OMV Gas & Power

# Austria – the industry perspective

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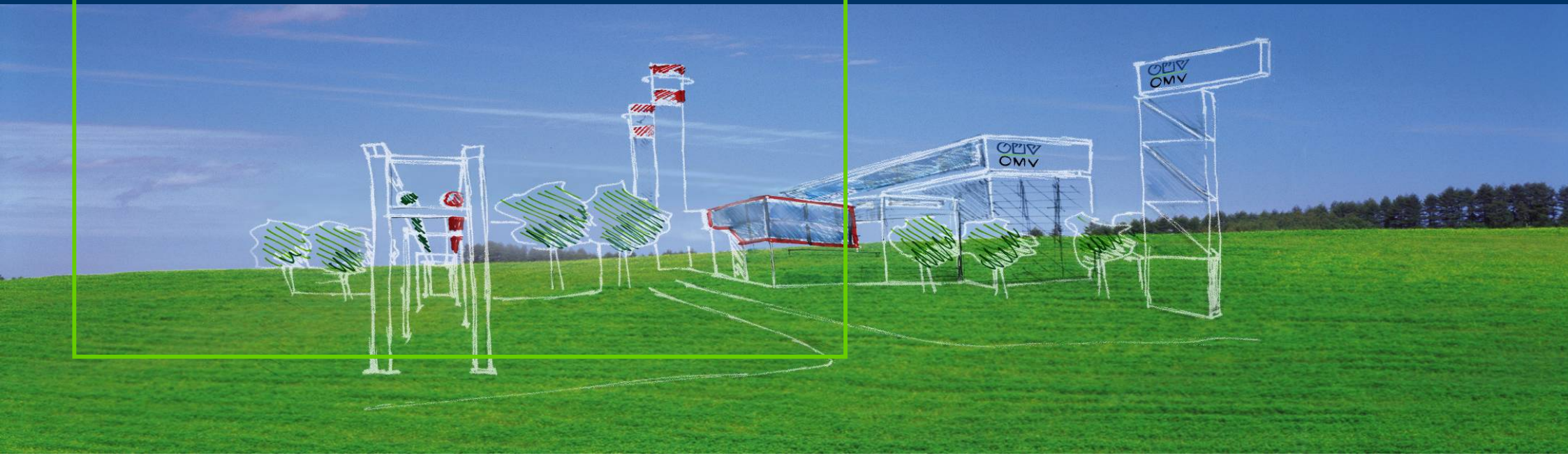
80th ExCo Meeting SolarPACES – Host Country Day
Vienna, April 7th 2011




Move & More.

# OMV has positioned itself as an integrated market leader in Central and South-eastern Europe

**E&P: Solid player in second tier**

- Oil & gas production is running at a total of about 317,000 boe/d, proved reserves (P1) approximately 1.2 bn boe
- International E&P portfolio spread across 16 countries comprising six core regions
- Focus on OECD and areas from which OMV markets can be supplied


**R&M: Clear market leader**

- 20% market share in 13 CEE and SEE markets
- Five refineries with 25.8 mn t/y capacity and a network of 2,319 filling stations
- 95,75% stake in leading Turkish marketing company Petrol Ofisi
- Integrated petrochemical business and 36% stake in Borealis

**G&P: Turntable in supply and logistics**

- Shipping of some 75 bcm per year of natural gas to Western Europe
- Operation of storage facilities with a capacity of 2.4 bcm
- Gas sales of 13 bcm in CEE, SEE and Turkey
- Long-term Russian and Norwegian supply contracts and access to equity gas

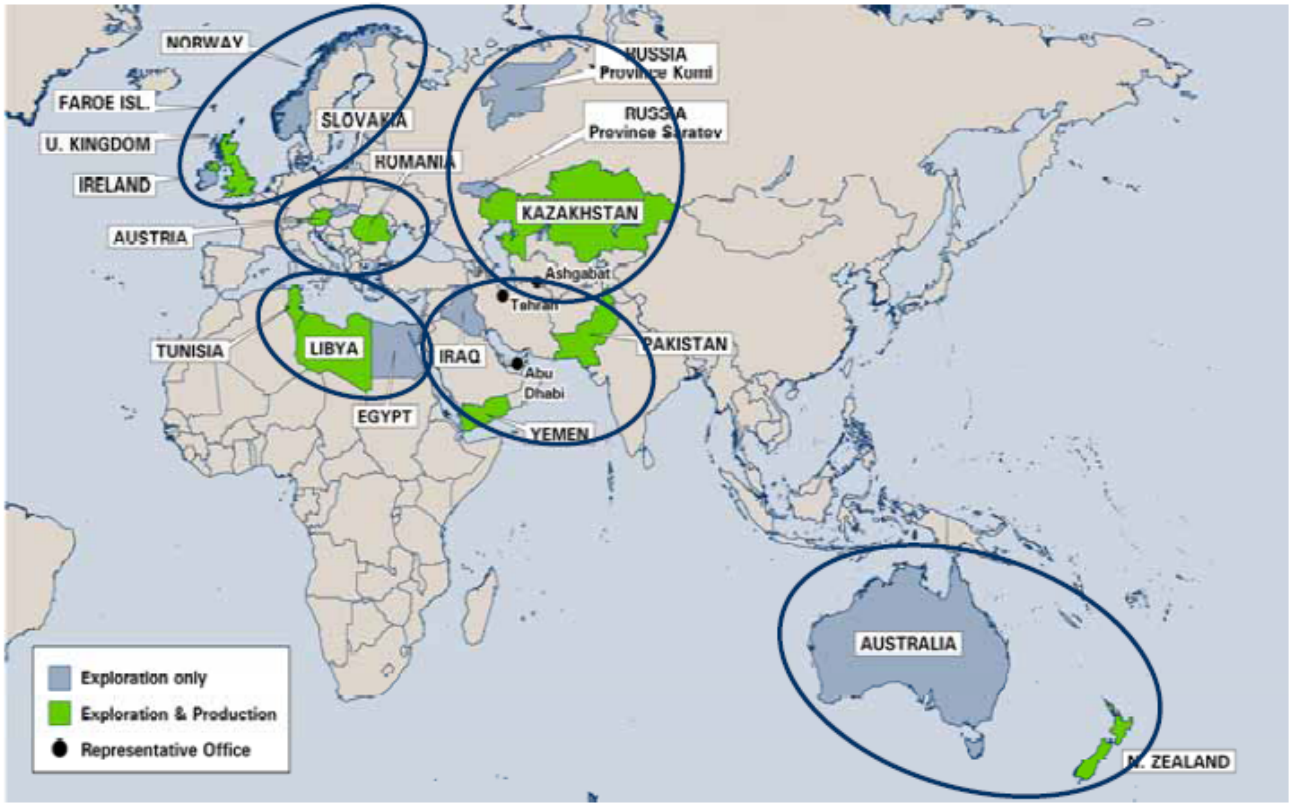
Figures refer to 2009; since Q1/10 R&M is active in 12 CE/SEE markets

