THE EU FRAMEWORK PROGRAMME
FOR RESEARCH AND INNOVATION

HORIZON 2020

Secure, Clean and Efficient Energy

The 2015 call for proposals

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European Commission

DG Research and Innovation **DG Energy**

Athens, 12 January2015

Research and Innovation

Νεα δεδομένα στην παγκόσμια ενεργειακή αγορά

Επίδραση οικονομικής κρίσης

Fall in private investment, tight financing conditions

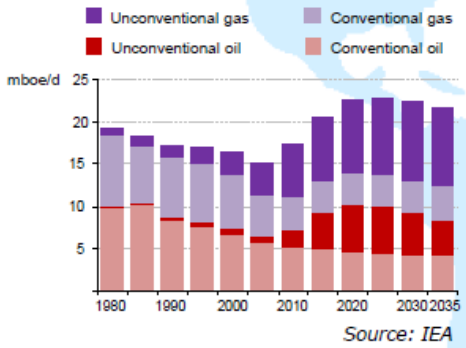
Fukushima

Some countries phase out nuclear power production

Κρίση Ουκρανίας

Shale gas

US oil and gas production

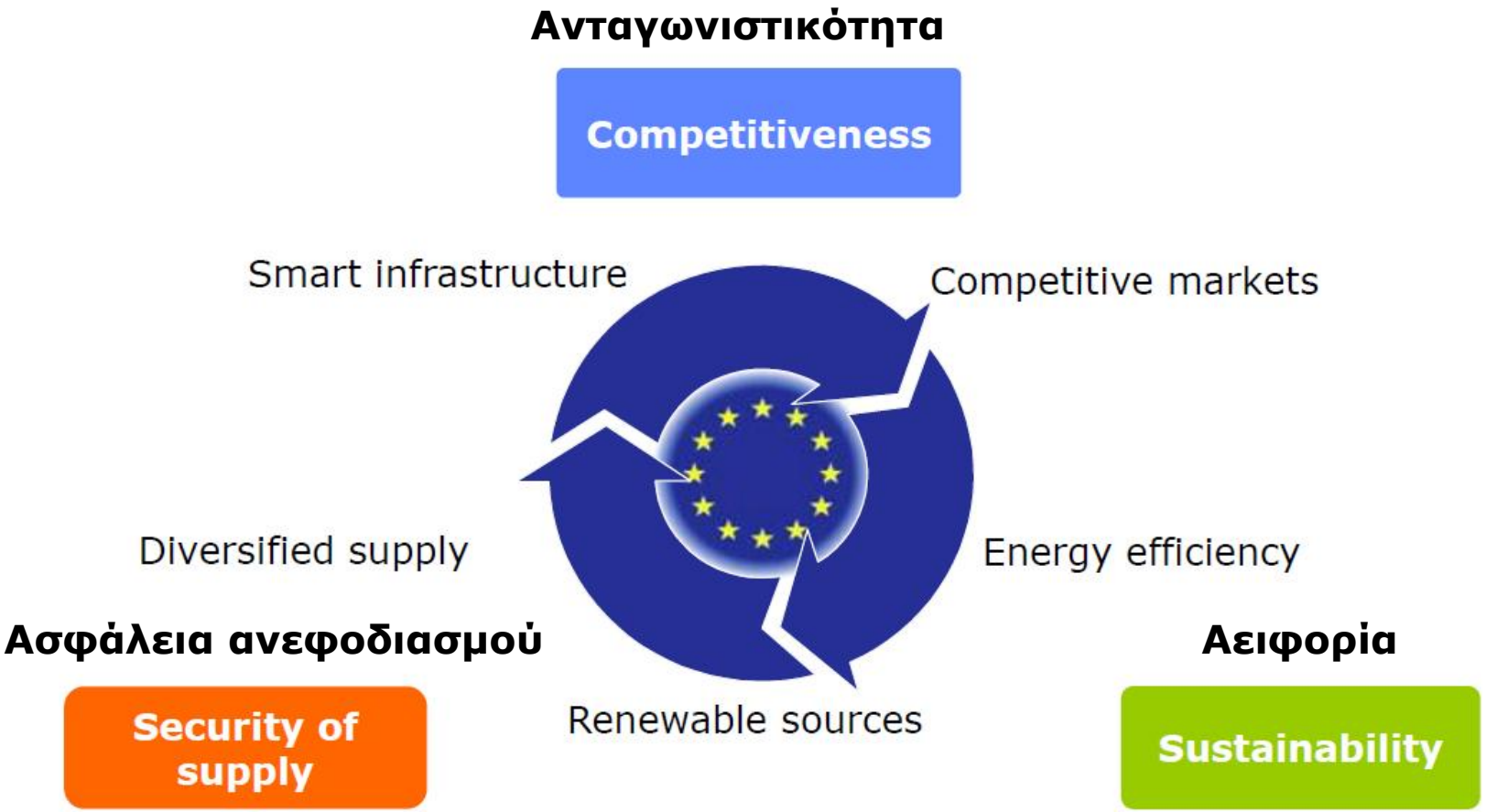


Αυξομειώσεις ζήτησης και τιμών

By 2030, world economy set to double and energy demand to rise by 1/3

Κορυφαίες προτεραιότητες της Ευρωπαϊκής Επιτροπή

Μια ανθεκτική ΕυρωπαϊκήΈνωση για την ενέργεια με μια μακρόπνοη πολιτική για την αλλαγή του κλίματος.



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Κορυφαίες προτεραιότητες της Ευρωπαϊκής Επιτροπής

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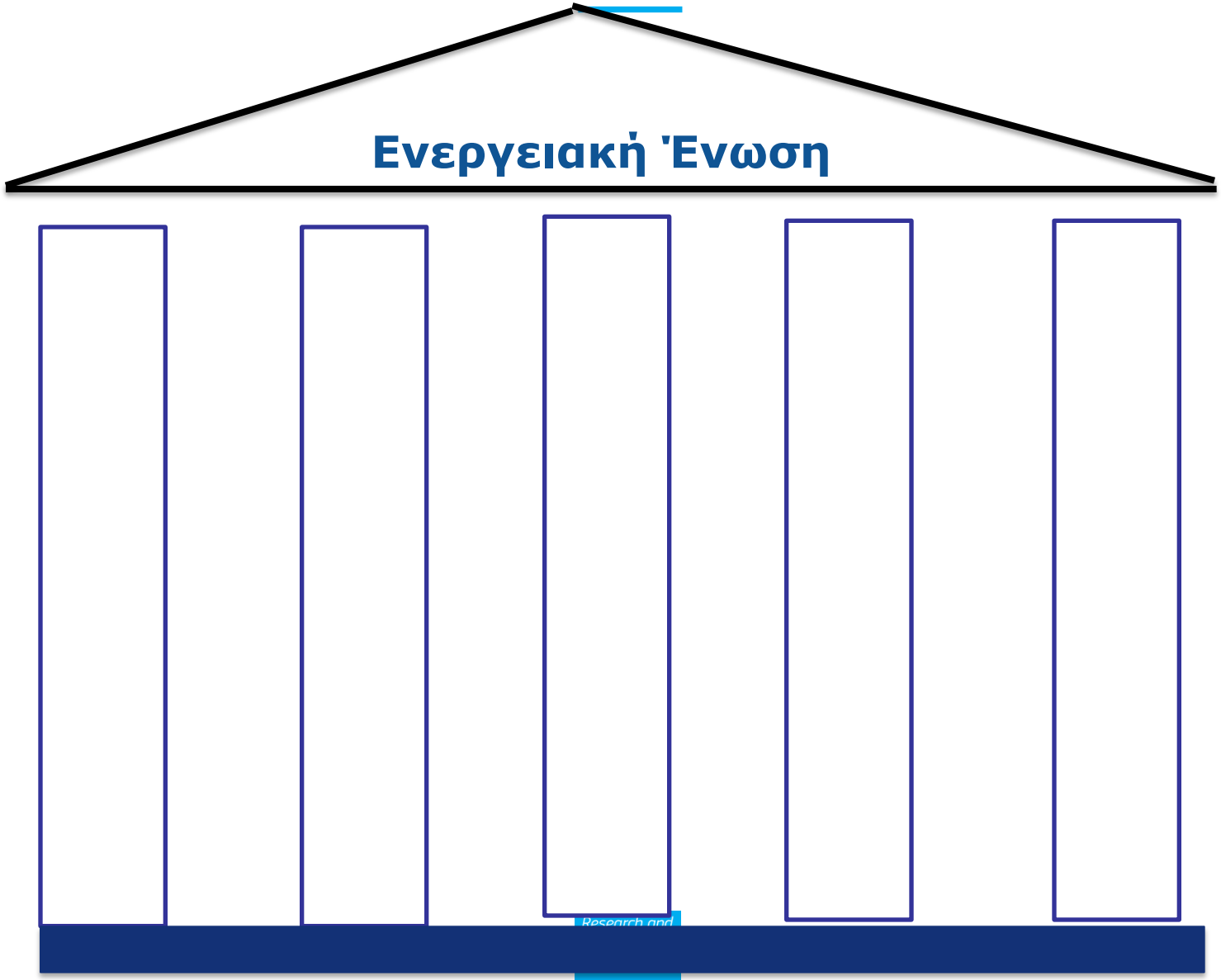
Το όραμα είναι να επιτύχει:

- *οικονομικά προσιτή ενέργεια για τις επιχειρήσεις και τους πολίτες,*
- *εξασφαλισμένη ενέργεια για όλα τα Κράτη Μέλη*
- *πράσινη ενέργεια για τις μελλοντικές γενιές.*

Research and Innovation

Η Ενεργειακή Ένωση αποτελείται από πέντε αλληλένδετους πυλώνες:



Η Ενεργειακή Ένωση αποτελείται από πέντε αλληλένδετους πυλώνες:

ασφάλεια του εφοδιασμού

Η Ευρωπαϊκή Ένωση είναι ο μεγαλύτερος πελάτης ενέργειας στον κόσμο.

Σήμερα, η ΕΕ εισάγει το 53% της ενέργειάς της

Κόστος 400 bl/χρόνο

- **συλλογικές διαπραγματεύσεις**
- **πνεύμα αλληλεγγύης και εμπιστοσύνης μεταξύ Κρατών Μελών**

Η Ενεργειακή Ένωση αποτελείται από πέντε αλληλένδετους πυλώνες:

ασφάλεια του εφοδιασμού

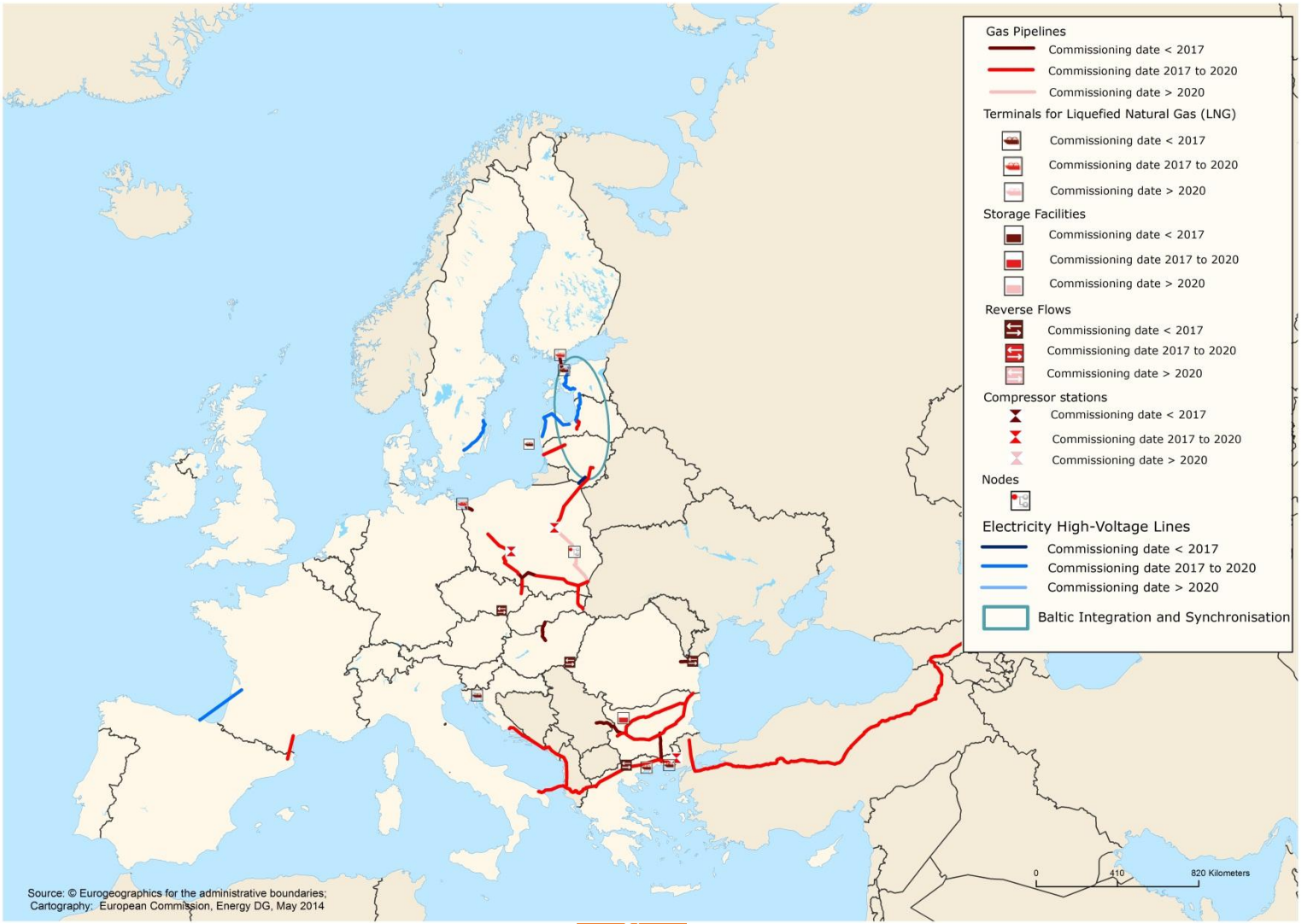
εσωτερική αγορά ενέργειας

διασφάλιση ότι θα ολοκληρωθεί η εσωτερική αγορά ενέργειας της ΕΕ.

