

**SESSION: “Scientific, technical and economic problems of wind energy”**

# Master Planning of Wind Power

CUBE Engineering Services for Renewable Energies  
Dipl. Ing. Stefan CHUN

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# CUBE offers A to Z Services for RES Development & Operation



## WIND POWER

from 100 kW to 1,500 MW el.



## SOLAR POWER

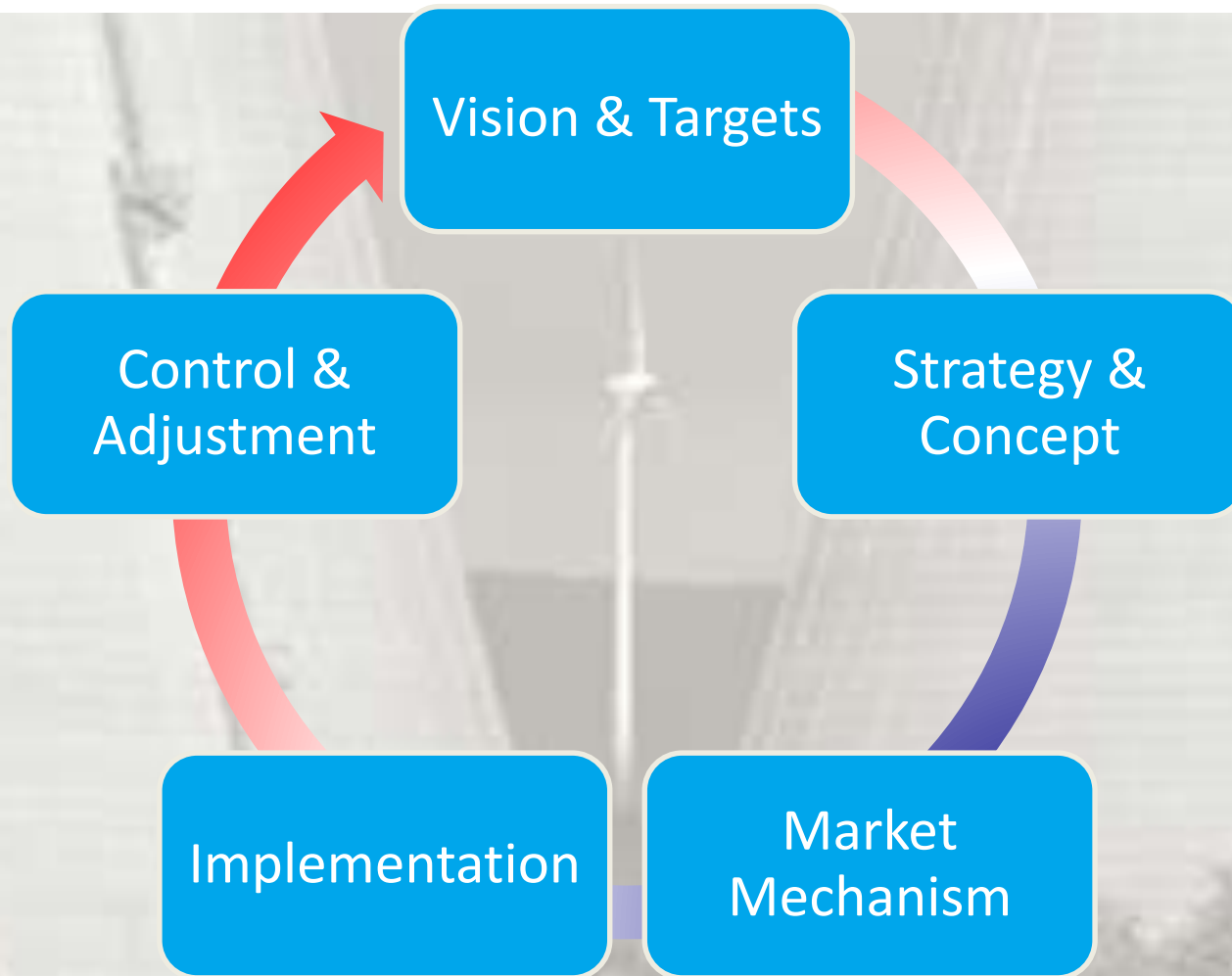
from 500 kWp to 50 MWp el.



