

ENERGY EFFICIENCY IN THE FRAMEWORK OF 2030 AGENDA FOR SUSTAINABLE DEVELOPMENT GOALS

The case of Italy

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SDGs: global integrated perspective, indicators, analysis, policy

- ✓ **Agenda 2030 (UN, 2015):** 17 Sustainable Development Goals; 169 targets; 244 indicators
- ✓ **Sustainable Development Goals** refer to different development domains, related to environmental, social, economic and institutional issues, outlining a global action plan from 2015 to 2030.

5P: people planet peace prosperity partnership

People

- End poverty and hunger and ensure that all human beings can fulfil their potential in dignity and equality and in a healthy environment.

Planet

- Protect the planet from degradation, sustainably managing its natural resources and taking urgent action on climate change.

Prosperity

- Ensure prosperous and fulfilling lives and economic, social and technological progress in harmony with nature

Peace

- Foster peaceful, just and inclusive societies free from fear and violence.

Partnership

- Revitalize Global Partnership for SD, based on a spirit of strengthened global solidarity, focused in particular on the needs of the poorest and most vulnerable.



The 17 SDGs of 2030 Agenda reflect interconnection between human and environmental systems within an integrated global perspective which requires synergies between institutions, including international cooperation and the political context. They include as indispensable components many references to the well-being of people and an equitable distribution of the benefits of development.



SDGs: global integrated perspective, indicators, analysis, policy



No poverty: End poverty in all its forms



Zero hunger: End hunger, achieve food security and improved nutrition and promote sustainable agriculture



Good health and well-being: Ensure healthy lives and promote well-being for all at all ages



Quality education: Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all



Gender equality: Achieve gender equality and empower all women and girls



Clean water and sanitation: Ensure availability and sustainable management of water and sanitation for all



Affordable and clean energy: Ensure access to affordable, reliable, sustainable and modern energy for all



Decent work and economic growth: Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all



Industry innovation and infrastructure: Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation

SDGs: global integrated perspective, indicators, analysis, policy



Reduce inequalities: Reduce inequality within and among countries



Sustainable cities and communities: Make cities and human settlements inclusive, safe, resilient and sustainable



Responsible consumption and production: Ensure sustainable consumption and production patterns



Climate action: Take urgent action to combat climate change and its impacts



Life below water: Conserve and sustainably use the oceans, seas and marine resources for sustainable development



Life on land: Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss



Peace, justice and strong institutions: Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels



Partnership for the goals: Strengthen the means of implementation and revitalize the Global Partnership for Sustainable Development

Reconciling the global integrated perspective with the specific needs of the country: a concrete and progressive approach

✓ At international level:

- **Multi-participatory and inter-institutional synergies** between **national** and **international** institutions, **thematic and methodological investments** for integrated mapping
- **Statistical measures and criteria for selection:** transparency of methodologies, frequency of dissemination, timeliness, territorial coverage and comparability, length of time series, ease of interpretation
- **NSOs coordination role for the indicators necessary for global monitoring and reporting, integration of new data sources**

✓ At national level:

- It's a complex challenge and a great opportunity for the country, for the **National Statistical System** and all the involved actors
- From 2016, **ISTAT** has made available, with half-yearly updates, the SDGs indicators produced within Sistan. In July '18: 235 statistical measures available for 117 SDGs indicators and First Report on the SDGs



Ensuring universal access to economic, reliable, sustainable and modern energy services

Comparing with previous Millennium Development Goals (UN, 2000), the Agenda 2030 points out the centrality of energy issue with respect to the three pillars of sustainable development (social, economic and environmental) by the **definition of a dedicated goal**:


- ✓ to guarantee **social inclusion and equity** in the use of energy resources;
- ✓ to optimize positive effects of a more efficient and rational exploitation of energy on **economic development** (benefits for production activities) and in terms of **environmental and energy sustainability**;
- ✓ relying on clean fuels and safe and efficient technology, it is extremely important to **limit social, economic and environmental costs**, such as health risks associated with the emission of harmful gases at both domestic and atmospheric levels, or progressive depletion of natural resources.

Goal 7 – Affordable and clean energy

The **Goal 7** includes **3 targets and 2 means of implementation targets**, to be reached by 2030, and, for each of them, one or more **reference indicators**:

- 7.1** **By 2030, ensure universal access to affordable, reliable and modern energy services**
 - 7.1.1 Proportion of population with access to electricity
 - 7.1.2 Proportion of population with primary reliance on clean fuels and technology

- 7.2** **By 2030, increase substantially the share of renewable energy in the global energy mix**
 - 7.2.1 Renewable energy share in the total final energy consumption

- 7.3** **By 2030, double the global rate of improvement in energy efficiency**
 - **7.3.1 Energy intensity measured in terms of primary energy and GDP** 

- 7.a** By 2030, enhance international cooperation to facilitate access to clean energy research and technology, including renewable energy, energy efficiency and advanced and cleaner fossil-fuel technology, and promote investment in energy infrastructure and clean energy technology
 - 7.a.1 International financial flows to developing countries in support of clean energy research and development and renewable energy production, including in hybrid systems