- Αύξηση διασυνοριακών ροών
- Επενδύσεις

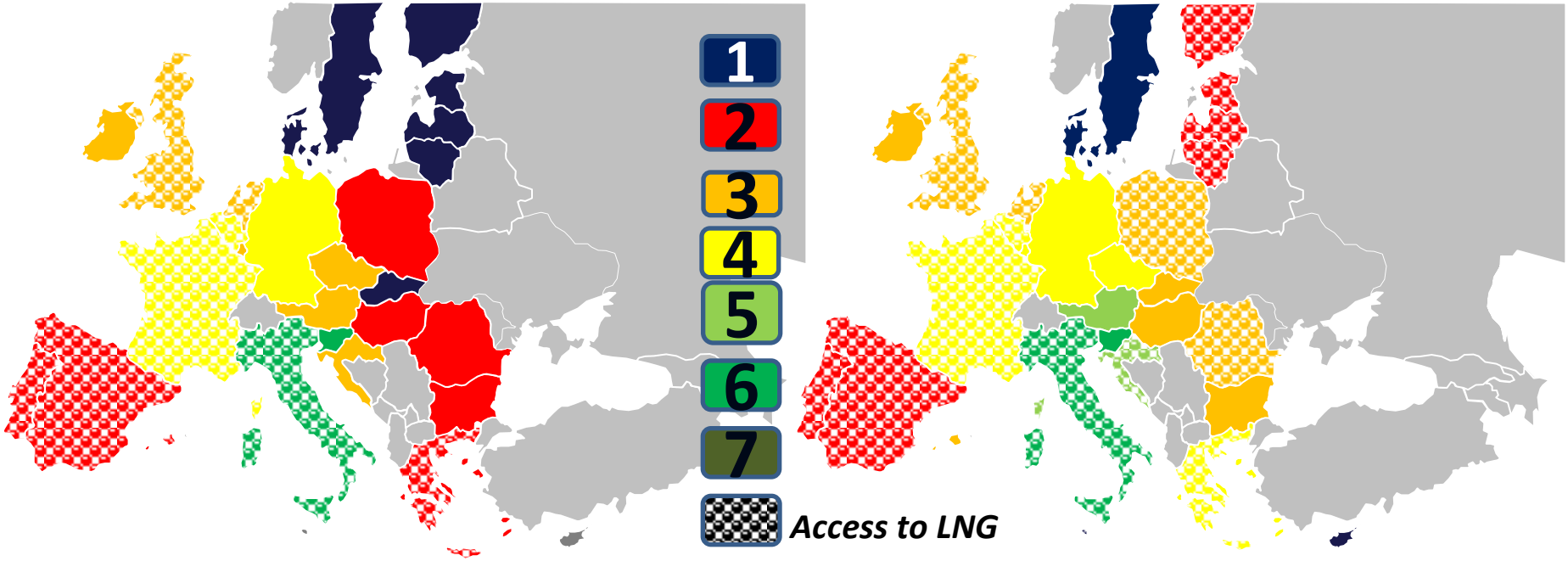
- Διαρθωτικά ταμεία 248 PCIs
- Διευρωπαϊκά δίκτυα 34 έργα κλειδιά
- Επενδυτικό Σχέδιο της ΕΕ

Έργα διασύνδεσης



Access to new resources

Number of supply sources a country may potentially access to through key infrastructure projects (at least 5% share) – before and after (2020)



Supply Sources: **Azerbaïdjan (new source), Algeria, Lybia, Norway, Russia, Union Production, LNG (one source)**
do not prejudge any commercial contracts

Source: ENTSO-G TYNDP 2013, Commission

Η Ενεργειακή Ένωση αποτελείται από πέντε αλληλένδετους πυλώνες:

Πλήρης αξιοποίηση του δυναμικό της ενεργειακής απόδοσης

- **οικολογική σήμανση & σχεδίαση**
- **κίνητρα – που θα πείσουν τους καταναλωτές να βελτιώσουν τις επιδόσεις τους στην ενεργειακή απόδοση.**

Η Ενεργειακή Ένωση αποτελείται από πέντε αλληλένδετους πυλώνες:

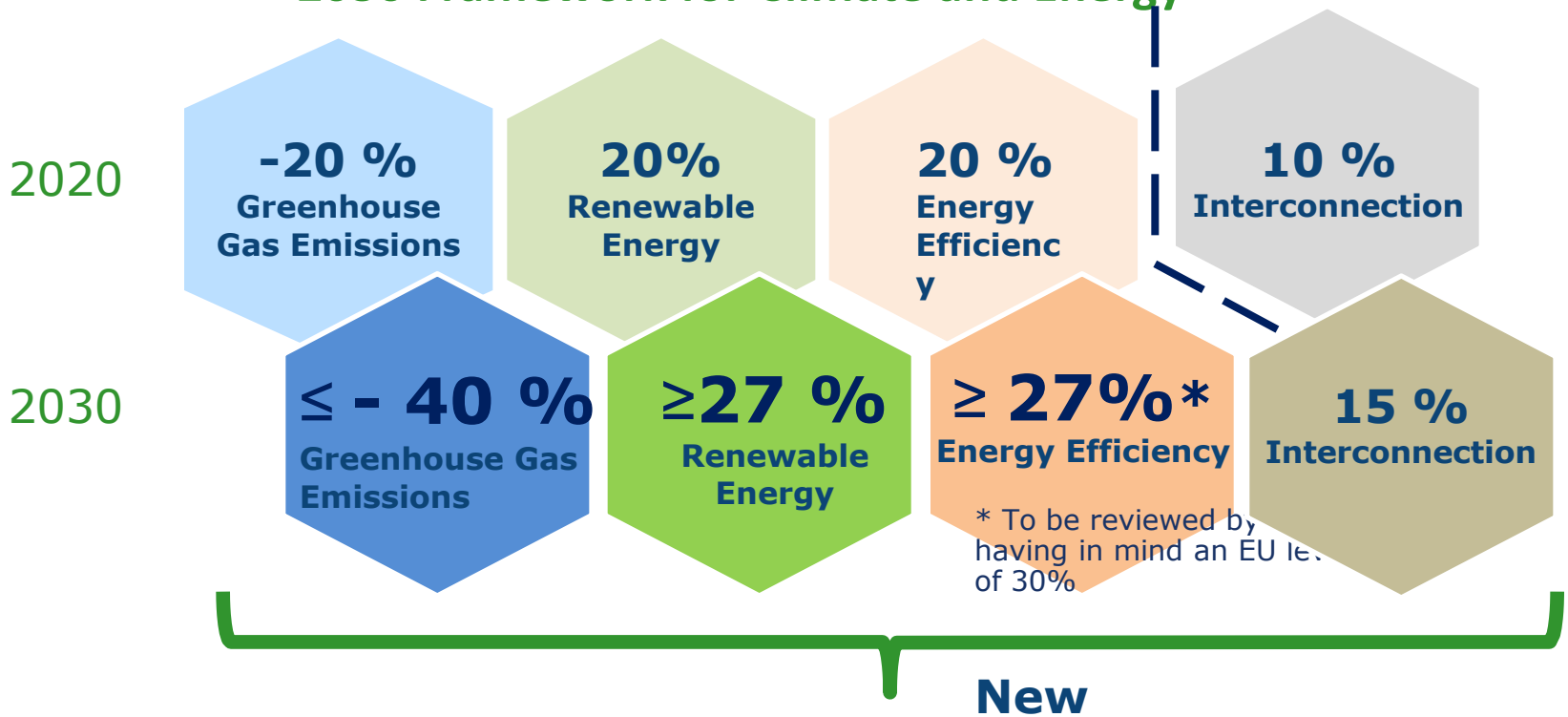
- ασφάλεια του εφοδιασμού
- εσωτερική αγορά ενέργειας
- ενεργειακή αποδοτικότητα
- Απαλλαγή του ενεργειακού μείγματος από τον άνθρακα

ενίσχυση της ηγετική θέσης στον τομέα της ενέργειας με χαμηλές εκπομπές άνθρακα & συμβολή στην παγκόσμια προσπάθεια για το κλίμα

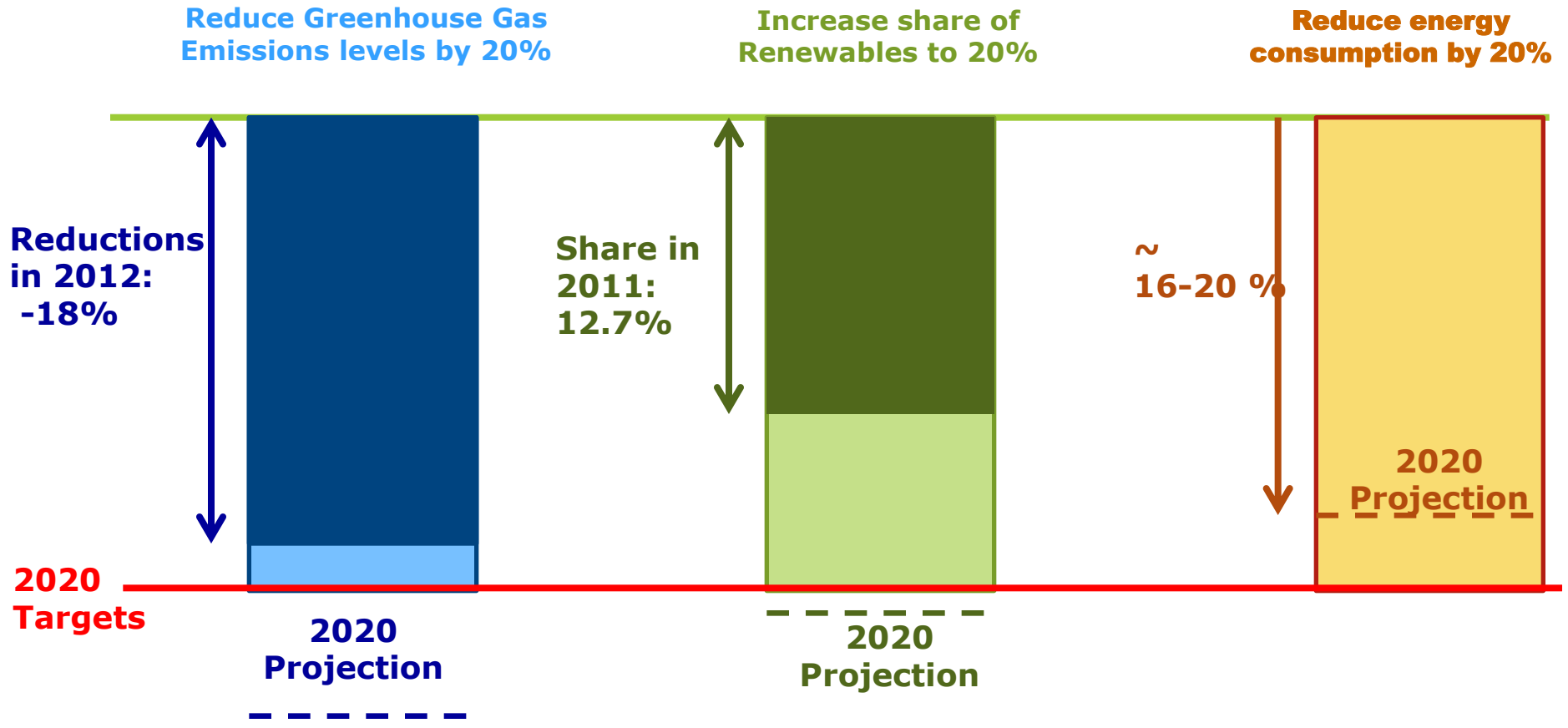
- **Στόχοι 2030**

Συμφωνημένοι στόχοι Ευρωπαικού Συμβουλίου Οκτ. 2014

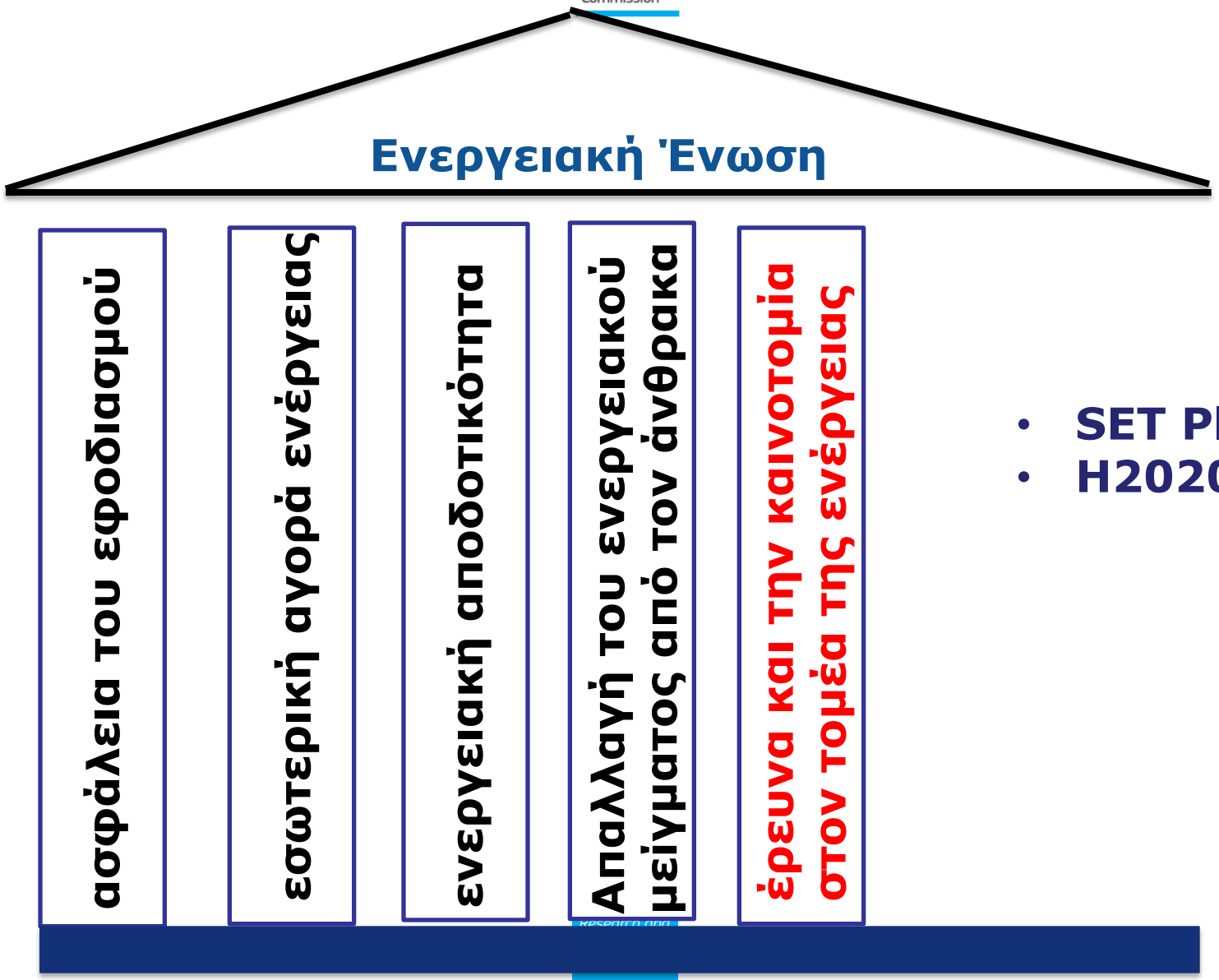
2030 Framework for Climate and Energy



2020 Climate and Energy Framework : where do we stand ?



Η Ενεργειακή Ένωση αποτελείται από πέντε αλληλένδετους πυλώνες:



