Steering Committee WP3

Global overview, current status and next steps

21 October 2014

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WP3 overview, status and next steps

Agenda

- WP3 overview
- Tasks
- Progress and status
- Next steps

WP3 overview, status and next steps

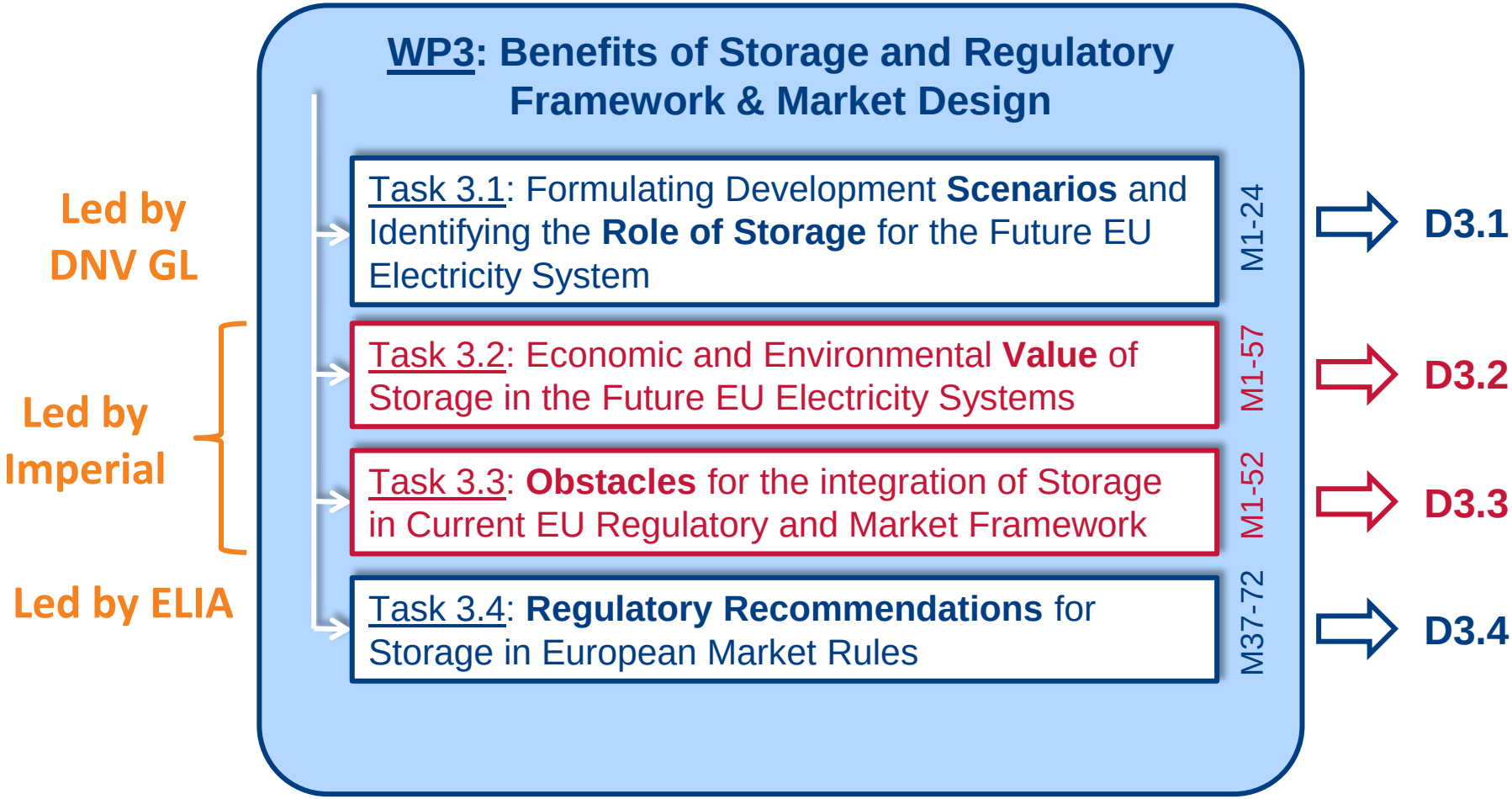
Part of eStorage

eStorage goal:

- Demonstrate Variable Speed PSP as an **economically viable solution** supporting large scale **integration** of intermittent **renewable energy production** into the EU electricity grid

➢ WP3 is about **quantification** of the economics and determination of **preconditions** to enable a viable solution

Tasks



Task 3.1 Scenarios

Progress and status – **work until now**

Formulating **Development Scenarios** and Identifying the **Role of Storage** for the Future EU Electricity System

