



Metamorphosis of Power Distribution

System Services from Photovoltaics

4th Integration Conference, December 2010
Werner.Coppye@3E.eu

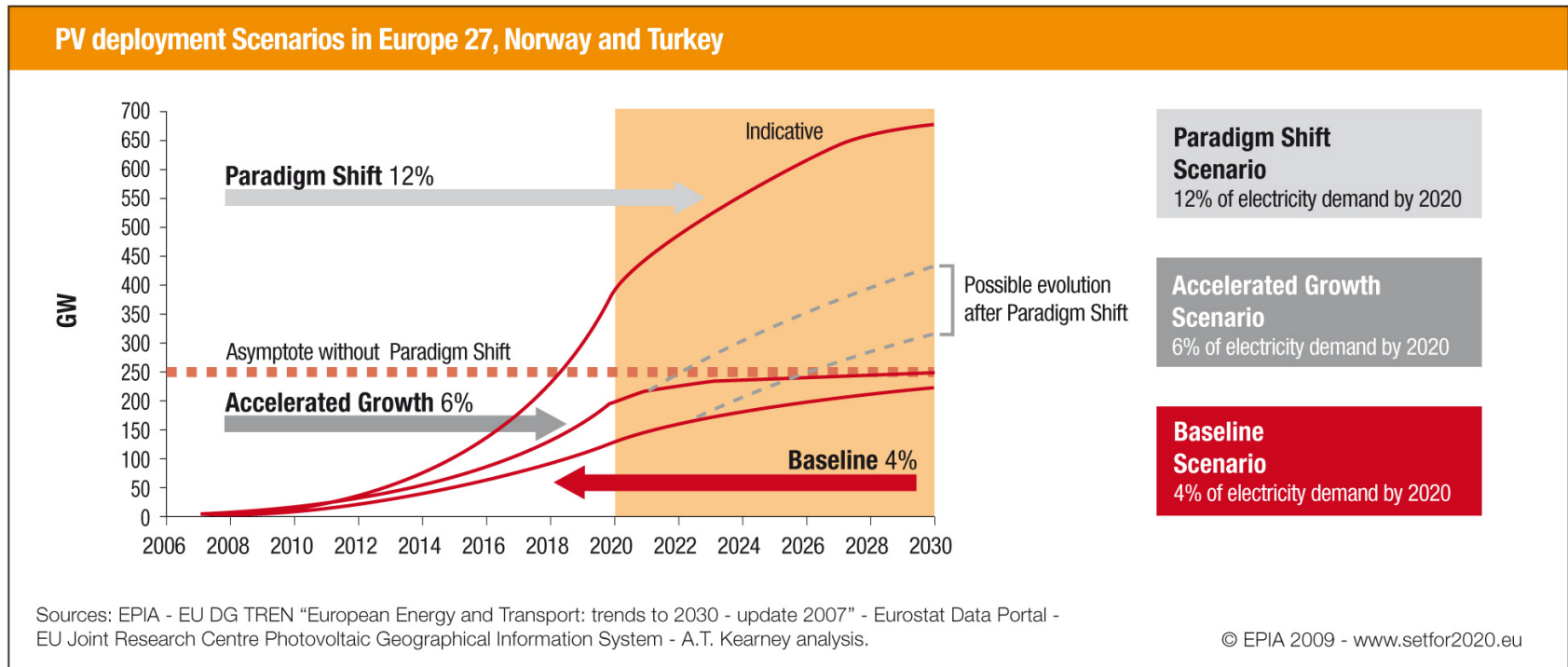
MetaPV at a Glance

- Grant agreement:
TREN/FP7EN/239511/METAPV
- October 2009 - March 2014
- Co-ordinator: 3E sa, Belgium
- 5.5 million € funding
from the European Commission
- 9.4 million eligible EC budget
- Full budget including PV developments:
27 million €