# Exploration & Production

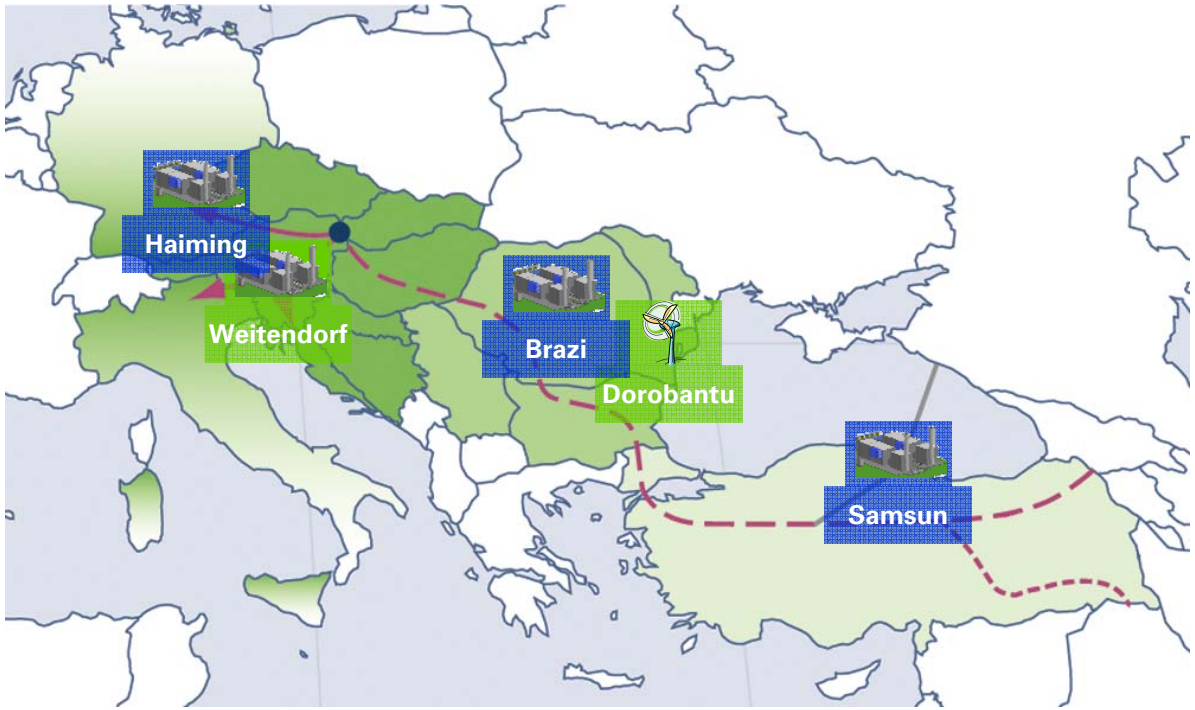
| **Proved reserves** as of December 31, 2009 in mn boe | |
|---|---|
| CEE | 945 |
| thereof Romania | 832 |
| Northwestern Europe | 20 |
| North Africa | 112 |
| Middle East | 38 |
| Russia/Caspian | 31 |
| Australia/New Zealand | 40 |
| **TOTAL** | **1,188** |

| **Production** in 2009, in boe/d | |
|---|---|
| CEE | 221,000 |
| thereof Romania | 181,000 |
| Northwestern Europe | 6,000 |
| North Africa | 37,000 |
| Middle East | 21,000 |
| Russia/Caspian | 6,000 |
| Australia/New Zealand | 25,000 |
| **TOTAL** | **317,000** |

## OMV's six core regions



# OMV Power: From gas to power along the OMV gas supply route




Alternative CO2 free

CCPP's

CCPP (Combined Cycle Power Plant)
HR (Heat Recovery) = Wärmerückgewinnung

## Strategic rationale

- Gas-fired power generation drives the gas demand
- Strong position of OMV in gas business (supply, trading, storages, pipelines)

