

# Strategy for New Business Development of OMV

Graz, 16<sup>th</sup> February 2012

Gerd Sumah

Corporate Strategy  
New Business Development

# Content

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OMV at a glance

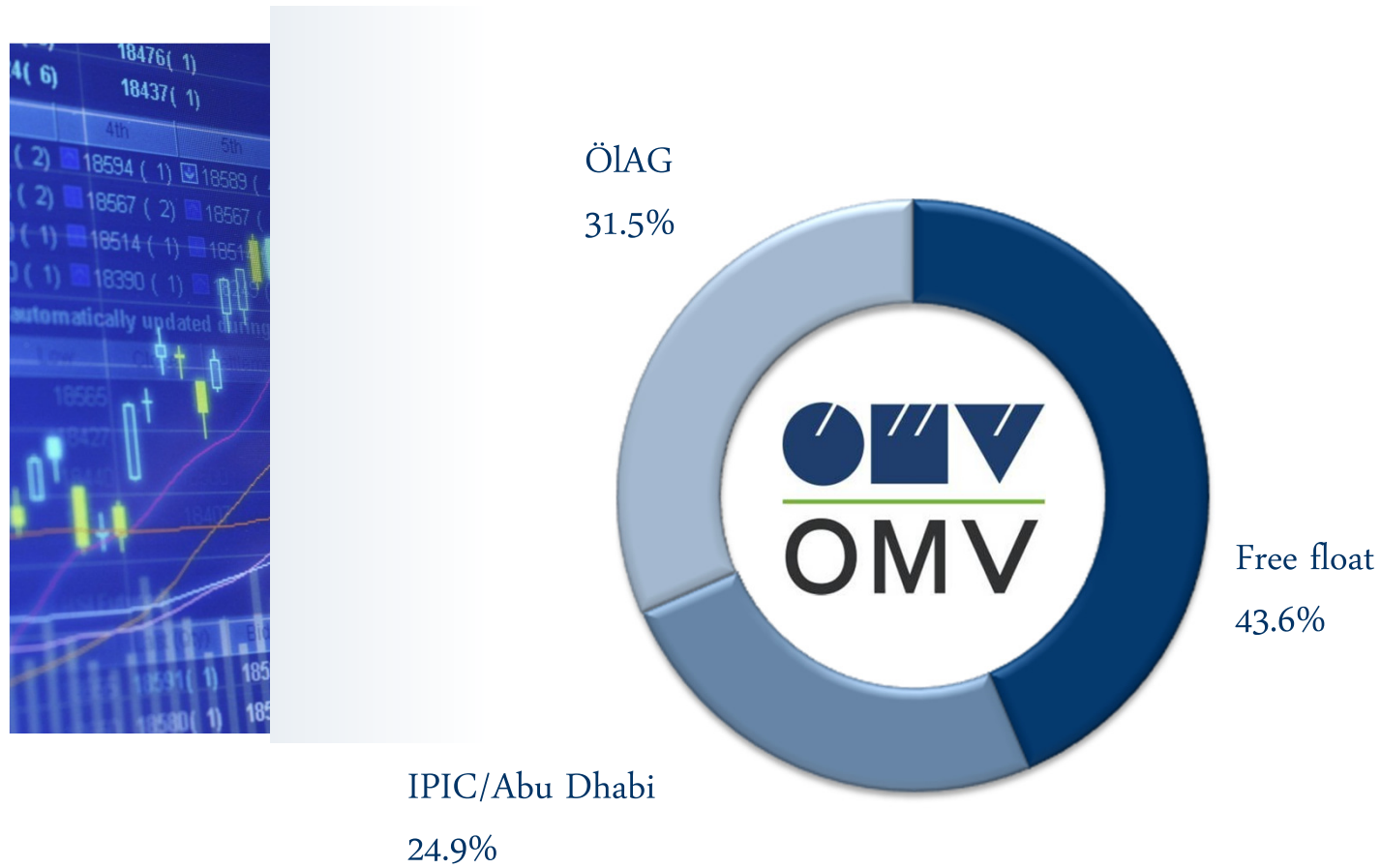
Global Energy Perspectives & Impacts ▶

OMV New Business Development Strategy

- 2<sup>nd</sup> generation biofuels
- Geothermal energy
- H2 as a fuel

Summary ▶

# Stockholder structure



# OMV Businesses and Markets

■ Current Markets



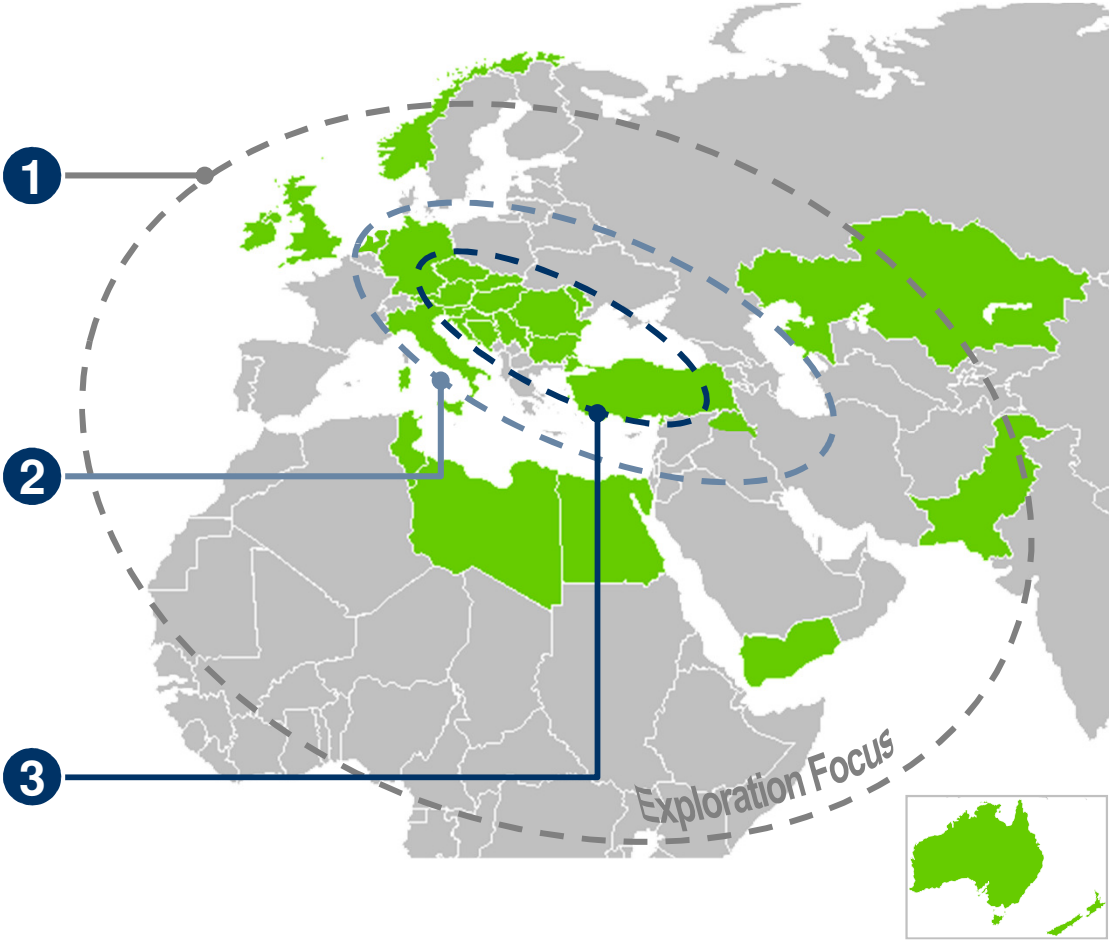
**Upstream Business**



**Integrated Gas Business**



**Downstream Business**



# OMV today – Integrated Oil and Gas Company

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## Exploration & Production:

- ▶ 318,000 boe/d oil and gas production
- ▶ 1.15 bn boe proven oil and gas reserves
- ▶ Active in the core countries Romania and Austria as well as in its balanced international portfolio



## Gas & Power:

- ▶ 2,000 km natural gas pipeline network in Austria
- ▶ Gas fired combination power plants in Romania and Turkey
- ▶ Operates a gas pipeline network in Austria with a marketed capacity of 89 bcm



## Refining & Marketing:

- ▶ 26 mn tons total annual refining capacity
- ▶ Operates a network of over 4,800 filling stations
- ▶ Market share in the Danube Region is approx. 20%

# Key companies and key subsidiaries

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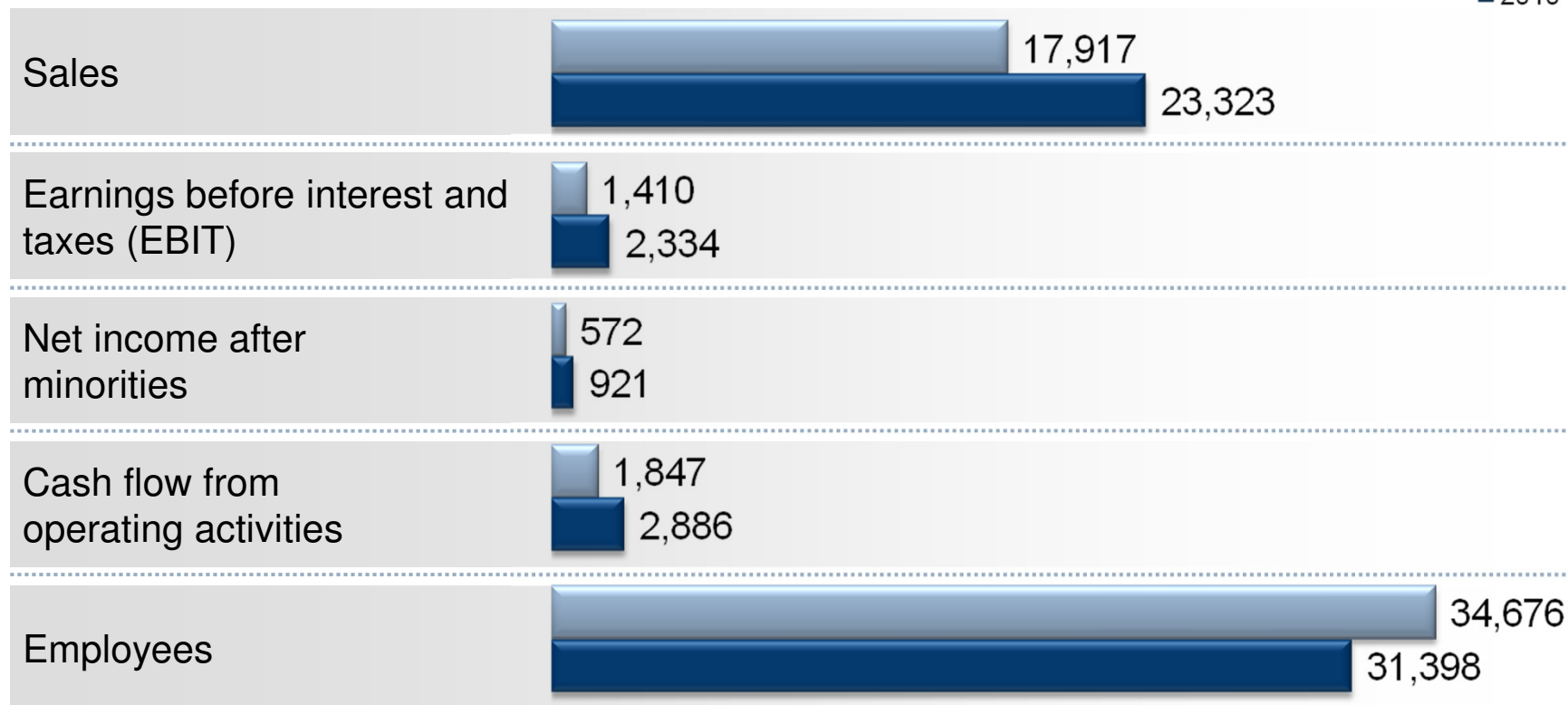
## OMV Aktiengesellschaft

- ▶ OMV Refining & Marketing GmbH (100%)
- ▶ OMV Exploration & Production GmbH (100%)
- ▶ OMV Gas & Power GmbH (100%)
- ▶ OMV Solutions GmbH (100%)
- ▶ OMV Deutschland (100%)
- ▶ Petrol Ofisi (97%)
- ▶ Petrom SA (51%)
- ▶ Borealis (36%)

# Key figures

in EUR mn

2009  
2010



# EBIT 2010



Exploration & Production <sup>1)</sup>

**EUR 1,816 mn**



Refining & Marketing incl. petrochemicals

**EUR 397 mn**



Gas & Power

**EUR 277 mn**

<sup>1)</sup> excluding intersegmental profit elimination



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Summary



# Summary - Energy outlook 2035

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Global oil demand growth



European gas demand growth



European oil demand decrease

## Market growth 2008-35

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**+12%**  
(global)



**+25%**  
(EU-27+Turkey)



**(20)%**  
(EU-27+Turkey)



Source: IEA WEO 11/2010 New Policy/Golden Age of Gas Scenario, IHS Global Insight, BP Statistical review 2011, OMV analysis

# Global Energy Policy

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## Strong differences of regional energy policy

