MINISTERO DELLO SVILUPPO ECONOMICO

Promotion of Technology Innovation in the Italian Energy Sector

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Ministry of Economic Development

5th European Energy Forum at a Glance
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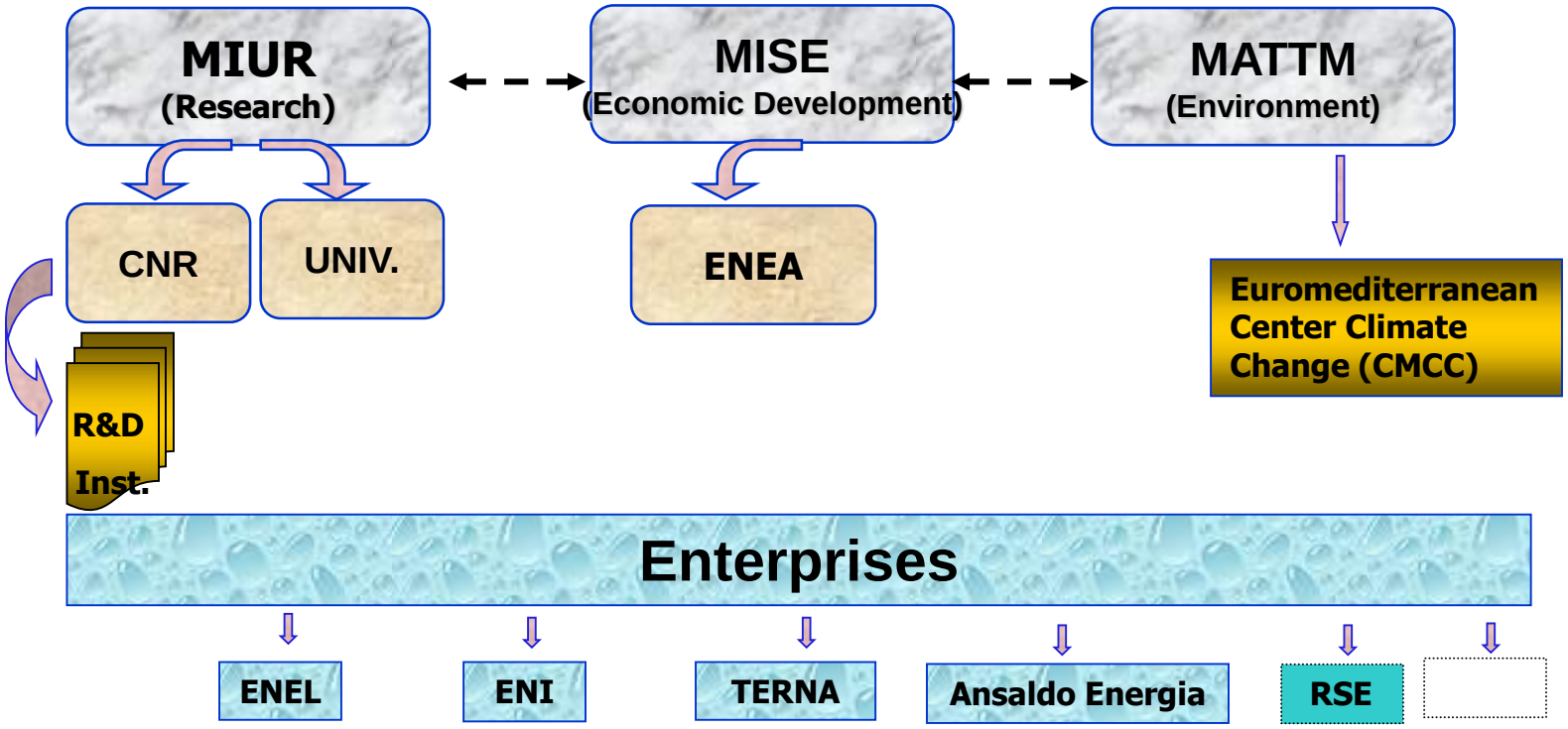
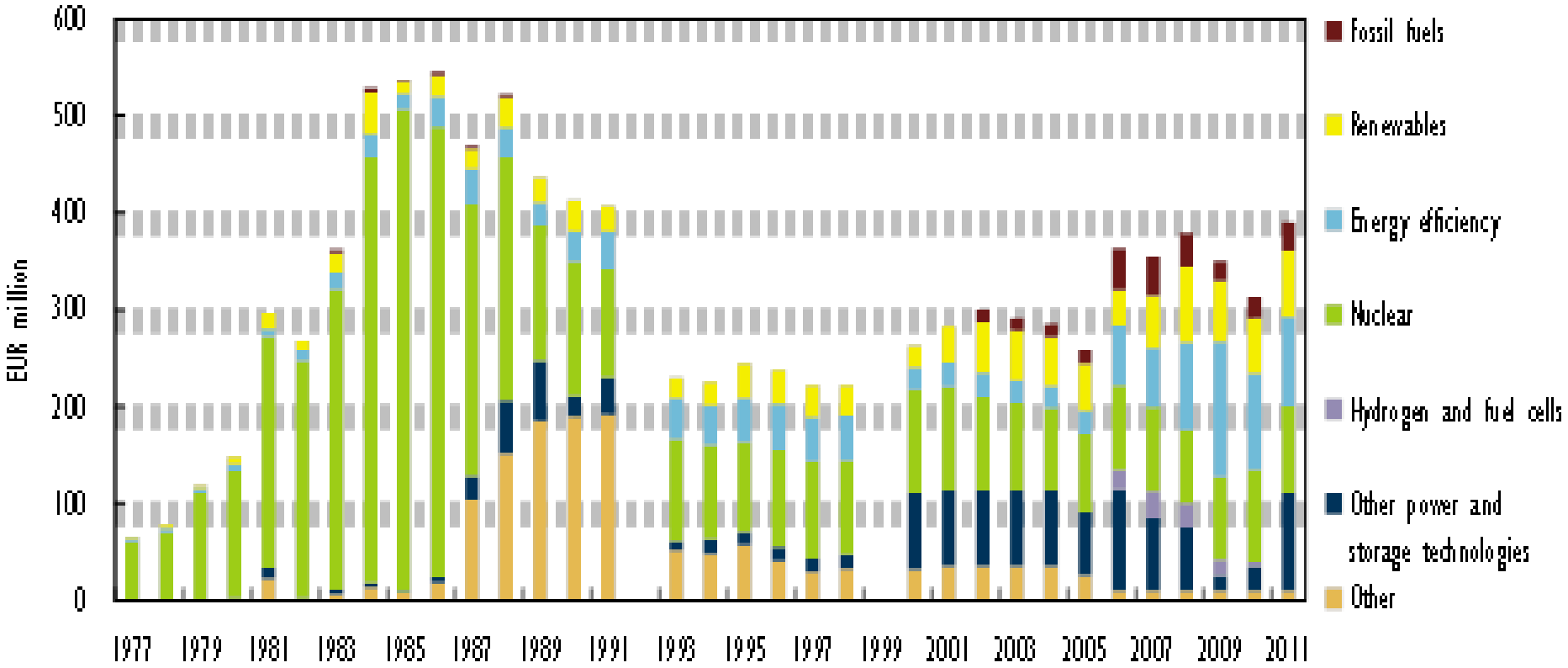
Institutional Framework
Main public players in Energy RD&D