- **SET Plan**
- **H2020**






SET-Plan

....in motion

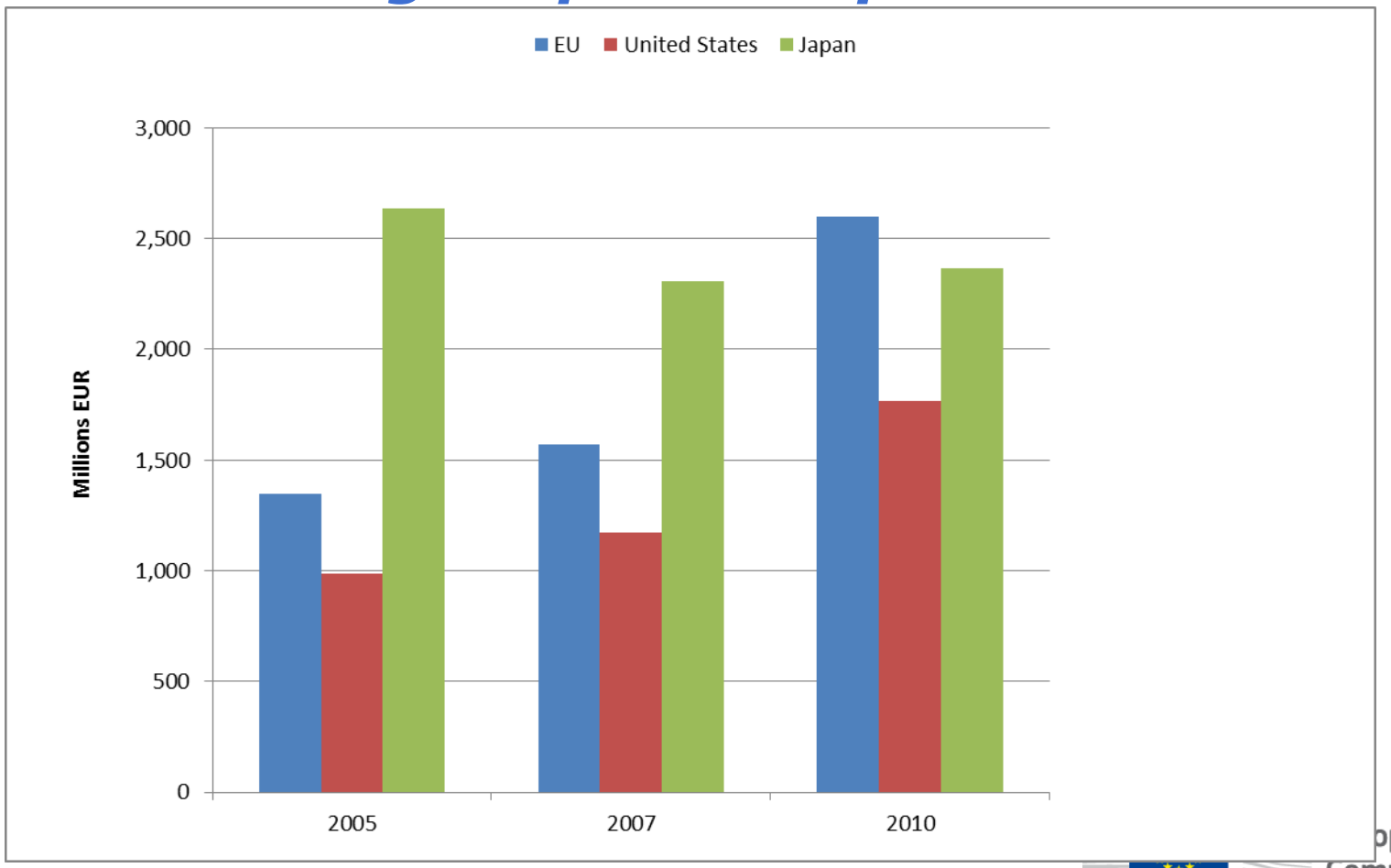



SETIS

Information For Decision-making

EU public R&D spending for energy

Increased over 2007- 2010
and caught up with Japan and USA



- *Source: JRC/SETIS*

European Commission

SET-Plan – the technology pillar of EU energy and climate change policy

Objective

To accelerate the development of a portfolio of low carbon technologies leading to their market take-off

Implementation

- **European Energy Research Alliance (EERA)**
- **European Industrial Initiatives (EIIs)**

Communication on Energy Technologies and Innovation 2 May 2013:

TOWARD AN INTEGRATED ROADMAP AND ACTION PLAN OF PUBLIC INVESTMENTS (EC AND MSS)

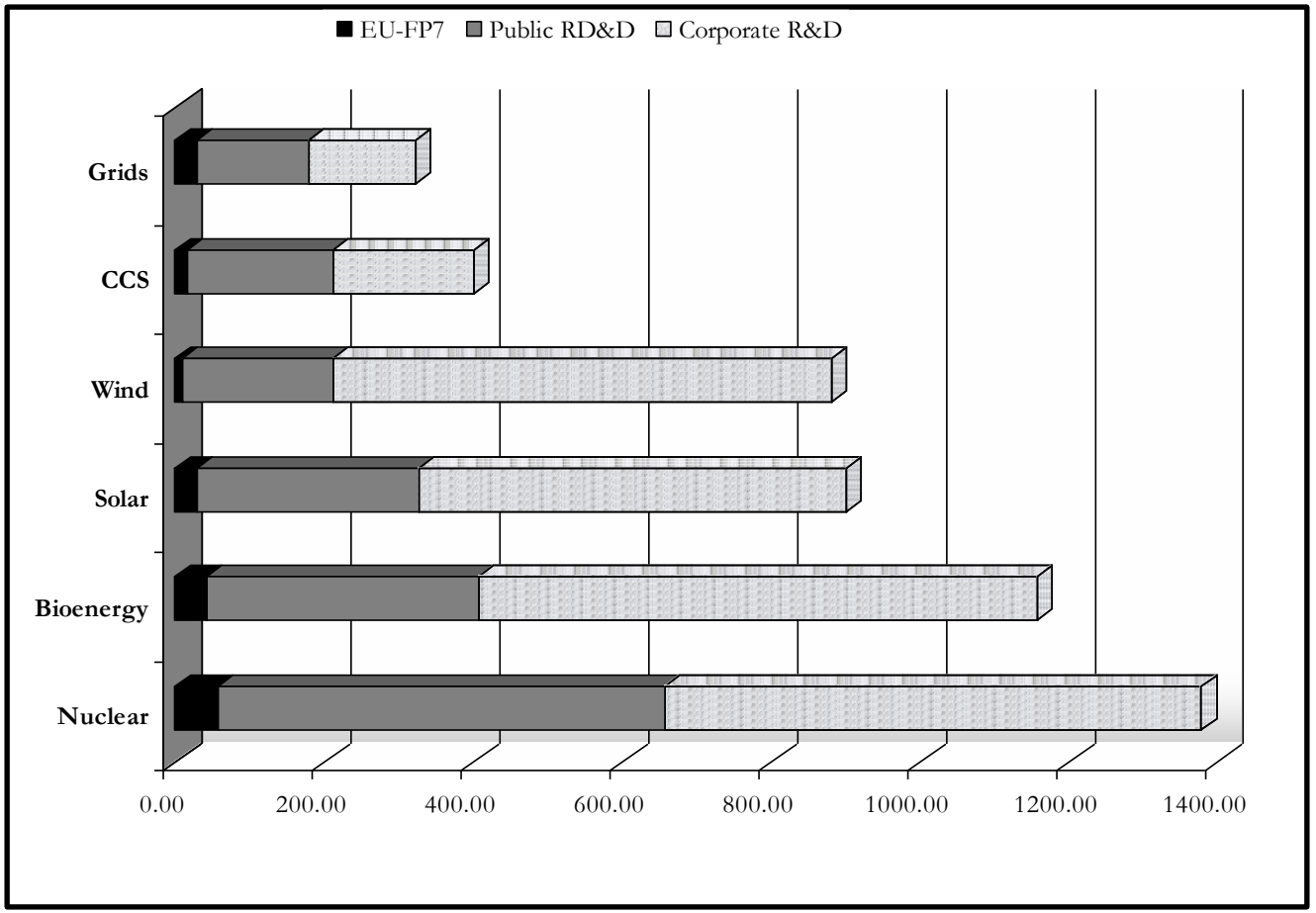
➢**SET Plan Conference 2014, Rome 10,11 December 2014**

Research & Innovation

SET Plan R&D investments in 2010

European Commission

Almost a doubling compared to 2007

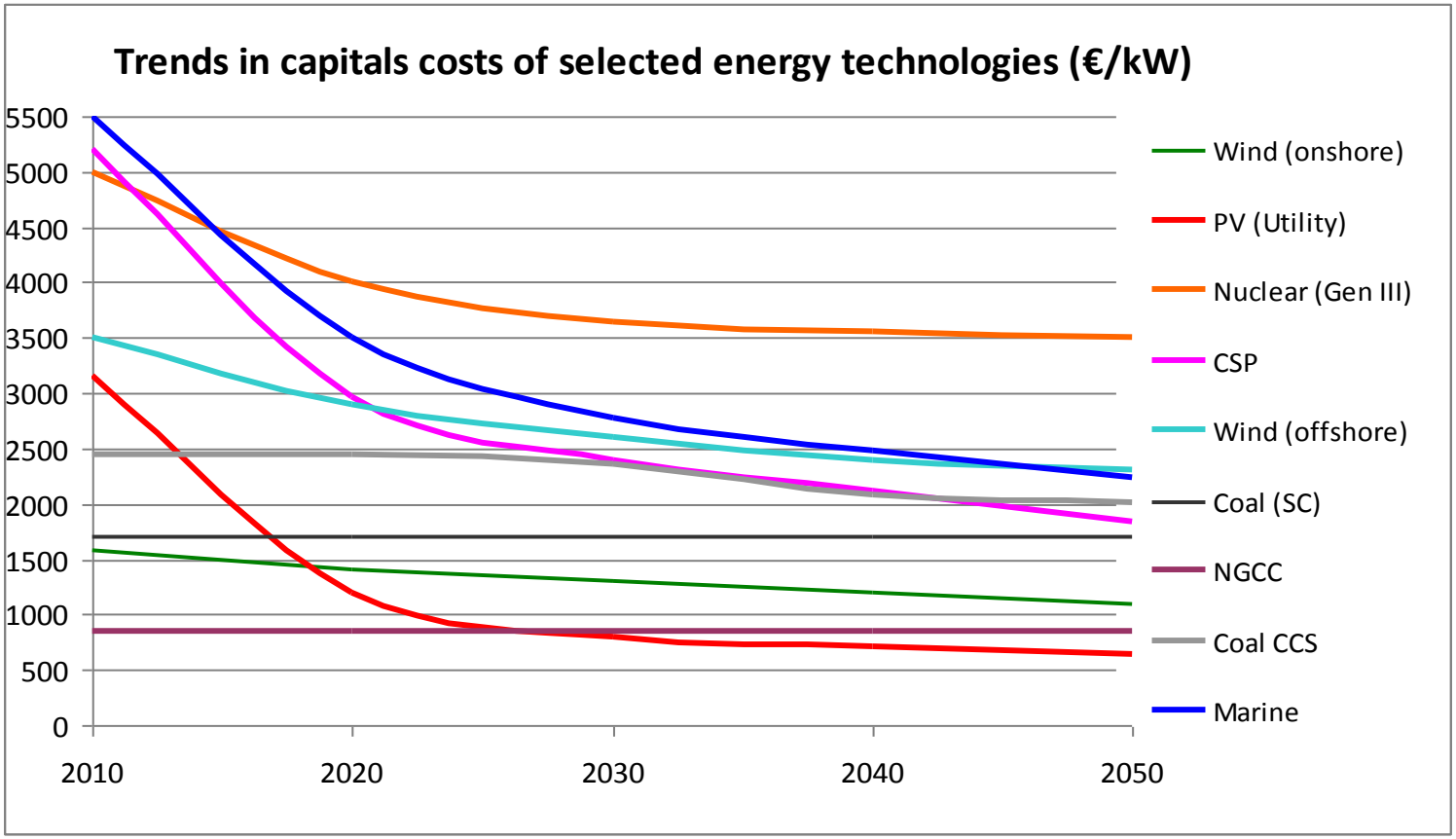


Public and corporate R&D by SET Plan technologies and source (2010) - EEPR funding is not included – Source: JRC/SETIS (COM(2013) 253 final)

Innovation potential

European Commission

Remains a significant potential for innovation to be captured



Capital cost reductions for selected energy technologies in absolute values - Source: JRC-SETIS SWD(2013)158 final