### USA

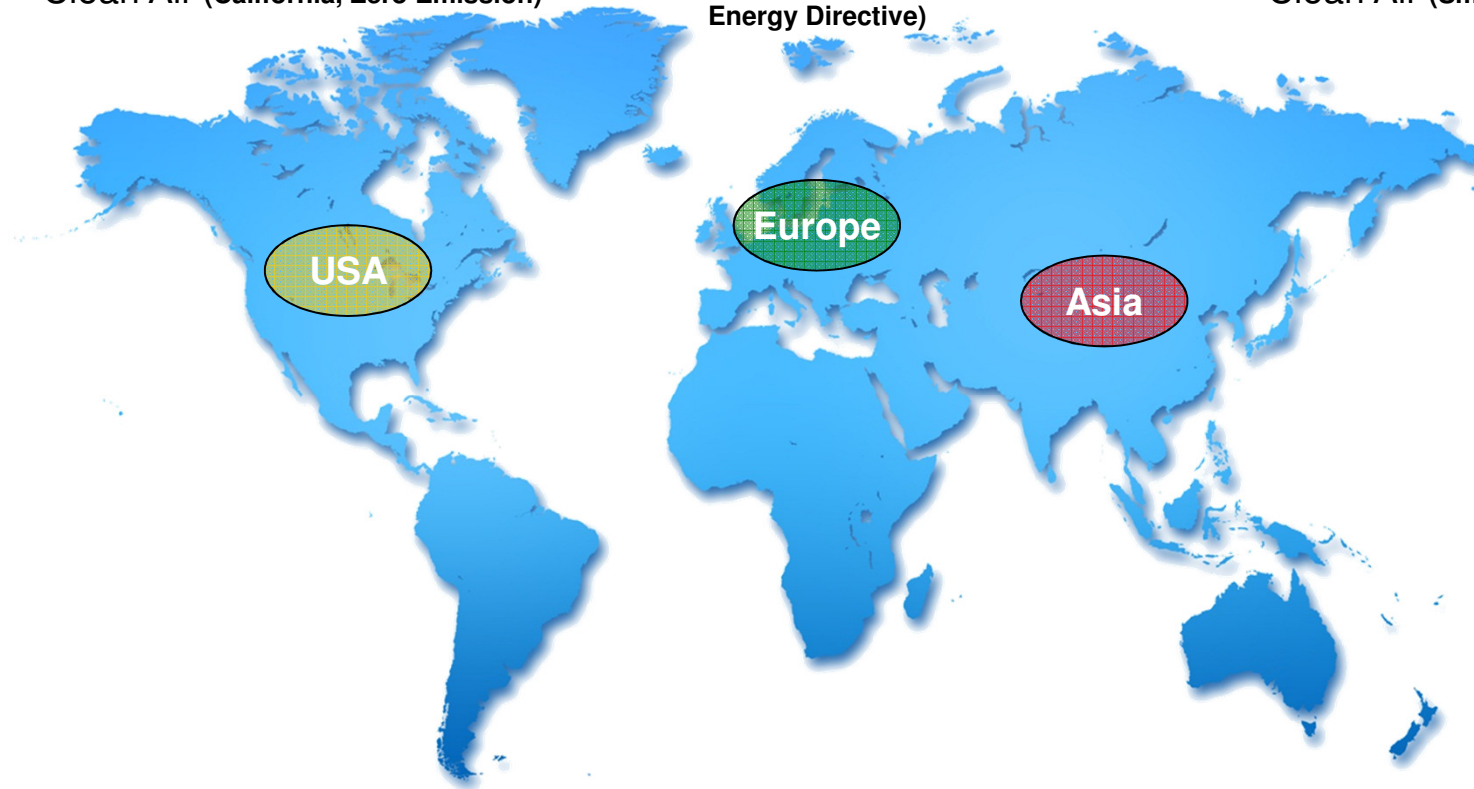
Security of Supply (Coal, Shale Gas)  
Clean Air (California, Zero Emission)

### Europe

CO<sub>2</sub> Reduction  
(Road Map 2050, Renewable Energy Directive)

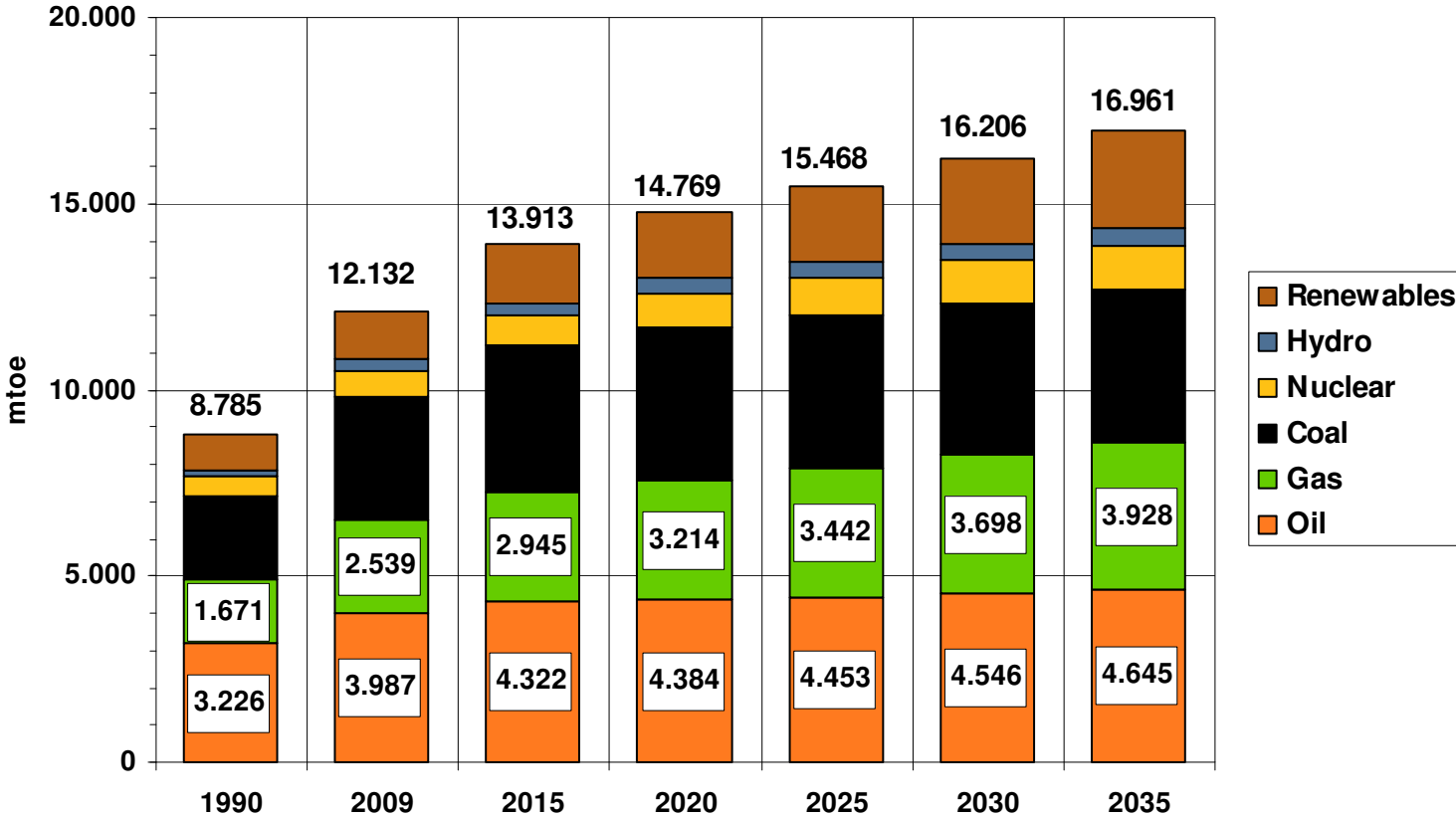
### Asia

Security of Supply (Coal to Power)  
Clean Air (Smog → e-Mobility)



