

# Energy Policy Directions and the Integrated Road-Map

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## EU Energy Policy State of Play – the Challenge

- **Move forward on ambitious agendas, for clean energy, for an integrated market and for access to indigenous sources of energy**
- **And at the same time achieve the balance between these objectives in sustainability, security of supply and the market (affordability)**



## Policy State of Play – Security of Supply

- **Import Dependency is geopolitical, many dimensions to resolve it. Proposals in preparation.**
- **Power system stability;**
  - short-term – corrections to grid management rules needed
  - mid-long term – the Integrated energy technologies Road-Map

## Policy State of Play – Sustainability

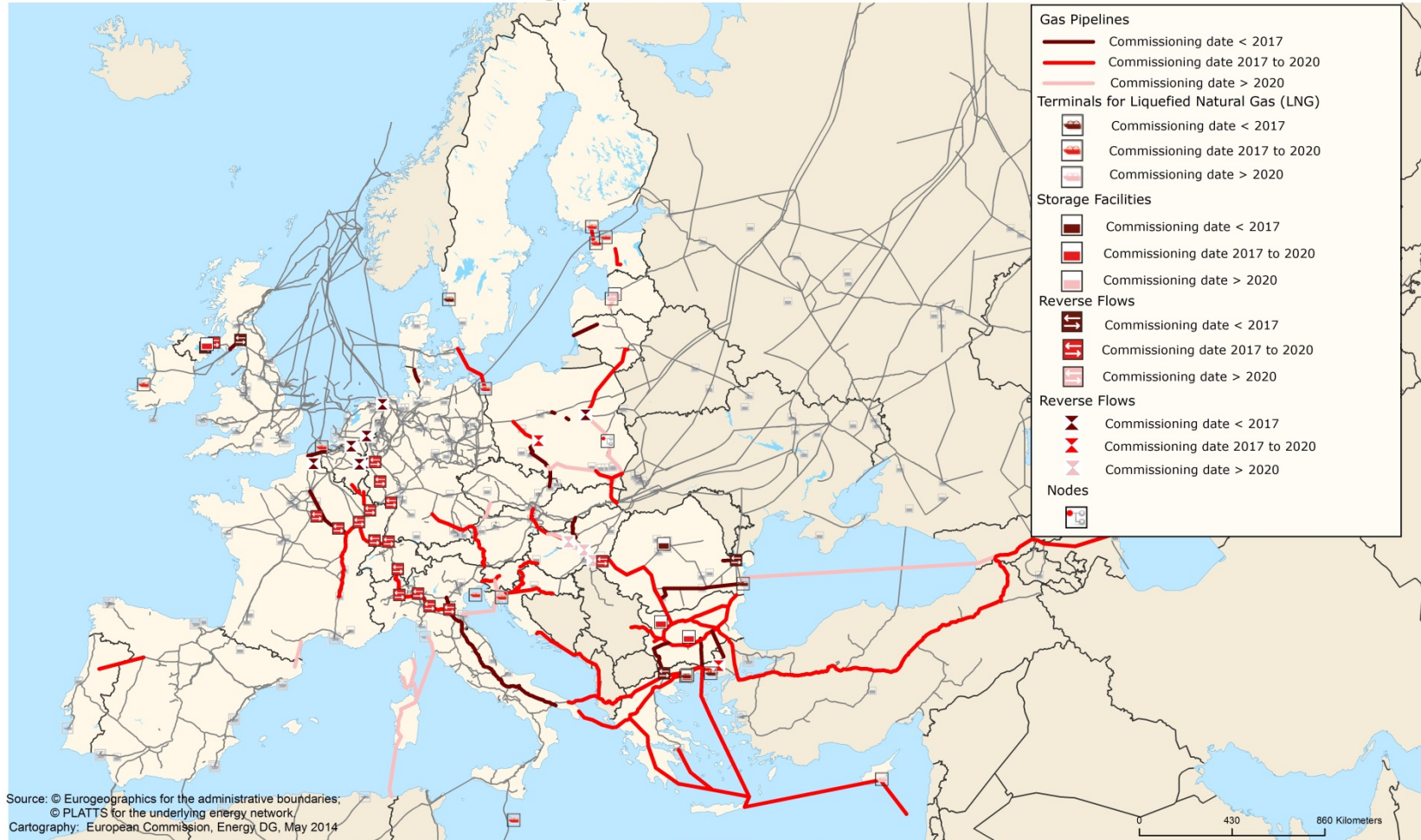
- **Renewables; also contribute to security of supply**
  - Market position maturing in some markets
  - Good design needed if support mechanisms used
- **Zero/Low- Carbon; for member states that have a high share of fossil fuels, environmental concerns are a must.**
- **Energy Efficiency; complex but essential**
- **Innovation; new technology will be an essential piece of every solution.**

