
- legal framework
- business model
- customer convenience
- environmental aspects



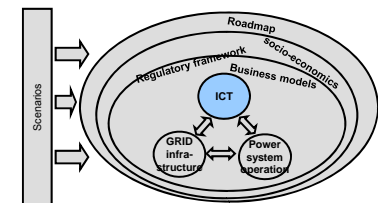
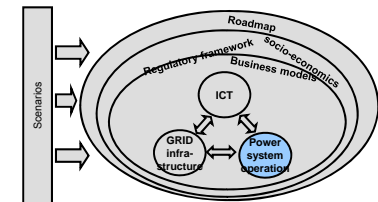
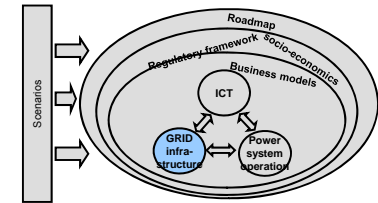
Recommendations



# Key questions addressed in G4V...(I)

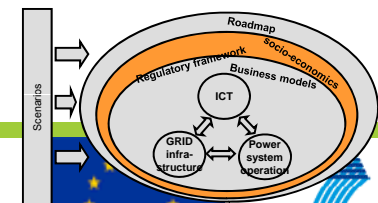
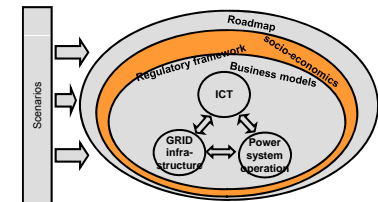
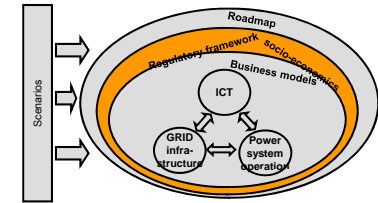
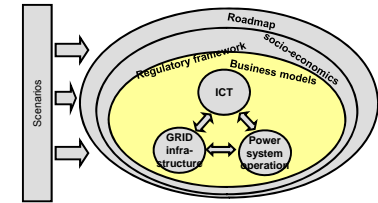


- What impact on the grids can be anticipated for a large number of EV's?
  - critical grid assets
  - potential problems (overloads, voltage violation,...)
  - influencing parameters (location of CIS, connection power,...)
  
- How could different charging strategies look like?
  - centralised vs. decentralised approaches
  - rather simple vs. more sophisticated strategies
  - different objectives: technical driven (e.g. congestion management) vs. market driven (e.g. aggregation for reserve markets)
  
- What is the most suitable (functional) ICT?
  - requirements depending on charging strategies, business cases as well as customer convenience
  - data privacy and security issues

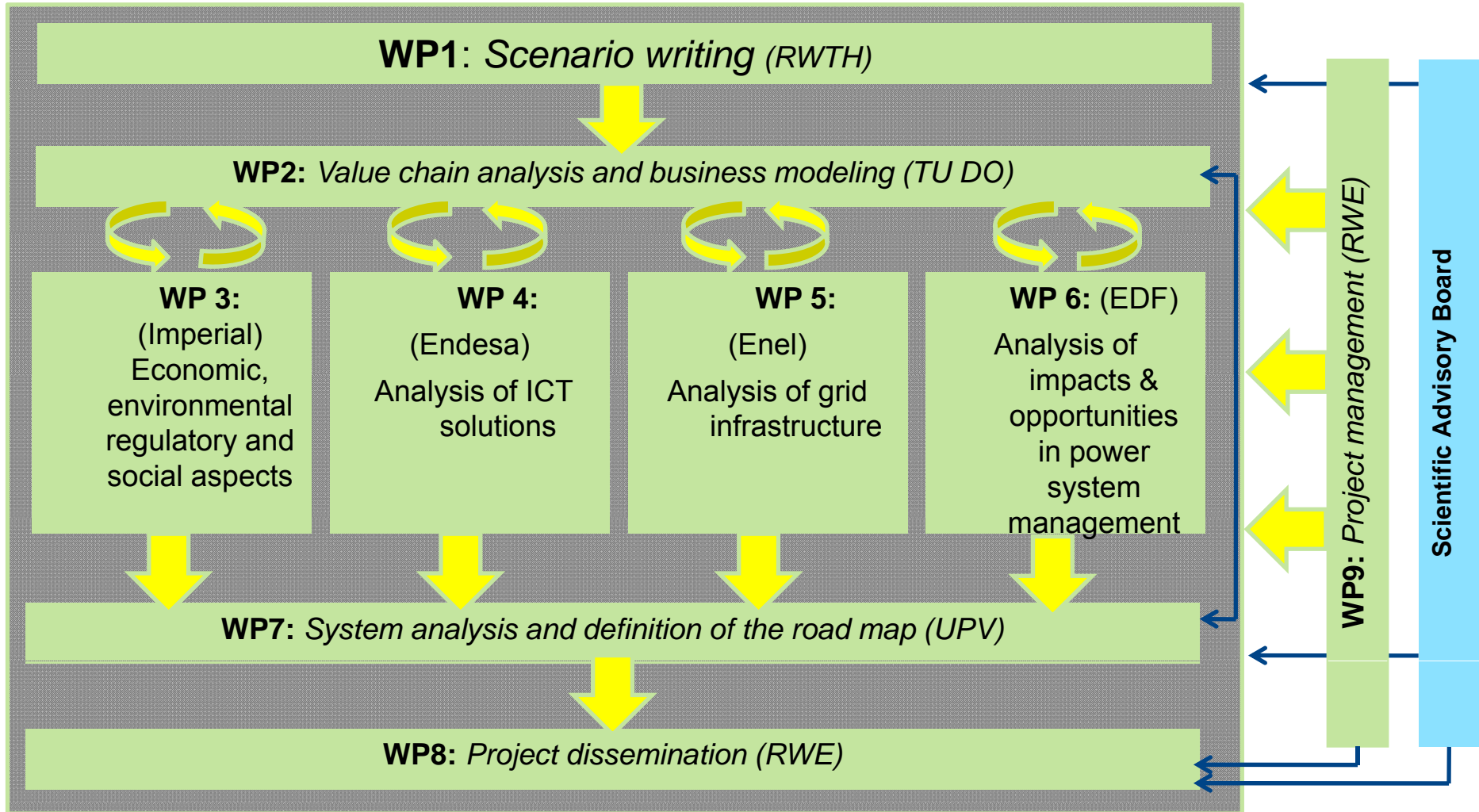


# Key questions addressed in G4V...(II)

- How will the business world be affected by EV'S?
  - new products and services
  - new business models
  - new stakeholders vs. traditional stakeholders
- What is the potential impact of EV's on the generation mix?
  - integration of Renewables
  - avoidance / reduction of wind-curtailment
  - potential for CO2-reduction
  - dispatching
- What are the costumers' views on EV's?
  - expectations, needs and concerns
  - behaviour and willingness to participate in particular charging schemes (incentivation)
- Is the regulatory framework enabler or barrier for an evolving EV market?



# Work Plan



Thank you very much for  
your attention!

Enjoy the conference!