## SMART POWER

Decentralized RE Systems >50kW

# MASTER PLANNING Cycle

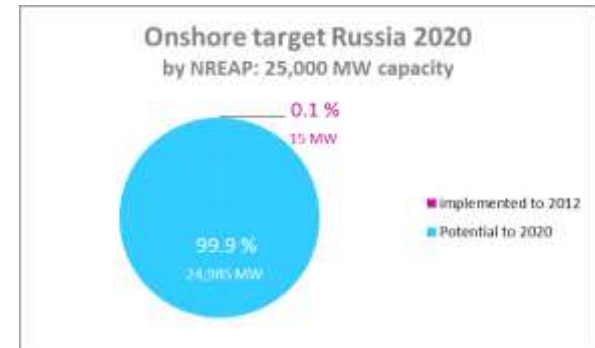


# VISION & TARGETs

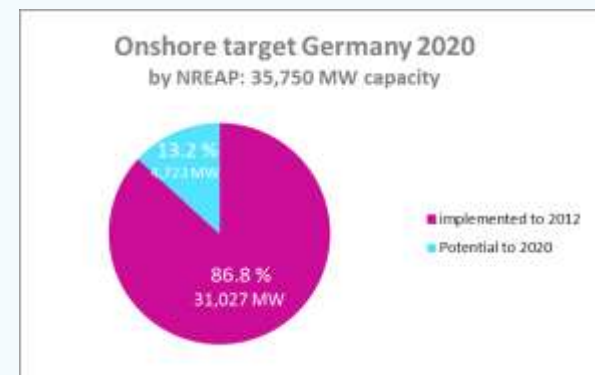
In order to establish the wind Power as an Industry with a significant ROLE and impact for a certain market/country a VISION with mid and long term TARGETs have to be defined.

- Set WIND POWER as a significant part with a fixed NUMBER of the overall portfolio for the Power supply system
- Establishment of own INDUSTRY for Wind Power (e.g. jobs, services, products, R&D)
- Definition of a NREAP - National Renewable Energy Action Plan (Master Plan)
- Type of the System: DGS - Distributed Generation System versus Concentrated Wind Power areas

Source: EREC - European Renewable Power Council, 2011 & EWEA "Wind in power – 2012 European statistics"



## Lessons Learnt from Germany

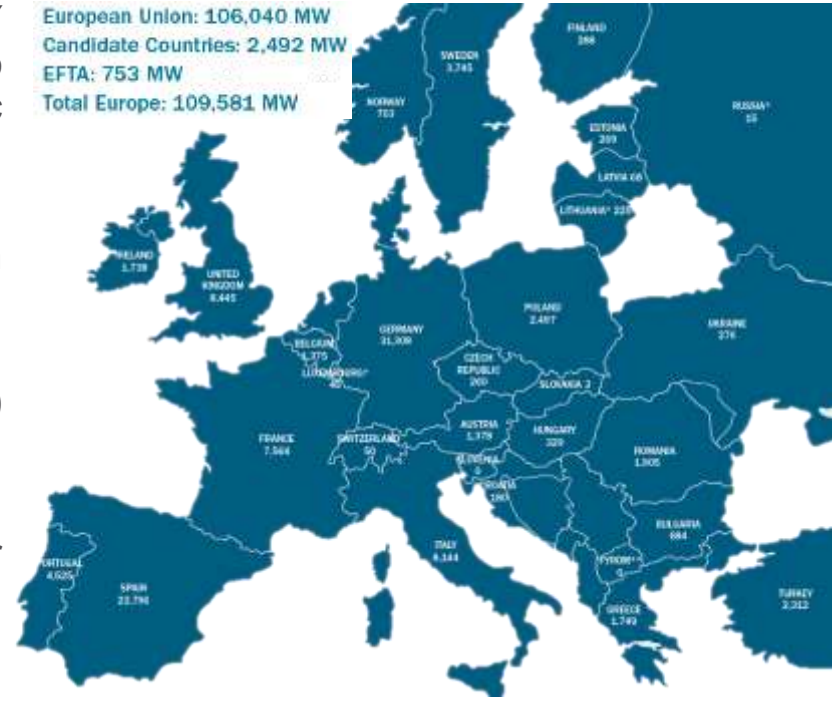


# STRATEGY & CONCEPT

The vision will be transferred to the STRATEGY where the different targets will be break down to certain milestones and addressed to the specific stakeholders.

- Full political COMMITMENT and implementation into national and regional plans
- Integration into Pan-European energy market
- ROADMAP with defined targets for 2020, 2030 and 2050
- Identification of important STAKEHOLDERS
- AWARENESS and MARKETING Program for Stakeholder, Administration and Public Sector
- Awareness and integration into FINANCE sector
- Incentives for FIRST MOVER of Wind Farm Projects

European Union: 106,040 MW  
Candidate Countries: 2,492 MW  
EFTA: 753 MW  
Total Europe: 109,581 MW



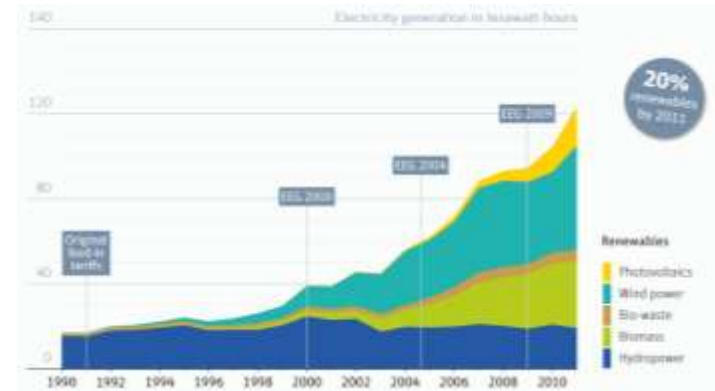
Source: "Roadmap EU-Russia Energy Cooperation until 2050" from 03.2013  
[www.ewea.org](http://www.ewea.org)

# MARKET MECHANISM

Definition of the right instruments and tools for the implementation of the vision and strategy will form and establish the MECHANISM of the MARKET.