## Policy State of Play – Affordability

- **The real key to implementing the shift in energy policy**
- **Energy Efficiency; reduce demand**
- **Reduce the costs of sustainability through technology**
- **New business models – related to consumer empowerment, demand response, intermittency ...**
- **Vulnerable consumers**



## Energy Infrastructure - Natural Gas



## Shifts for security of supply - EU gas infrastructure

- **Bidirectional pipeline operation**
- **Increased LNG**
- **New uses for the network; biogas, CCS, hydrogen**

*But underpinning investments with policy should help  
– the 2030 framework*

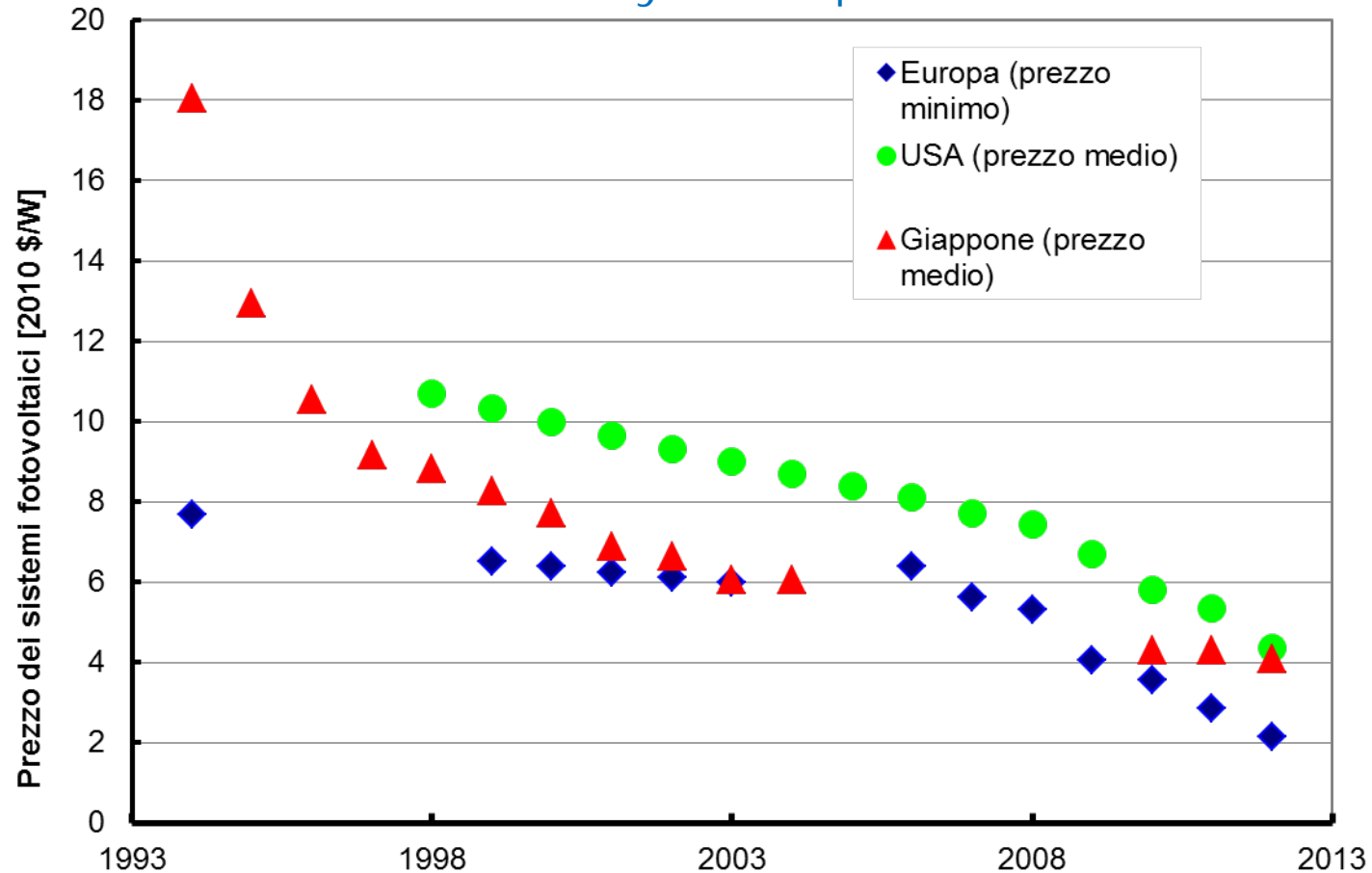




## Post-2020 Policy Choices

- **Type of and scope of targets (GHG, RES, EE ....)**
- **Mandatory or indicative**
- **Implementation mechanisms; carbon price, certificates, tariffs, taxes**

## Technology can help to cut costs; Residential and commercial PV systems price



Source: JRC (2013)



## The Electricity Grid & Integration

- **The centre of the challenge**
- **New flexibility needed to allow for more dynamic flows and new business models at local and system levels**
- **Cross-border issues**
- **Who leads? – key role for the Integrated Road-Map**



## The Integrated Road-Map I

- Will provide a path to new technology and innovation, to underpin shifts in energy policy
- Takes a holistic system view
- Five key directions ...

## The Integrated Road-Map II

- To empower the consumer in new energy business models
- Rationalise demand (energy efficiency)
- Optimise system management – flexibility for demand response, intermittency ...)
- Reduce the costs of energy production, while enhancing sustainability and security of supply
- Support multidisciplinary and international contributions to the effort



## The Integrated Road-Map III – Practical Steps

- **Communication on energy technology and innovation (May 2013), based on a public consultation in early 2013**
- **Stakeholders develop the Road-Map, to April 2014**
- **Discussion with Member States, Summer 2014**
- **Develop the IRM Action Plan**
- **Political and Public Debate**
- **Link to New Governance of Energy Policy**

## Conclusions

- **The Integrated Road-Map is central to new energy policy and related development of technology**
- **Major shifts in energy policy are underway, so the challenge on technology is major also**
- **Need a balanced approach, that combines policy, regulation, technology and new business models**



