



# *Ministry of Economic Development*

Directorate General for Security of Supply and Energy Infrastructure

## Overview

The Italian economy has struggled over the past decade and there is an urgent need to restore its international competitiveness, recover from the recession and establish the basis for long-term growth. The National Energy Strategy issued in 2013 recognizes that the energy sector has a fundamental role to play in the growth of the economy. Developing a more competitive and sustainable energy is therefore one of the most significant challenges for Italy's future. Accordingly, the NES aims being to pave the way for wider and more effective participation of industry and the country's public and private research centers in future R&D programmes. Smarter investment in energy-related research activities will contribute to further improving the energy and resource efficiency of the economy and to creating new sources of growth.

In adjunction, it is important to point out that the Central Government has in pipeline a huge renovation of the governance of the public research system through the National Research Plan (PNR) 2015-2020, that of course includes also the activities of R&D related to energy and clean technologies. In fact, the high level of fragmentation of actors and areas of research in conjunction with a lack of a single coordination actor/"control room" can be repaired by the new PNR. The PNR has been recently approved by CIPE (Comitato Interministeriale per la Programmazione Economica) for an overall amount of public funding of EUR 2.5 billion.

The NES highlights the fact that most indicators reveal that research and innovation in the energy sector is not at the required level. There is a strong dependence on foreign technology, and to a growing trade deficit, especially in high-technology products and for the production of clean energy, one that has grown more pronounced in recent years.

Accordingly, one of the aims of the NES is to pave the way for wider and more effective participation of industry and the country's public and private research centers in future R&D programmes. On this basis, the NES proposes a series of new measures:

- Greater support for R&D promoted by private sector stakeholders: Tax reliefs recently introduced are a first step.
- These measures will be complemented with two other instruments: the Fund for System Research in the Electricity Sector (financed from electricity tariff revenues), and the Fund for Sustainable Growth.
- Increase the amount of resources available under competitive access conditions to create partnerships between both universities and research establishments and private-sector companies.

Italy's technological innovation activities are closely co-ordinated with the European Union Strategic Energy Technology Plan (SET) in the perspective of the full implementation of the Energy Union at European level. In coming years in fact, EU R&D resources will increasingly be allocated to the priority projects identified under the SET Plan, as already happened for the Horizon 2020 Programme for Research and Innovation.

Within this context, 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 Italian participation can offer 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.

As regards priority development areas of the Italian commitment to Mission Innovation, Italy considers the following areas to be of priority interest:

<b>Priority Themes</b>
Research to increase the use and reduce the costs of <b>innovative renewable</b> technologies, particularly those in which, as a country, Italy already starts off in a strong position: <b>solar, geothermal, marine energy and second (and third) generation biofuels</b>
Research in <b>renewable technologies that can be integrated in buildings</b> with solutions with low impact on the landscape and the architectural heritage of the historical centers of our cities
<b>Integrated systems of power generation</b> from renewable sources with systems of accumulation and least production from fossil sources (natural gas) to continue the market parity of the renewable ones
Research in <b>smart grids</b> , partly to facilitate distributed generation, and in <b>storage systems</b> , also in relation to sustainable transport and mobility
Research in <b>energy efficiency materials and solutions</b> , and their technological transfer
Accelerate the roll-out of innovative technologies, services and solutions, for urban applications, which ask for a cross-sectorial approach to support <b>the global deployment of Smart Cities solutions</b>

## Actors

The main ministries involved in Mission Innovation are the Ministry of Economic Development (MSE), the Ministry of Education, Universities and Research (MIUR) and the Ministry of Environment and Protection of Land and Sea (MATTM).

The public R&D institutions which carry out energy-related research are the National Agency for New Technologies, Energy and Sustainable Economic Development (ENEA), the National Research Council (CNR) and Research on Energy Systems (RSE). An important role will be also played by the regional governments and the scientific community (universities, R&D labs).

## Funding

The main contribution to Mission Innovation investments will come from public institutions both at national and regional level. Following a period of decline in the first half of the 2000s, public funding for energy-related R&D increased, reflecting the renewed priority attached to this sector. Funding declined again at the end of the decade, however, as a result of an overall cut in public spending. The government energy R&D budget allocated to energy efficiency and renewable technologies grew steadily during the decade, with the exception of the last few years. These have become the dominant energy research areas,

accounting for about half the total government energy R&D budget in 2010 (up from 17% in 2000). This is reflected by the growing number of patent applications in these fields.

In 2011, public energy RD&D funding amounted to around EUR 400 million. The budget structure has changed in recent years, with a marked shift towards energy efficiency and renewable (24% and 17% of the total budget respectively), while nuclear R&D has lost ground (23% in 2011 compared to 40% in 2000). Transport research is also funded through the general research framework and through programmes dedicated to transport.