# Global Economy Perspectives

World Energy Demand by Primary Energy Sources



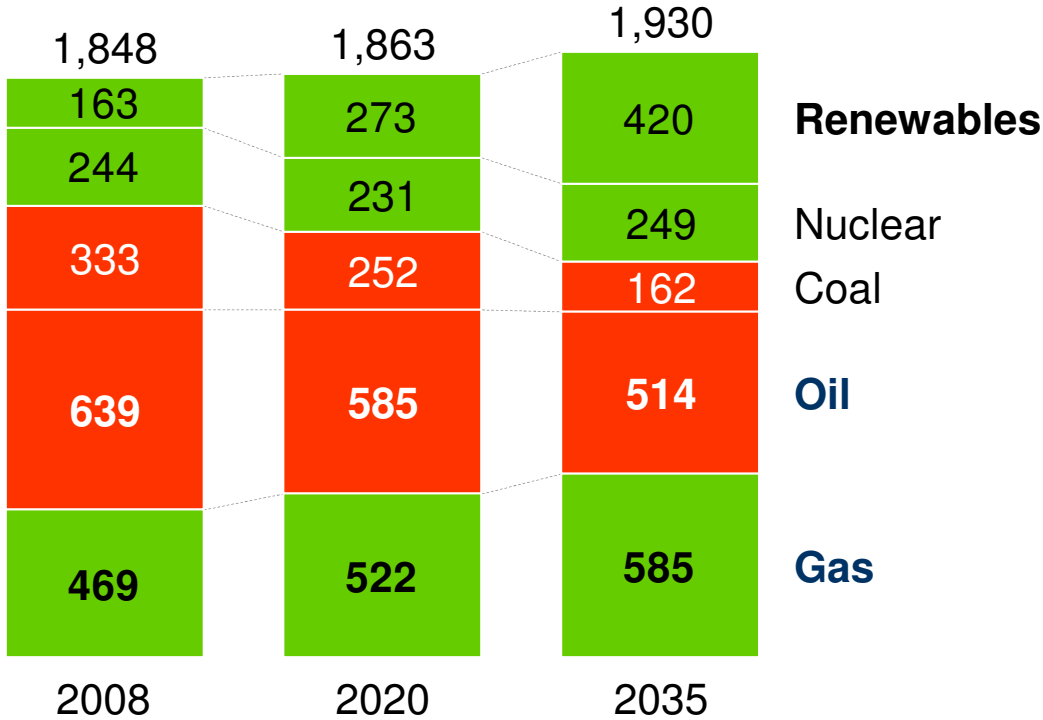
mtoe... million tons oil equivalent

Source: IEA / World Energy Outlook 11/2011 "New Policy Scenario"



# Oil & gas >50% of primary energy sources in 2035

**EU-27+Turkey primary energy demand** ■ Increasing ■ Decreasing  
 mn toe p.a.



- Oil & gas >50% of energy demand in 2035 (today: 63%)
- High growth of gas demand (main driver is power sector)
- Europe needs additional gas imports of up to ~150 bcm p.a. until 2020

Source: IEA WEO 11/2010 New Policy/Golden Age of Gas Scenario, IHS Global Insight, BP Statistical review 2011, OMV analysis



# Content

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2nd generation biofuels

Geothermal energy

H2 as a fuel

Summary



# Strengthen R&D and renewable technologies based on core competencies

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## Change in Strategy

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- Do not further pursue 1st generation renewables (e.g., wind, hydro), but enable with gas-fired power
- Instead **focus on 2nd generation renewables** that are close to OMV's core competencies/assets

## Examples for OMV activities

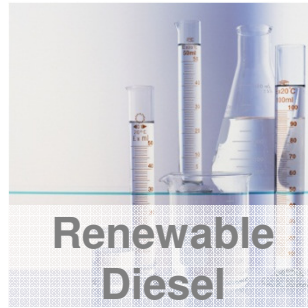
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- **Geothermal energy** based on our geological and drilling competence
- **2nd generation biofuel technologies** in existing refineries (e.g. Biocracking of biomass to renewable diesel)
- **Hydrogen** by analysis of H2 market as a sustainable and renewable fuel (e.g. H2 Mobility initiative Germany)

**R&D budget/year: EUR 20 mn, up to EUR 50 mn in the near to long term for realization of projects**

# 2nd generation biofuel technologies in existing refineries

## Rationale



- **European biofuel legislation** is leading to a growing market for biofuels
- **Advantages for OMV**
  - Achievement of biofuels legislation
  - Utilizing existing refinery assets
  - Secure biofuel supply of OMV downstream

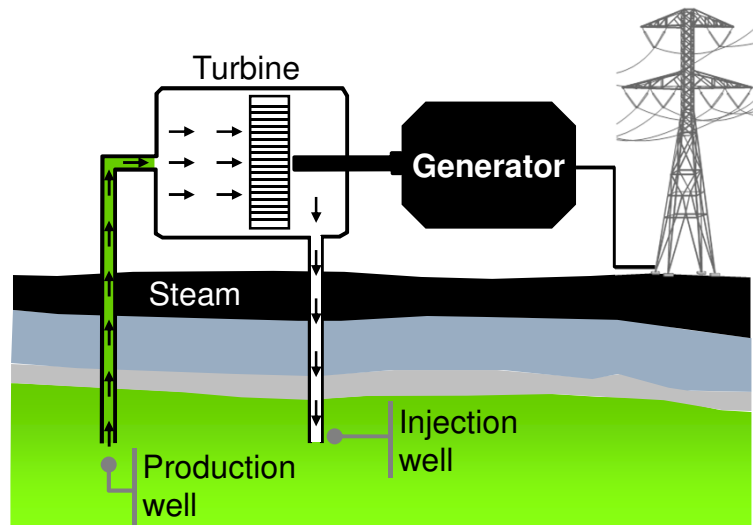
## Thermal cracking of biomass

- BioCrack generates **2nd generation biofuels (renewable diesel)**
  - Feedstock is cellulose, e.g., wood, straw
  - Time to market: 10-12 years
- **OMV pilot plant** ready to launch by spring 2012
  - Conversion of solid biomass into renewable diesel fuel
  - Pilot plant site: Schwechat refinery
  - Project period: 2010-2013
  - Development for Commercialization



# Leverage OMV's core competencies by investing in geothermal energy

## Rationale



- **Commercially attractive:** plant operates 24/7, capacity factor ~95%
- **OMV has synergies** in geology interpretation, drilling, and operating steam turbines

<sup>1</sup> According to government sources  
SOURCE: GPI, July 2011

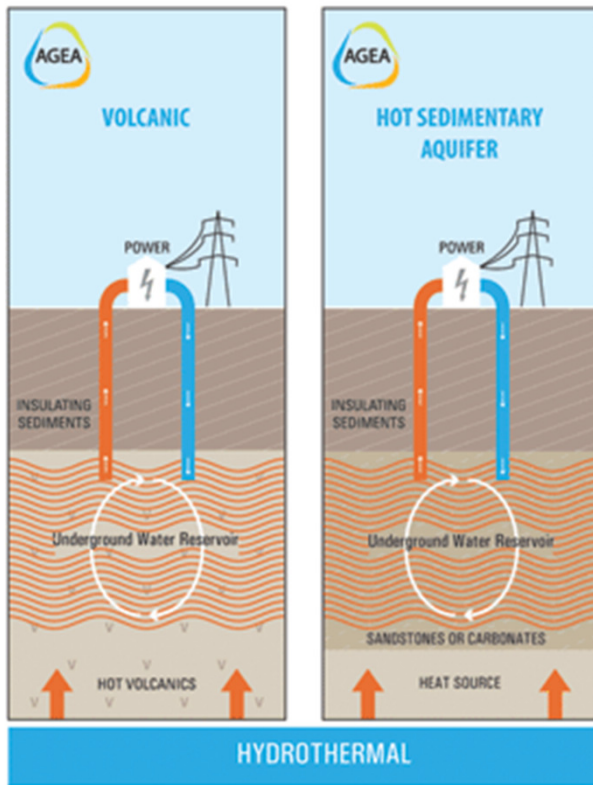
## Potential project in Turkey

- Turkey has **huge geothermal potential**
  - ranked **5<sup>th</sup>** worldwide for geothermal resources
  - Geological potential for geothermal power of **>30,000 MW<sup>1</sup>**
- Turkish government **currently issuing licenses**
- Currently active screening for potential **participation in projects:**
  - Identify and secure partners/attractive geothermal resources
  - Long term investment