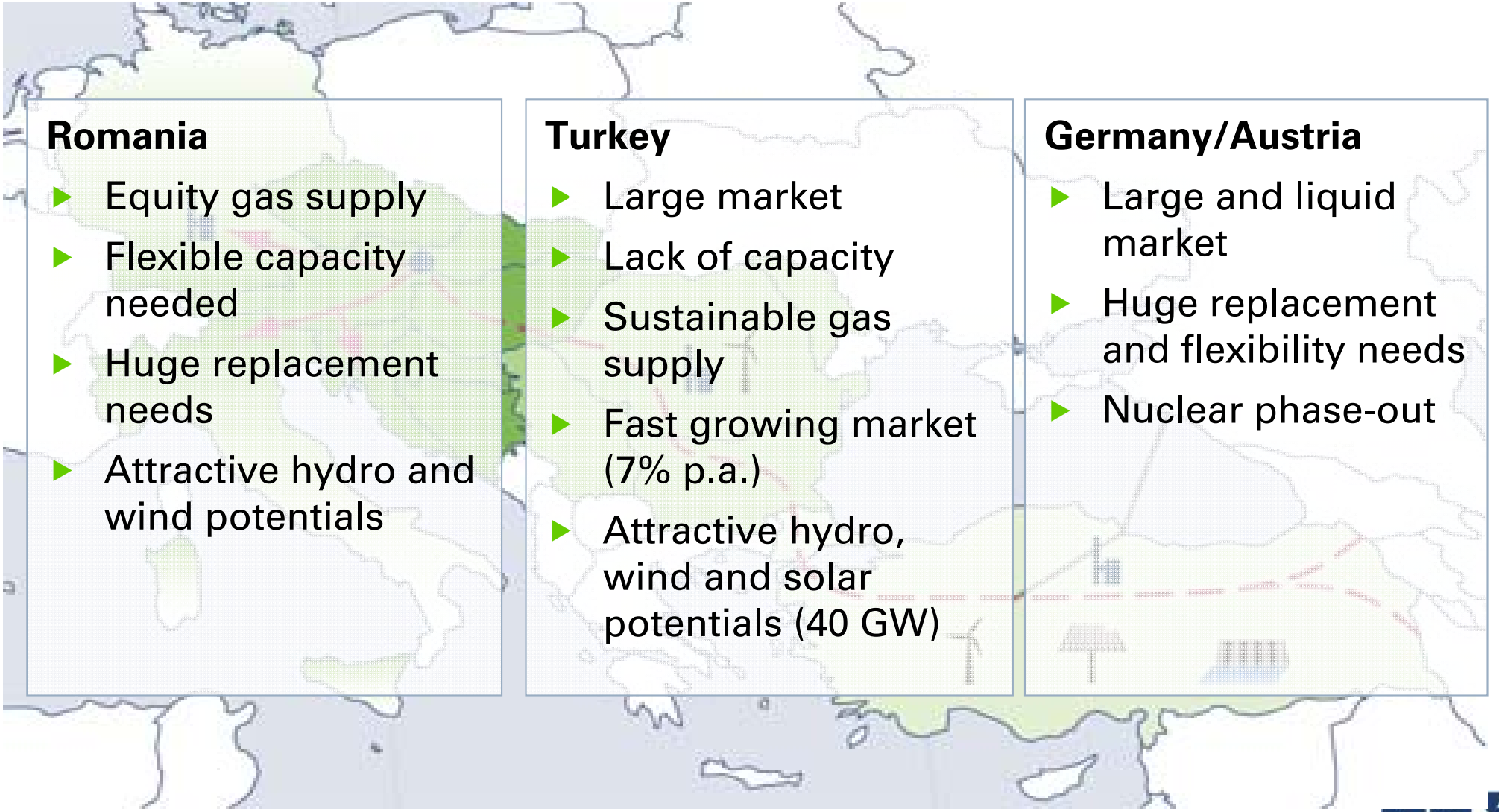
## Strategic thrust

- Additional value creation through expanding the gas value chain to electrical power

## Power strategy

- Build up an **asset portfolio** with gas-fired power plants and renewable energy

# OMV Power focus on 3 different markets



**Romania**

- Equity gas supply
- Flexible capacity needed
- Huge replacement needs
- Attractive hydro and wind potentials

**Turkey**

- Large market
- Lack of capacity
- Sustainable gas supply
- Fast growing market (7% p.a.)
- Attractive hydro, wind and solar potentials (40 GW)

**Germany/Austria**

- Large and liquid market
- Huge replacement and flexibility needs
- Nuclear phase-out

# Renewable power plants require flexible CCPPs

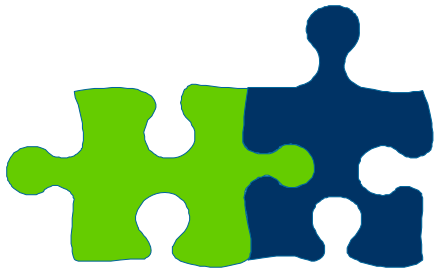
## Gas-fired CCGT

- \+ Flexibility “on demand”
- \+ Additional outlet for gas sales (secure demand)
- \+ Low investment costs per capacity
- \+ Ability to operate on balancing market (incl. intra-day market)
- \+ Hedging of decreasing gas prices
- × High variable costs
- × Exposure to spark spread and CO2 price, risk of being price-setting plants in merit order
- × Reduced competitiveness in base load on forward market

## Renewable power

- \+ Low/zero variable costs
- \+ Low carbon footprint reducing Group’s carbon intensity, no exposure to carbon price
- \+ Growing market potential due to changing energy map
- \+ Favourable regulatory setting
- × High investment costs per capacity
- × Inflexible, to certain extent uncontrollable power generation
- × Economics influenced by geographic factors (“geographic monopoly”)

## Synergies



- \+ Ability to operate anytime on all different markets and optimise sales portfolio (base, peak, intra-day)
- \+ Ability to meet changing demand requirements
- \+ Stable cash flows, sustainable profitability / growth options
- \+ Risk diversification