- Literature **study**
  - European policy and scenarios,
  - Demand development
  - Technology development
  - Development of fuel supply and fuel prices
- **Development of scenarios**

Task 3.1 Scenarios

Progress and status – **work until now**

- Set up of **models**
- Definition approach and requirements **grid study**
- Assessment of **role of storage**
- **Choice of scenarios**

➢ Preparation of **deliverable D3.1** – Feasible development scenarios for the EU electricity system

Task 3.1 Scenarios

Progress and status - **Approach of scenario development**

Two tracks approach, in line with the scenario definition of ENTSO-E:

- Track A, based on the **review of recent scenario and roadmap studies**, top-down approach with back-casting from 2050 to 2013
- Track B, through **least-cost power system expansion** (bottom-up, forecasting) based on **expected development of demand, technology and fuel availability and prices**.

Cornerstone: **Need for flexibility** in the energy sector up to 2050 and the **role** that **energy storage**, in particular VSPSP, can fulfil.

Task 3.1 Scenarios

Progress and status – **Potential contribution areas of storage**

Potential **contribution areas** of storage:

- Main role is to **add flexibility** to the electricity system
- Detailed role is **dependent on the place of the storage** device in the grid
  - Balancing demand and supply
  - Grid management
  - Energy Efficiency

Task 3.1 Scenarios

Progress and status – **Potential contribution areas of storage**

Storage is **not the only solution** for flexibility and storage **alone cannot solve** all flexibility **issues** in an economic way. There are several **competing and complementary solutions** such as:

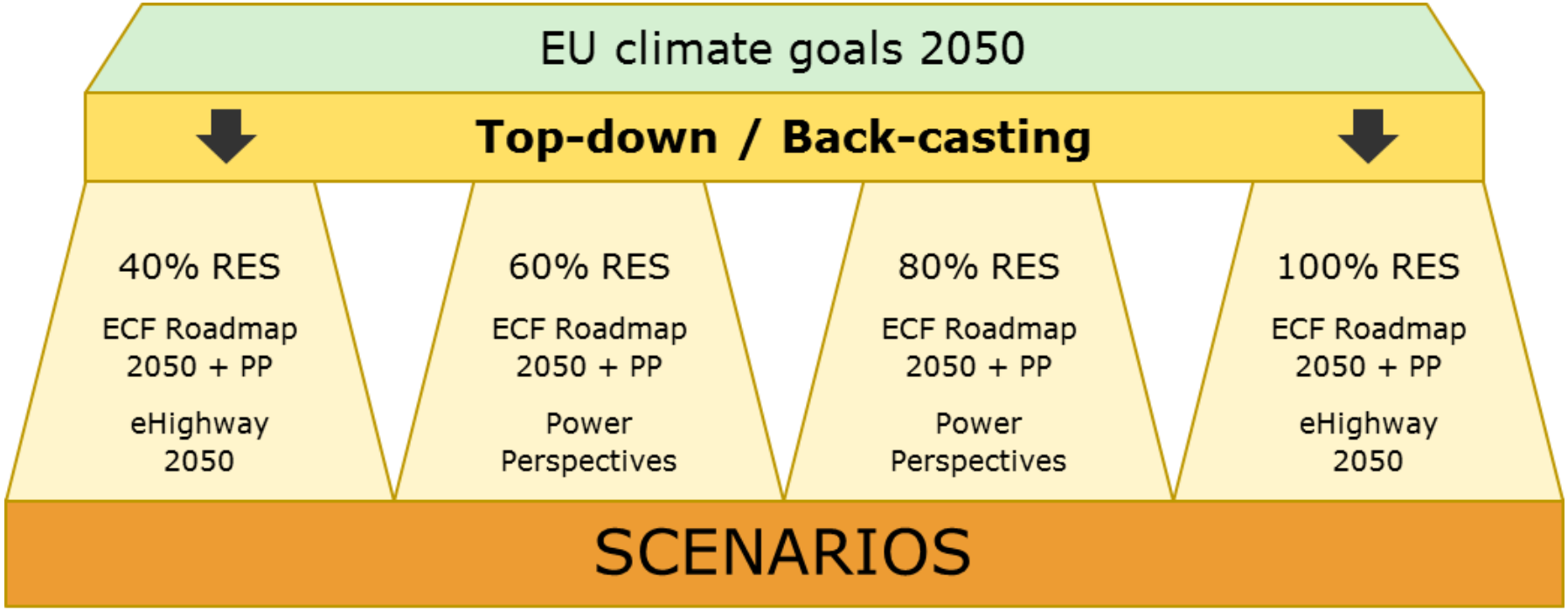
- More flexible conventional power stations
- Grid enforcement/extension
- Demand side management / Demand Response
- Curtailment of wind and PV