Government energy RD&D spending, 1977-2011



The National Energy Strategy (NES) issued in 2013 has set up 4 main objectives of energy policy

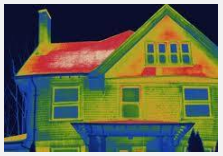
1. **Competitiveness**: **Significantly reduce the energy cost gap** for consumers and businesses, with a gradual alignment **to European prices**

2. **Environment: Outperform the environmental targets set by the** '**20-20-20 Package**' and take a lead role in the European **'Roadmap 2050'** decarbonisation process

3. **Security**: **Strengthen security of supply**, especially in the gas sector, and **reduce the external energy dependence**

4. **Growth: Enhance sustainable economic growth** through the **development of the energy sector**

7 priorities have been identified in the NES with concrete objectives and specific support measures



1 **Energy efficiency**

2 Development of a **competitive market** and **Southern European gas hub**

3 Sustainable development of **renewable energy**

4 Development of **infrastructure** and of the **electricity market**

5 Restructuring of **refining sector** and of the **fuel distribution network**

6 Sustainable production of **domestic hydrocarbons**

7 Modernisation of **energy governance**

RD&D in the energy sector

The NES has the aim to pave the way for a more effective co-operation among industries and research centers in future R&D programmes

Research priorities

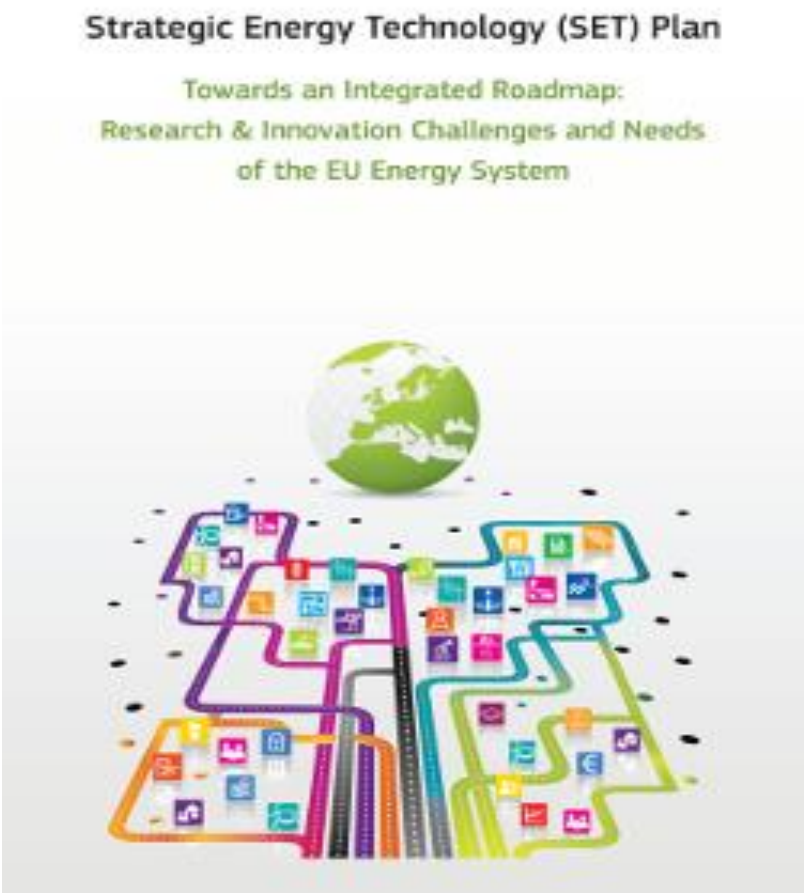
- Research on **innovative renewable technologies**, in particular those in which we start from a situation of strength (such as **solar, geothermal, marine energy and biofuels**).
- Research on **smart** grids - also to facilitate distributed generation – and **storage systems**, also with a view to sustainable mobility.
- Research on **materials and energy efficiency solutions** and their technology transfer.
- Research on innovative technologies, services and solutions, **for urban applications**, which ask for a cross-sectorial approach to support the global deployment of **Smart Cities solutions.**
- Research on **renewable technologies that can be integrated in buildings** with low impact on the landscape and the architectural heritage.

