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Commission

Towards an Integrated Roadmap for the EU Energy System

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The European Union Energy System

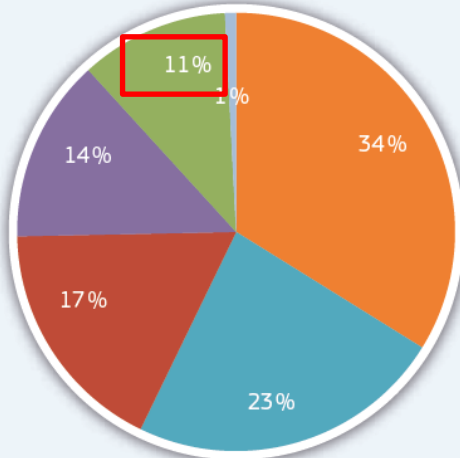
A few figures



Total Primary 2012: 1 682 Mtoe
(Total Primary and Secondary 2012: 1 683 Mtoe)

EU 28

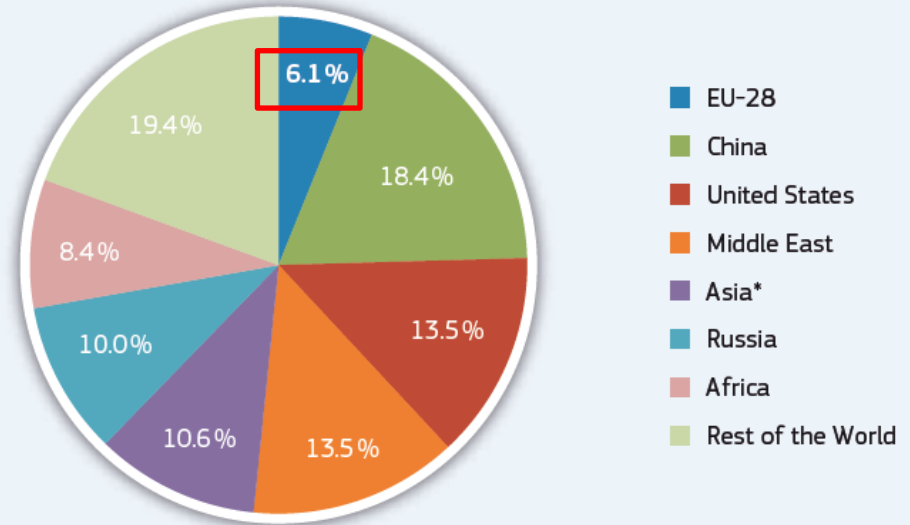
(505 million inhabitants
in 2013, ~30% of
worldwide GDP)



- Petroleum and Products
- Gas
- Solid Fuels
- Nuclear Heat
- Renewables
- Wastes, Non-Renewable

World Energy Production by Region (%)

Total 2011 = 13 202 Mtoe



- Still a strong reliance on hydrocarbon
- But with a continuously increasing share of renewables

Sustainability

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EU-28 Energy Import Dependency

By Fuel

	1995	2000	2005	2010	2011	2012
Total	43.0 %	46.7 %	52.2 %	52.7 %	53.9 %	53.4 %
Solid Fuels	21.5 %	30.6 %	39.4 %	39.4 %	41.7 %	42.2 %
of which Hard Coal	29.7 %	42.6 %	55.7 %	57.9 %	62.3 %	62.5 %
Petroleum and Products	74.0 %	75.7 %	82.1 %	84.4 %	85.1 %	86.4 %
of which Crude and NGL	73.0 %	74.5 %	81.3 %	84.6 %	85.5 %	87.8 %
Natural Gas	43.4 %	48.9 %	57.1 %	62.1 %	67.1 %	65.8 %