Task 3.1 Scenarios

Progress and status – **Choice of scenarios**

Four « top down – back casting » scenarios

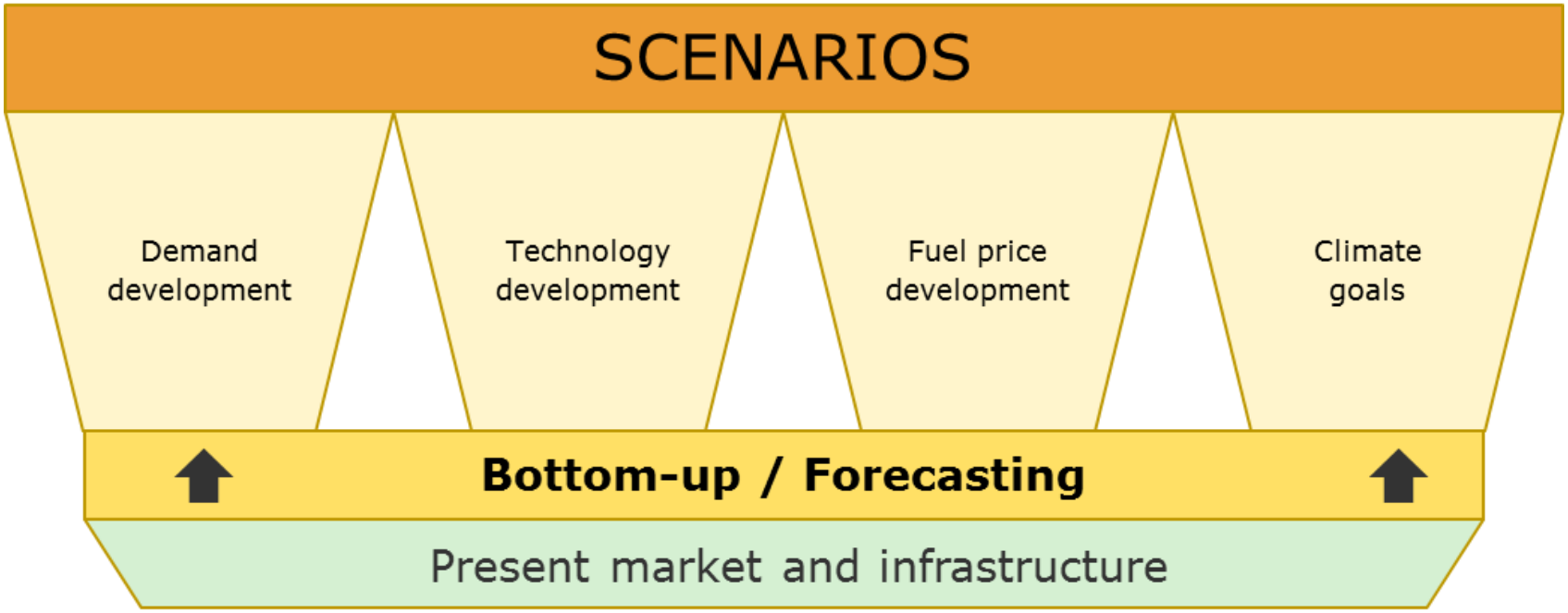
with RE shares of 40%, 60%, 80% and 100%



Task 3.1 Scenarios

Progress and status – **Choice of scenarios**

« Bottom-up / Forecasting » scenarios by **least cost expansion** based on **climate goals** and possible development of **demand, technology and fuel/CO_2 prices**