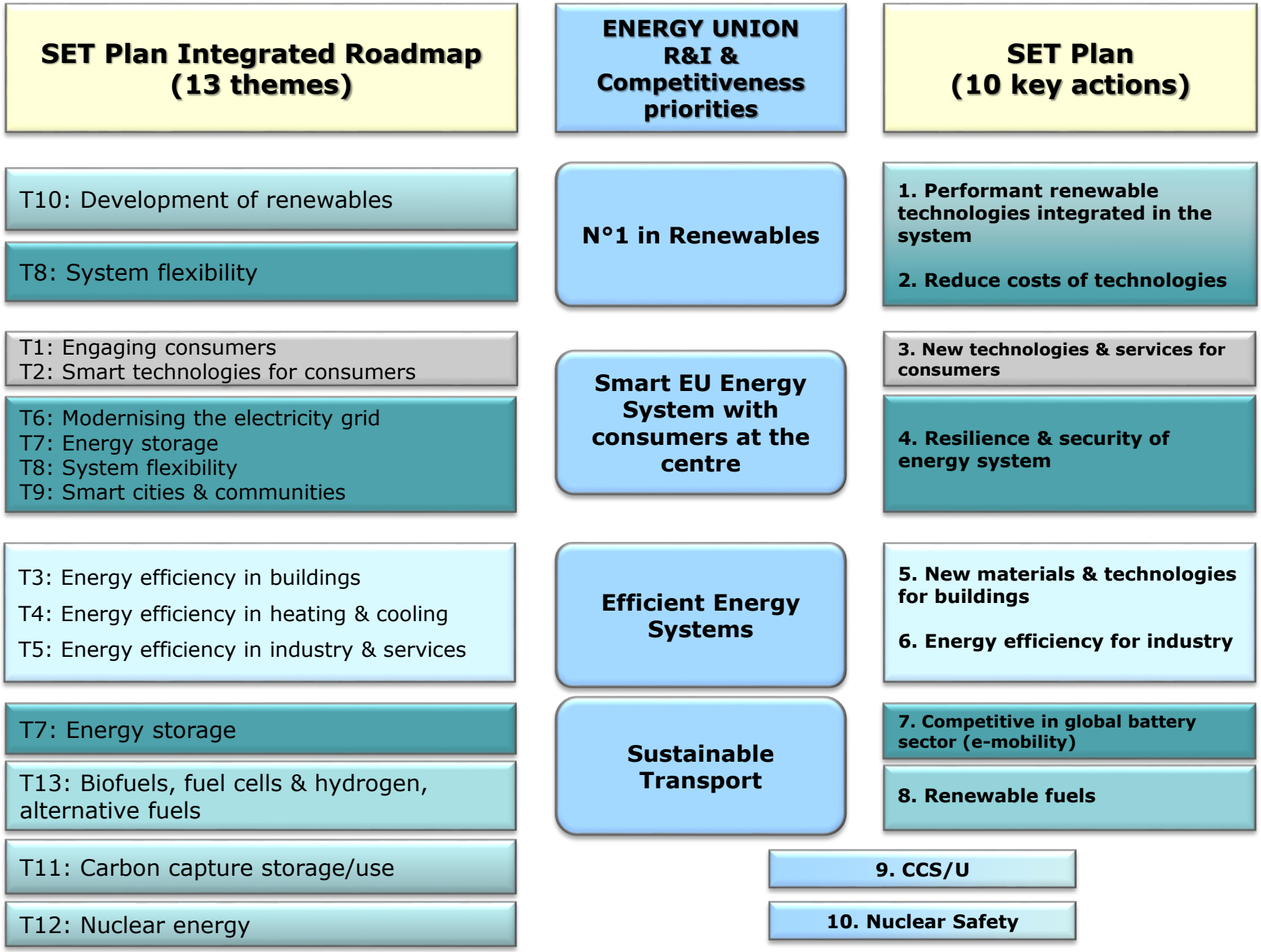
Main actions

- **Supporting research and development promoted by private sector stakeholders.**
- Increase the amount of **resources available under competitive access,** to create partnerships between universities, research centers and private companies.
- **Rationalize the current segmentation of initiatives** assigned to various agencies and ministries, in order to overcome the fragmentation among the parties and the areas of R&D and “act as a system”.
- Ensure that Italy’s technology innovation activities **are closely co-ordinated with the European Strategic Technology (SET) Plan.**
- **Align the incentive schemes to the SET Plan priorities.**

SET Plan Conference – Rome, 10 December 2014

SET 20 Plan 14 CONFERENCE




SET Plan Integrated Roadmap (13 themes)
ENERGY UNION R&I & Competitiveness priorities
SET Plan (10 key actions)
T10: Development of renewables
T8: System flexibility
N°1 in Renewables
1. Performant renewable technologies integrated in the system
2. Reduce costs of technologies
T1: Engaging consumers
T2: Smart technologies for consumers
T6: Modernising the electricity grid
T7: Energy storage
T8: System flexibility
T9: Smart cities & communities
Smart EU Energy System with consumers at the centre
3. New technologies & services for consumers
4. Resilience & security of energy system
T3: Energy efficiency in buildings
T4: Energy efficiency in heating & cooling
T5: Energy efficiency in industry & services
Efficient Energy Systems
5. New materials & technologies for buildings
6. Energy efficiency for industry
T7: Energy storage
T13: Biofuels, fuel cells & hydrogen, alternative fuels
Sustainable Transport
7. Competitive in global battery sector (e-mobility)
8. Renewable fuels
T11: Carbon capture storage/use
9. CCS/U
T12: Nuclear energy
10. Nuclear Safety

Overall context: EU Funding for Sustainable Energy 2014-2020

- **Cohesion Policy** to allocate some 23 billion € (estimate!) to investments in energy efficiency, renewable energy, smart distribution grids and urban mobility, including research and innovation in those areas in complementarity with Horizon 2020

- **Horizon 2020:** Some 5.9 billion € to be allocated to research and innovation in "Secure, clean and efficient energy"

- **Connecting Europe Facility:** Some 5.9 billion € to be allocated to investments in TEN-E infrastructure of highest European added value

- **LIFE+** (funding 450 M€ in 2014-2017 – Deep Green Initiative and RSI underand **COSME** also relevant for certain aspects