# Renewable Power - Focus on wind, while also supporting hydro and solar, and new technologies

**Overview**

- Business Unit Power – Renewable Projects bundles renewable power activities of OMV Group
- Focus on renewable power from feedstock free of charge and without any alternative usage
  - Focus on capacity growth in commercially mature renewable technologies, i.e. hydro and wind
  - Development of solar power as business opportunity and supporting new technologies

| Business Area | Wind | Hydro | Solar |
|---|---|---|---|
| |  |  |  |
| **Focus and Strategy** | ▸ Key technology for capacity growth<br>▸ Focus markets: Romania, Turkey | ▸ Evaluation of hydro power projects with lowest possible environmental and socio-economic impact | ▸ Evaluation of Concentrated Solar Thermal Power Plants (CSP)<br>▸ Focus areas: Turkey, MENA |

**Monitoring of new opportunities/ technology trends**

- Geothermal power (in cooperation with OMV E&P); Biomass to heat and power opportunistically
- Photovoltaics, Electricity storage systems
- Electric drive concepts: Plug-in hybrid/electric vehicles

# Romania: CCPP in Brazi


**Capacity**

- 860 MW net

**Generation**

- 5 TWh p.a.

**Type**

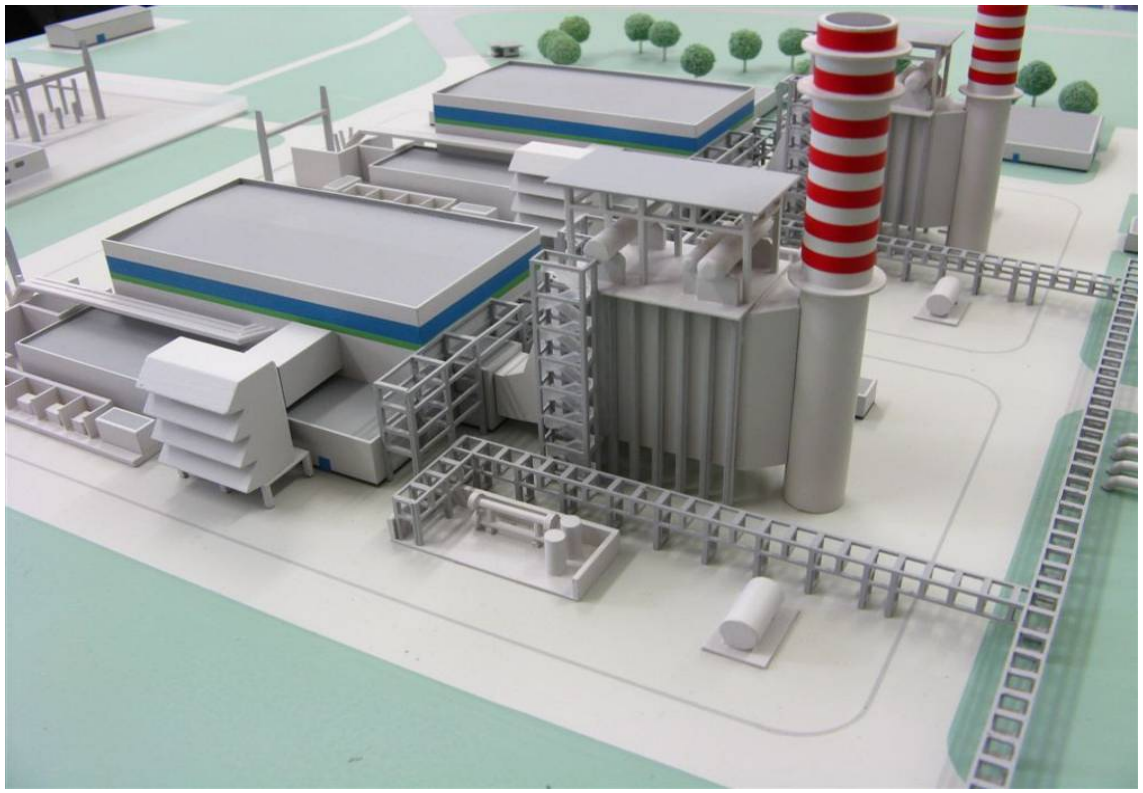
- Combined cycle gas-fired power plant (CCPP)

**Status**

- First brick ceremony at Brazi took place on 03 June 2009
- Plant and electrical overhead line construction ongoing
- Gas pipeline (30 kms) construction ongoing

**2009: Start of construction  2011: Start of commercial operation**

# Project CCPP Samsun Fact Sheet



**Capacity**

- 870 MW net
- 2 x 435 MW Gas/Steam Turbines (Single Shaft power plant)

**Type**

- Gas fired Combined Cycle Power Plant (CCPP)

**Status**

- Construction start: 2010
- Commercial Operation: 2012

**2010-06: Construction Start** **2012: Commercial Operation**

# Germany: CCPP Haiming

**Capacity**

- 850 MW net

**Generation**

- 5 TWh p.a.