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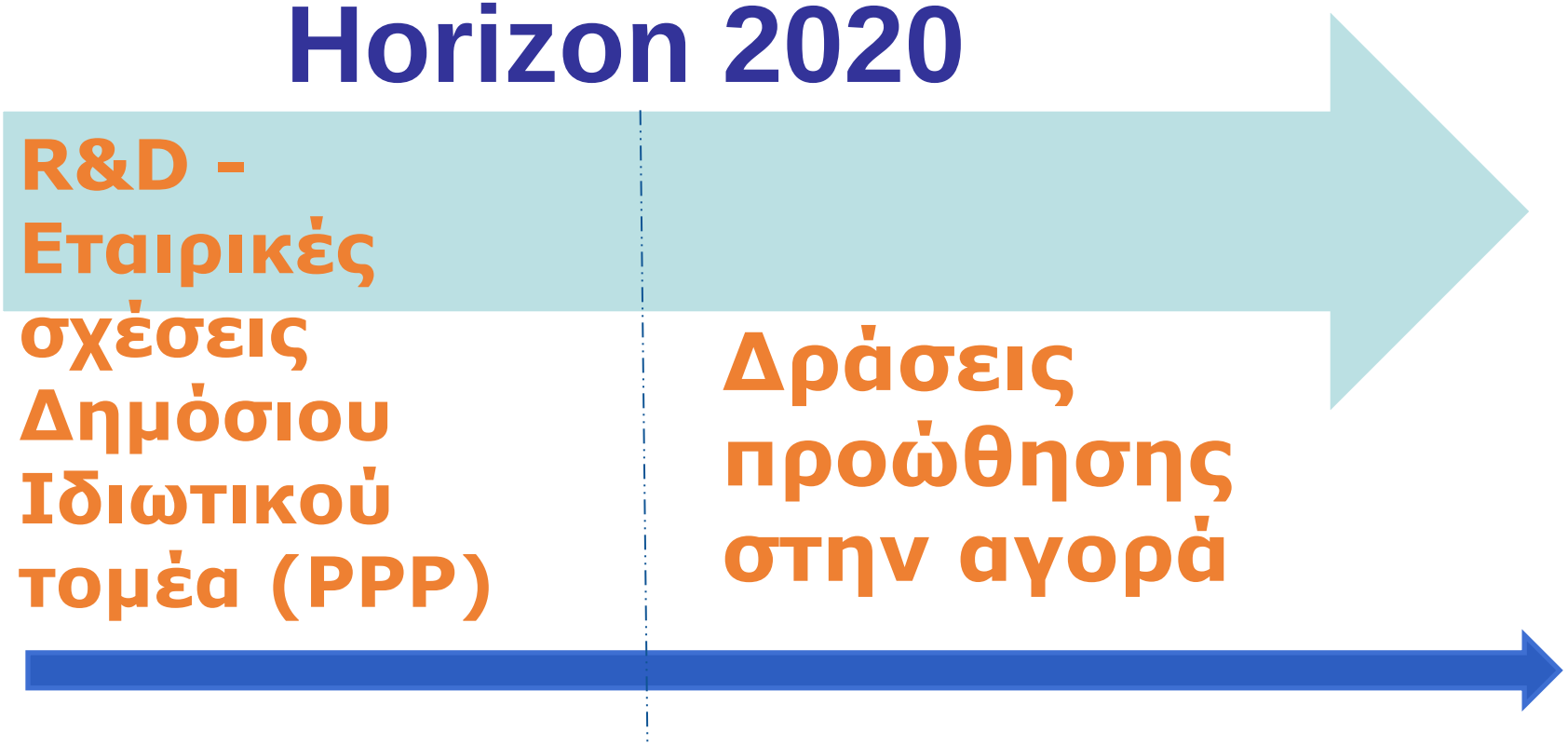
Horizon 2020



Research and Innovation

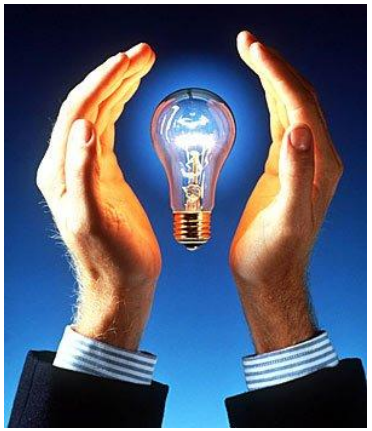
European Commission

ENERGY CHALLENGE (2014-2015)

Low Carbon Energy

Smart Cities & Communities

Energy Efficiency



SMEs and Fast Track to Innovation

Research and Innovation

GHG Emissions

Innovation fund

- **400 million allowances,** amount depending on carbon price
- Building on **existing NER300** programme for carbon capture and storage and renewables
- **New: extension of scope** to low carbon innovation in industrial sectors
- Open for **projects** in **all Member States**

Horizon 2020 - What's new

- **A single programme** bringing together three separate programmes/initiatives (former FP7, CIP, EIT)
- **Coupling research to innovation** – from research to retail, all forms of innovation
- **Focus on societal challenges** facing EU society, e.g. clean energy, health and transport
- **Simplified access**, for all companies, universities, institutes in all EU countries and beyond
- **New approach** to international cooperation (EU interests will be protected better
- Focus on **SME's (20% of total budget for societal challenges)**

Three priorities

Priority 1.
Excellent science

Why:

- **World class scientific research is the foundation of tomorrow's technologies, jobs and wellbeing**
- **Europe needs to develop, attract and retain research talent**
- **Researchers need access to the best infrastructures**

Priority 2.
Industrial leadership

Why:

- **Strategic investments in key technologies (e.g. nanotechnologies, advanced manufacturing, micro-electronics) underpin innovation across existing and emerging sectors**
- **Europe needs to attract more private investment in research and innovation**
- **Europe needs more innovative small and medium-sized enterprises (SMEs) to create growth and jobs**

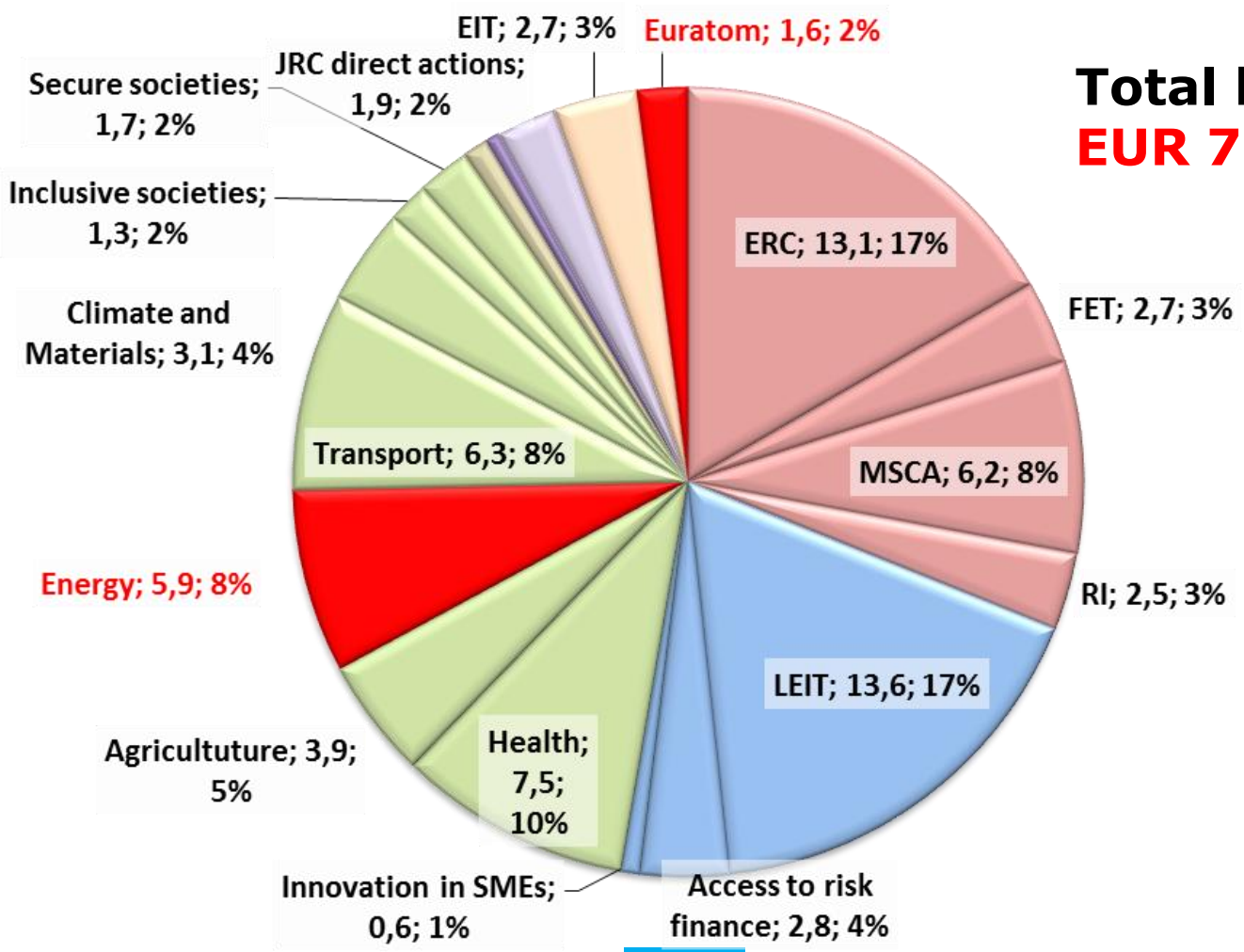
Priority 3.
Societal challenges

Why:

- **Concerns of citizens and society/EU policy objectives (climate, environment, energy, transport, etc) cannot be achieved without innovation**
- **Breakthrough solutions come from multi-disciplinary collaborations, including social sciences**
- **Promising solutions need to be tested, demonstrated and scaled up**

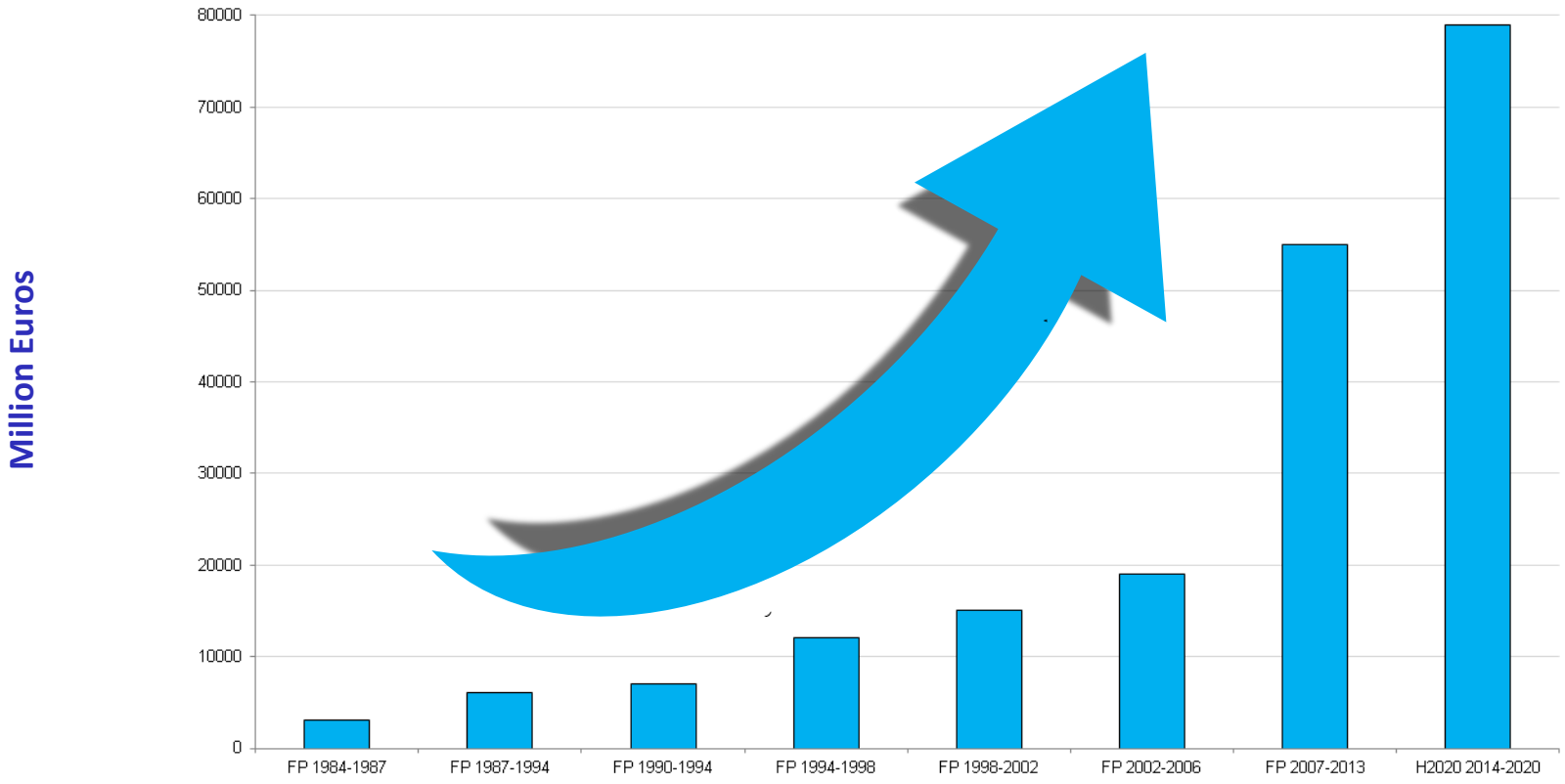
European Commission

Horizon 2020 - Budget allocation (2014-2020, bn €)