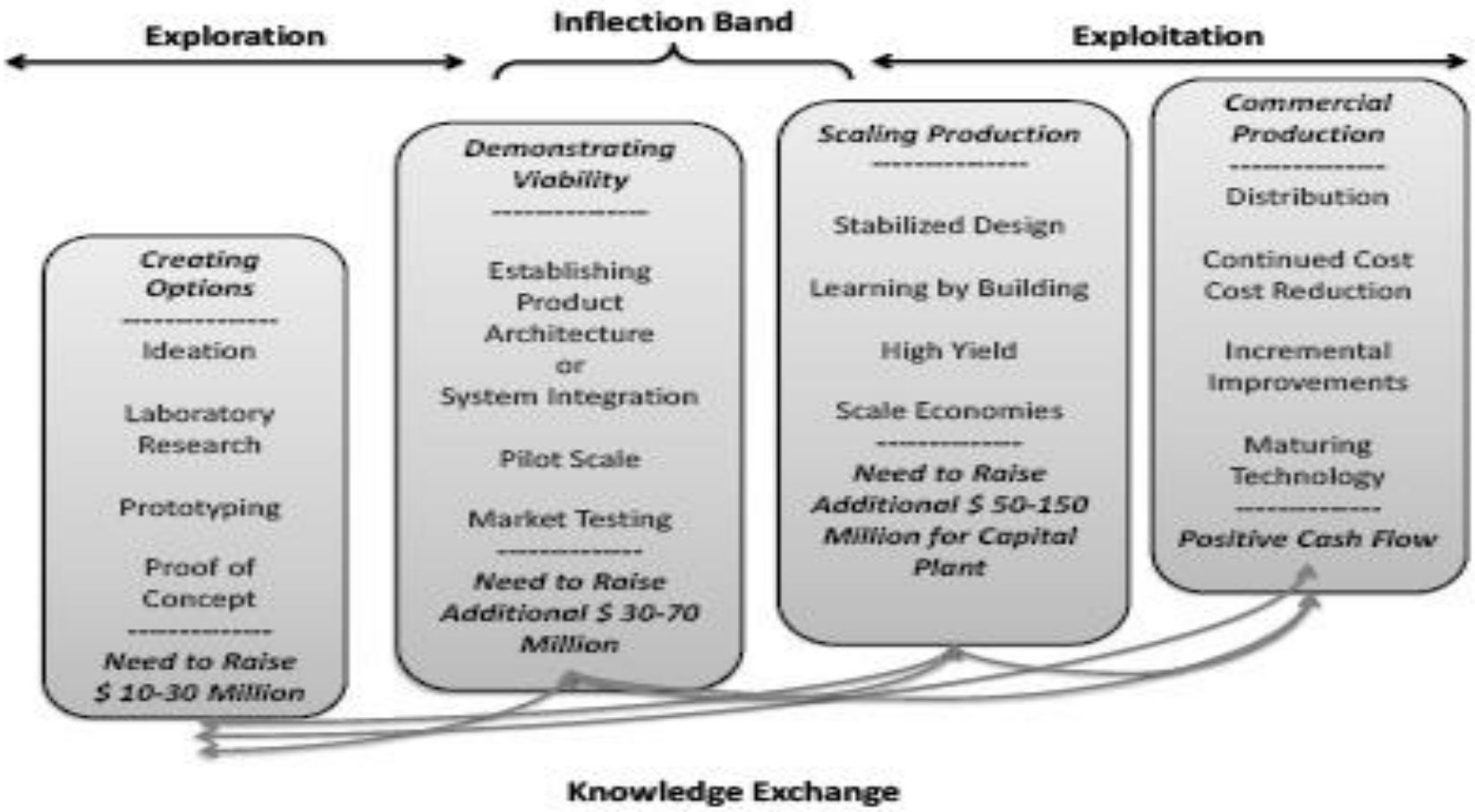
Funding scheme for SET Plan projects

Common Roadmap and Implementation Plan

Public funding partners	Project typology	Instruments
EC	High EU added value	FP/Horizon
EC, MS, EIB	Large projects, EU added value, shared interests	FP/Horizon (ERA-NET), NER300, EEPR, ESI Funds
EC, MS	Localised shared interests	EERA, ad-hoc arrangements
MS	Supporting domestic industry	national programmes
EIB	Industrial scale projects	EIB loans, RSFF, guarantees, equity

