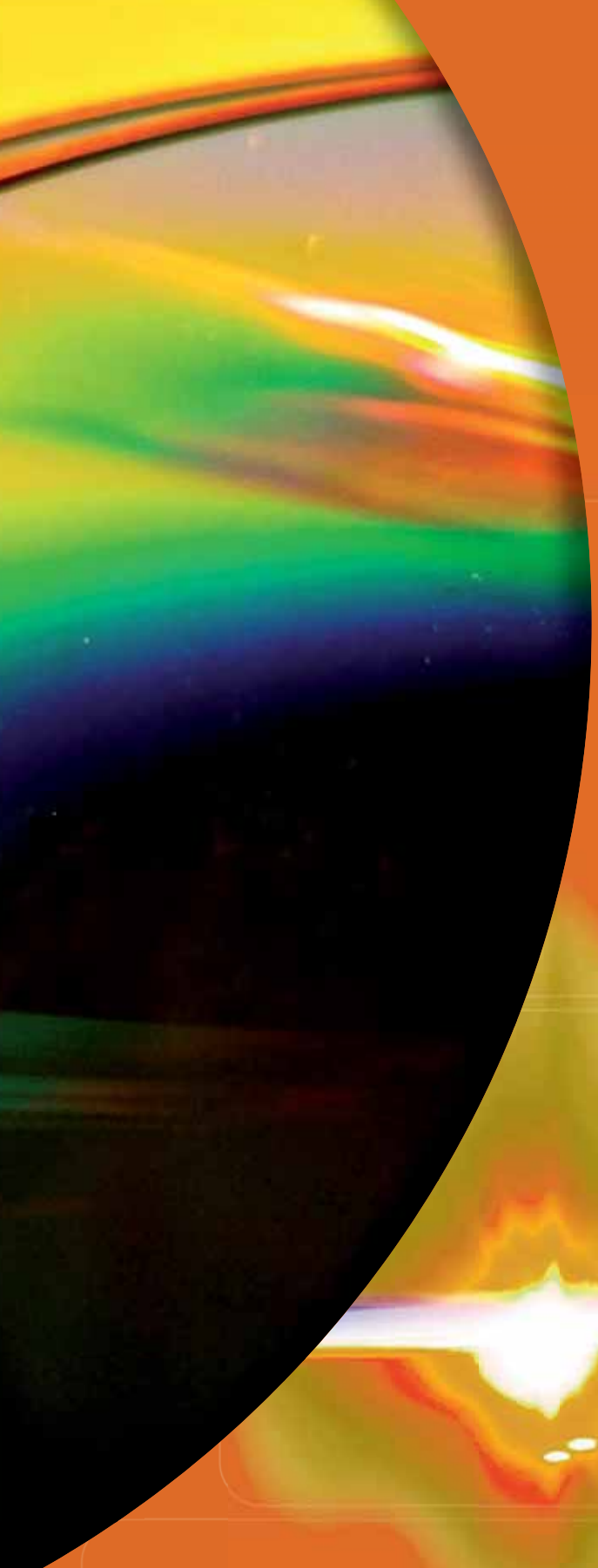


Research and Innovation for Italy's Sustainable Development

ENEA Is
the Italian National Agency for New Technologies, Energy and Sustainable Economic Development

ENEA is a public body concerned with research, technology innovation and advanced services in the fields of energy, the environment and sustainable economic development.

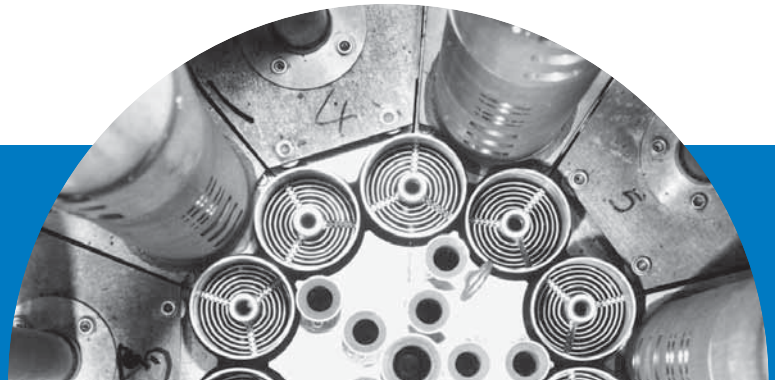
ENEA's core mission is aimed at Italy's economic, environmental and social sustainability, by searching new technological solutions capable of meeting the complex, economic and environmental global challenges.

Thanks to its role as Advisor to public administration for the achievement of national objectives in the fields of energy and the environment, ENEA acts in close collaboration with the Italian Government, Regions, local administrations and with the national production system.

In accomplishing its institutional objectives, the Agency has a task of consequence: transferring know-how and technologies from research communities to enterprises, institutions and civil society.

60 Years of History

ENEA was assigned the role of Agency by the Law no. 99 of 23rd July, 2009.
It is a melting pot of all the skills, know-how and expertise built up in its 60 years of research on energy and new technologies.
ENEA's history starts in 1952 when the National Committee for Nuclear Research (CNRN) was founded under the CNR (the National Research Council). Its activity sector then became very advanced and specialized: the peaceful applications of nuclear energy. Ten years later, the Italian Parliament transformed CNRN into CNEN (National Committee for Nuclear Energy), where research was closely connected with industry and focused on technology development to design and build nuclear plants and fuel-cycle facilities. In 1982, CNEN was named ENEA - the Italian National Committee for Research and Development of Nuclear Energy and Alternative Energies - and research was extended to renewable energy sources. Further transformations followed in 1991, 1999 and 2003. Since then, ENEA has taken over novel important missions.