# Overview of Geothermal Systems

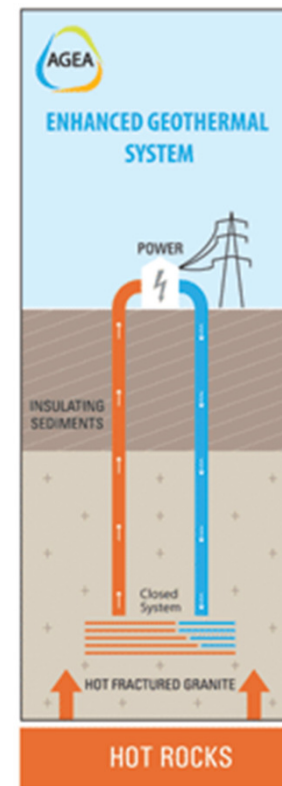
## ► Hydrothermal system

Wells drilled into hydrothermal water reservoir produce steam or hot water



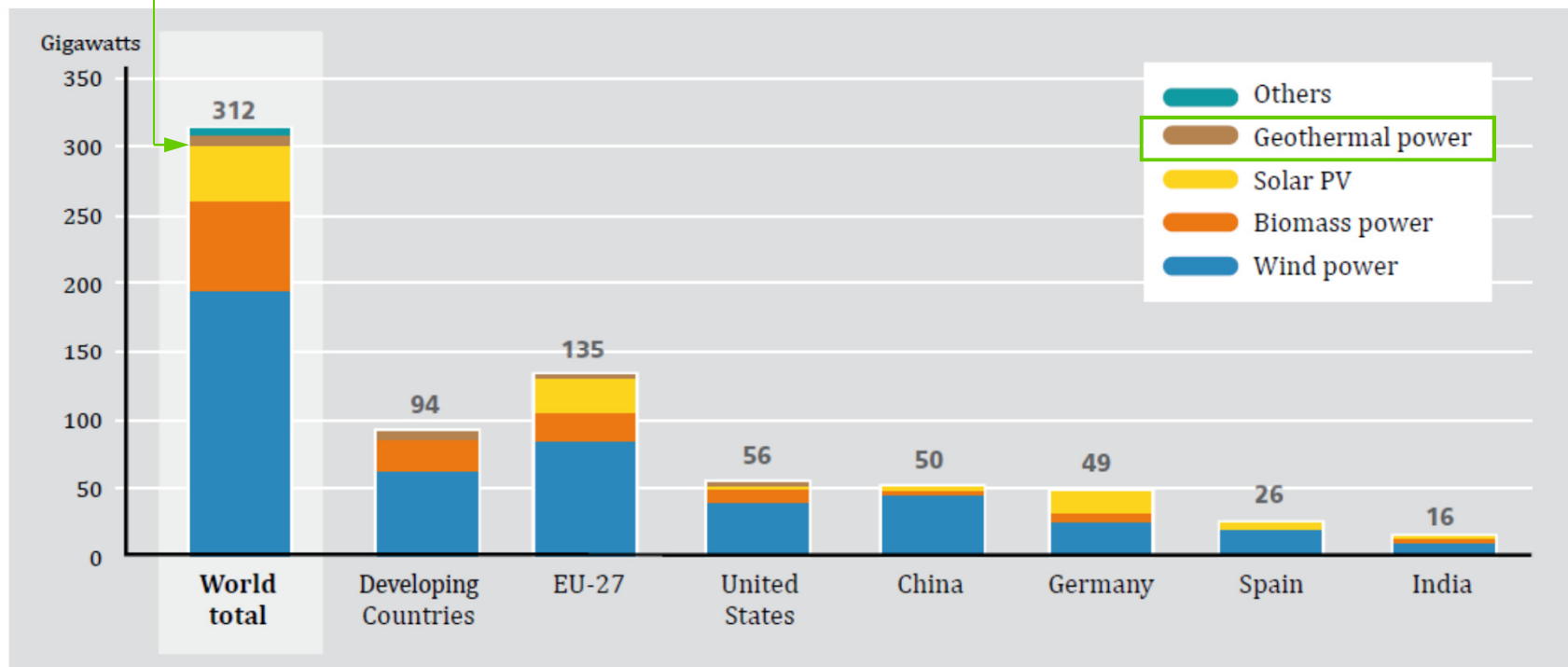
## ► Petrothermal system (EGS\*)

Wells drilled into fractured hot dry rocks plus water injection produce steam and hot water



# Renewable Power Capacities 2010

- ▶ **11,000 MWe** geothermal power... → **3.5%** share of global renewable or ... → **0.5%** of global power capacities



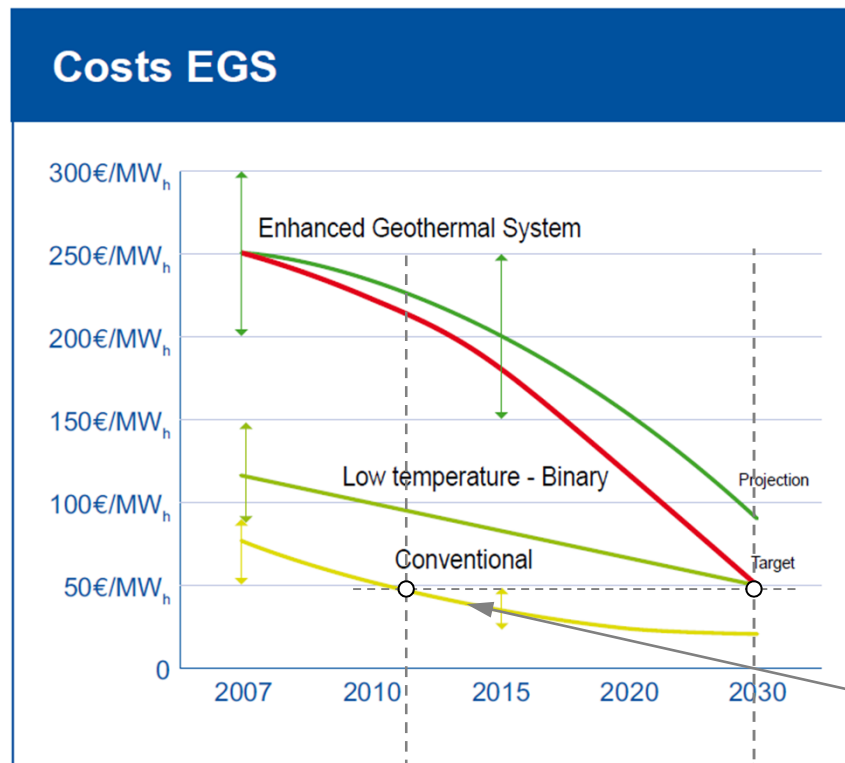
# Geothermal Energy Costs

- ▶ Costs of **Conventional** Geothermal Power is **competitive**
- ▶ Costs of **EGS** are currently **4 to 5 times higher**

Technology	Typical Characteristics	Typical Energy Costs (U.S. cents/kilowatt-hour)
<b>Power Generation</b>		
Large hydro	Plant size: 10 MW–18,000 MW	3–5
Small hydro	Plant size: 1–10 MW	5–12
On-shore wind	Turbine size: 1.5–3.5 MW; Rotor diameter: 60–100 meters	5–9
Off-shore wind	Turbine size: 1.5–5 MW; Rotor diameter: 70–125 meters	10–20
Biomass power	Plant size: 1–20 MW	5–12
Geothermal power	Plant size: 1–100 MW; Types: binary, single- and double-flash, natural steam	4–7
Solar PV (module)	Efficiency: crystalline 12–19%; thin film 4–13%	–
Solar PV (concentrating)	Efficiency: 25%	–
Rooftop solar PV	Peak capacity: 2–5 kW <sub>peak</sub>	17–34
Utility-scale solar PV	Peak capacity: 200 kW to 100 MW	15–30
Concentrating solar thermal power (CSP)	Plant size: 50–500 MW (trough), 10–20 MW (tower) Types: trough, tower, dish	14–18 (trough)