- Highly dependent on imports
- Rather high prices impact competitiveness

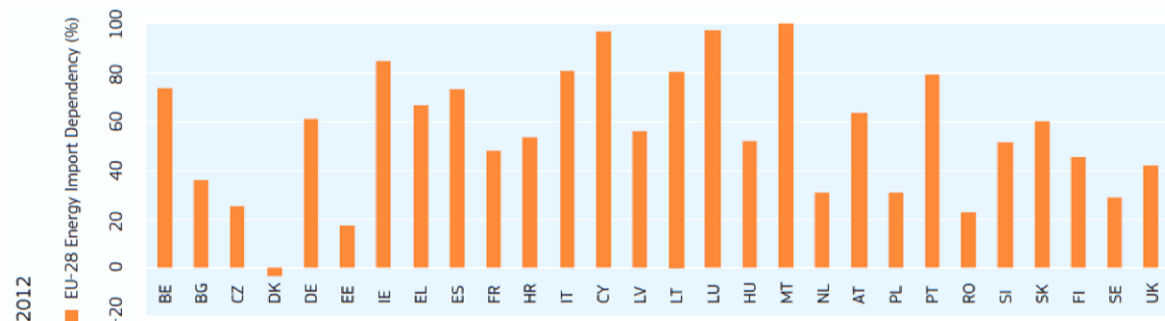
Security

Competitiveness

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Diverse and fragmented

- + 2014: 28 Member States
- + EU legal framework but national regulations
- + Different energy production sources
- + Different histories, INCO relationship, sources of imports and dependencies
- + Different political priorities (green, shale gas, etc.)
- + liberalisation makes good but unequal progress
- + Missing corridors between countries





2008: The SET Plan

Focus on technologies with market impact up to 2020 (set up of EITs)

- Wind
- Solar
- Electricity grids
- CCS
- Bioenergy
- Nuclear
- Smart Cities and Communities
- Fuel cells and hydrogen

Focus on longer-term research actions beyond 2020 (set up of EERA)