ENEA Is an Instrumental Organization for Italy's Sustainable Development

With its recent law-acknowledged role of Agency, ENEA has been recognized and ratified its over-half-century experience on issues of the utmost importance like energy, environmental safeguard and technology innovation, as well as its capability to face up to and solve complex problems thanks to its multidisciplinary competences.

The functions typical of a research body have been further increased with manufacturing and service-oriented ones for innovation-process dissemination, which is crucial to sustainable and competitive development.

The Agency is one of Italy's leading actors in the field of green economy, which ever more often reveals itself as the principal way out of the world economic crisis.

Core concept in ENEA's vision is that the environmentally-friendly innovation of production systems gives rise to considerable economic and social spinoffs, so crucial to the growth and competitiveness of economic systems.

Along with companies sharing these objectives, the Agency develops cutting-edge technologies which easily find their way in the large-scale market uptake. Companies have at their disposal ENEA's expertise, laboratories and experimental facilities, often unique in the whole Europe. The Agency also transfers its know-how through training programmes aimed at creating new professional figures.

"Today, no area holds more promise than our investments in…energy…. But for the sake of our children and our future, we must do more to combat climate change"

from Barack Obama's Speech at the U.S. Congress about the "State of the Union", Washington, 12 February, 2013

The Italian Industry Success in the Construction of ITER

Within the framework of an international collaboration among all the most technologically advanced countries (Europe, Japan, USA, Russia, China, Korea and India), the experimental reactor ITER is being constructed in Cadarache, France. Thanks to their close collaboration with ENEA, Italian companies have gained the major production orders for building the reactor components: 750 out of 1,300 million euro have been used for funding Italian manufacturing companies producing superconducting magnets, control systems, special heat exchangers.

ENEA Is the Major Italian Research Institution in the Field of Energy

ENEA is historically the Italian research institution in the field of energy.

Thanks to its research, services and support activities aimed at defining the national energy policy, ENEA is actively contributing to reduce carbon emissions and the energy dependence on fossil fuels while helping disseminate the low-carbon economy all over Italy.

The Agency is concerned with R&D technologies more efficient and competitive in terms of exploitation of renewable energy sources – especially concentrating solar power (CSP), photovoltaics (PV), biomass and biofuels - with particular effort put on the production of new-generation biofuels and PV systems. ENEA research is also focused on hydrogen, fuel cells, energy storage systems, CO_2 capture and storage methods, as well as on the development of new materials, components, processes and systems for the sustainable use of fossil fuels and the optimization of end use energy.

With an eye to the future, ENEA carries out research on thermonuclear fusion, IV-generation nuclear reactors and marine energy, very promising in terms of spinoffs for industry and civil society.

The Agency also gives its significant contribution to define Italy's energy policy. Achieving the EU greenhouse-emission reduction targets and keeping the national industry competitive in the new low-carbon technologies demand policies and instruments capable of starting up a "technological speed-up" of the Italian energy system. ENEA's role in achieving such an objective consists in: developing methodologies and instruments for the analysis and modelling of the national energy systems; developing scenarios and evaluating the impact of policies and measures on the energy system in order to identify long-term development trends which might allow the Country to accomplish the objectives of energy safety, environmental sustainability and economic competitiveness.