- Change in LEGISLATION with supporting schemes for Renewable Energies (e.g. prioritisation of interconnection, capacity & supply, Feed-in tariff, planning, protection of investment)
- Integration into existing Electricity NETWORK and Power Wholesale MARKET
- PILOT PROJECTs with local Learning Curves
- Joint COOPERATION for technology with EU
- EDUCATIONAl Programs, conferences and R&D Projects at Universities and Institutes (-> RE Cluster Management)
- INFORMATION & Communication about light-house projects (e.g. awareness, demonstration)

Source: BMU / energytransition.de



## Lessons Learnt from Germany

### German Feed-In LAW

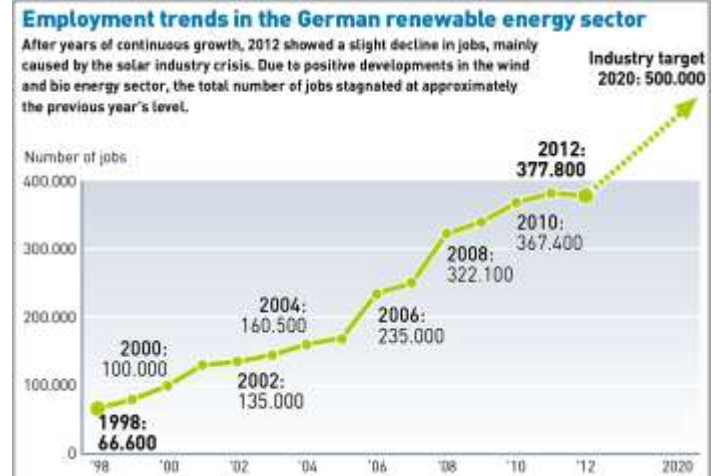
created an INVESTMENT of app.  
**50,000,000,000 EUR** [= 50 Billion]  
 (70% are private Investment)

# IMPLEMENTATION

The IMPLEMENTATION phase demonstrates the feasibility and quality of selected strategy and market mechanism. Finer adjustments and support schemes have to be considered as well.

- GUIDELINES for Wind Farm Development
- Analysis of regional WIND RESOURCES based on wind field modelling
- ZONING of specific Wind Farm areas in the different regions & states of interest
- Grid and Interconnection CAPACITIES
- Regional support for O&M BUSINESS
- Scientific and R&D PROGRAMs with local Universities and Institutes

Source: BMU/AGEE-Stat, DLR/DIW/ZSW/GWA/Prognos/UBA/BEE [03.2013]  
www.renewables-in-germany.de

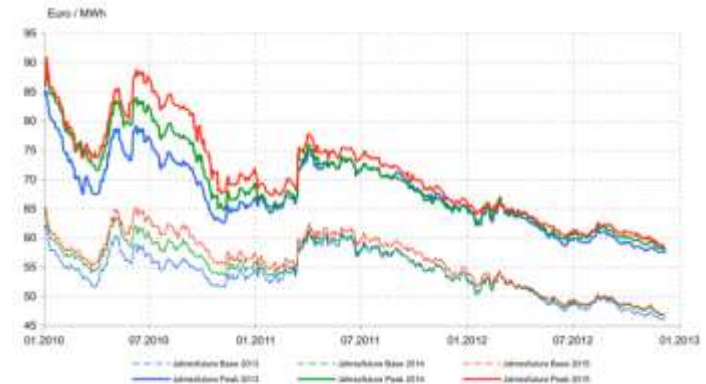


# CONTROL & ADJUSTMENT

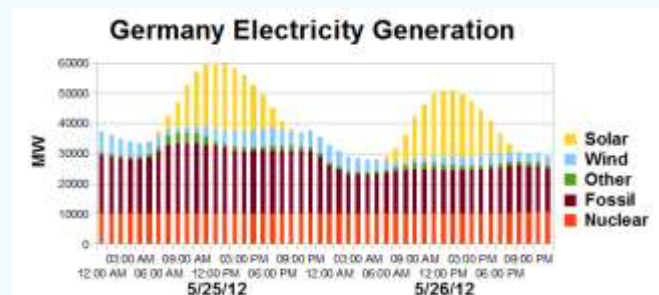
Once the market is established and the different key player have established the first wind farm and project pipelines it is crucial to CONTROL the process and to ADJUST according to the overall targets and market environment.

- MONITORING of Projects and Development
- ADJUSTMENT and MITIGATION of mechanism and measures according to initial targets
- ADAPTION of Targets and Milestones
- Change of POWER MARKET
- COMMUNICATION of Progress and Lessons Learnt during Conferences & Congresses

Source: [www.david-energie.de](http://www.david-energie.de), [www.evwind.es](http://www.evwind.es)



## Lessons Learnt from Germany





Thank you for your attention!  
Do you have any Questions?



AT THE END OF THE DAY...  
CUBE DELIVERS.

Contact: [s.chun@cube-engineering.com](mailto:s.chun@cube-engineering.com)  
Breitscheidstr: 6, 34119 Kassel  
Germany