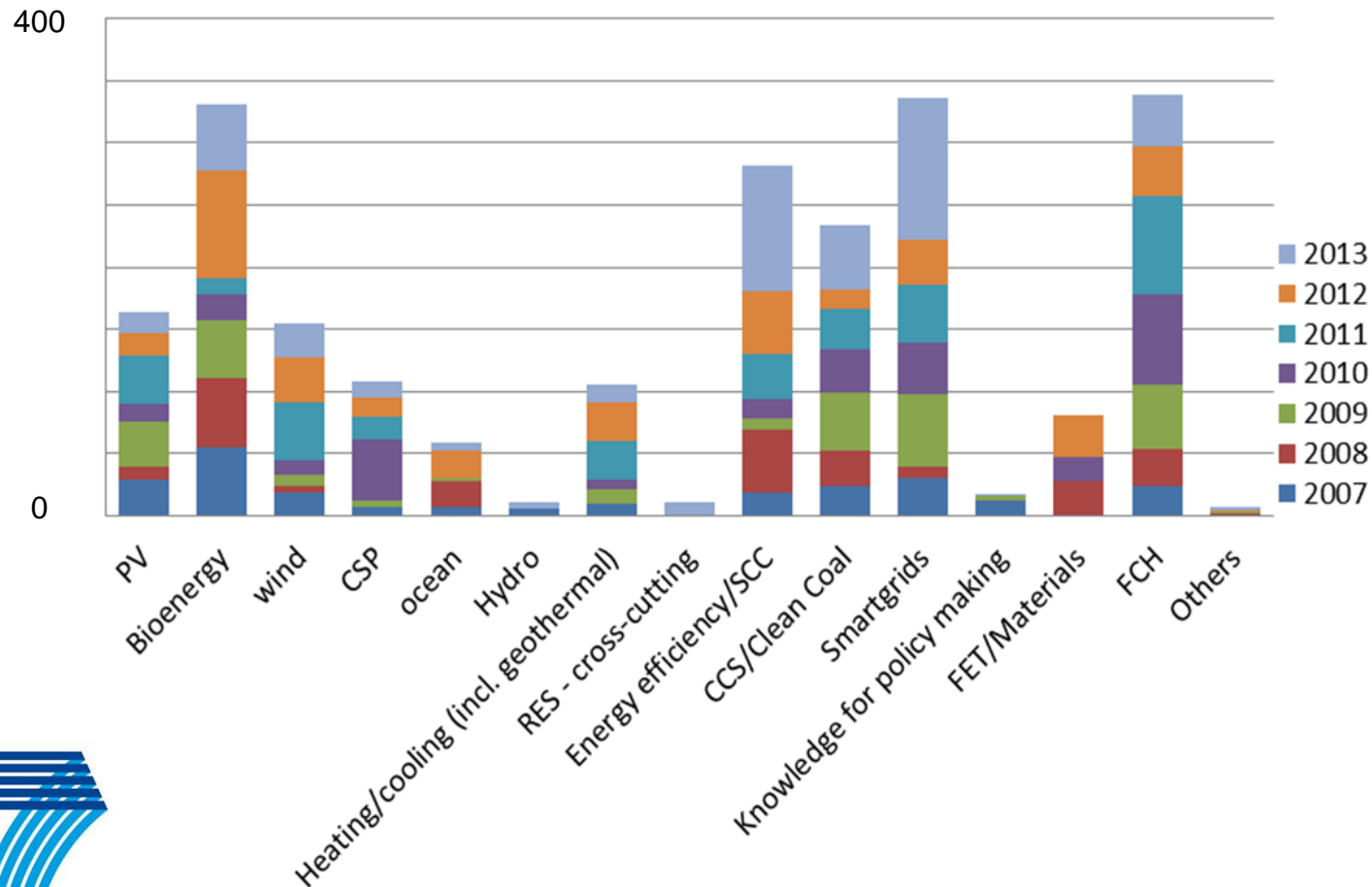
Objective for 2020

- 20% reduction of CO₂ emissions (wrt 1990)
- 20% share of Renewable Energy
- 20% improvement in Energy Efficiency



Implementation: FP7 2007-2013

FP7 Energy Theme - budget allocation per year (2007-2013, M€)



2013: Communication on Energy Technologies and Innovation

Key Principles

- New Challenges post 2020
- From sectors to system
- Bridging research and innovation with energy policy
- Making better use of existing and increased financial resources
- Keep options open
- Harness endogenous resources



- Integrated Roadmap
- Action Plan –EC and MS financing
- Robust reporting system
- A new coordination structure under the SET plan SG on energy efficiency
- New competences: e.g. non-technological barriers
- External Dimension