ENEA Is the Italian National Agency for Energy Efficiency

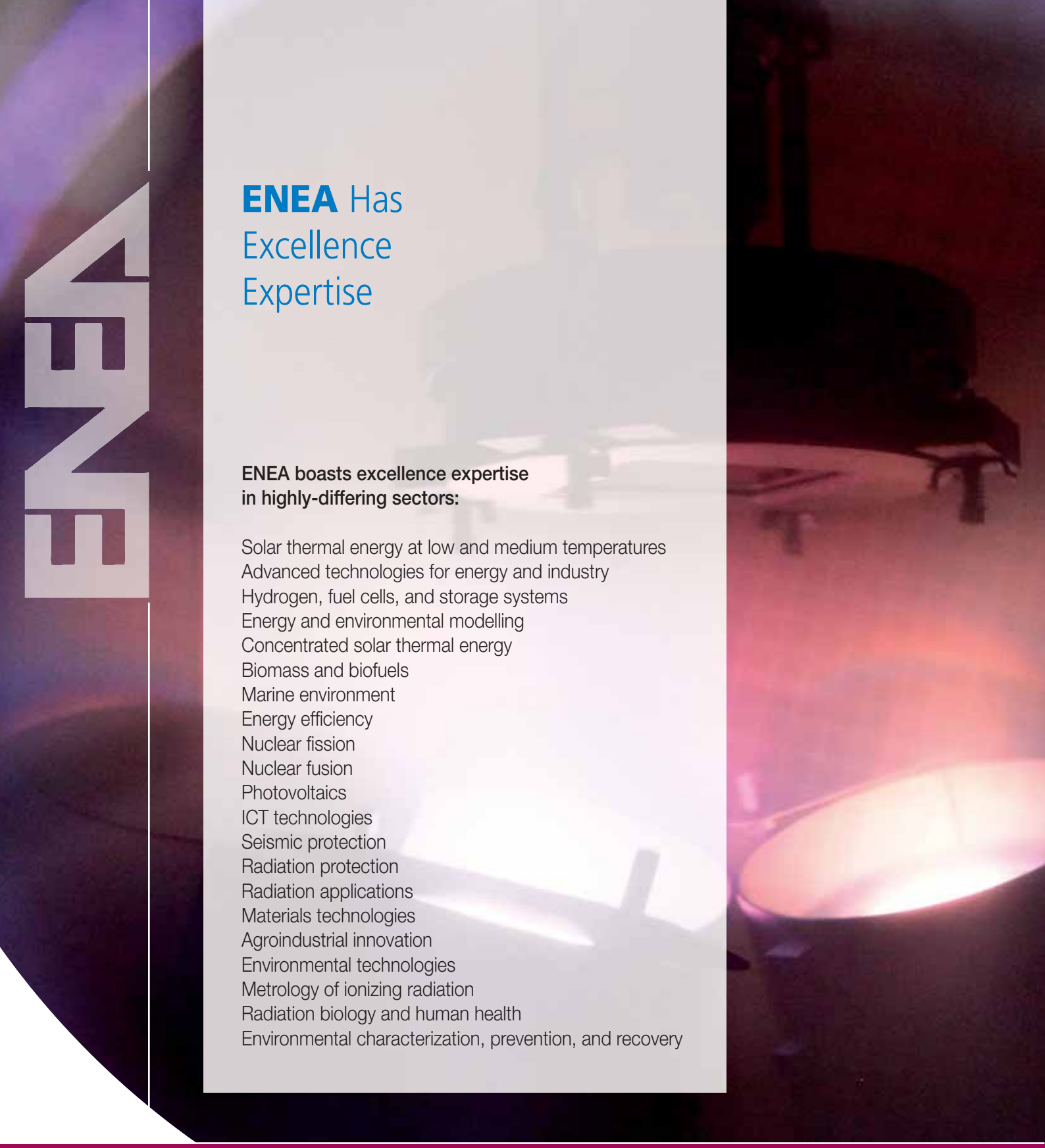
ENEA carries out research on energy efficiency since the '80s. Since 2008, it has been law-attributed the role of Italian national Agency for Energy Efficiency and provides the Government, Regions and local bodies with its support by both defining and implementing measures, and setting up actions and instruments to help public administration, the production system and citizens take up a more competitive, sustainable, and low-consumption energy economy.

The National Action Plan and the Annual Energy Efficiency Report: In 2011, for the Italian Ministry for Economic Development, ENEA drew up the National Action Plan for Energy Efficiency, where the framework and intermediate results for achieving the EU 20% greenhouse emission and energy consumption reduction targets by 2020 are identified. Furthermore, each year the Agency draws up a detailed Report on energy evolution and intensity and on the level of accomplishment of the national energy saving.

White Certificates: White Certificates are among the most efficient instruments to incentivize energy saving interventions. Applicable since 2006, they allowed to issue 17 million energy efficiency certificates and a total of 1.7 billion euro approximately. ENEA plays a key role in managing this instrument by carrying out the preliminary technical examination of the proposals, preparing new technical data sheets, and participating in the evaluation activities.

Building, Industry, Agriculture, Mobility, Distributed Generation, Energy Services: These are the sectors where the Agency fosters the implementation of key technologies for a more efficient use of energy and for strengthening the companies' innovation potential and competitiveness. Through its network of territorial offices, the Agency identifies the territorial demand and connects it with its scientific competences, thus substantially contributing to the application of energy efficiency provisions.

Information and Training: Increasing consumers' awareness on the individual and collective benefits deriving from a more rational use of energy is one of the keys to any successful low-energy-consumption policy. Similarly, training expert technicians capable of addressing and applying energy efficiency instruments is important, too. That is why ENEA is all along actively engaged in raising end users' awareness and training specialized personnel.



ENEA Has Excellence Expertise

ENEA boasts excellence expertise in highly-differing sectors:

Solar thermal energy at low and medium temperatures
Advanced technologies for energy and industry
Hydrogen, fuel cells, and storage systems
Energy and environmental modelling
Concentrated solar thermal energy
Biomass and biofuels
Marine environment
Energy efficiency
Nuclear fission
Nuclear fusion
Photovoltaics
ICT technologies
Seismic protection
Radiation protection
Radiation applications
Materials technologies
Agroindustrial innovation
Environmental technologies
Metrology of ionizing radiation
Radiation biology and human health
Environmental characterization, prevention, and recovery

ENEA Hosts Laboratories and Advanced Facilities

ENEA Research Centres and Laboratories host advanced facilities and plants, used both under the Agency's programmes and by Italy's scientific and entrepreneurial communities.

Shaking Tables

The Casaccia Research Centre hosts two shaking, 6-degree-of-freedom tables among the biggest in Europe. They allow to study and test new technologies and materials for the seismic protection of civil, industrial and historical/monumental artifacts.

The Italian National Institute of Ionizing Radiation Metrology

The ENEA National Institute of Ionizing Radiation Metrology has been assigned the role of Primary Metrologic Institute by the Law no. 273 of 11 August, 1991. Actually, it is the Italian national authority ensuring the reliability of ionizing radiation measurements in all sectors they are made use of: radiation therapy, radiation diagnostics, radiation protection in the environment and in hospitals, scientific research.