Project Rationale

PV on the Rise

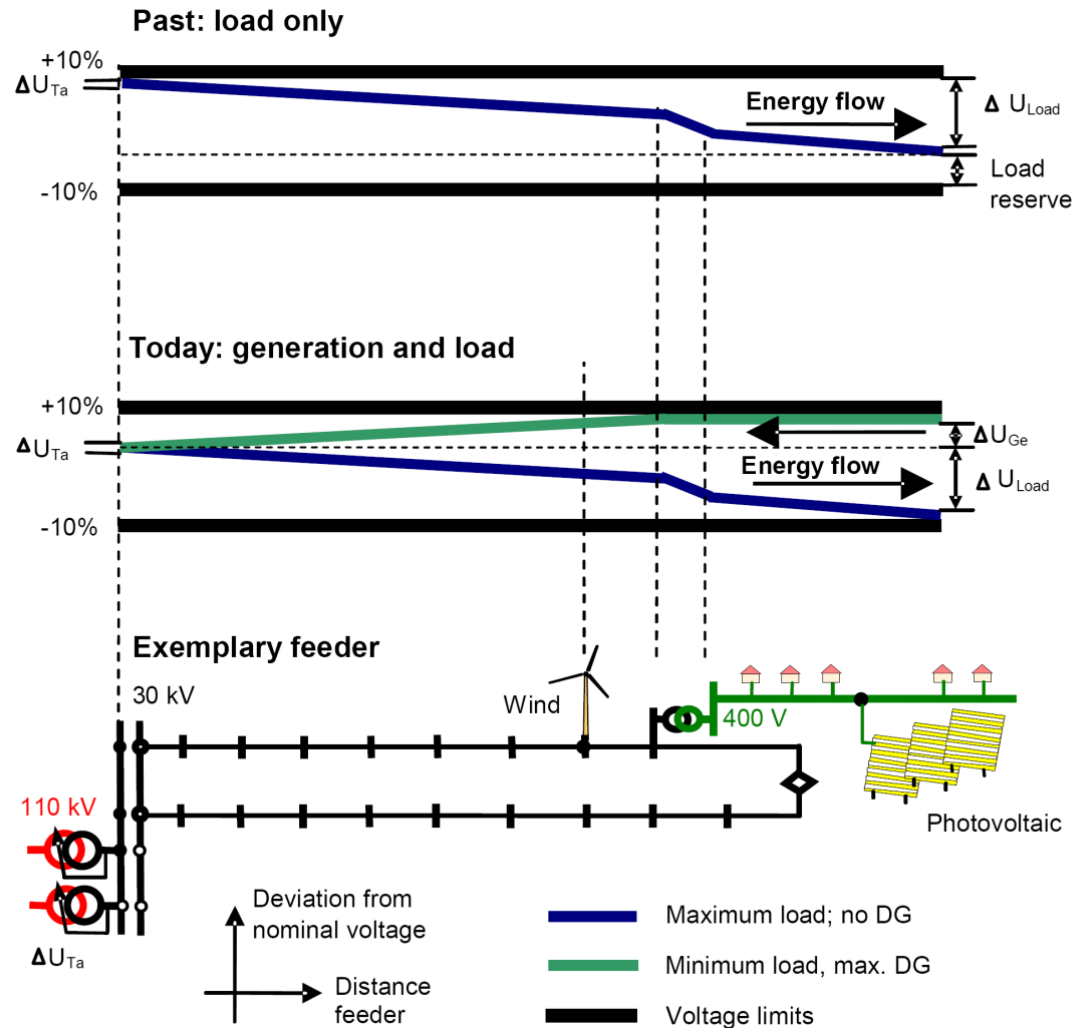


Energy penetration of 4 – 6 – 12% ...
=> locally much higher

Project Rationale

Grid bottlenecks are local

- Voltage
- Transformer rating
- Protection



Project Objective

PV is Shifting from Troublemaker to Solution

- Grid reinforcement is the least efficient answer
- Active PV can provide the solution
 - Inverters for grid support
 - Interaction with distribution system control