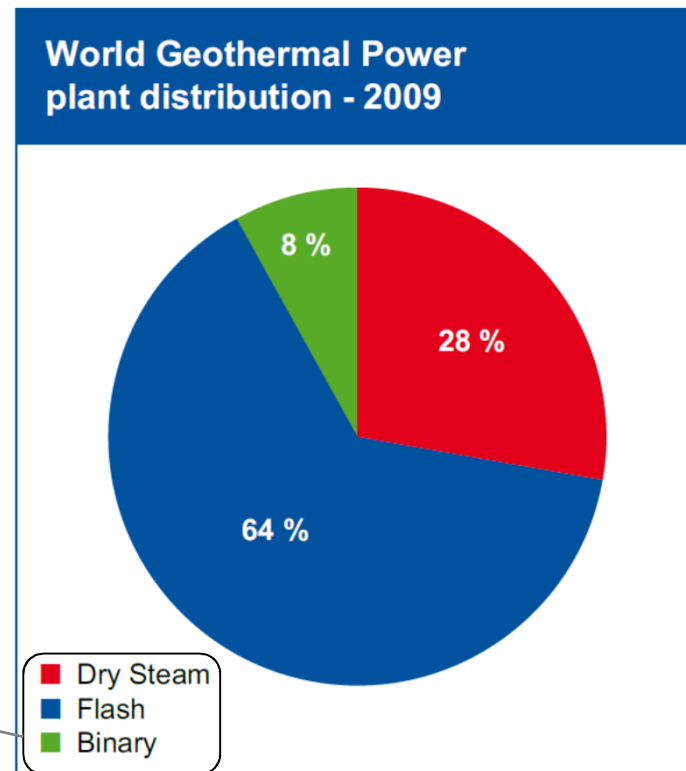
# Geothermal Energy – Economics, Technology

## Economics



**20+ years from 2011  
to profitability of EGS**

## Conventional Technologies



Source: European Geothermal Energy Council – EGEC

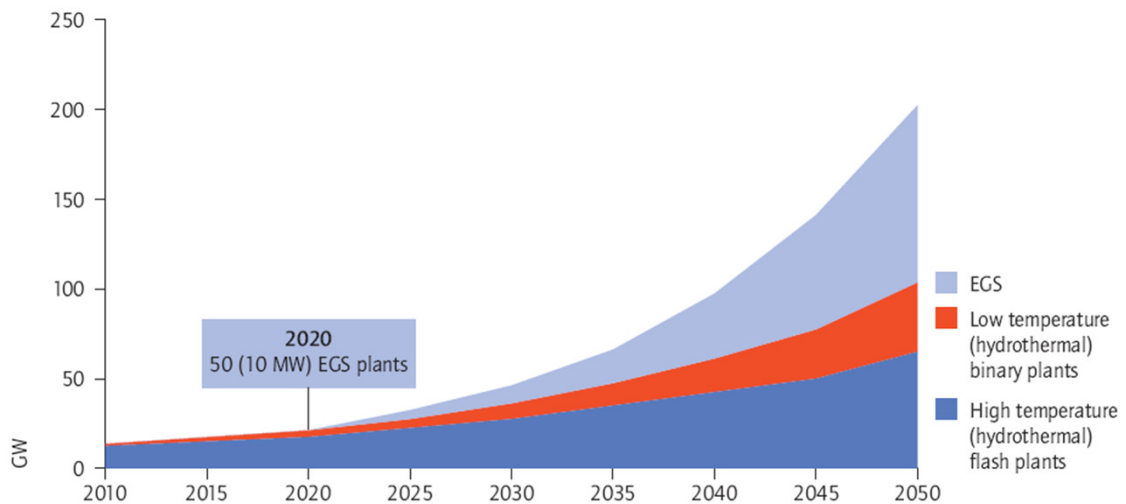
21 | OMV Aktiengesellschaft, GS-D, Graz 16.2.2012

# Global Geothermal Perspective

## Geothermal energy situation (2011)

- ▶ **Power plants** operated in **24 countries**
- ▶ **Heat** was used directly in **78 countries**

- ▶ International Energy Agency prediction
- ▶ Growing emphasis on EGS technology
- ▶ 50 x 10MWe EGS plants predicted to be online by 2020



Reference: IEA Technology Roadmap Geothermal Heat and Power

# Hydrogen: Explore market for a sustainable energy carrier in the future

## Rationale

OMV hydrogen-equipped filling station, Stuttgart, Germany



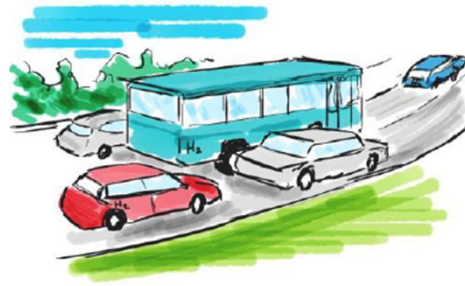
- Hydrogen (H<sub>2</sub>) is **environmentally clean**
- **Synergies** along OMV's value chain
  - H<sub>2</sub> **production** by fossil sources
  - H<sub>2</sub> **gas piping** routine in refineries
  - H<sub>2</sub> **supply** with own network

## H2 Mobility initiative

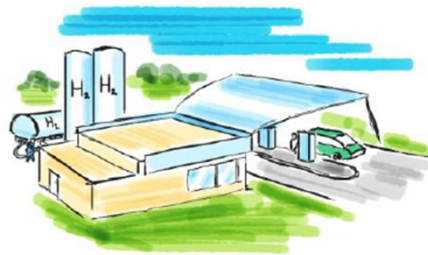
- **Build up H<sub>2</sub> infrastructure**
  - Joint industry effort supported by OMV, Shell, Total, Daimler etc.
  - Ambition: expansion of H<sub>2</sub> fuelling stations in Germany starting in 2015
- **Initiative flanked by fuel cell vehicle development**
  - Letter of Understanding on development and market introduction
  - Signed by all relevant automotive manufacturers
  - Ambition: development and market introduction of vehicles until 2015

# H2 Mobility: No Market without refueling infrastructure

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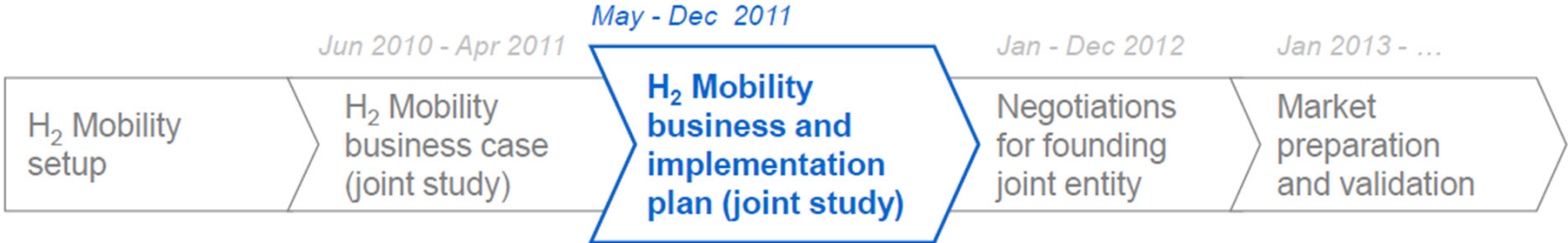


- FCEVs will only be bought by customers if there is a refueling infrastructure
- A refueling infrastructure is only commercially attractive if there are FCEV customers





# H2 Mobility initiative



### Main achievements

Memorandum of understanding for H <sub>2</sub> Mobility signed Sep 10, 2009 in Berlin	Consistent HRS and FCEV ramp-up scenarios for Germany agreed	Design of joint entity structure outlined
		Business case calculated and implementation plan outlined