Solar Collector Testing Facility

The Casaccia Research Centre hosts the solar collector testing facility, which allows to test operation under real conditions and to perform qualification testing of components and systems of solar molten-salt linear trough systems, a technology developed by ENEA.

Integrated Innovation Centre Agrobiopolis

Set up in 2005 at the Trisaia Research Centre, this Technology Pole is devoted to the development of agro-food industry in southern Italy. It represents a new model of collaboration between public scientific research and private industries.

CRESCO Supercomputer

Installed in the Portici Research Centre, CRESCO is the most powerful supercomputer among the ones in other Italian research organizations and ranks 180th in the latest world list of the “TOP 500 Supercomputer sites”. CRESCO is available for use by public and private partners.

Steam Explosion Pilot Plant

The Steam Explosion pilot plant is hosted and operated at the Trisaia Research Centre. It can treat 300 kg/h of biomass and is used in the Italian and European projects aimed at researching, developing and demonstrating the production of liquid biofuels from fermentation processes (ethanol).

Radiation Protection Institute

The Radiation Protection Institute, with its laboratories located in five ENEA Research Centres, ensures the physical radiation protection surveillance for all activities related to possible risks from ionizing radiation exposure. It additionally provides end users, public administrations, research bodies, industries and private companies with specific technical support.

Concentrating Photovoltaics

The PhoCUS-5 5 kWp standard Unit, located at the Portici Research Centre, is one of the biggest systems in Italy in the field of concentrating photovoltaics. The systems is used for research activities aimed at developing high-efficiency solar cells and innovative plant components.

Calliope

Calliope, the γ irradiation plant designed and developed by ENEA at the Casaccia Research Centre, is used for research and services for applications related to: study on the effects of γ irradiation on the physical and chemical material properties; development of recovery processes in the agro-food, environmental, and cultural heritage sectors; irradiation of components for aerospace, nuclear and electronic industries.

Solar Heating and Cooling Plants

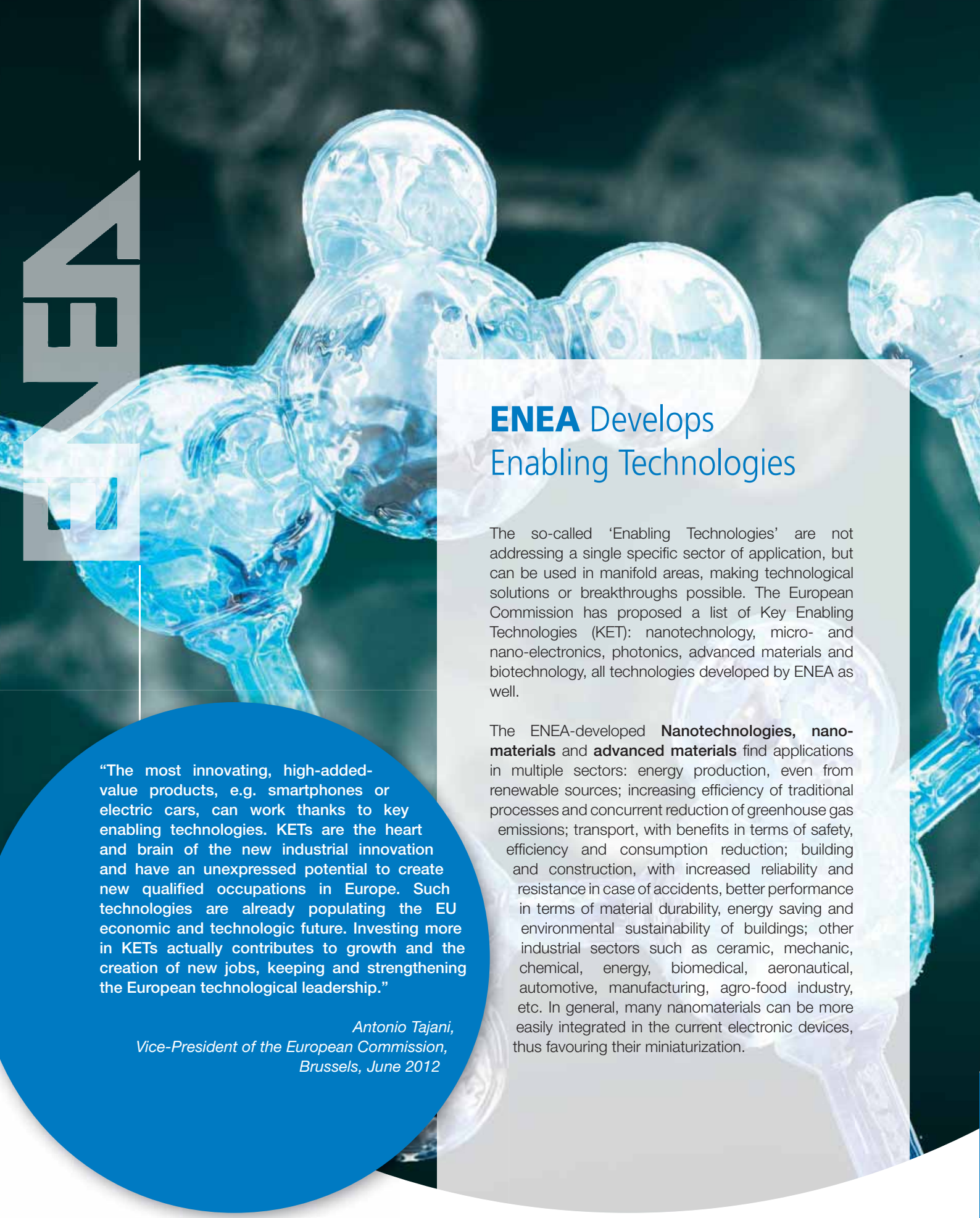
Some buildings in the Casaccia Research Centre are air-conditioned through solar heating and cooling systems using solar energy to meet their heating and cooling needs. In this case the use of direct sun beams is particularly suitable during summertime, when the highest cooling demand is met by the highest peaks of solar radiation.