Targets

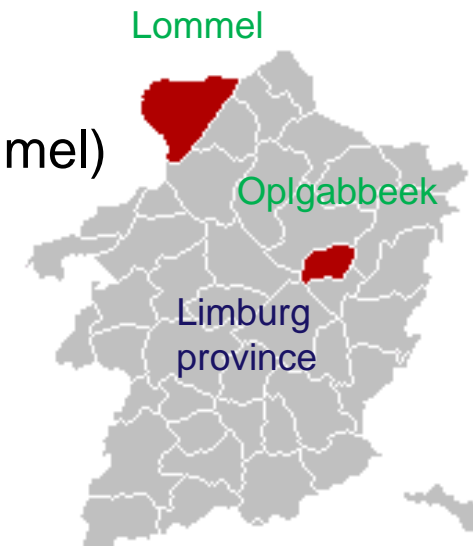
Proving the Advantages of Active Grid Control

- Distribution grid hosting capacity: **+ 50%**
 - For **~10% of the costs** of grid reinforcements
 - Fault ride through capabilities for **system security**
 - No need for PV curtailment during contingency
 - Possible **autonomous** operation
 - Maintaining quality, safety & security of supply
- => Large-scale demonstration in the **real world** !

Approach

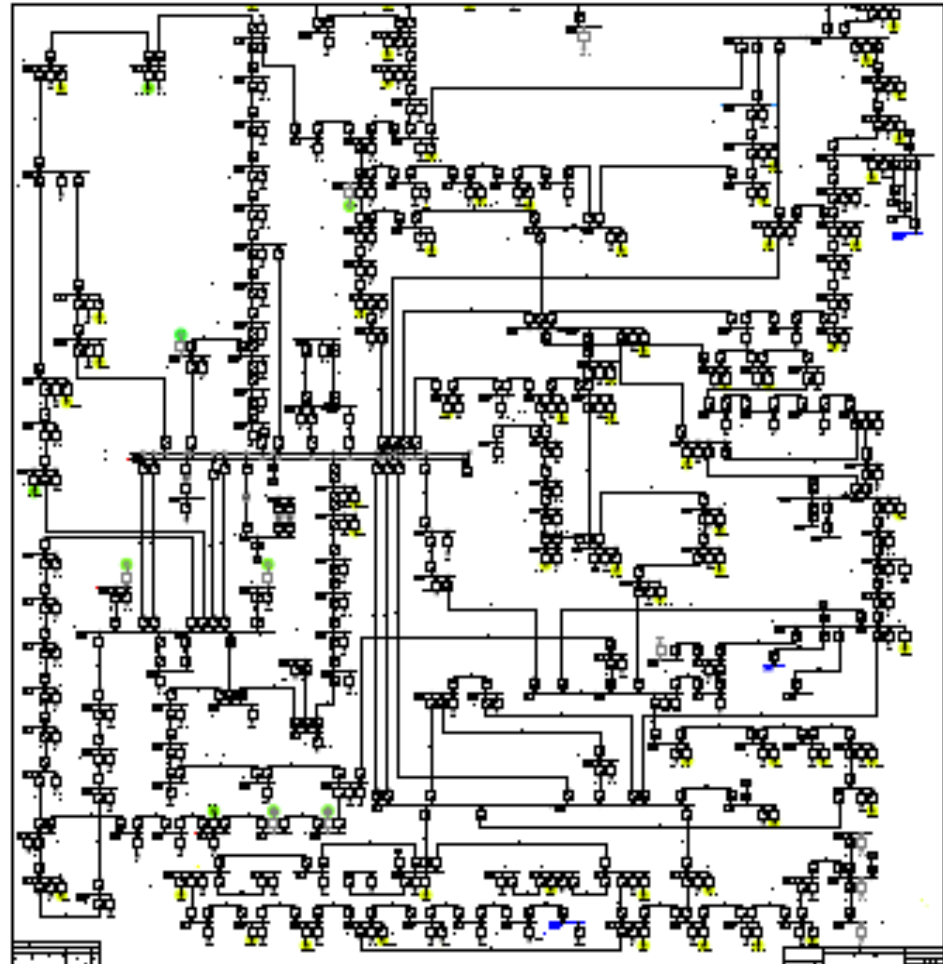
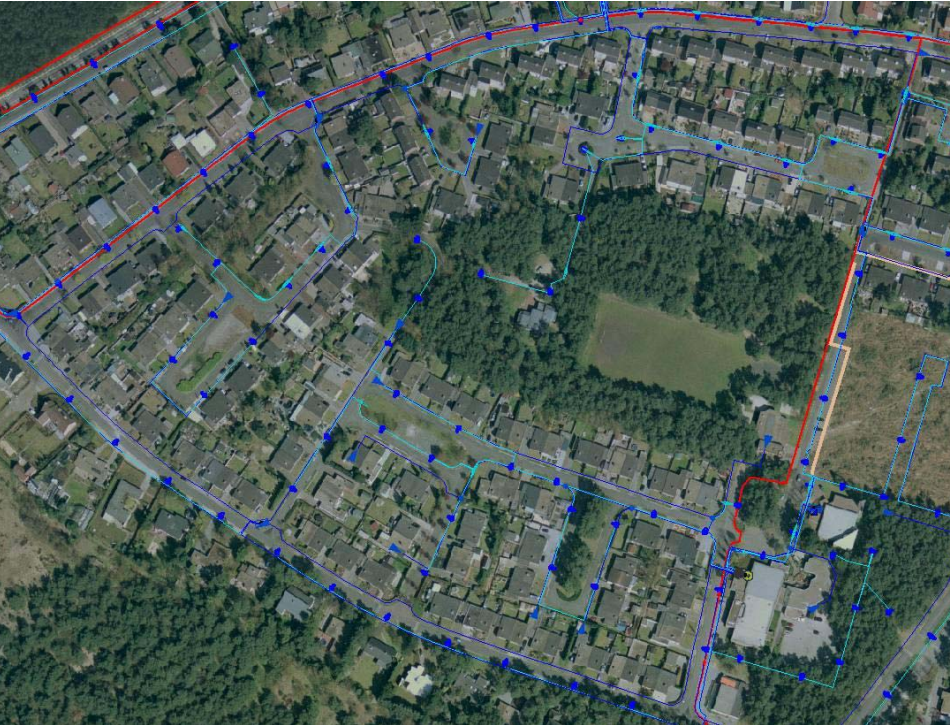
PV System Development