**Type**

- Combined cycle gas-fired power plant (CCPP)

**Status**

- Land secured
- Plant construction permit expected 2010
- Overhead line permitting process started (critical path)
- Bürgerbegehren: 61% voted pro power plant project
- EMAS certified

**Target:**

**2012: Start of construction  2014: Start of commercial operation**

# Austria: Heat Recovery Weitendorf

**Capacity**

- 16 MW

**Generation**

- 75 GWh p.a.
  (~ 28,000 households)

**Type**

- Heat recovery system with boiler and steam turbine

**Status**

- All permits granted
- Construction started
- Electrical connection line construction started

**2009: Start of construction** → **2011: Start of commercial operation**

# Wind Romania – first renewable asset

**Capacity**

- 45 MW

**Generation**

- 113 GWh p.a.
  (~ 50,000 households)

**Type**

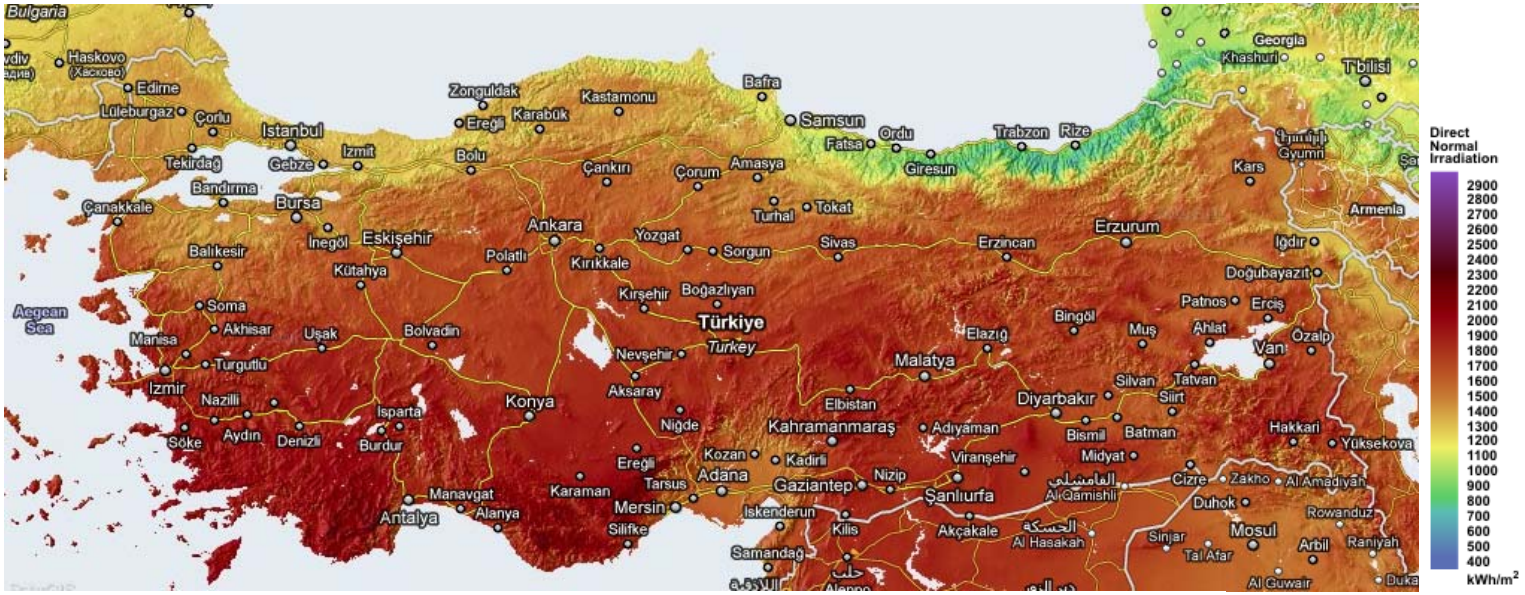
- 15 Vestas turbines, 3 MW each

**Status**

- All contracts signed
- All permits and land secured
- Site mobilisation June 2010

**2010: Start of construction → 2011: Start of commercial operation**

# Project development CSP Turkey




***Theoretical Solar Potential Turkey***

*~100,000 km²* within macro region with usable DNI above 1800 kWh/m²

***Suitable areas***

*40,000 km²* of flat feasible areas with DNI above 1800 kWh/m²

***Project Options***

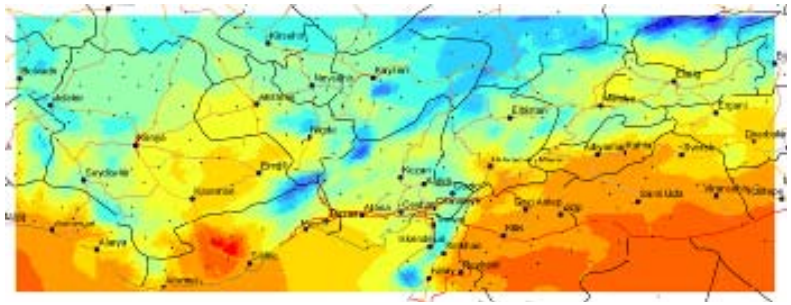
- 17 sites were selected for a long list (1900-2100 kWh/m²*a)
- 3 sites out of that were shortlisted with a total capacity of several 100 MW
- Further development at 2 sites with ground based solar measurements

| | |
|---|---|
| **Location:** | South Turkey |
| **Capacity:** | 50 MW net (minimum) |
| **Type:** | Concentrated Solar Power (CSP) plant |
| **Start of development:** | 2008 |
| **Status:** | Pre-feasibility study for CSP plant opportunities in Turkey showed numerous pilot-/demonstration plant locations<br>Feasibility study and solar measurements at 2 sites ongoing (2009 – 2011) |

# Site Selection Process

## Pre-Feasibility Study

### Solar Irradiation Map for Macro Region



CRITERIA:
- Excellent solar radiation (>2000 kWh/m2/a)
- Low humidity, no clouds, no dust
- Flat terrain (slope < 3%, 1-2 km² for 50 MW)
- Water for cooling and cleaning of the collectors
- Access to gas for balancing of the plant
- Access to power grid
- Land use agreement
- Civil infrastructure

### Priority Region

### Revised Short Listed Sites

Site 1

Site 2

Site 3

- Detailed site evaluation
  - Current use
  - Ownership
  - Irrigation
  - Topography
  - Accessibility
  - Water
  - Gas
  - Grid
- Solar resource verification