Laboratories Research on the Marine Environment

The Santa Teresa Research Centre hosts a set of specialized laboratories devoted to monitoring, analyzing and understanding the physical, chemical and biological processes occurring in the marine environment and its variations - whether natural or due to anthropic activities. This kind of investigations are aimed at both developing forecast scenarios on the response of marine ecosystems to global changes and identifying possible criteria for the sustainable management of resources.

Divertor Test Platform

The DTP (Divertor Test Platform) plant is operated at the Brasimone Research Centre. It reproduces a 1:1 scale portion of the vacuum chamber of a thermonuclear fusion reactor and is used for remote maintenance tests on prototypical cassettes and other divertor components.



ENEA Develops Enabling Technologies

The so-called 'Enabling Technologies' are not addressing a single specific sector of application, but can be used in manifold areas, making technological solutions or breakthroughs possible. The European Commission has proposed a list of Key Enabling Technologies (KET): nanotechnology, micro- and nano-electronics, photonics, advanced materials and biotechnology, all technologies developed by ENEA as well.

The ENEA-developed **Nanotechnologies, nano-materials** and **advanced materials** find applications in multiple sectors: energy production, even from renewable sources; increasing efficiency of traditional processes and concurrent reduction of greenhouse gas emissions; transport, with benefits in terms of safety, efficiency and consumption reduction; building and construction, with increased reliability and resistance in case of accidents, better performance in terms of material durability, energy saving and environmental sustainability of buildings; other industrial sectors such as ceramic, mechanic, chemical, energy, biomedical, aeronautical, automotive, manufacturing, agro-food industry, etc. In general, many nanomaterials can be more easily integrated in the current electronic devices, thus favouring their miniaturization.

"The most innovating, high-added-value products, e.g. smartphones or electric cars, can work thanks to key enabling technologies. KETs are the heart and brain of the new industrial innovation and have an unexpressed potential to create new qualified occupations in Europe. Such technologies are already populating the EU economic and technologic future. Investing more in KETs actually contributes to growth and the creation of new jobs, keeping and strengthening the European technological leadership."

Antonio Tajani,
Vice-President of the European Commission,
Brussels, June 2012

Recent estimates show that the world KET market is expected to pass from the current 646 million euro to over 1,000 billion euro by 2015: an exponential increase of over 54%, equivalent to over 8% of the EU GDP. In the nanotechnology sector alone, the number of jobs in the EU is expected to increase from 160,000 in 2008 to approximately 400,000 by 2015. The EU leadership in KET R&D has not yet converted into the large-scale production of goods and services required to stimulate growth and employment. This is just the direction taken with the latest proposals by the European Commission on the future EU research and innovation programme "Horizon 2020" and the new 2014-2020 Cohesion Policy on structural funds. Being able to develop and apply KETs on an industrial scale plays a crucial role in contributing to competitiveness and sustainable growth.

In ENEA, **photonics** is addressed to all sectors of high-energy physics, aerospace, biomedical and industrial diagnostics and to energy production systems, too, including nuclear energy. In particular, the ENEA-developed fiber-optic systems can be used for monitoring civil infrastructures, transport, cultural heritage, and for applications including high-energy-physics machines and aerospace sensor systems.

The **plant biotechnologies** developed by ENEA include applications of microorganisms and microalgae in areas ranging from human nutrition to food quality and safety, from green chemistry to biopharmaceuticals and plant vaccines, from bioenergy to environmental biotechnologies, to bioremediation. The ENEA research facilities allow the integration of biotech with energy, the environment and human health.

The Agency develops Geographical Information Systems (**GIS**), supporting public administration and policy-makers in evaluating, monitoring and managing a whole territory. For example, the ENEA **Biomass Atlas** has been developed on the basis of the energy potential of biomass distributed all over Italy.

ENEA develops enabling technologies within international contexts, too, in close collaboration with other research partners such as the French Alternative Energies and Atomic Energy Commission (Commissariat à l'énergie atomique et aux énergies alternatives), under an ENEA-CEA Framework Agreement, which provides for joint activities aimed at developing enabling technologies potentially pervasive in the whole energy sector.

ENEA

Technologies Developed by **ENEA** Find Applications in Manifold Sectors

Many cutting-edge technologies developed by ENEA have found important applications in a diverse range of sectors.

Some examples are given:

- Some **lasers** developed for thermonuclear fusion research are also used for environmental diagnostics, industrial and medical applications, cultural heritage safeguard, security.
- The ability to develop **models and simulations of systems and complex phenomena**, acquired in nuclear fission plant safety, useful for novel and important applications and results in: studying the climate system; processing of energy scenarios and strategies; evaluation of policies and measures; assessment of atmospheric pollution.
- **Sensor networks**, which are at the basis of the development of almost all industrial sectors: energy, human health, safety, transport, automation, communication, logistics, entertainment.