- Necessary condition for large-scale demonstration
- Financed via the regional support scheme
- Demonstration sites
 - LV: 128 x 4kW (residential – Oplgabeeke & Lommel)
 - MV: 31 x 200 kW (industrial – Lommel)
- 10 % of systems equipped with storage
- To be installed by end of 2011



Approach

Considered Medium Voltage Network



DSO Infrac, Lommel & Opglabbeek

Implementation Synergy of Partner Expertise

Partners cover large spectrum of knowledge:

- INDUSTRY
- APPLIED RESEARCH
- RENEWABLE ENERGY SERVICES



Impact

Leading by Example

- Showcase for policy makers, regulators, grid operators and local population
- New ambition level set for industry
- Quantification of PV benefits
- Experience for grid code development



Impact

Concrete Business Opportunities

- Consultancy for active grid operation
- Commercialisation of active inverters
- Services for intelligent grid operation
- Intensive PV project development with active systems



Conclusion

- TECHNICAL
 - active control is the way for DG integration
 - grid control and services from PV must interact
- PRACTICAL
 - deployment is pursued via large-scale demonstration
 - demo sites must be real situation
- BUSINESS-WISE
 - industry-driven deployment
 - long-term perspectives for further exploitation

“First PV smart grid in the real world !”

THANK YOU FOR YOUR ATTENTION



3E sa

Achim Woyte

B-1000 Brussels, Belgium

Achim.Woyte@3E.eu

www.metaPV.eu – www.3E.eu