### H<sub>2</sub> Mobility coalition objectives

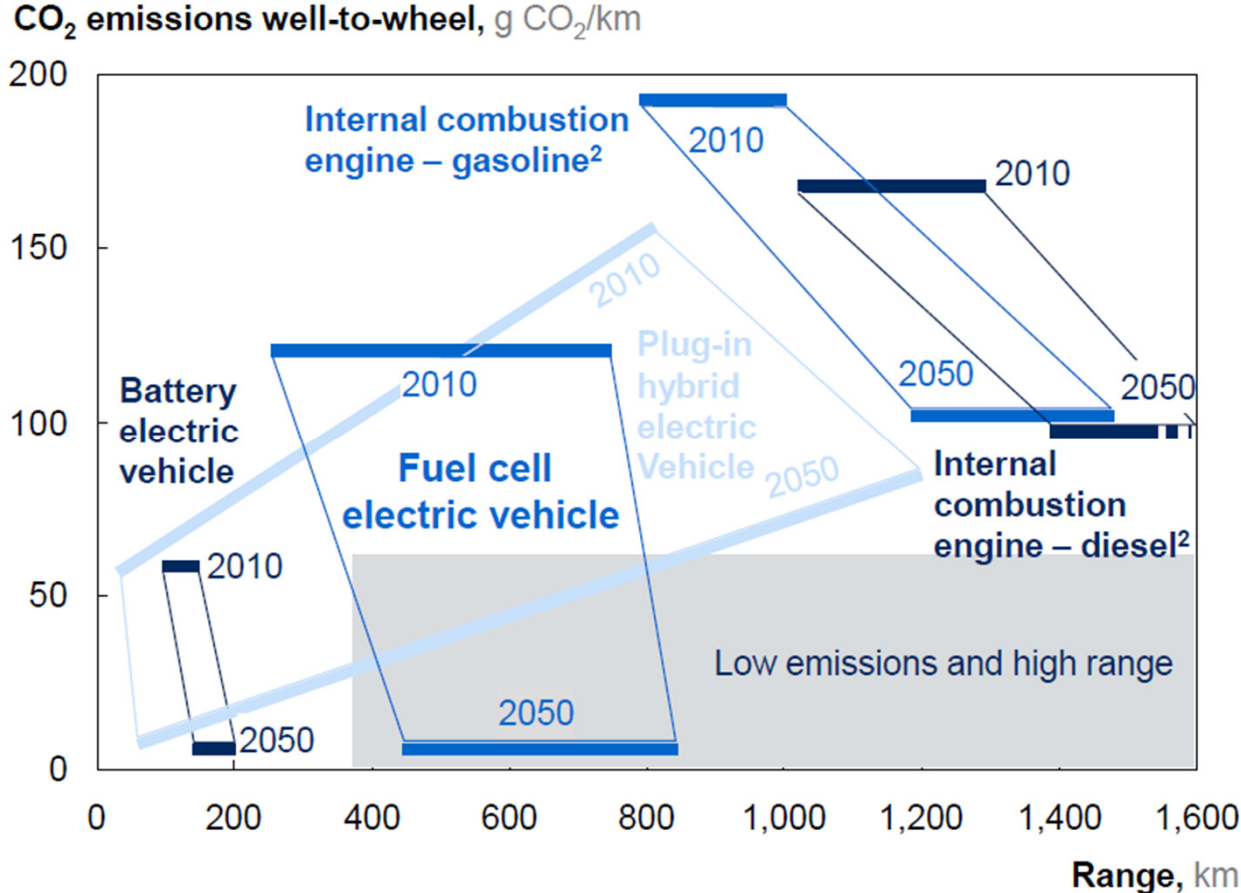
Negotiate joint entity agreement	Start HRS rollout in Germany via the CEP
Win (new) H <sub>2</sub> Mobility members as investors	Synchronize HRS rollout with FCEV ramp-up

### H<sub>2</sub> Mobility analysis participants in 2011

Source: H2 Mobility



# CO2 emissions of passenger car drive trains



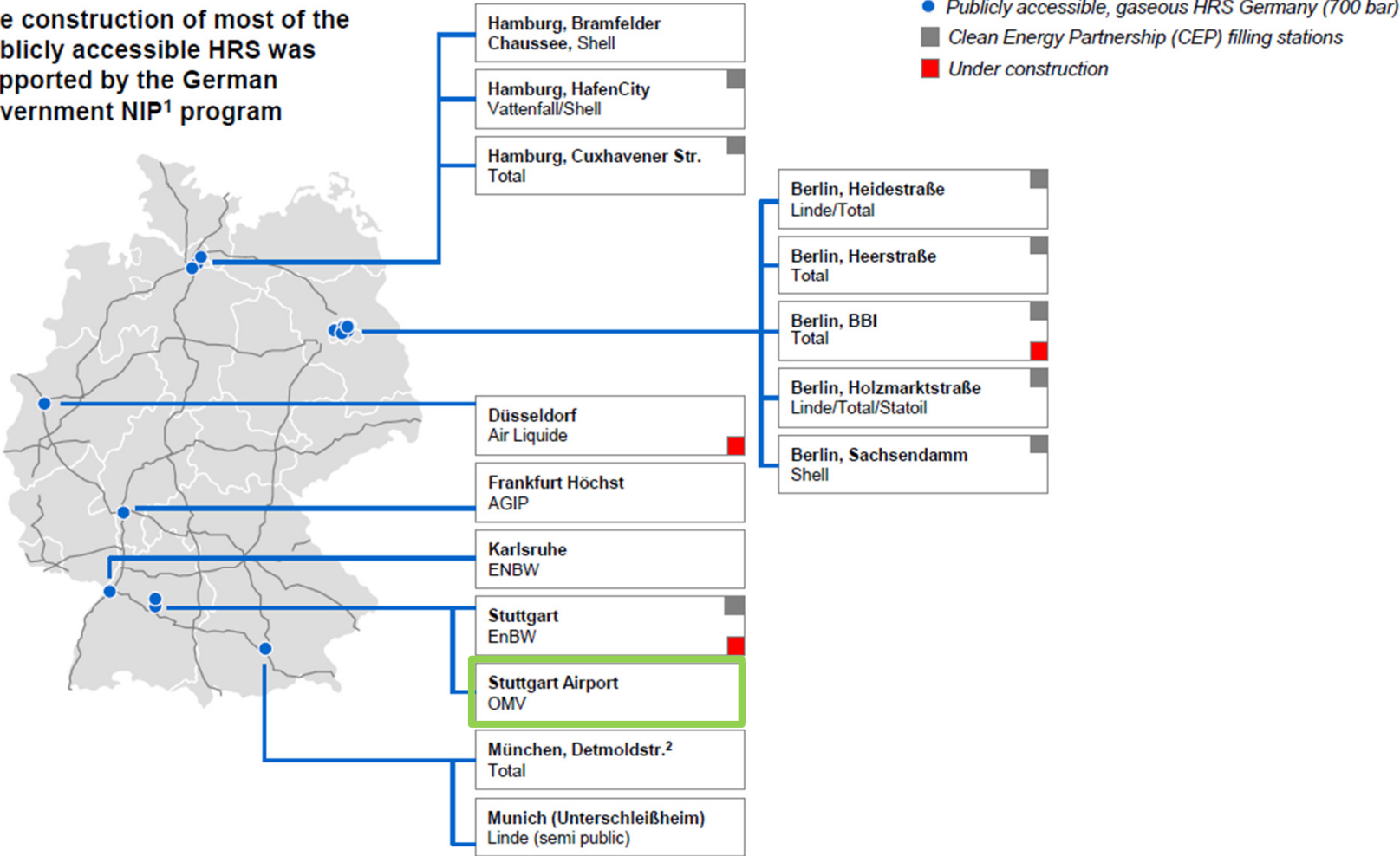
1 According to the Integrated Energy and Climate Program; 21% compared to 1990  
 2 Range for 2050 based on fuel-economy improvement (constant tank size assumed); assumed 6% CO<sub>2</sub> reduction due to biofuels by 2020, 24% by 2050