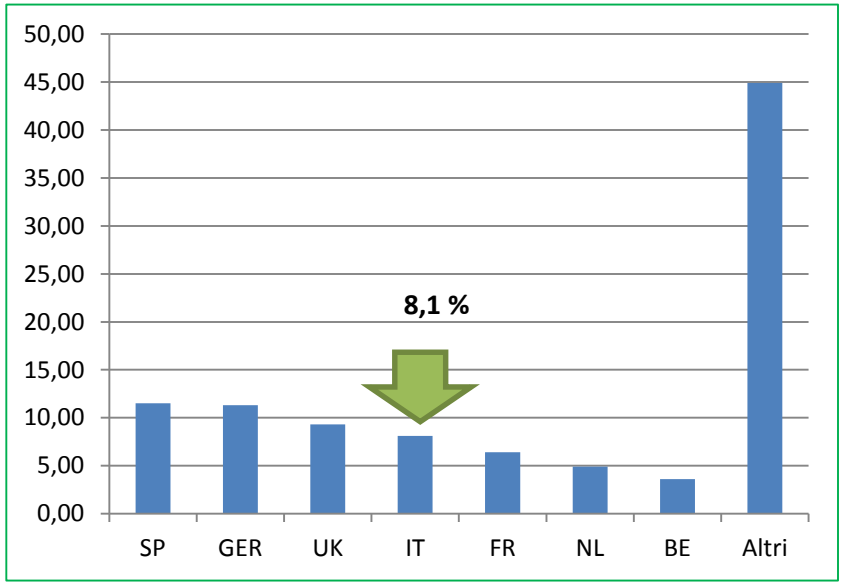
Common assessment, monitoring and reporting standards - KPIc

Difficulties in raising funding for demo projects

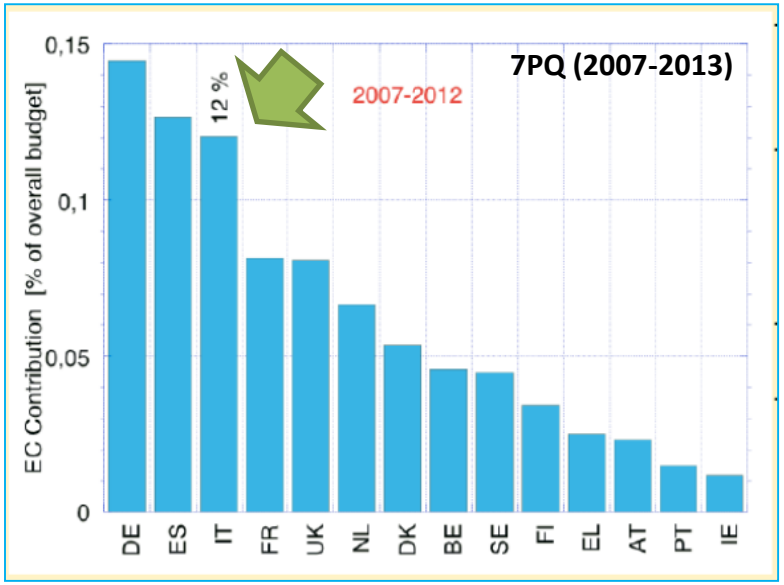


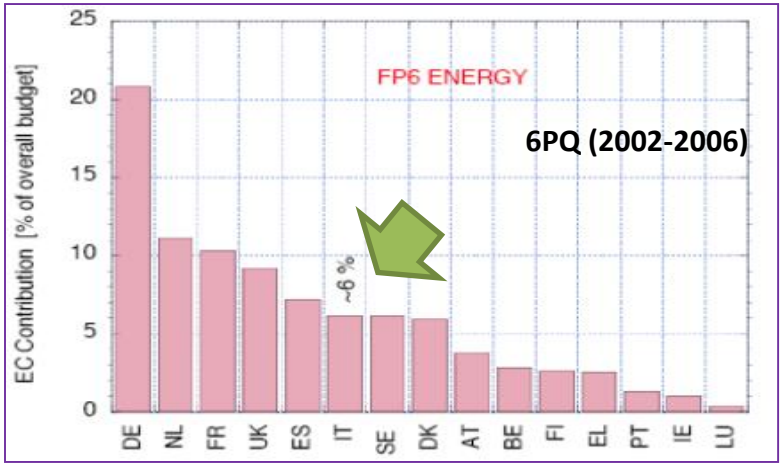
Italian participation to Energy EU-FP Calls

H2020 – Energy Calls 2014-2015



Allocated budget (30 October, 2015)





MiSE financing support scheme to energy innovation and alignment to the SET Plan/Horizon priorities (1)

Fund for R&D in the Electricity System:

- Funding: Revenues from the electricity bill (60 M€ / y)
- Tools: 1) Program agreements with the main public R&D organisations (ENEA, CNR, RSE), 2) Call for proposals for industries

European Structural Investment (ESI) Funds:

- ESI Funds focus heavily on energy efficiency investments, particularly on the efficiency of buildings and SMEs. The ESI Funds will also be used for renewable energy and smart distribution grids.