On the other hand, ENEA's specificity lies in its multidisciplinary approach and its ability to create applications in some sectors from its skills and know-how, methodologies and research facilities originally aimed at studies and applications in other sectors.

Some examples are here reported:

ENEA for Cultural Heritage Conservation

ENEA has been researching for knowledge, conservation, use and exploitation of Italy's cultural heritage for about thirty years. The Agency investigates and provides its services on behalf of: bodies from the Ministry of Cultural Heritage, local bodies, public and private institutions, also by acting under national and international research programmes.

ENEA for Human Health

ENEA research and experimental activities are focused on: the use of ionizing radiations for radiation therapy and nuclear medicine; the utilization of physical and material technologies for medical diagnostics; the study of mechanisms and effects of physical agents and chemicals on human health; the development of health-oriented biotechnologies and plant technologies.

ENEA for Security

ENEA boasts unique (in the nuclear field) and excellence (sensoristics, automation, ITC) competences in Italy that can successfully contribute to enhancing the national security standards in all emergence - prevention, intervention, recovery - as well as testing and training phases.

ENEA for Mobility

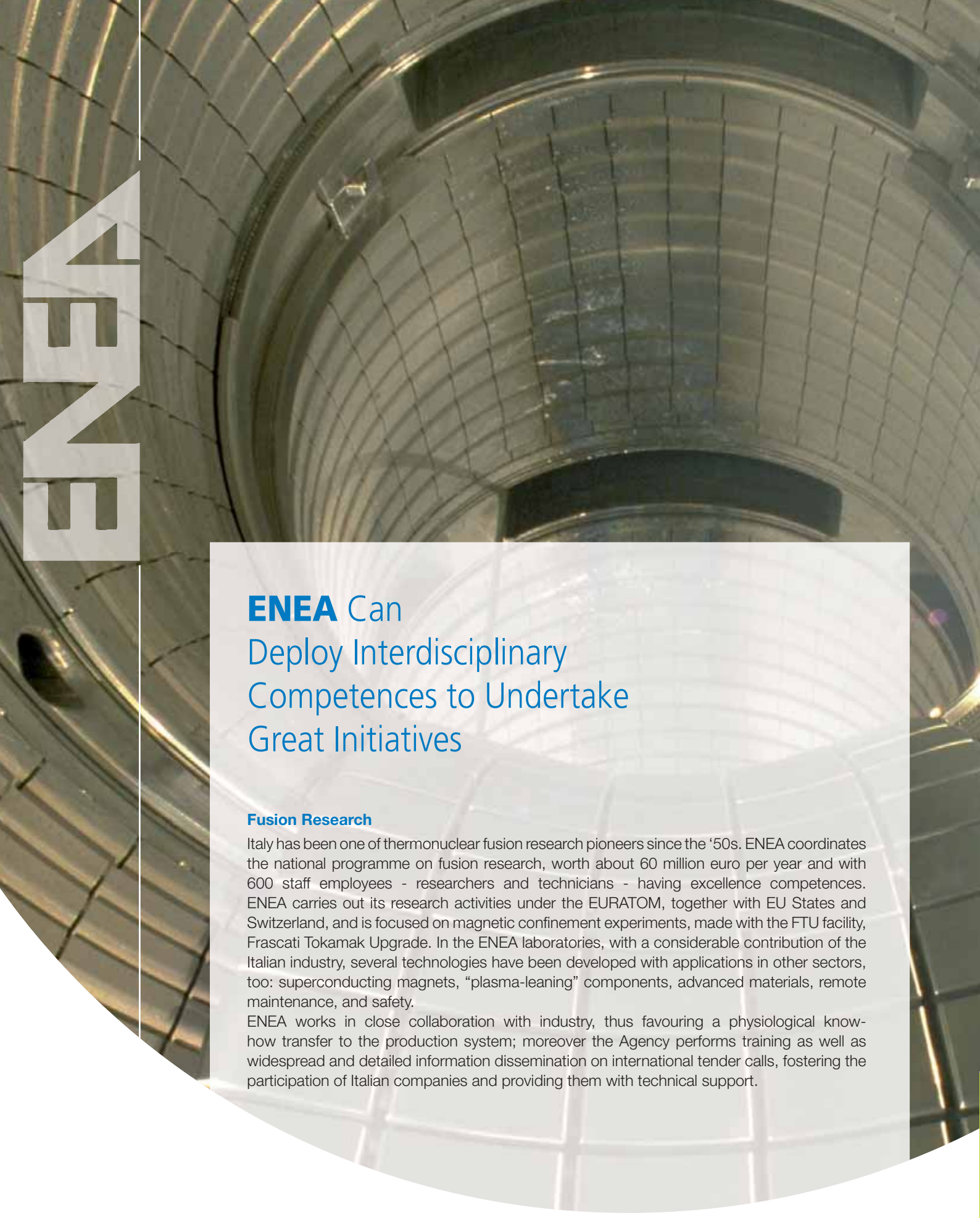
ENEA focuses its activities on efficient and sustainable transport systems, offering technological and strategic options; its research and innovation efforts are devoted to vehicles for all transport modes, by investigating new propulsion systems, materials, alternative fuels. The Agency also develops and tests integrated transport-managing systems.