### Priority site(s)

- Solar measure-ments
- Negotiations with land owners
- Permissions obtained

**Decision on priority site**

# Legal Framework for CSP

**Renewable Energy Law**

- Introduced in 2005, valid until 2010
- Applicable price ceiling of 55 €/MWh
- Possibility of switching between fixed price and market prices
- Reduced or no licensing fees
- Priority grid access
- Privileged access and use of treasury land

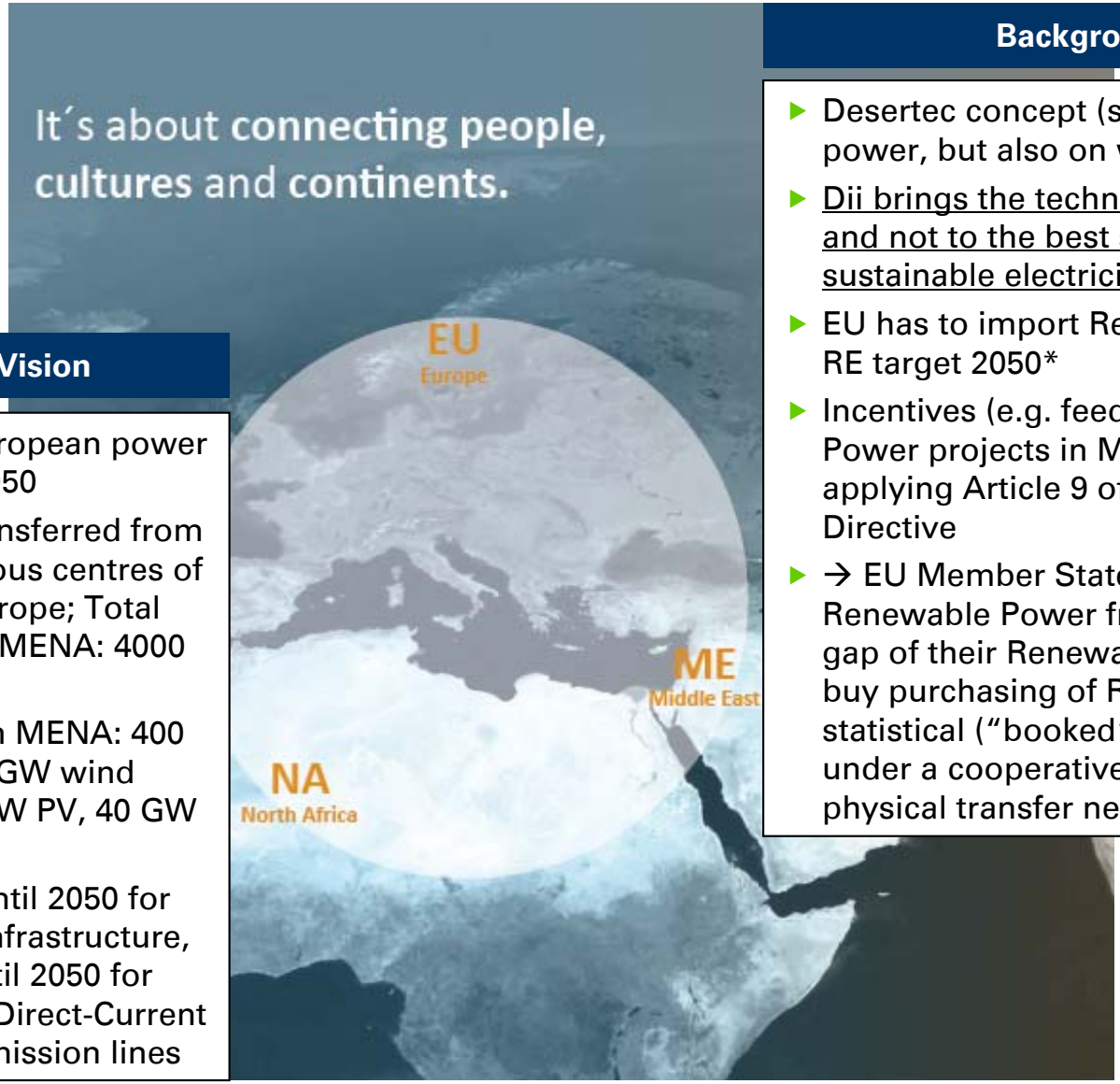
**Draft of new RES Law (2008-2010)**

- For the first time special feed-in tariff for Solar Energy
- The FIT for CSP 200 €/MWh with the option for 260 €/MWh in case that 100% of the EM equipment will be sourced in Turkey

**New amendment to RES law**

- Ratified in December 2010
- Feed-in-tariff for CSP: 13.3 ct$/kWh
- Additional incentives for domestically produced components: max. 4.9 ct$/kWh for PT
- Max. FiT for CSP: 14 ct€/kWh
- Hybrid production facilities are possible
- Cap of 600 MW solar energy until 12/2013

# Desertec Industrial Initiative Dii – Energy from Deserts




## Dii 2050 Vision

- 15% of the European power demand by 2050
- 700 TWh/a transferred from MENA to various centres of demand in Europe; Total production in MENA: 4000 TWh/a
- Installations in MENA: 400 GW CSP, 130 GW wind energy, 120 GW PV, 40 GW geothermal
- 350 bn EUR until 2050 for power plant infrastructure, 50 bn EUR until 2050 for High-Voltage Direct-Current (HVDC) transmission lines