SOURCE: H<sub>2</sub> Mobility



# HRS infrastructure Germany

The construction of most of the publicly accessible HRS was supported by the German government NIP<sup>1</sup> program

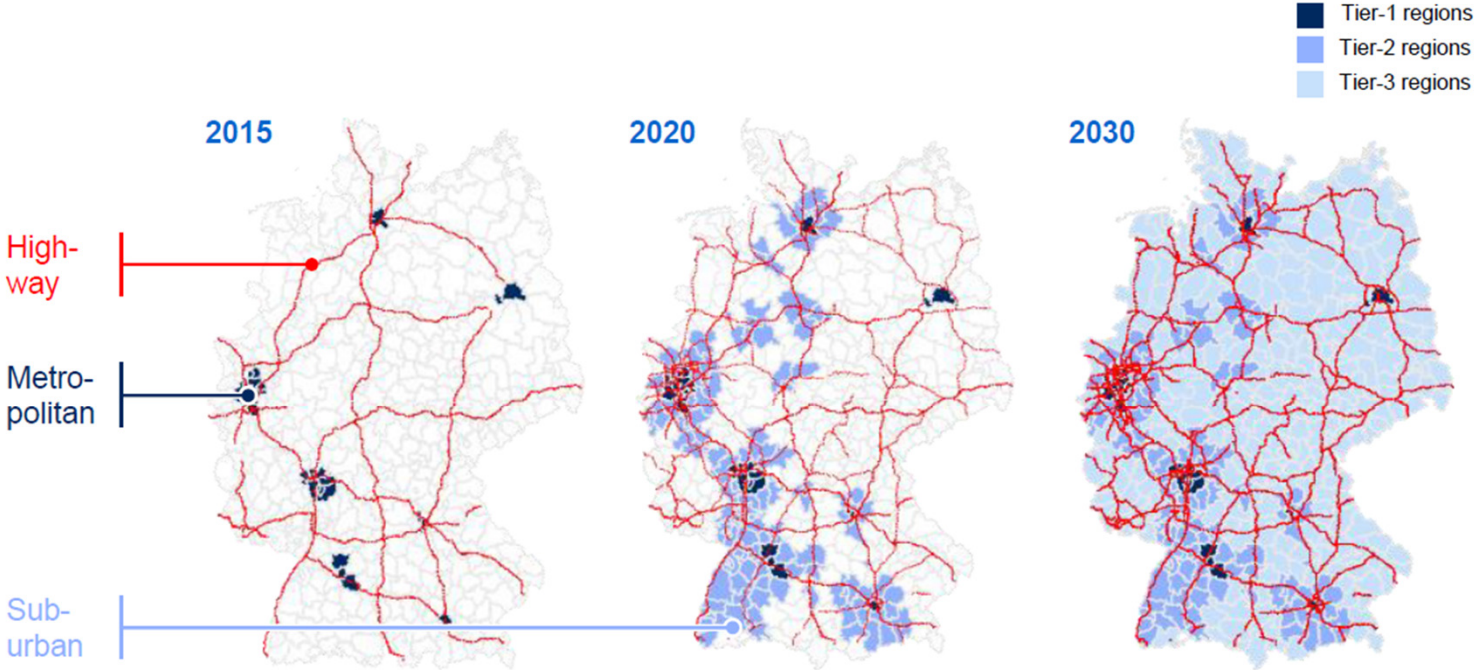


# OMV H2 refueling station Stuttgart Airport



# HRS rollout plan „H2 Mobility“

**1** The HRS rollout would start in 6 metropolitan areas and along major highways – by 2030, the HRS network will cover all of Germany

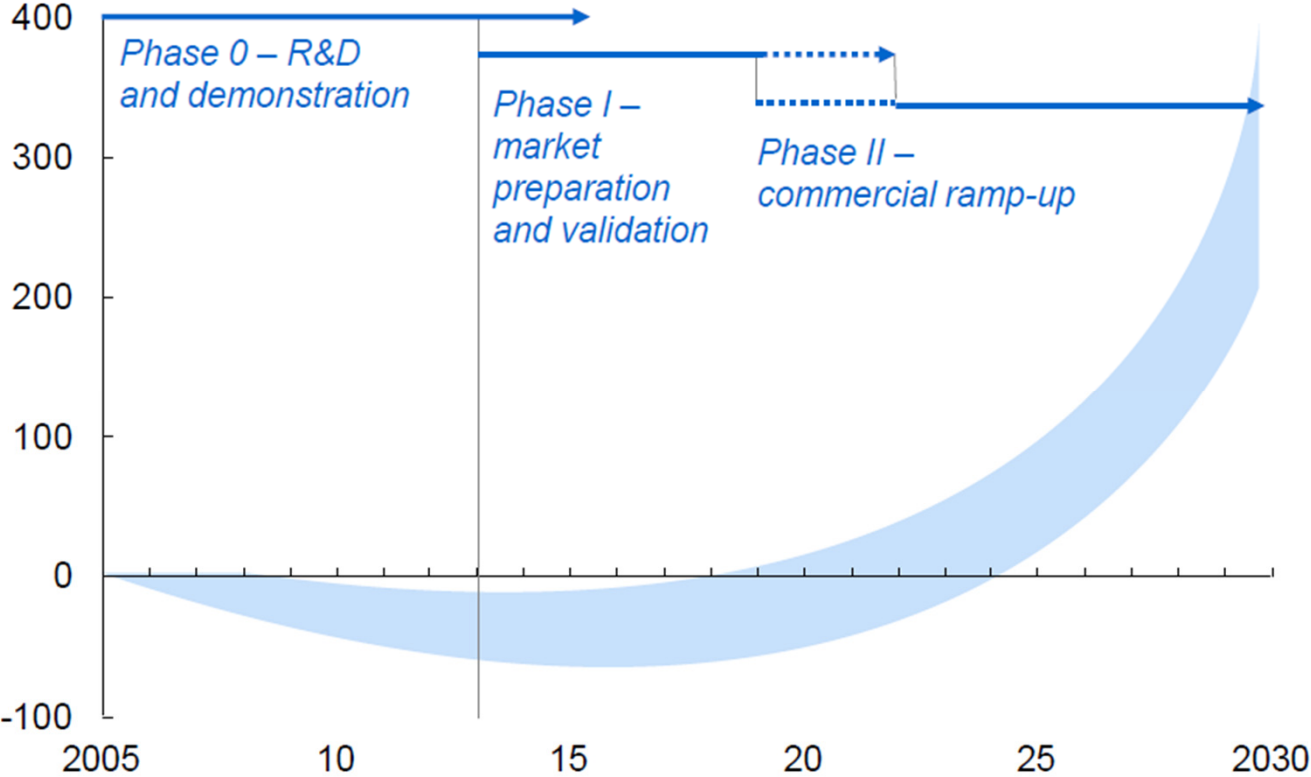


<b>No. of FCEVs</b> Thousands	~ 5	~ 150	~ 1,800
<b>No. of HRS</b>	~ 100	~ 400	~ 1,000
<b>Total population covered by HRS</b> Percent	~ 20	~ 60	~ 100



# HRS infrastructure as long term investment

Illustrative free cash flow development from HRS investments and operations



SOURCE: H<sub>2</sub> Mobility



# Kontakt

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