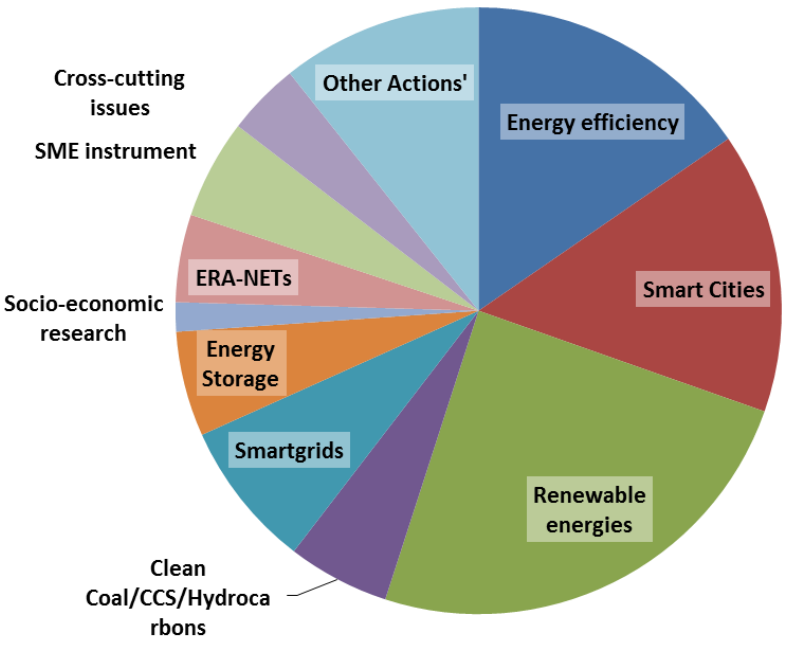
Total budget:
EUR 78,6 billion

Growth of EU Framework Programme Funding



European Commission

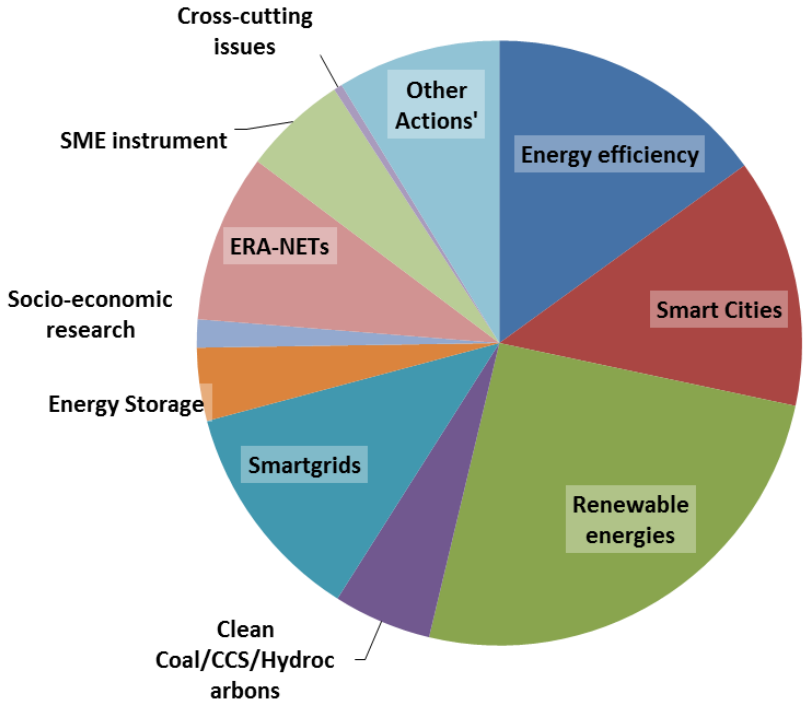
Budget allocation of the Energy WP (2014)



TOTAL budget for 2014: **EUR 607 million**

+ Contribution to JTI Fuel Cells and Hydrogen in 2014: **EUR 60 million**

Budget allocation of the Energy WP (2015)



TOTAL budget for 2015: **EUR 647 million**

+ Contribution to JTI Fuel Cells and Hydrogen in 2015: **EUR 70.5 million**

Basic principles

- **2-year work programme** to allow for better preparation of applicants
- **Challenge-based** approach
  - Definition of specific challenge to be tackled - broader scope of topics
  - Applicant can propose the most appropriate solution to the challenge
- Integration of **cross-cutting issues** (social sciences, international cooperation, etc.)
- Cross-thematic cooperation in strategic **'focus areas'**
- Covering the **full innovation cycle** (use of TRLs to specify scope of activities)

Evaluation criteria

Proposal evaluated by the experts "as it is"
and not as "what could be" = no need for negotiation

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Technology Readiness Levels

TRL 0: **Idea**. Unproven concept, no testing has been performed.

TRL 1: **Basic research.** Principles postulated and observed but no experimental proof available.

TRL 2: **Technology formulation**. Concept and application have been formulated.

TRL 3: **Applied research**. First laboratory tests completed; proof of concept.

TRL 4: **Small scale prototype** built in a laboratory environment ("ugly" prototype).

TRL 5: **Large scale prototype** tested in intended environment.

TRL 6: **Prototype system** tested in intended environment close to expected performance.

TRL 7: **Demonstration system** operating in operational environment at pre-commercial scale.

TRL 8: **First of a kind commercial system**. Manufacturing issues solved.

TRL 9: **Full commercial application**, technology available for consumers.

Research and Innovation actions *Funding rate: maximum 100%*

- Actions primarily designed to establish new knowledge including testing and validating on a small scale laboratory prototype, Limited demonstration or pilot activities to show technical feasibility in a near to operational environment.

Innovation actions - *Funding rate: maximum 70%*

- Include prototyping, testing, demonstrating, piloting, large-scale product validation and market replication,

Coordination and support actions- *Funding rate: maximum 100%*

- Actions consisting primarily of accompanying measures such as e.g. standardisation, dissemination, awareness-raising and communication, networking, coordination or support services,

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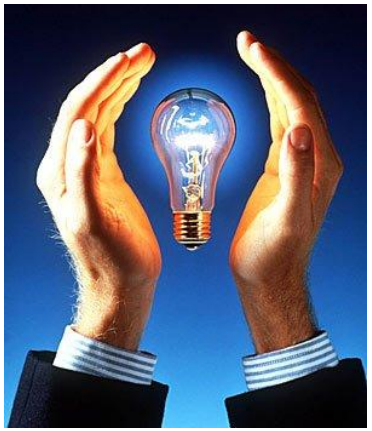
ENERGY CHALLENGE (2015)

Low Carbon Energy

Smart Cities & Communities

Energy Efficiency



SMEs and Fast Track to Innovation

Research and Innovation

European Commission

Call Competitive low-carbon energy : Deadlines

Topics*	2014		2015
LCE1, LCE2, LCE11, LCE15, LCE16	01/04/2014 (Stage 1)	23/09/2014 (Stage 2)	
LCE22	01/04/2014		
LCE4, LCE7, LCE8, LCE10, LCE14, LCE18	07/05/2014		
LCE2, LCE11, LCE15, LCE17	03/09/2014 (Stage 1)		05/05/2015 (Stage 2)
LCE3, LCE12, LCE19, LCE20	10/09/2014		
LCE3, LCE12, LCE19, LCE21, LCE23 LCE4, LCE5, LCE6, LCE9, LCE14, LCE18			05/05/2015

*** Corresponds to the topic code in the work-programme**

Competitive Low-Carbon Energy

Renewable electricity and heating/cooling

Support for

- **Research activities** to develop the next generation technologies (including photovoltaics, concentrated solar power, wind energy, ocean energy, hydropower, deep geothermal energy and renewable heating and cooling) (LCE2) TRL 3-4 > 4-5, RIA
- **Demonstration** of renewable electricity and heating/cooling technologies (including photovoltaics, concentrated solar power, wind energy, ocean energy, deep geothermal energy and renewable heating and cooling) (LCE3) TRL 5-6 > 6-7, IA
- Accompanying **market uptake measures** removing non-technological market barriers for existing and emerging renewable electricity, heating and cooling technologies (LCE4) TRL 7-9, CSA

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Competitive Low-Carbon Energy

Modernising the European Electricity Grid

Support for

- Demonstration of innovative components for **meshed off-shore grids** linking off-shore energy generation resources with on-shore grids in different countries (LCE5)
  TRL 6-7 > 8, IA, RIA
- Demonstration of integration of the **transmission system** and the **wholesale market** (LCE6), IA, RIA
- Integration and validation of solutions for the main challenges of the **distribution grid** and **retail market** (LCE7)
- Supporting the community in deploying a **common framework** for measuring the **energy and environmental efficiency of the ICT-sector** (LCE23)

Competitive Low-Carbon Energy

Providing the energy system with flexibility through enhanced energy storage technologies

Support for

- Advancing **local/small-scale energy storage** and their integration into the distribution grid and at building/house level (LCE8)
- Further develop **large scale energy storage** and reduce the barriers for new storage concepts (LCE9) 5 > 6-7, IA
- Developing the **next generation** of energy storage technologies (LCE10)

Competitive Low-Carbon Energy

Sustainable biofuels and alternative fuels for the European transport fuel mix

Support for

- **Research activities** on next generation technologies for biofuels and sustainable alternative fuels (LCE11) TRL 3-4 > 4-5, RIA
- **Demonstration activities** for advanced biofuel technologies (LCE12), TRL 5-7>6-7, IA LCE13 cooperation with Brazil)
- Accompanying **market uptake measures** for removing non-technological market barriers for existing and emerging sustainable bioenergy (LCE14) TRL 7-9, CSA

RES / biofuels - Budget

The share of the EU contribution benefitting **one single technology area**:

1) from topics **LCE 2 and LCE 11**, research & innovation actions in the field of renewables (electricity, heat, cooling and fuels), shall **not exceed 25% of the total budget** dedicated to these topics,
2) from topics **LCE 3 and LCE 12**, innovation actions in the field of renewables (electricity, heat, cooling and fuels), shall **not exceed 33% of the total budget** dedicated to these topics.

Competitive Low-Carbon Energy

Enabling the decarbonisation of the use of fossil fuels during the transition to a low-carbon economy

Support for

- Enabling decarbonisation of the fossil fuel-based power sector and energy intensive industry through **CCS**, including geological CO2 storage (LCE15) TRL 4-5 > 6, RIA
- Understanding, preventing and mitigating the potential environmental impacts and risks of **shale gas** exploration and exploitation (LCE16)
- Improving **operational flexibility** of efficient fossil fuel power plants to facilitate integration renewables with variable output (LCE17), TRL 3 > 4-6, RIA

Competitive Low-Carbon Energy

Social, environmental and economic aspects of the energy system

Support for

- Understanding the role of the **human factor** in the energy transition, including support for education and training networks (LCE20)
- **Modelling** and analysing the energy system, its transformation and impacts (LCE21)

Competitive Low-Carbon Energy

Cross-cutting issues

Support for

- *Developing early stage **transformative energy technologies** or enabling technologies (LCE1)*
- **Joint Actions** between Member States on demonstration and validation of innovative energy solutions (open for all technology areas included in this and the Smart Cities and Communities call) (LCE18)
- **Coordination** of national R&D activities (open for all technology areas included in this call) (LCE19)
- *Fostering trans-national co-operation between **National Contact Points (NCPs)** for the Energy Challenge (LCE22)*

Call Competitive low-carbon energy: Budget (M€)

Topics*	Short-hand Description	2014	2015
LCE1	New knoweldge & technologies	**20**	
LCE2, LCE11	RES/Fuels – Research	**60**	**60**
LCE3, LCE12	RES/Fuels – Demonstration	**73**	**80**
LCE4, LCE14	RES/Fuels – Market uptake	**20**	**20**
LCE5, LCE6, LCE7	Smart grids	**60**	**71,48**
LCE8, LCE9, LCE10	Energy Storage	**44,15**	**36,34**
LCE15, LCE16, LCE17	Fossil Fuels (CCS & other)	**33**	**35**
LCE18	ERANET	**34,25**	**61,25**
LCE19	Coordination of national programmes	**3**	**3**
LCE20, LCE21	Socio-economic research	**10,5**	**10**
LCE22	NCP Network	**1,5**	
LCE23			**0,4**

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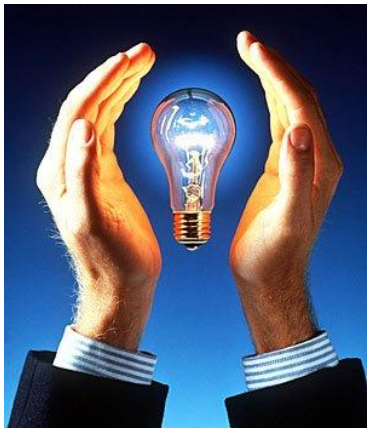
ENERGY CHALLENGE (2014-2015)

Low Carbon Energy

Smart Cities & Communities

Energy Efficiency



SMEs and Fast Track to Innovation

SMEs and fast track to innovation for Energy

Support for

- Stimulating the **innovation potential of SMEs** for a low carbon and efficient energy system (SME instrument) (SIE1)
  - Bottom-up approach
  - Continuously open call
  - Only SMEs eligible for participation
  - 3 Phases: feasibility study, innovation project, commercialisation phase
- Fast track to Innovation (SIE2)

Call SIE: Cut-Off Dates
Topic SIE1 = SME Instruments
Open for submission on 01/03/2014

	2014	2015
Phase 1	18/06/2014 24/09/2014 17/12/2014	18/03/2015 17/06/2015 17/09/2015 16/12/2015
Phase 2	09/10/2014 17/12/2014	18/03/2015 17/06/2015 17/09/2015 16/12/2015

Budget	2014	2015
Phase 1	3,40	3,48
Phase 2	29,89	30,58
Mentoring & coaching and Phase 3	0,68	0,70
Budget	33,95M€	34,76M€

European Commission

ENERGY CHALLENGE (2014-2015)

Low Carbon Energy

Smart Cities & Communities

Energy Efficiency

SMEs and Fast Track to Innovation

Energy Efficiency Call (1)

Buildings and Consumers

Research and demonstration activities targeting:

- **Prefabricated modules** for renovation of building (EE1)
- **Buildings design** for new buildings (EE2)
- Deep renovation of **historic buildings** (EE3)
- **Demand response** in blocks of buildings (EE6)
- Developing new **ICT-based solutions** for improving energy efficiency (EE11)
- **Socioeconomic research** on energy efficiency (EE12)

Energy Efficiency Call (2)

Buildings and Consumers

Accompanying support actions aiming at:

- Improving **skills** of construction workforce (EE4)
- Improve market conditions and **remove barriers for renovation** (EE5)
- **Building capacities** of public authorities for sustainable energy policies and plans (EE7)
- Helping public **procurement authorities** to purchase best available sustainable energy products (EE8)
- **Empowering stakeholders** to assist public authorities in sustainable energy policies and measures (EE9)
- Changing **consumer behaviour** (EE10)

Energy Efficiency Call (3)

Heating and Cooling

- Improving technologies for **district heating and cooling** (EE13)
- Accompanying **support measures** for removing non-technological market barriers for efficient heating and cooling solutions (EE14)

Energy Efficiency Call (4)

Industry and Products

Demonstration actions

- New technologies for recovering **waste heat** from industrial processes and transforming it into useful energy forms (EE18)

Accompanying support actions aiming at

- effective **implementation** of ambitious EU product efficiency **legislation** (EE15)
- Removing market barriers for energy efficiency in industry through **organisational innovations** (EE16)
- Helping **large buyer groups** to demand energy products with high performance levels (EE17)

Energy Efficiency Call (5)

Finance for Sustainable Energy

Support Actions aiming at

- Improving financeability of sustainable energy investments by stimulating **new financial products** and **business models** (EE19)
- Supporting **project developers** to set up innovative bankable sustainable energy investment schemes and projects (EE20)
- **Rolling-out** innovative energy services and financial schemes for sustainable energy (EE21)

Call Energy Efficiency: Budget

Topics*	Short-hand Description	2014 (M€)	2015 (M€)
EE1, EE2	EeB PPP: Pre-fabricated modules and New Energy Efficient Buildings	**8**	**9**
EE3	EeB PPP: Historic Buildings	**5**	
EE18	SPIRE Topic PPP: Heat recovery	**8**	**8**
EE6, EE12, EE13	Demand response in building blocks, socio- economic research and technology for DHC	**8,5**	**13,35**
EE11	ICT for energy efficiency	**8,5**	**8,5**
EE4, EE5, EE7, EE8, EE9, EE10, EE14, EE15, EE16, EE17	Market uptake in Buildings, Consumers, Industry and Products; Empowering public authorities and its stakeholders	**34,5**	**32,8**
EE19, EE20, EE21	Finance for sustainable energy including project development assistance	**25**	**26,5**

Call Energy Efficiency: Deadlines

Topics*	2014	2015
Implemented via PPP EeB or SPIRE (EE1, EE3, EE18)	20/03/2014	
All other topics (EE4, EE5, EE7, EE8, EE9, EE10, EE11, EE12, EE13, EE14, EE15, EE16, EE19, EE20, EE21)	05/06/2014	
Implemented via PPP EeB or SPIRE (EE2, EE18)		**04/02/2015**
All other topics (EE5, EE6, EE7, EE9, EE10, EE11, EE13, EE14, EE15, EE16, EE17, EE19, EE20, EE21)		04/06/2015

*** Corresponds to the topic code in the work-programme**

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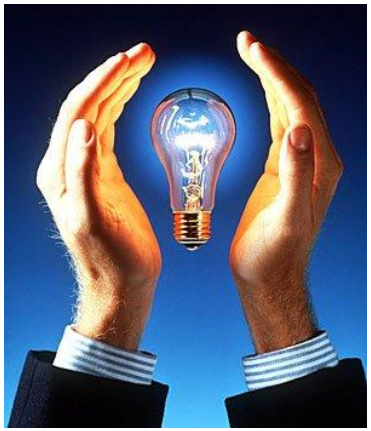
ENERGY CHALLENGE (2014-2015)

Low Carbon Energy

Smart Cities & Communities

Energy Efficiency



SMEs and Fast Track to Innovation

Smart Cities and Communities

Support for demonstration of:

- **Large scale demonstration** of **integrated solutions** between the energy, transport, and ICT sectors through partnerships between municipalities and industries (SCC1)
- Accompanying support measures focussing on:
  - Developing a framework for common data and performance measurements (SCC2)
  - Developing system standards for smart cities and communities solutions (SCC3)
  - Establishing networks of public procurers in local administrations on smart city solutions (SCC4)
  - Prize competition for smart solutions (SCC5)

Smart cities and communities
Lighgthouse projects (SCC1):

- ***innovative lighthouse projects***
- ***(Neary zero) or Low energy districts***
- ***Integrated infrastructures -***
- ***Sustainable urban mobility***

- ***high replication potential***

- ***exhaustive monitoring of operation/performance/efficiency***

- ***cost effective measures***

- ***communication/exchange of information***
  Between users / inhabitants
  Decision makers / city authorities

2014 SCC1 – lighthouse projects

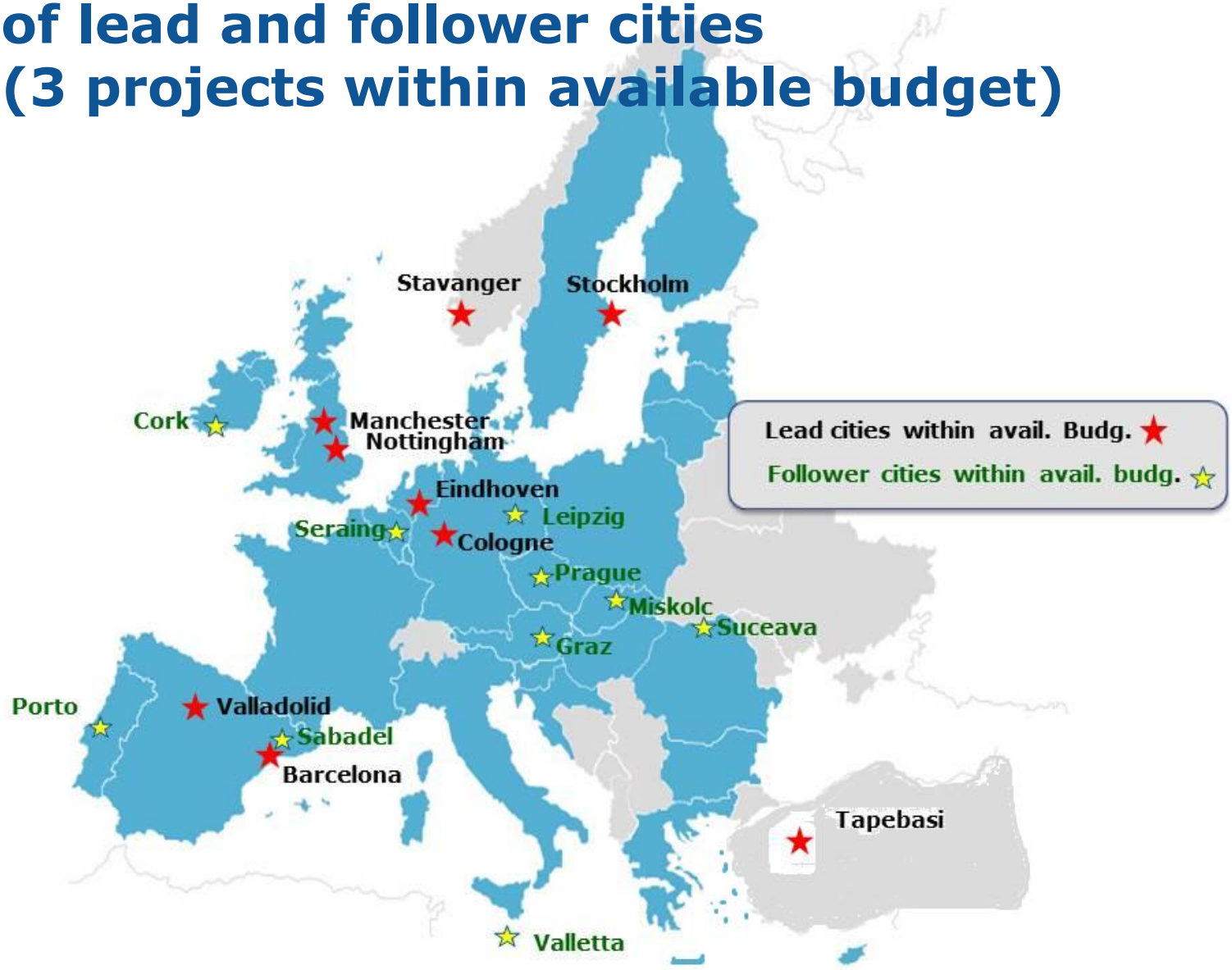
19 proposals
529 *participants from* ***32*** *countries*
(27 MS, 2 AS, 3 Third Countries)

46 *lead cities from* ***17*** *countries*
53 *follower cities from* ***28*** *countries*

First three ranked proposals (within available budget)
9 *lead cities from* ***7*** *countries*
10 *follower cities from* ***10*** *countries*

European Commission

SCC1 Geographical distribution of lead and follower cities (3 projects within available budget)



Call Smart cities & communities: Deadlines

Topics*	2014	2015
SCC1	07/05/2014	
SCC2, SCC4	07/05/2014	
SCC1		05/05/2014
SCC3		05/05/2014

*** Corresponds to the topic code in the work-programme**

Call Smart cities & communities: Budget

Topics*	Short-hand Description	2014 (M€)	2015 (M€)
SCC1	Large-scale demonstration	**90,32**	**106,18**
SCC2	Developping framework for monitoring	**1**	
SCC3	Developping system standard		**1**
SCC4	Public procurers networks	**1**	

Υπ' όψιν

- ***Προετοιμασία όχι διαπραγμάτευση συμβάσεων***
- ***Χρόνος πληροφόρησης συμμετεχόντων***
- ***Δράσεις διάδοσης***

Further Information

- **Information Day in Brussels** (presentations, videos): http://ec.europa.eu/research/conferences/2013/energy_infoday/infoday_energy_en.htm
- **Information Day (only on SCC) 12/2/2015 in Brussels**

http://ec.europa.eu/research/index.cfm?pg=events&eventcode=A2BB2E69-0D3D-13D9-D927C5762E197D63.

- **Horizon 2020 Helpdesk - Research Enquiry Service:**

  http://ec.europa.eu/research/index.cfm?pg=enquiries
- **National Contact Points (NCPs):**

  http://ec.europa.eu/research/participants/portal/desktop/en/support/national_contact_points.html
- **Enterprise Europe Network:**

  http://een.ec.europa.eu/about/branches
- **Participant Portal:**

  http://ec.europa.eu/research/participants/portal/desktop/en/home.html

Work programme 2014-15

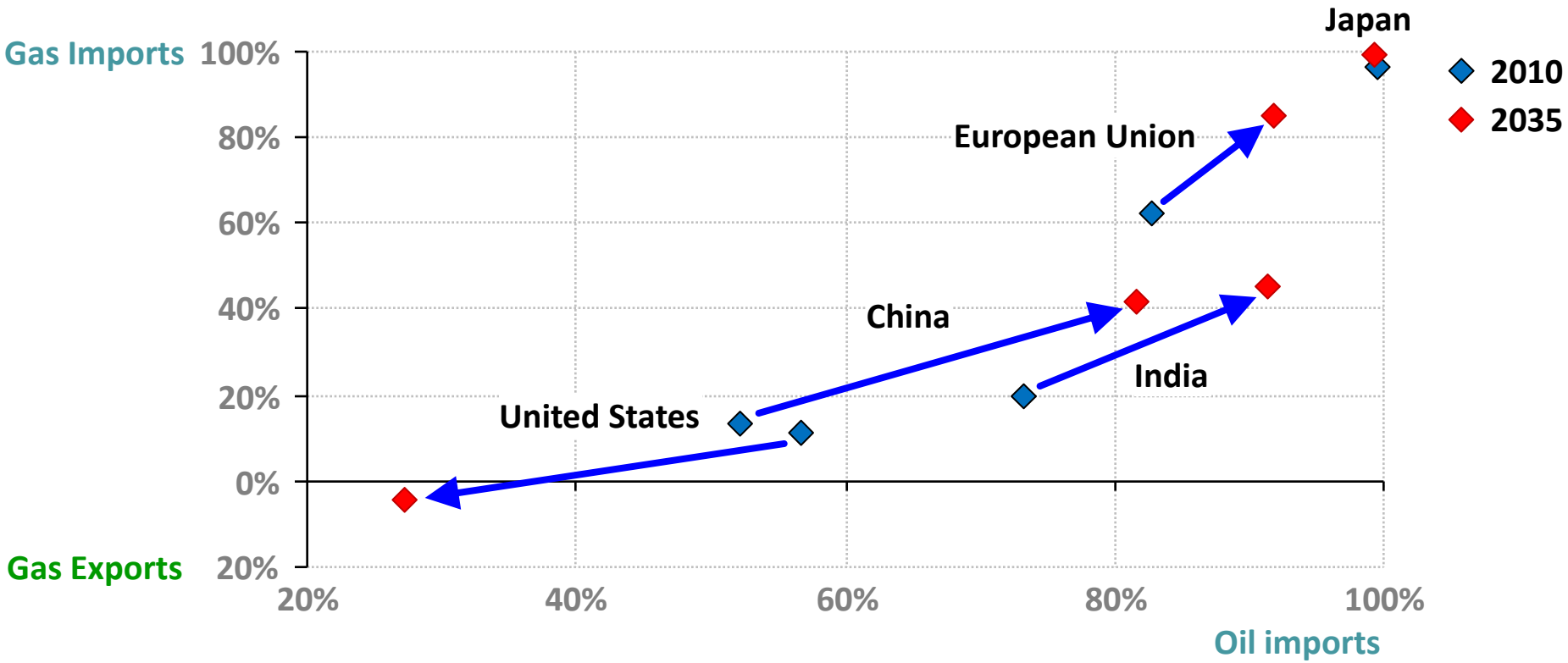
http://ec.europa.eu/research/horizon2020/pdf/work-programmes/secure_clean_and_efficient_energy_draft_work_programme.pdf

Thank you for your attention!