## Background and Concept

- Desertec concept (started 2003) focuses on solar power, but also on wind and other renewables
- Dii brings the technology to the best resources and not to the best subsidy schemes to produce sustainable electricity for EU and MENA
- EU has to import Renewable Energy to fulfill 80% RE target 2050*
- Incentives (e.g. feed-in tariffs) for Renewable Power projects in MENA will be possible by applying Article 9 of the EU Renewable Energy Directive
- → EU Member States can act as "Off-taker" of Renewable Power from third countries to close the gap of their Renewable Energy targets (NREAP) buy purchasing of Renewable Power and by a statistical ("booked") transfer of the electricity under a cooperative flexible mechanism (no physical transfer necessary according to Article 9)

Source: Dii

* Jochen Homann, State Secretary Ministry of Economics and Technology, Germany

# Dii: 51 Partners from over 12 countries

Dii
Renewable energy
bridging continents

## 19 Shareholders

ABB
ABENGOA SOLAR
ceVital
DESERTEC FOUNDATION
Deutsche Bank
Enel Green Power
e·on
HSH NORDBANK
FLAGSOL
Munich RE
M+W GROUP
NAREVA
RED ELÉCTRICA DE ESPAÑA
VORWEG GEHEN
SAINT-GOBAIN SOLAR
SIEMENS
SCHOTT solar
Société Tunisienne de l'Electricité et du Gaz
Terna

## 32 Associated Partners

3M
AGC
Audi
BASF The Chemical Company
BearingPoint
BILFINGER BERGER
COMMERZBANK
Concentrix solar
CONERGY
Deloitte.
EVONIK INDUSTRIES
FCC
First Solar
FLABEG
Fraunhofer
GARRAD HASSAN
HSBC
IBM
ILF
Italgen Italcementi Group
KAEFER
LAHMEYER INTERNATIONAL
MAURI SOLAIRE
Morgan Stanley
NUR ENERGIE
OMV
Rexroth Bosch Group
SCHOELLER
SMA
TERNA ENERGY SA
TÜV SÜD

**Cooperating with institutions, associations and other initiatives :**
MSP, UfM, IRENA, RECREE, ENTSO-E, ESTELA, OME, MEDRING, TRANSGREEN, etc.