Structure

I. Energy Efficiency

II. Competitive, Efficient, Secure,
Sustainable & Flexible Energy
System

III. Cities, Communities & Market
Uptake

IV. Synergies, Roles & Tasks
of Actors

V. Monitoring &
Review

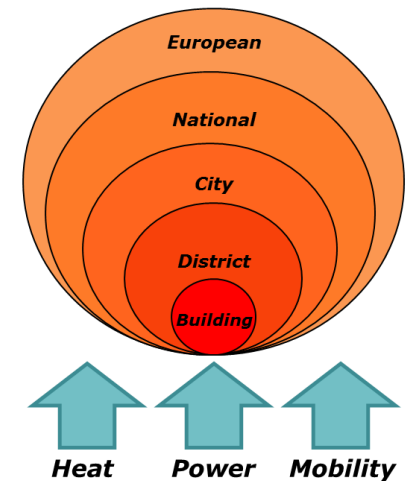
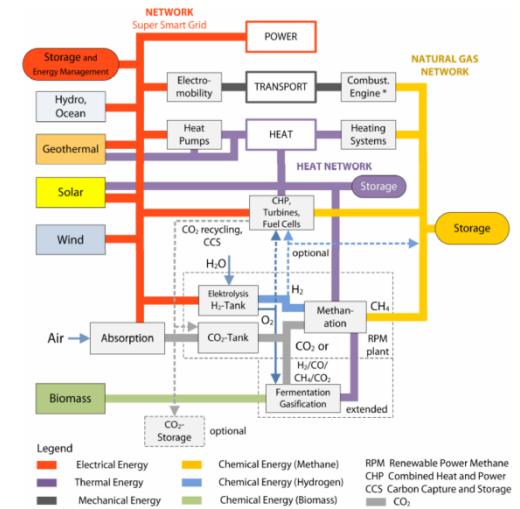
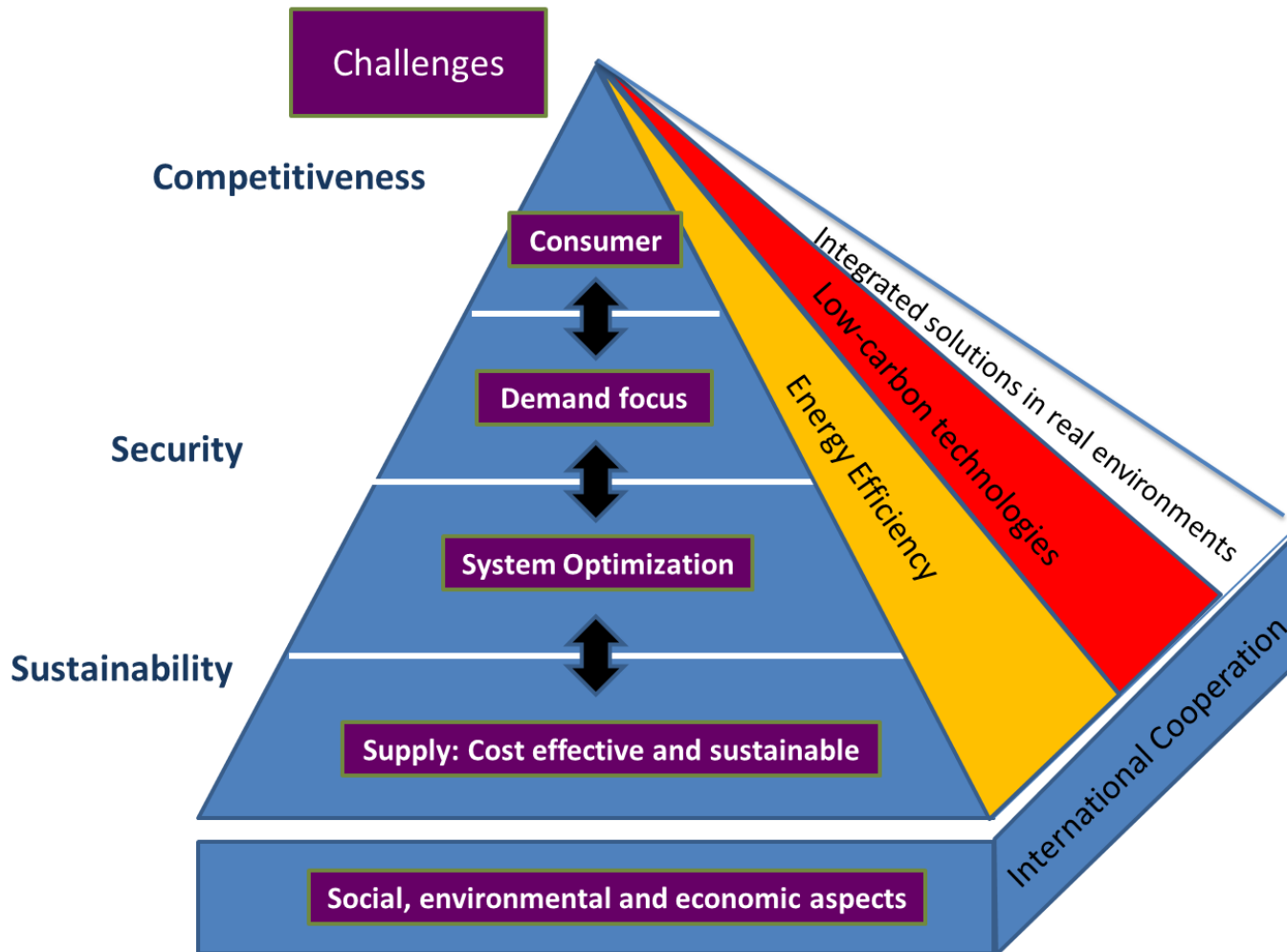
Challenges and Key Issues

- Cost competitiveness/performance
- System integration (smart interfaces, new capabilities of equipment, new or improved services to system, forecast)
- Supply chains (industrial logistics, maintenance, materials and manufacturing, recycling)
- Non technological aspects (market framework, business model, spatial planning, standards, financing, skills and capacities)
- Societal issues (environment impact, safety, health, social acceptance)

Objective for 2030 (Climate-Energy package)

- 40% reduction of CO₂ emissions (wrt 1990)
- 27% share of Renewable Energy
- 30% improvement in Energy Efficiency

Energy system Holistic approach



Implementation: EU



Calls	2014 (M€)	2015 (M€)
Energy Efficiency	97,5	98,15
Smart Cities and Communities	92,32	108,18
Competitive Low-Carbon Energy	359,1	372,33
SMEs and Fast Track to Innovation	33,95	37,26
<i>Part B – other actions</i>	75	61
Euratom Fission	48,3	39,6
<i>Part B – other actions</i>	0,3	15,0

H2020: 70.2 bEur total funding (7 years)

Energy: 5.9 bEur (7.7 %)

Implementation: MS



Towards an Integrated Roadmap and its Action Plan

Integrated Roadmap	R&I Actions	EU	Joint actions	MSs individually/ regions (cohesion)	Industry
Consumer	X	✓		✓	✓
	X	✓		✓	✓
Demand focus	X	✓	✓		
	X		✓		✓
System Optimisation	X	✓		✓	✓
	X	✓			
Supply	X	✓	✓		✓
	X			✓	
Socio-economic	X	✓			✓
	X		✓		



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