# Difficult investment climate for RES ...

FIGURE 3: GLOBAL TRENDS IN RENEWABLE ENERGY INVESTMENT 2012 DATA TABLE, \$BN

Category	Year Unit	2004 \$bn	2005 \$bn	2006 \$bn	2007 \$bn	2008 \$bn	2009 \$bn	2010 \$bn	2011 \$bn	2012 \$bn	2011-12 Growth %	2004-12 CAGR %
<b>1 Total Investment</b>												
1.1 New investment		39.6	64.7	100.0	146.2	171.7	168.2	227.2	279.0	244.4	-12%	26%
1.2 Total transactions		48.4	90.7	135.6	204.7	231.0	232.5	285.8	352.5	296.7	-16%	25%
<b>2 New Investment by Value Chain</b>												
<b>2.1 Technology development</b>												
2.1.1 Venture capital		0.4	0.6	1.2	2.2	3.2	1.6	2.5	2.6	2.3	-15%	25%
2.1.2 Government R&D		2.0	2.1	2.3	2.7	2.8	5.2	4.7	4.7	4.8	3%	12%
2.1.3 Corporate RD&D		3.0	2.9	3.3	3.6	4.0	4.0	4.6	4.8	4.8	-1%	6%
<b>2.2 Equipment Manufacturing</b>												
2.2.1 Private equity expansion capital		0.3	1.0	3.0	3.7	6.8	2.9	3.1	2.6	1.4	-46%	20%
2.2.2 Public markets		0.3	3.8	9.1	22.2	11.6	12.5	11.8	10.6	4.1	-61%	41%
<b>2.3 Projects</b>												
2.3.1 Asset finance		24.8	44.0	72.1	100.6	124.2	110.3	143.7	180.1	148.5	-18%	25%
Of which re-invested equity		0.0	0.1	0.7	3.1	3.4	1.8	5.5	3.7	1.5	-60%	-
2.3.3 Small distributed capacity		8.9	10.5	9.8	14.3	22.5	33.5	62.4	77.4	80.0	3%	32%
Total Financial Investment		25.8	49.3	84.7	125.6	142.4	125.5	155.6	192.2	154.8	-19%	25%
Gov't R&D, corporate RD&D, small projects		13.8	15.4	15.3	20.6	29.3	42.7	71.7	86.8	89.6	3%	26%
Total New Investment		39.6	64.7	100.0	146.2	171.7	168.2	227.2	279.0	244.4	-12%	26%
<b>3 M&amp;A Transactions</b>												
3.1 Private equity buy-outs		0.8	3.8	1.8	3.6	5.5	2.5	1.9	3.0	2.4	-19%	14%
3.2 Public markets investor exits		0.0	1.4	2.7	4.2	1.0	2.6	4.7	0.1	0.4	200%	41%
3.3 Corporate M&A		2.4	7.9	12.7	20.4	18.0	21.5	18.0	29.5	7.1	-76%	14%
3.4 Project acquisition & refinancing		5.4	12.8	18.4	30.4	34.9	37.7	33.9	40.9	42.3	4%	29%
<b>4 New Investment by Sector</b>												
4.1 Wind		14.4	25.5	32.4	57.4	69.9	73.7	96.2	89.3	80.3	-10%	24%
4.2 Solar		12.3	16.4	22.1	39.1	59.3	62.3	99.9	158.1	140.4	-11%	36%
4.3 Biofuels		3.7	8.9	26.1	28.2	19.3	10.6	9.2	8.3	5.0	-40%	4%
4.4 Biomass & w-t-e		6.3	8.3	11.8	13.1	14.1	13.2	13.7	12.9	8.6	-34%	4%
4.5 Small hydro		1.5	4.6	5.4	5.9	7.1	5.3	4.5	6.5	7.8	20%	22%
4.6 Geothermal		1.4	0.9	1.4	1.8	1.8	2.7	3.5	3.7	2.1	-44%	5%
4.7 Marine		0.0	0.1	0.9	0.7	0.2	0.3	0.2	0.3	0.3	13%	30%
Total		39.6	64.7	100.0	146.2	171.7	168.2	227.2	279.0	244.4	-12%	26%
<b>5 New Investment by Geography</b>												
5.1 United States		5.7	11.9	28.2	34.5	36.2	23.3	34.6	54.8	36.0	-34%	26%
5.2 Brazil		0.5	2.2	4.2	10.3	12.5	7.9	7.9	8.6	5.4	-37%	34%
5.3 AMER (excl. US & Brazil)		1.4	3.4	3.4	5.0	5.6	5.9	11.5	8.3	9.5	14%	27%
5.4 Europe		19.6	29.4	38.4	61.7	72.9	74.7	101.3	112.3	79.9	-29%	19%
5.5 Middle East & Africa		0.6	0.6	1.2	1.7	2.7	1.7	5.0	3.5	11.5	228%	46%
5.6 China		2.6	5.8	10.2	15.8	25.0	37.2	40.0	54.7	66.6	22%	50%
5.7 India		2.4	3.2	5.5	6.3	5.2	4.4	8.7	13.0	6.5	-50%	13%
5.8 ASOC (excl. China & India)		6.7	8.3	8.9	11.0	11.5	13.2	18.1	23.8	29.0	22%	20%
Total		39.6	64.7	100.0	146.2	171.7	168.2	227.2	279.0	244.4	-12%	26%