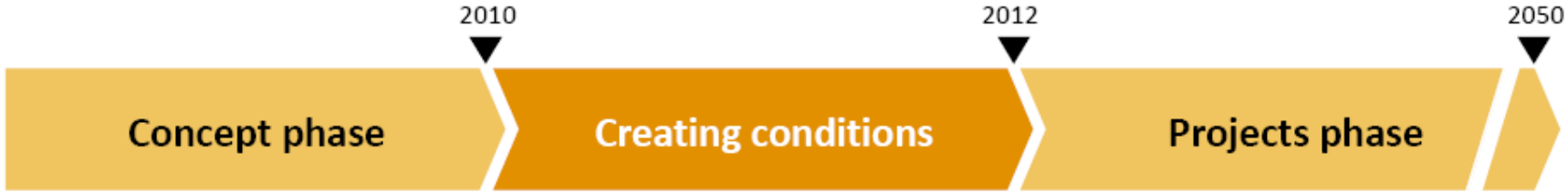
Source: Dii



OMV

# Making the vision a reality – planning phase until 2012

Dii roadmap

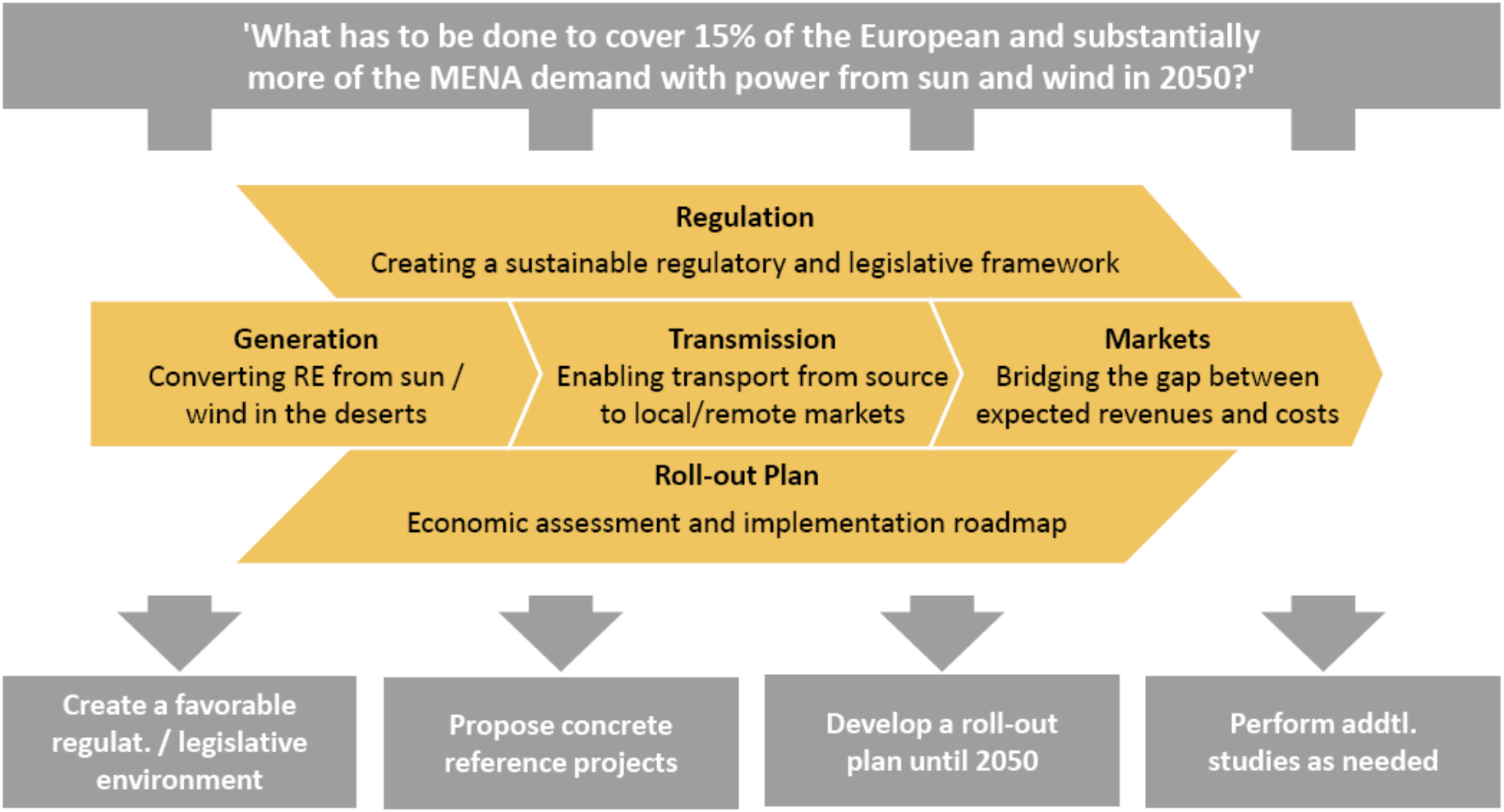



| | Concept phase | Creating conditions | Projects phase |
|---|---|---|---|
| Deliverables | ▪ Detailed description of the concept<br>▪ Technical feasibility studies | ▪ Create a favorable regulatory environment<br>▪ **Propose and specify concrete reference projects** (e.g. in MOR, TUN)<br>▪ Develop a long term rollout plan until 2050<br>▪ Perform additional studies as needed (e.g. grid concept) | ▪ Project realization and investments by partners and parties in the market |
| Key players | ▪ NGOs and Research Institutes (DLR, CoR, DESERTEC Foundation)<br>▪ Various German ministries, e.g. BMU, BMWi, etc. | ▪ External stakeholders<br>▪ EC, EU/MENA governments, other industrial initiatives<br>▪ Shareholders and partners | ▪ Project developers<br>▪ Technology providers<br>▪ Investors |

Source: Dii

# Five work areas derived from Dii's mission and objectives

Dii work areas



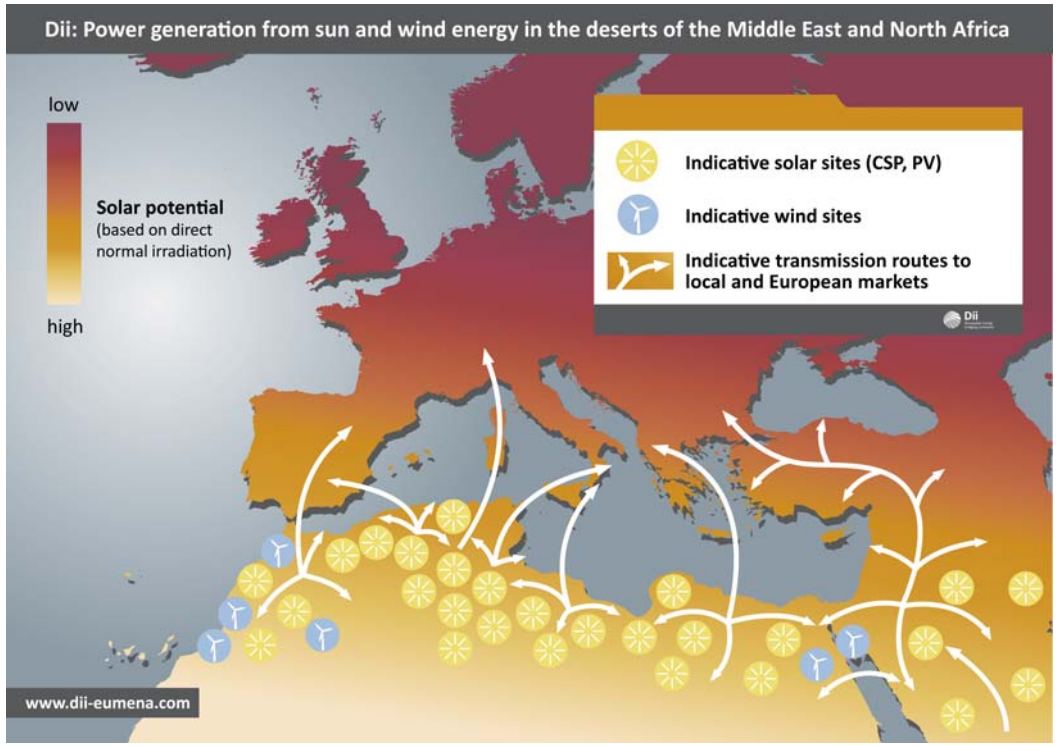

Source: Dii

# Dii and OMV

- OMV joined Desertec Industrial Initiative (Dii) as an Associate Partner in March 2010
- First Austrian company to join Dii

**Objectives:**

- Active contribution to Dii working groups during feasibility phase
- Obtain and evaluate results from feasibility studies
- Bring in OMV experience of realizing large international energy projects
- OMV has regional footprint in MENA region for many years and can leverage contacts
- Extend renewable portfolio in MENA
- Bring in experience in developing wind and solar projects
- Build up know how (technology, organisation, processes)
- Fortify our strong partnership with the region(s)




Sketch of a possible infrastructure ("Super Grid") for a sustainable supply of power to Europe, the Middle East and North Africa (EU-MENA)
Source: Dii

# OMV Power – Pioneers, Professionals, Partners