These are the main funding instruments:

#### Fiscal support: Tax credits and the patent box

A tax credit regime offers a 25% incremental-based tax credit, with a more generous rate of 50% if the R&D project is conducted in collaboration with universities and public research institutions or by innovative start-ups and to cover expenditures related to highly qualified R&D staff. The R&D tax credit can be used to offset tax and social contributions liabilities, which means that even loss-making firms might benefit from the incentives. This is important to avoid favouring firms in a profit making position at the expense of firms making losses as is often the case for young dynamic firms.

A patent box allows businesses to benefit from lower effective tax rates (13.75% as of 2017) on profits derived from intellectual assets (copyrights; patents; trademarks which are functionally equivalent to patents and know-how exploited through licenses with the aim of incentivising the location of intellectual assets currently held abroad, avoiding their relocation and more generally supporting investment in R&D (OECD, 2015).

#### National Electric System Research

This programme develops research projects of general interest to the Italian electricity system, focusing on applied research and a system-oriented approach. The activities are aimed at innovating and improving the performance of the system in terms of economics, safety and the environment. The programme's coverage ranges from system governance to R&D and deployment of renewable technologies, electric transmission and end-use. It is financed through a specific component of the end-user electricity price which is determined annually by the Italian Regulatory Authority for Electricity Gas and Water (AEEGSI) and currently amounts to about EUR 0.015 per kilowatt hour.

The resources allocated by the three-year plan 2015-17 amount to approximately EUR 210 million. ENEA, CNR and RSE are the leading public research agencies involved.

#### Programme for Promoting Smart Grids by Distribution Companies

The Italian Authority for Electricity and Gas (AEEG) introduced specific provisions in the regulation governing the procedures, costs and timing for the connection of RES systems to the grid (Unified Text for Active Connections - TICA). Improvements were introduced to facilitate better access to feed-in tariffs mechanism. In this context AEEG began to support activities by granting funding to pilot projects aimed at developing smart grid solutions. These projects supported included schemes related to the smart management of the power network and the integration of electric vehicles. Main Italian DSOs are very active in this field.

## Act of Address concerning the Industrial Policy for Smart Cities

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 the testing of innovative solutions that companies can offer to find solutions to urban problems. Having promoted a dedicated Task Force on Smart Cities, the Ministry has recently issued an Act of Address concerning the Industrial Policy for Smart Cities. The Act provides the strategic framework to the upcoming Program, that will aim, by the creation of 14 pivotal areas in major Italian Cities, at:

1. Gradually transforming the Cities into a place where the most innovative players can imagine, experiment and introduce their innovations;
2. Creating an attractive and retentive environment for activities of R&D, prototyping and industrialization for Italian and international companies.

The Program, initially funded with 65 million EUR, is divided into two specific policy measures, respectively pursuing to:

- The promotion of energy efficient and connected services and infrastructures, such as Smart Grids;
- The spread of services, solutions and devices, designed upon the needs of Cities and of the private constituency.

The implementation of such pilot areas will represent the ideal setting to encourage "open innovation" among Italian and international-class companies, as well as for the use of Big Data and Open Services. The Program will be extended thanks to the involvement of European Structural Investment (ESI) Funds 2014-2020. The Agency for Cohesion, the Italian Association of Municipalities and the Conference of Italian Regions are strongly cooperating for the deployment of the Program.

## Fund for sustainable growth

The fund is focused on interventions for the support of research and development projects that are aimed at introducing significant technological advancements through the development of enabling technologies (intensive technologies of knowledge and associated with high R & D intensity, rapid innovation cycles, high investment costs and highly skilled work) or technologies to address the "societal challenges" defined in accordance with the strategy Europe 2020.

## European Structural Investment (ESI) Funds 2014-2020

ESI Funding programmes focus heavily on energy efficiency investments, particularly on the energy efficiency of buildings and Small and Medium-sized Enterprises (SMEs). The ESI Funds will also be used for renewable energy and smart distribution grids, as well as for smart energy transmission and storage infrastructure and energy-efficient, decarbonised transport. The ESI Funds provide a strategic, integrated and comprehensive framework for these energy investments, and also provide a link to policy makers in regions, cities, rural and coastal areas. Italian regions together with central Government have identified a number of priorities in their Smart Specialisation Strategies, which will form the strategic basis for their overall use of funds for research and innovation investments. This means that allocations for low-carbon research and innovation might increase further in line with the evolving content of the Mission Innovation strategies.