ENEA for Government and Large-Network Security

An efficient Country system must necessarily count on the availability, reliability and security of many of its technological facilities, commonly known as critical facilities, which are becoming ever more complex to manage. ENEA is endowed with competences and operational tools useful for successfully contributing to their management and security.

ENEA for Seismic Protection

ENEA was the first Italian research body to carry out studies and experimental campaigns on seismic isolation in the early '90s, gaining and strengthening its leadership at the national and international levels. It promoted the application of seismic isolation and energy dissipation to any kind of structures, from cultural heritage to nuclear power plants. The Agency provides its consulting services for the project and performs the installation tests of important strategic structures. It is also strongly involved in information dissemination and training activities.



ENEA Can Deploy Interdisciplinary Competences to Undertake Great Initiatives

Fusion Research

Italy has been one of thermonuclear fusion research pioneers since the '50s. ENEA coordinates the national programme on fusion research, worth about 60 million euro per year and with 600 staff employees - researchers and technicians - having excellence competences. ENEA carries out its research activities under the EURATOM, together with EU States and Switzerland, and is focused on magnetic confinement experiments, made with the FTU facility, Frascati Tokamak Upgrade. In the ENEA laboratories, with a considerable contribution of the Italian industry, several technologies have been developed with applications in other sectors, too: superconducting magnets, "plasma-leaning" components, advanced materials, remote maintenance, and safety.

ENEA works in close collaboration with industry, thus favouring a physiological know-how transfer to the production system; moreover the Agency performs training as well as widespread and detailed information dissemination on international tender calls, fostering the participation of Italian companies and providing them with technical support.

The National Research Programme in Antarctica

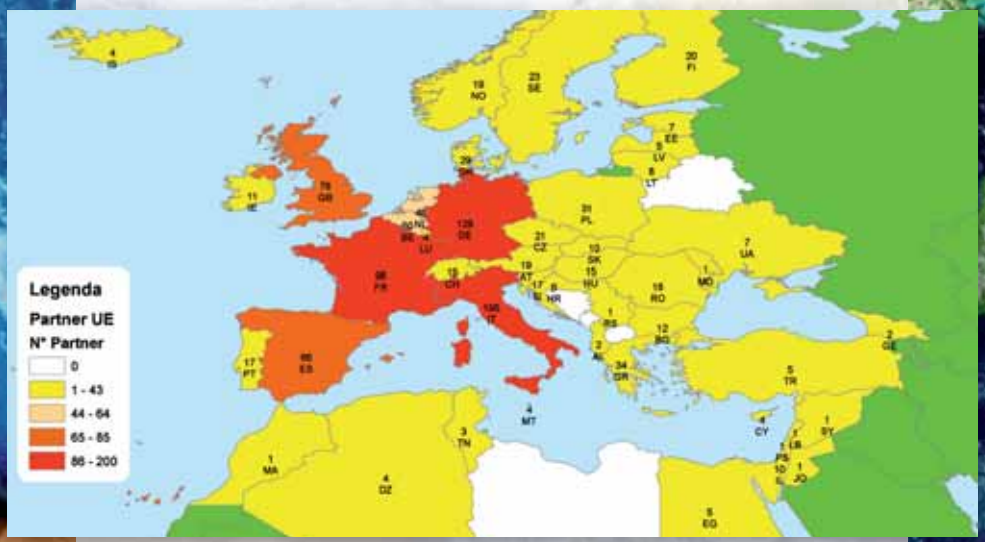
Its peculiar geographical position along with its physical characteristics, its distance from pollution sources and the almost total lack of anthropic perturbations make Antarctica one of the privileged places from where the Planet can be globally observed. Scientifically, it represents a virtuous example of international collaboration; the joint effort of several States has allowed to achieve interesting results on the remote history of the Planet and the study of the global change. Italy started its Antarctic adventure in 1985, when the Research Programme in Antarctica (PNRA) and the first expedition to the continent were set up. To date, the PNRA can boast two of the most beautiful and functional polar stations serving scientific research: “Mario Zucchelli” station in the Terra Nova Bay by the Ross Sea, and “Concordia” station, the most extreme joint Italian-French station, located on the Antarctic Plateau at an altitude of 3270 m. For all these years, many research activities have been carried out by the most prominent national research bodies; ENEA has given its research contribution but has mainly played a specific role of its own: setting up the expeditions, arranging the technical and logistic actions and being responsible for the whole organization of the operative areas are tasks which ENEA was assigned, along with planning and managing interventions, procurement of materials and services, maintenance of all plants and facilities installed at the Antarctica stations.

The Tokamak FTU facility, operating at the Frascati Research Centre, runs with very high magnetic fields (8 T) and allows to study plasmas under physical conditions of interest for the experimental reactor ITER otherwise unrealizable with any other machine

“Mario Zucchelli” Station

ENEA Participates in Important International Research Programmes

ENEA participates in 145 projects under the EU research programmes, counting on 33 million-euro EU funding, with partners from European and South-Mediterranean areas,



and from the rest of the world

ENEA participates in the following large international networks/ initiatives:

- EERA - European Energy Research Alliance
- ECRA - European Climate Research Alliance
- European Energy Network
- MEDENER - Mediterranean Association of the National Agencies for Energy Conservation
- TAFTIE - The Association For Technology Implementation in Europe
- Enterprise Europe Network, the largest service network promoting and supporting SMEs competitiveness and innovation
- European Innovation Partnership on Raw Materials
- European Innovation Partnership on Water
- European TTO Circle - European Network of Technology Transfer Offices
- IGLO - Informal Group of RTD Liaison Offices in Brussels for EU R&D
- EPBRF - European Platform for Biodiversity Research Strategy.