Find out more:
www.ec.europa/research/horizon2020

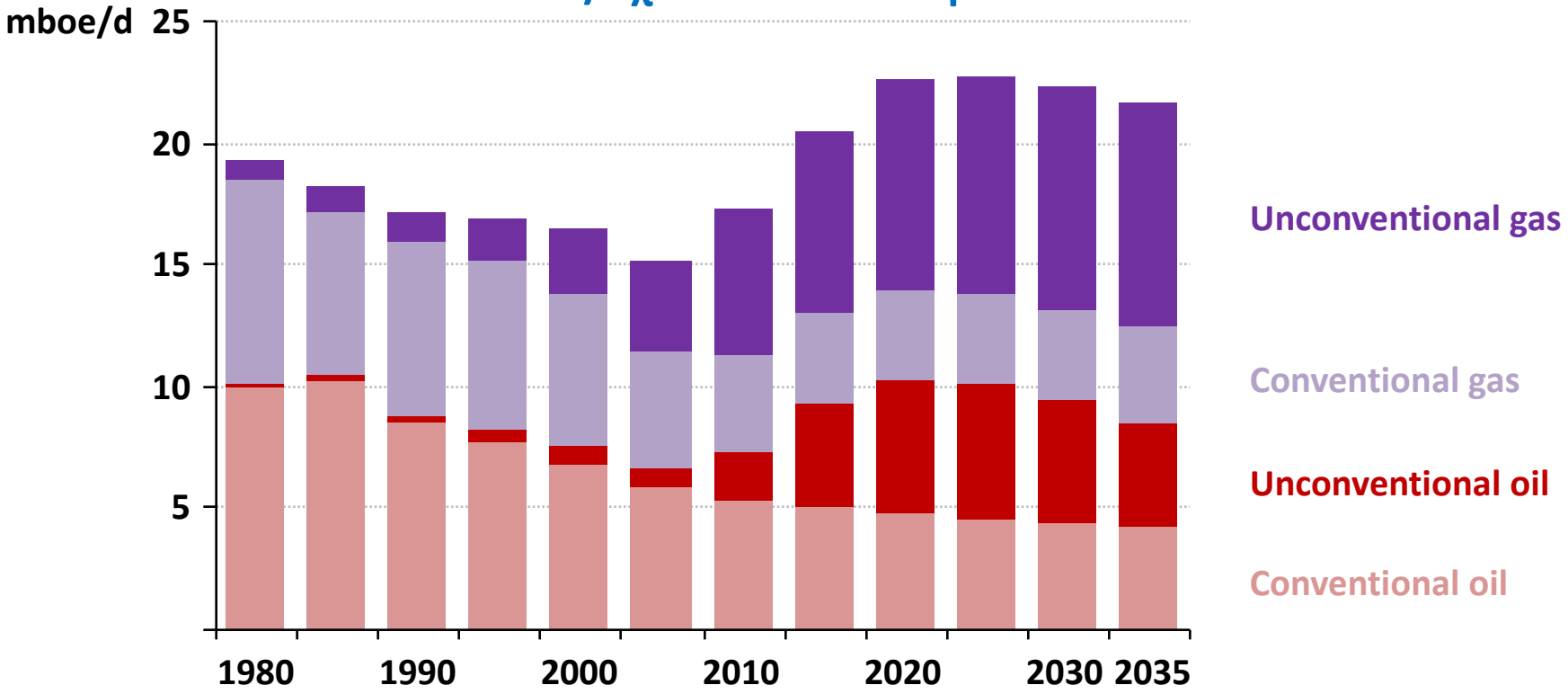
HORIZON 2020

Καθαρή εξαρτηση απο εισαγωγές πετρελαιου και φυσικού αερίου



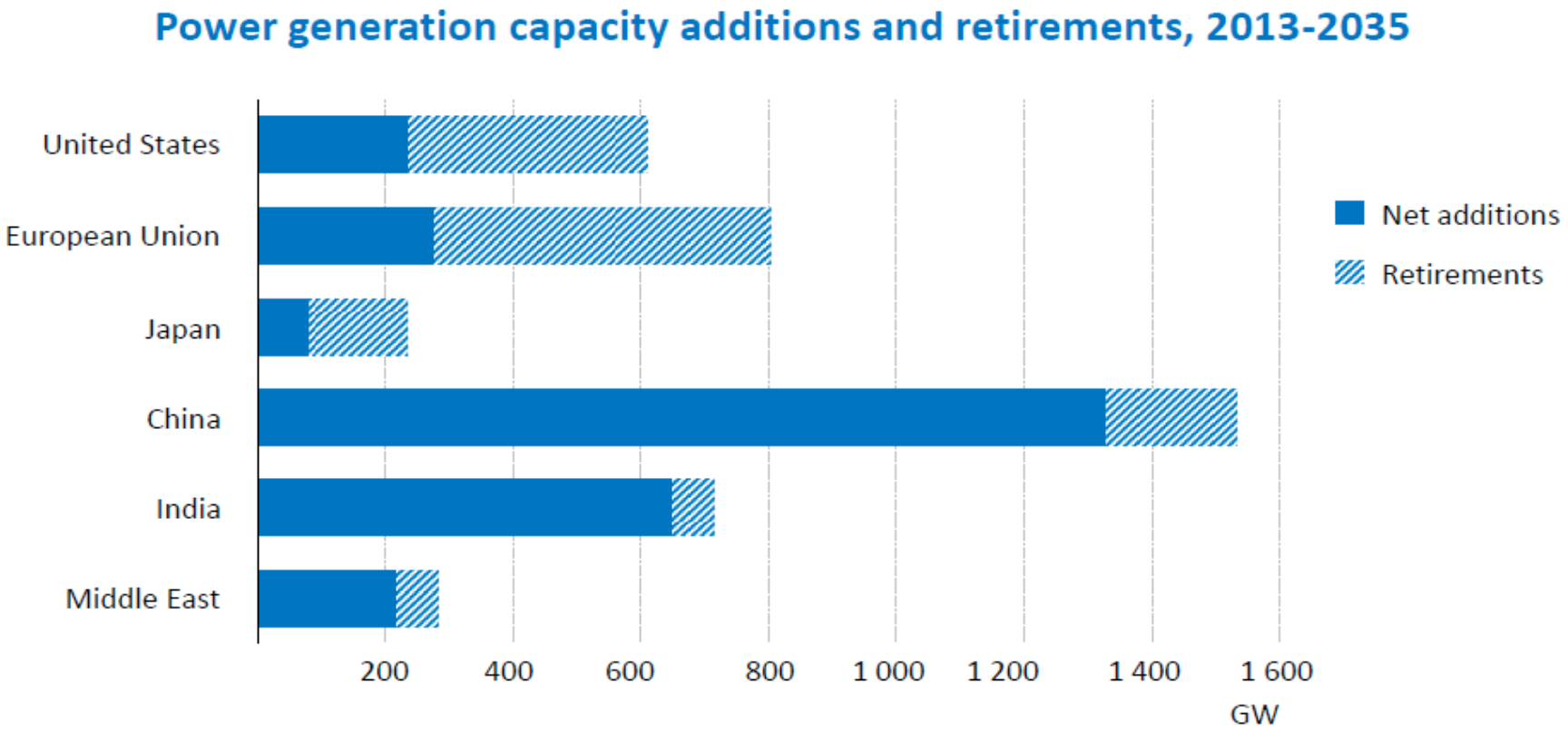
While dependence on imported oil & gas rises in many countries, the United States swims against the tide

ΗΠΑ παραγωγή πετρελαίου και φυσικού αερίου /σχιστολιθικού αερίου



Η συγκεντρωση πραγωγής μη συμβατικών πηγών ενεργειας έχει επίδραση και έξω απο τις ΗΠΑ

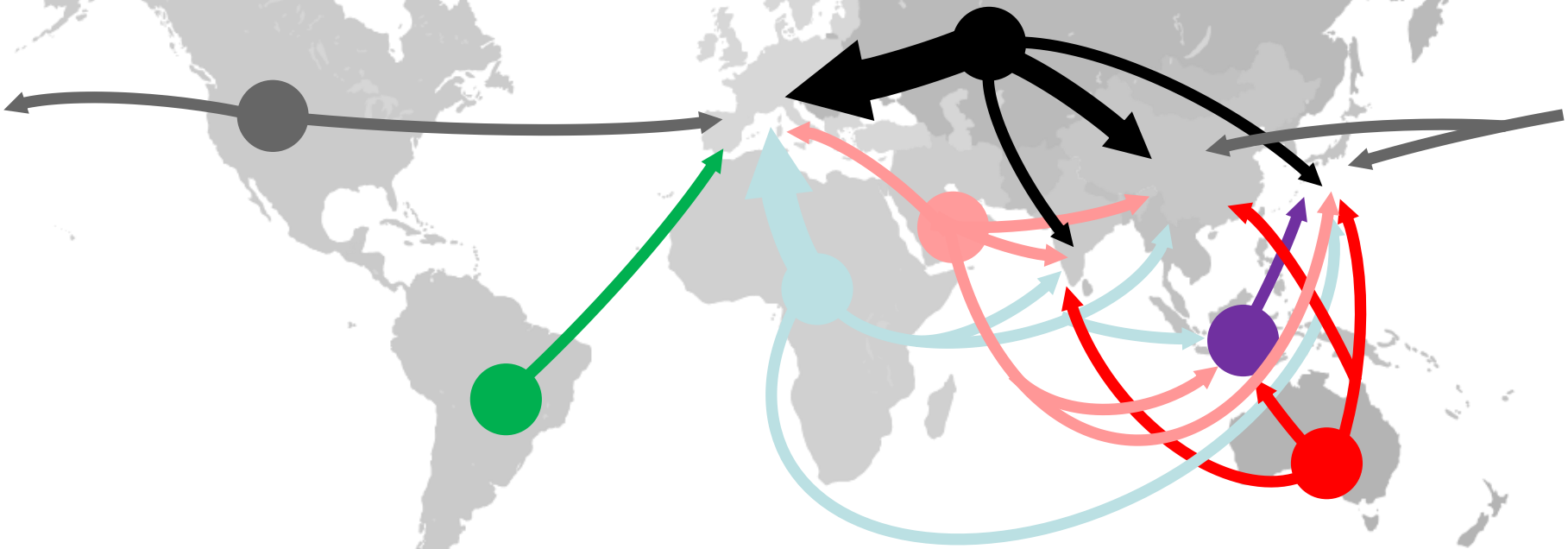
Εγκαταστημένη ισχύς



China & India together build almost 40% of the world's new capacity; 60% of capacity additions in the OECD replace retired plants