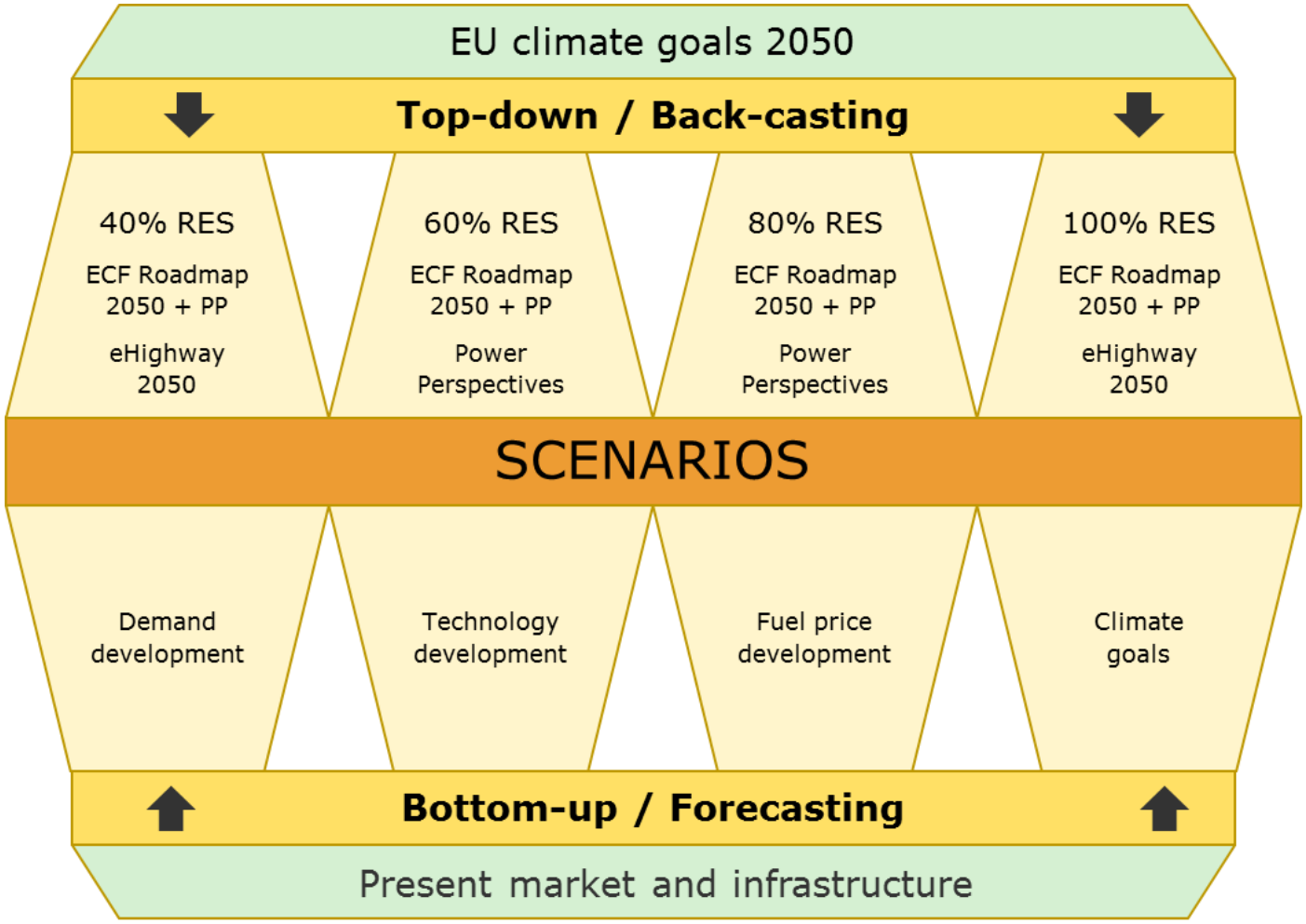
Task 3.1 Scenarios

Progress and status – **Choice of scenarios**

Combining the approaches may reveal how realistic the top down scenarios are

under different assumptions of

demand, technology and fuel/CO_2 prices



Task 3.2 Value of storage

Progress and status – **work until now**

TASK 3.2: Economic and Environmental **Value of Storage** in the future EU electricity Systems

- **Survey** of similar projects or studies recently conducted on a similar European-wide scale.
- **Preparation of models**

➢ Coming year: Further **modelling** and determination of **value of storage**

Task 3.3 Obstacles for integration of storage

Progress and status – **work until now and next steps**

TASK 3.3: **Obstacles for the integration of Storage** in Current EU Regulatory and Market Framework

Work until now:

- Start of survey of current market and regulatory mechanisms pertaining to storage facilities in selected European countries

Next steps:

➢ Analysing gaps in the existing regulatory and market arrangements which act as barriers to efficient deployment of storage

Task 3.4 Regulatory recommendations

Progress and status – **work until now**

TASK 3.4: Regulatory **Recommendations** for Storage in European Market Rules which support efficient **large scale integration of renewable electricity and energy storage** on a European scale

- This task is to start in month 36

WP3 overview, status and next steps

Questions, remarks?

A consortium of energy-industry leaders and academic researchers

Algoé, a management consultancy.

Alstom, a leading power generation and grid equipment and solutions company.

DNV KEMA, the global expert in energy and sustainability consultancy.

EDF, the world's largest producer of electricity.

Elia, one of Europe's leading electricity transmission system operators.

Imperial College, a provider of world-class education and research.