New Entrants Reserve - NER 300:

- Biofuels project 195 M€ (M&G, Piemonte Region)
- Smart grids project 170 M€ (ENEL, Puglia Region)

MiSE financing support scheme to energy innovation and alignment to the SET Plan/Horizon priorities (2)

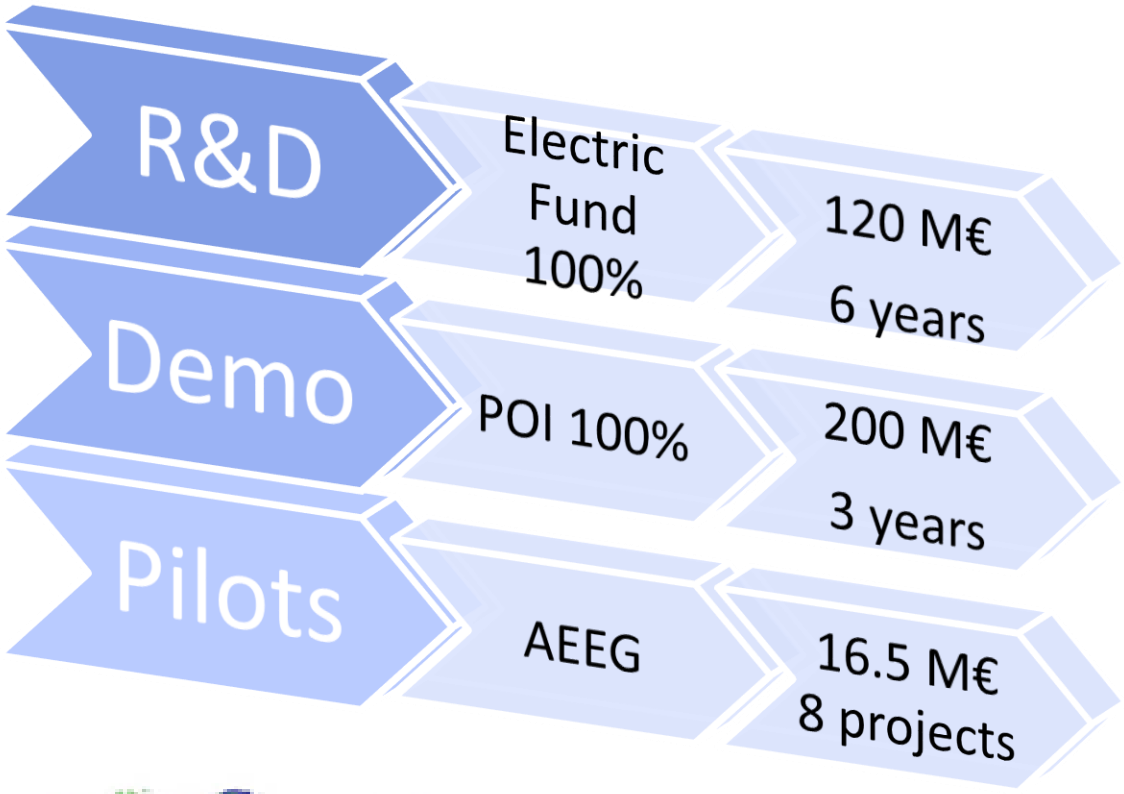
Fund for Sustainable Growth:

- To support projects aimed at introducing significant technological advancements through the development of enabling technologies or technologies to face the "societal challenges" defined in accordance with the Europe 2020 strategy

Tax credit for R&D investments and patent box:

- The credit is up to 25% for costs for highly qualified personnel and for research contracts with universities, R&D institutes or other companies including innovative startups
- A patent box allows businesses to benefit from lower effective tax rates (13.75% as of 2017) on profits derived from intellectual assets