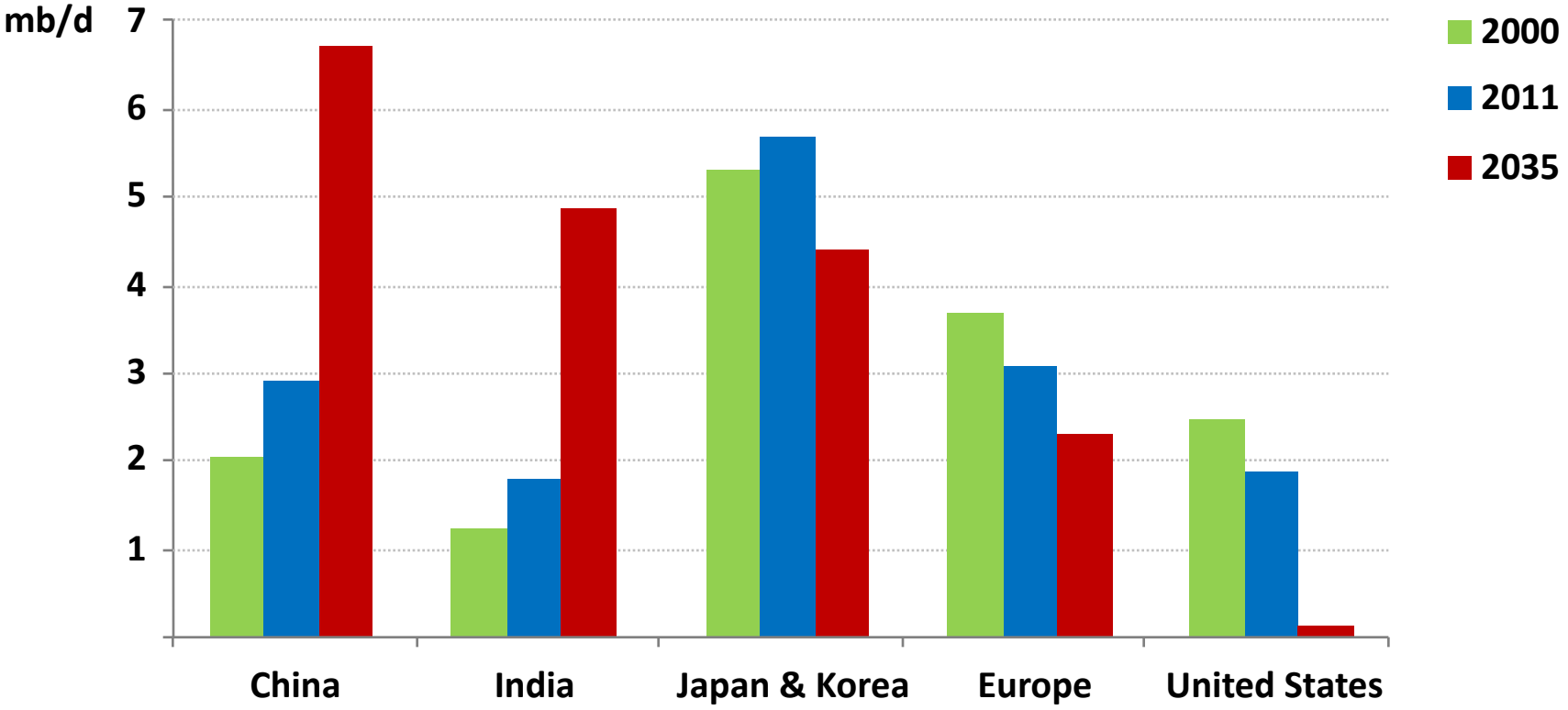
OECD/IEA 2013

Διεθνής αγοράς φυσικού αερίου - Κύριες ροές , 2035



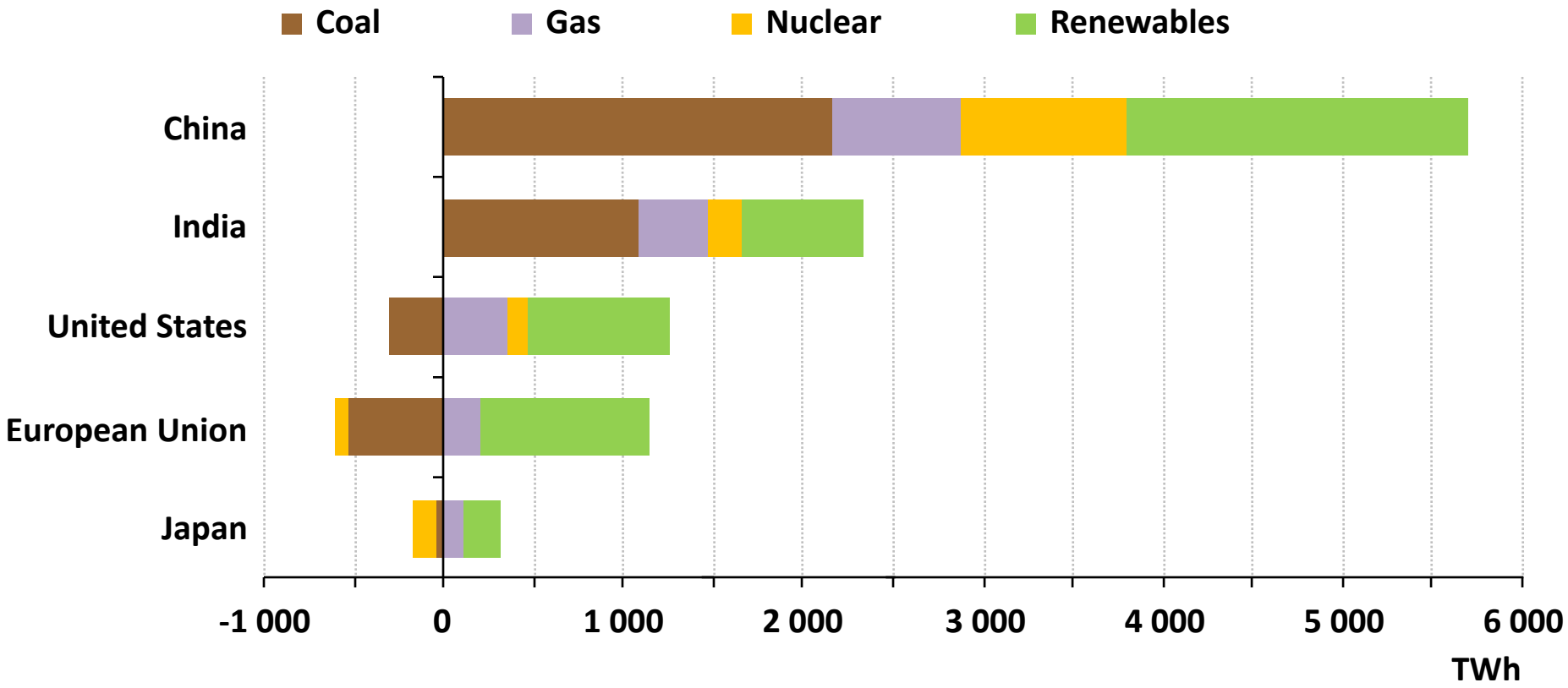
Rising supplies of unconventional gas & LNG help to diversify trade flows, putting pressure on conventional gas suppliers & oil-linked pricing mechanisms

Εξαγωγές πετρελαίου Μέσης Ανατολής ανά προορισμό



By 2035, almost 90% of Middle Eastern oil exports go to Asia; North America's emergence as a net exporter accelerates the eastward shift in trade

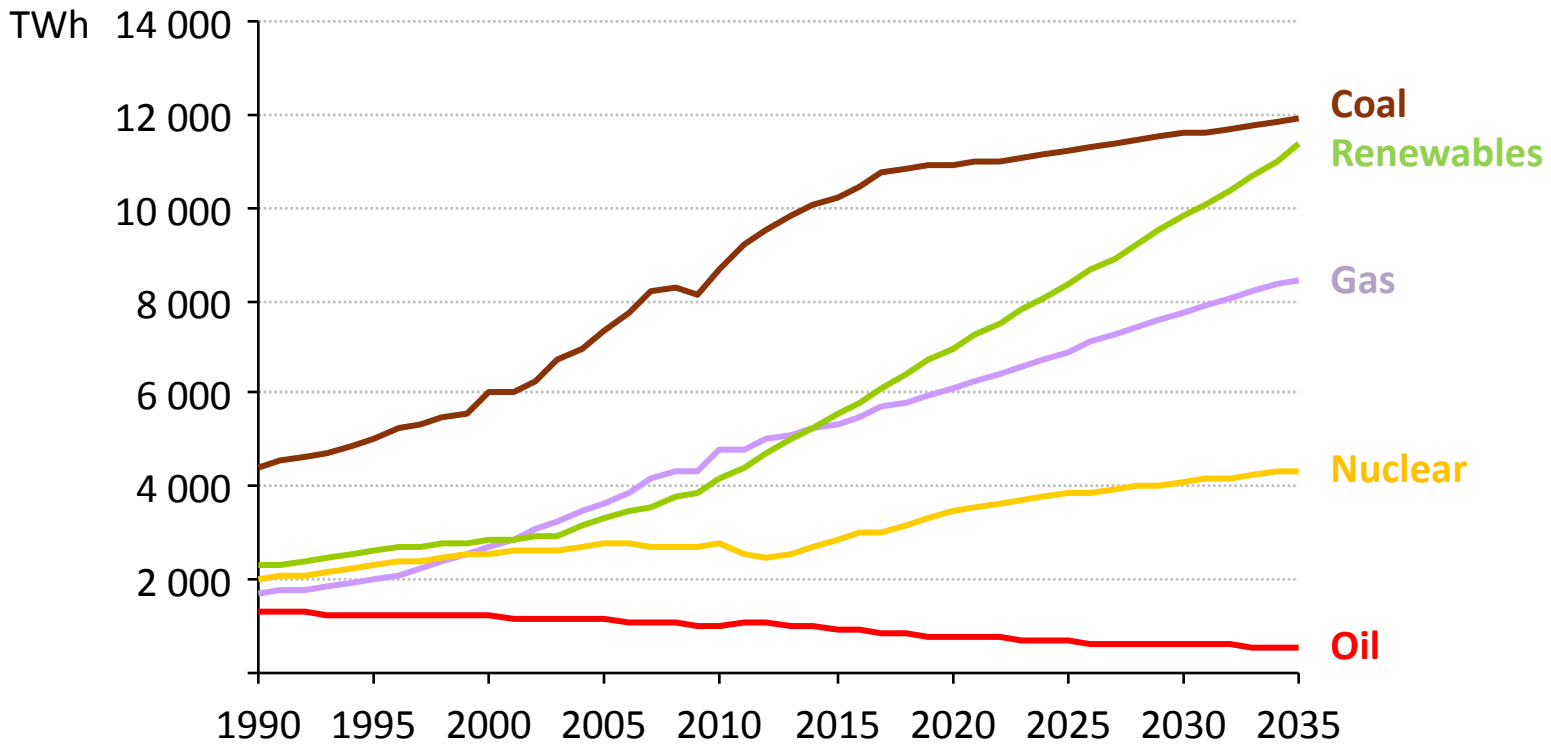
Αλλαγές στον τρόπο παραγωγής ενεργειας, 2010-2035



The need for electricity in emerging economies drives a 70% increase in worldwide demand, with renewables accounting for half of new global capacity

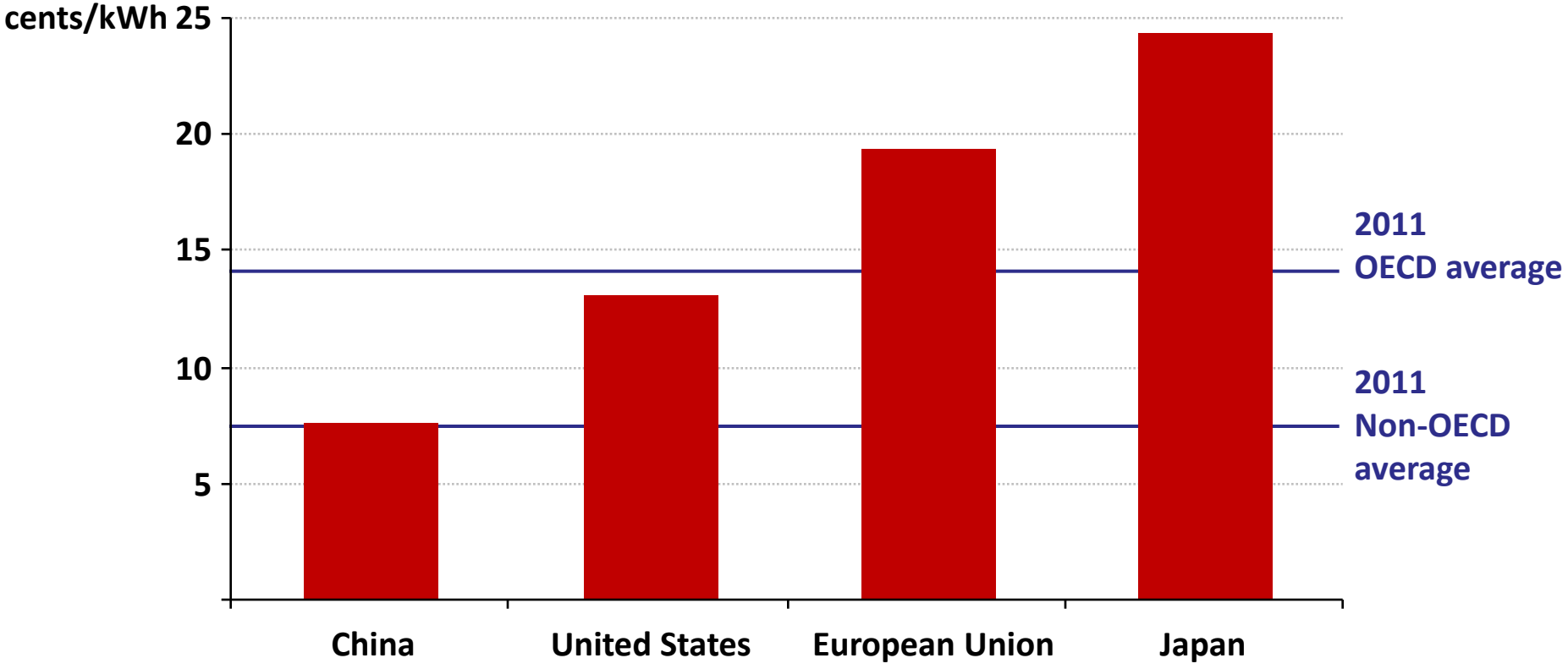
OECD/IEA 2013

Το παγκόσμιο ενεργειακό μείγμα πρόκειται να αλλάξει



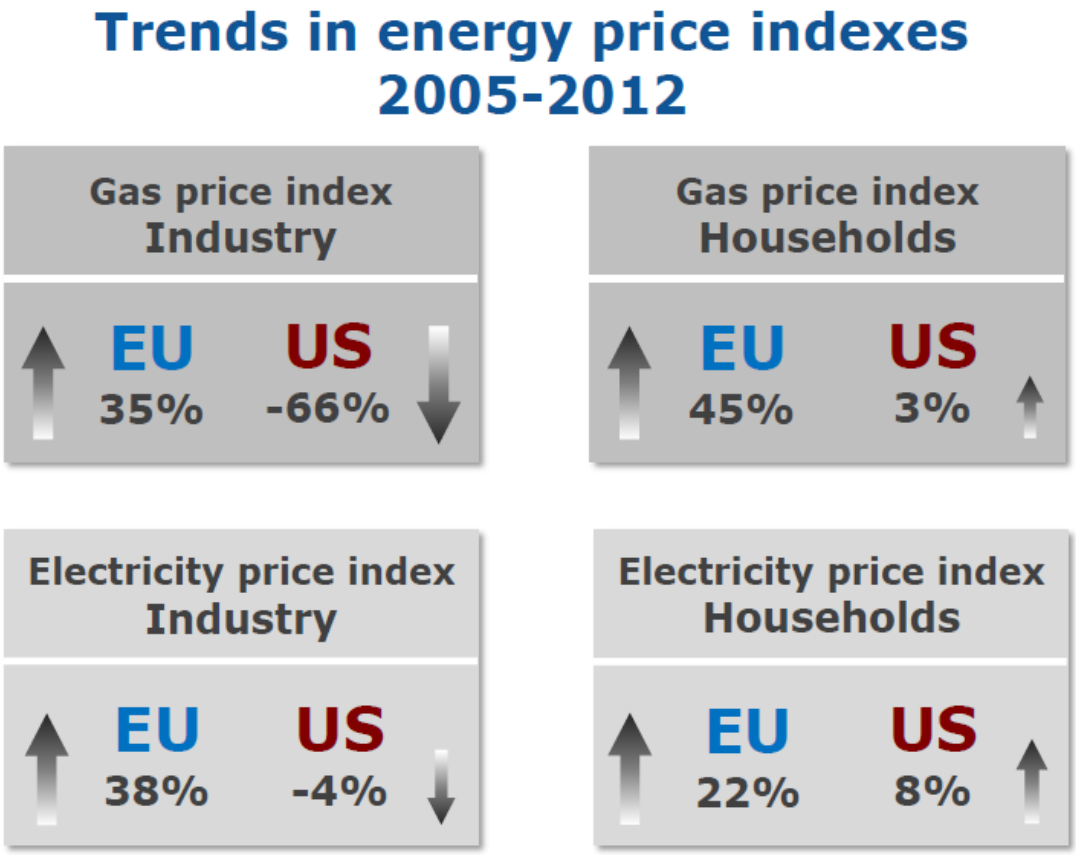
Renewables electricity generation overtakes natural gas by 2015 & almost coal by 2035; growth in coal generation in emerging economies outweighs a fall in the OECD

Μέσες τιμές ηλεκτρικου ρευματος στα νοικοκυριά, 2035



Electricity prices are set to increase with the highest prices persisting in the European Union & Japan, well above those in China & the United States

Οι τιμές ενέργειας επηρεάζουν τον ανταγωνισμό



Source: IEA

European Commission

Μερίδιο αγοράς εργοβόρων προϊόντων