ENEA is member of many European and Italian Technology Platforms as well as of 9 Italian Technology Alliances, playing its outstanding role in the European Research Area, with particular reference to Innovation.

ENEA collaborates with the major international organizations:

- IAEA - International Atomic Energy Agency
- IEA - International Energy Agency
- OECD - Organization for Economic Co-operation and Development
- NEA - Nuclear Energy Agency
- EURATOM - the European Atomic Energy Community
- NATO - North Atlantic Treaty Organization.

ENEA signed agreements with the major European partner Countries: Albania, Belgium, France, Germany, Russia, Sweden, Switzerland, EU (JRC) and extra-European partner Countries: Brazil, China, Korea, Egypt, India, Israel, Japan, USA.

ENEA Disseminates Information and Knowledge

ENEA disseminates information and knowledge to research communities, institutions, companies, mass media and the public at large.

The web TV, the two-monthly magazine “Energia, Ambiente e Innovazione”, the institutional web portal and a set of thematic websites, the publications providing information and insights on technical and scientific topics, exhibitions and conferences are some of the instruments ENEA makes use of for communicating and promoting its research results, thus favouring their exploitation for production and social purposes.

ENEA also offers a wide range of training activities targeted at different users: students, technicians, professionals, companies and public institutions.

Graduation theses, national and international fellowships, traineeships and stages are available for university students, early-stage and experienced researchers; also in collaboration with other institutions, ENEA organizes refresher courses for business and public administration employees, or specialized training courses aimed at creating new professional figures.

The Agency is also endowed with an e-learning platform with about 200 free courses - training and refresher - for SMEs and public administration employees, teachers and students.

ENEA
Horizon 2020

Thanks to its research and the technologies and methodologies it develops, at the national level ENEA contributes to address some of the epochal challenges that are threatening the Planet and mankind:

Epochal Challenges	ENEA Contribution
World population growth	Low-carbon energy technologies
Food insecurity	Food safety technologies
Climate change	Mitigation and adaptation technologies
Water reduction per capita	Water reuse/recycling technologies
Population ageing	Human health technologies
SMEs competitiveness	Development and transfer of new technologies
Critical raw materials availability	Recovery technologies
Growing urbanization	Smart cities and mobility technologies
Science-based decision making	Modelling for policy makers
Cultural heritage safeguard	Cultural heritage technologies
Depletion of energy resources	Technologies for energy efficiency and search of new energy sources
Growing complexity and interconnection of networks	Technologies and methodologies for network management and security

ENEA
in Figures

Offices and Research Centres

The Agency operates through nine Research Centres, five Research Laboratories, and a network of Offices located all over Italy. It also has an ENEA-EU Liaison-Office in Brussels. ENEA headquarters is located in Rome.

Human Resources

The main resource ENEA puts at the disposal of the Country is its highly competent, skilled and qualified technical and scientific staff. As of 31st December 2012 data, the Agency's employees are 2711, more than 57% being university graduates. Of these, 588 are engineers and 750 have a scientific degree; high-school graduates, technicians and administration employees represent 36.8% of the overall staff. In 2010-2013, unlike other government organizations, its careful turn-over management allowed ENEA to take on 340 new permanent employees, most of them being researchers and technologists.

Financial Resources

ENEA R&D activities and technical and scientific services are deeply involved and in close connection with international and national contexts. The Agency participates in the great EU and international programmes and, at the national level, in projects funded by the Italian Ministries, often in collaboration with private companies. It also provides private and public bodies, both central and local, with its highly scientific services. Besides qualifying the institutional role of ENEA, such initiatives also play a key role as source of funding - increased in the last few years - which allowed to successfully overcome the continuous reduction of government funds, decreased by 19% from 2010 to 2013 (from over 187 million euro in 2010 to 152 million euro in 2013).

Patents

ENEA produces industrial patents available for enterprises. The first patents date back to 1957; so far in Italy 791 patents have been registered, which have enriched and consolidated the technical culture heritage of the Agency. The 791 primary patents registered in Italy have generated about 1250 patents abroad.

Participated Companies

ENEA fosters the setting-up and becomes partner of companies where research, enterprises and public administration collaborate and are part of a single “system” aimed at promoting and supporting research and technology innovation within the Italian economic system. As a partner, ENEA participates in 33 companies among limited companies, limited-liability companies, and consortia. ENEA participation is mainly aimed at strengthening the relationship between the Agency and industry - i.e., between public organizations, capable of producing know-how, and the production system, demanding the application of innovation technology to the economic system - also by fostering the participation of partner companies in international and EU programmes.

Spin-offs

ENEA disseminates its technologies also by promoting the creation of research spin-offs, and through companies marketing technologies, products, processes and services generated from the Agency’s scientific and technological research. ENEA has created 10 spin-offs, which find use in several high-tech sectors.

The sustainable economic development of Italy is our main goal, research is our tool

turning new ideas into innovative process

www.enea.it/en

Published by ENEA - Communication Service - Text: S. Del Bufalo, M. Leonardi, G. Martini, D. Savelli - Translation: C. Costigliola - Graphic design: B. Giovannetti ed FGE - Photographs: F. Conte and ENEA Archive - July 2013