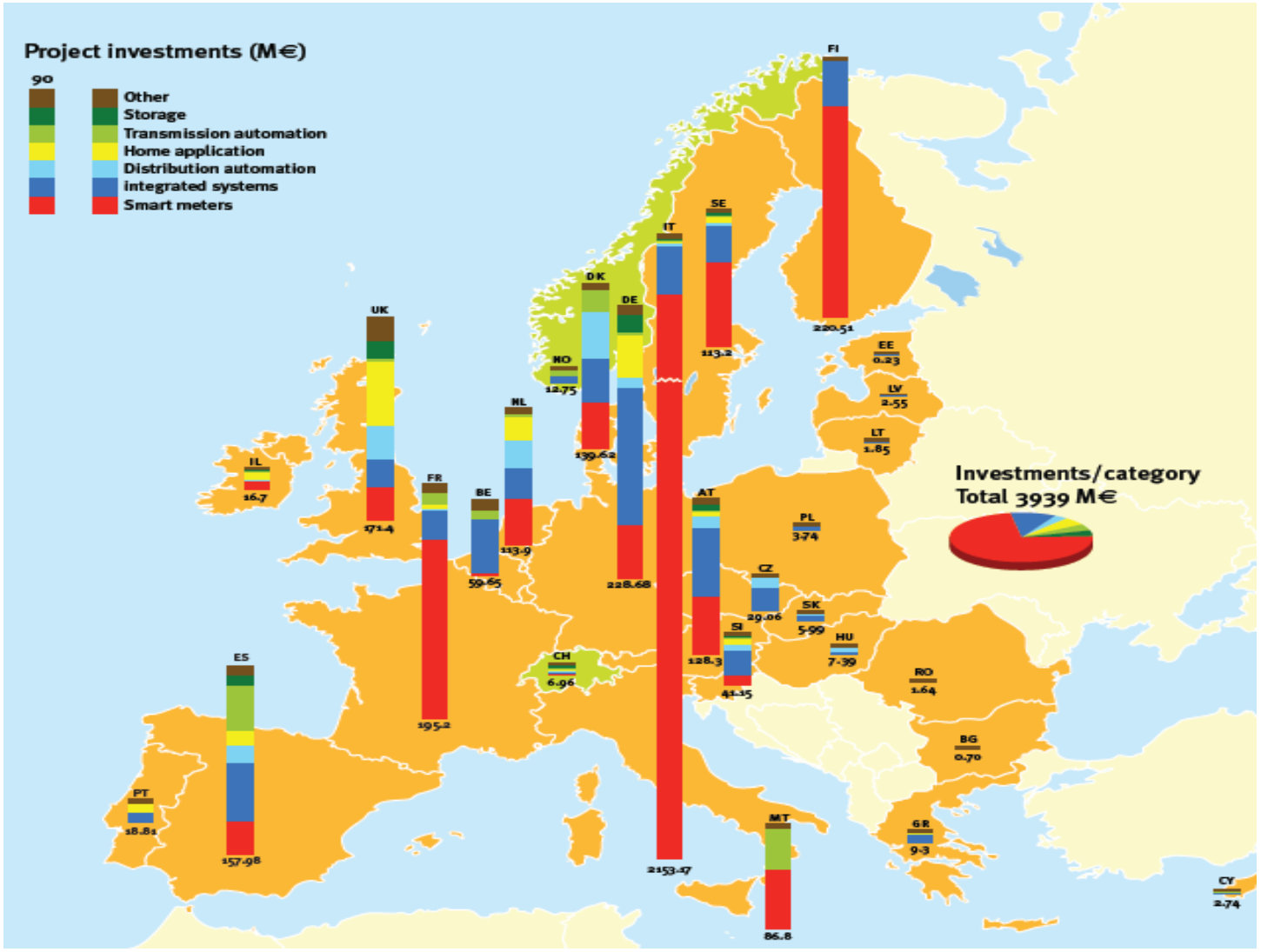
The innovation chain for Smart Grids in Italy



ISGAN
international smart grid action network

Renewable integration	Scenario analysis
Planning	Operation
System management	Component technologies innovation
ICT	Power electronics
Storage	Electric vehicles
PQ	Environment

European investments in smart energy



Concentrated Solar Energy Technologies
ARCHIMEDE Project

Solar Collector Assembly – Test Loop at ENEA

Solar field:

318 solar collectors

100 meters long

Main issues from the Italian experience (1)

- The overall framework remains oriented towards direct grants and loans, but a shift of some of this direct financing towards demand-driven innovation in key R&I areas is being initiated as non-competitive funds are phased out.
- Innovative SMEs now are financed by means of grants and loans provided by public agencies at regional level. Most regions also support SMEs by taking shares in specific investment companies for local development.
- The level of resources devoted to R&I, both private and public, is significantly lower in Italy compared to other EU countries. Nonetheless, Italy ranks second in Europe after Germany in terms of presence of innovative SMEs.

Main issues from the Italian experience (2)

- The alignment with the SET-Plan and Horizon 2020 priorities can represent an opportunity to streamline operations and overcome the fragmentation of the incentive system.
- Italy can count on excellent research resources in areas as renewable energy and system integration (smart grids and storage).
- A strength cross-sectoral cooperation, especially with the ICT sector, is crucial to enable the integration of the various systems that make up the combination of the future Smart Grid-Smart City chain.
- The Italian Ministry of Economic Development considers Smart Cities as an opportunity to empower the Country's competitiveness and growth, for their capacity to concentrate dedicated research and testing of innovative solutions to urban problems.

Mission Innovation Initiative

- Italy considers the launch of Mission Innovation a strong commitment and opportunity to accelerate public and private efforts on clean energy research and innovation.

- The participation can also offer to the system a significant contribution in facing problems such as the low private sector participation in R&D investment in the energy sector and the high degree of fragmentation among the parties.

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