- 7.b** By 2030, expand infrastructure and upgrade technology for supplying modern and sustainable energy services for all in developing countries, in particular least developed countries, small island developing States and landlocked developing countries, in accordance with their respective programmes of support
 - 7.b.1 Investments in energy efficiency as a proportion of GDP and the amount of foreign direct investment in financial transfer for infrastructure and technology to sustainable development services

SDG 7.3.1. - Energy intensity

- ✓ **Energy Intensity**, measured in terms of primary energy and GDP, is assumed as **indicator for target 7.3.1**

- ✓ **SDG METADATA** (Last update: 16 March 2018; <https://unstats.un.org/sdgs/metadata/>):
 - **Definition:** Energy intensity is defined as the energy supplied to the economy per unit value of economic output.

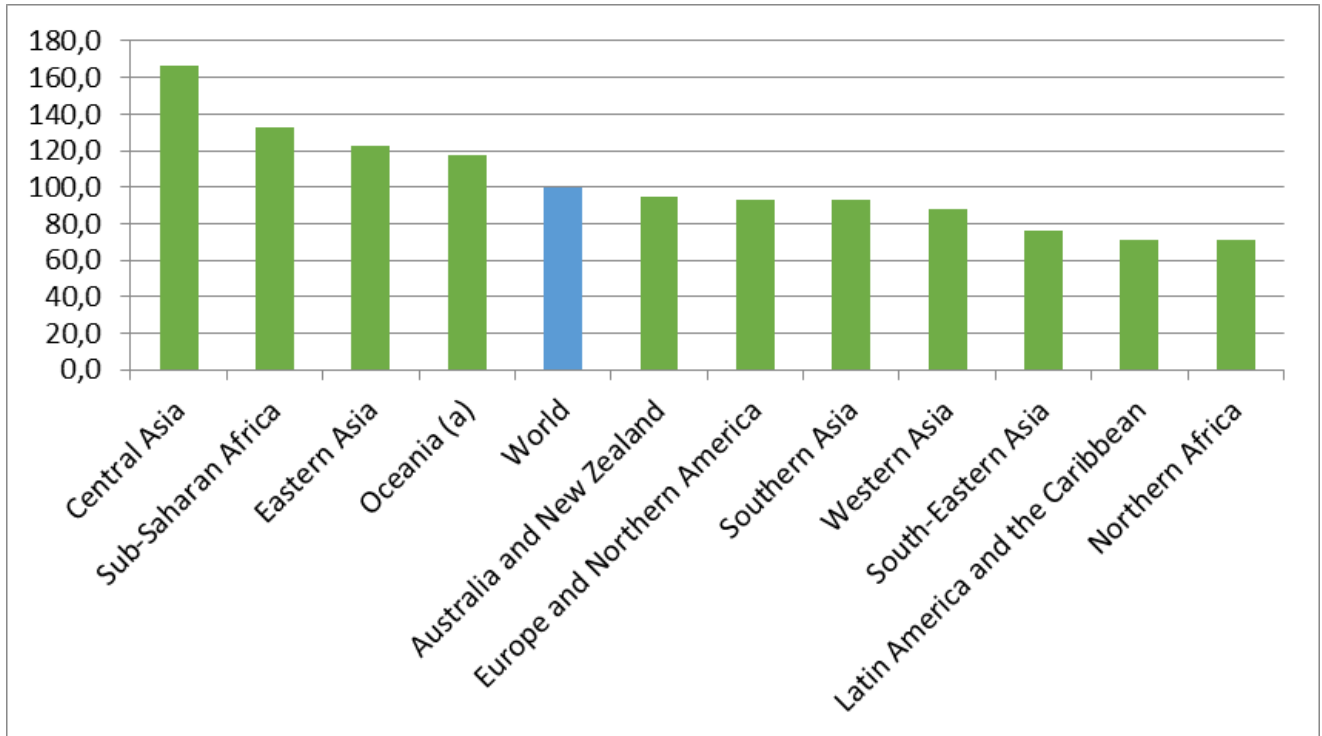
 - **Rationale:** Energy intensity is an indication of how much energy is used to produce one unit of economic output. It is a proxy of the efficiency with which an economy is able to use energy to produce economic output.

 - **Computation Method:** This indicator is based on statistics used to produce a national energy balance. Internationally agreed methodologies for energy statistics are described in the “International Recommendations for Energy Statistics” (IRES), adopted by the UN Statistical Commission (<https://unstats.un.org/unsd/energy/ires/>). Once a national energy balance is developed, the indicator can be obtained by dividing total energy supply over GDP.

 - **Comments and limitations:** Energy intensity is only an imperfect proxy for energy efficiency. It can be affected by a number of factors, such as climate, structure of the economy, nature of economic activities etc. that are not necessarily linked to pure efficiency.

SDG 7.3.1. - Energy intensity at global level (levels)

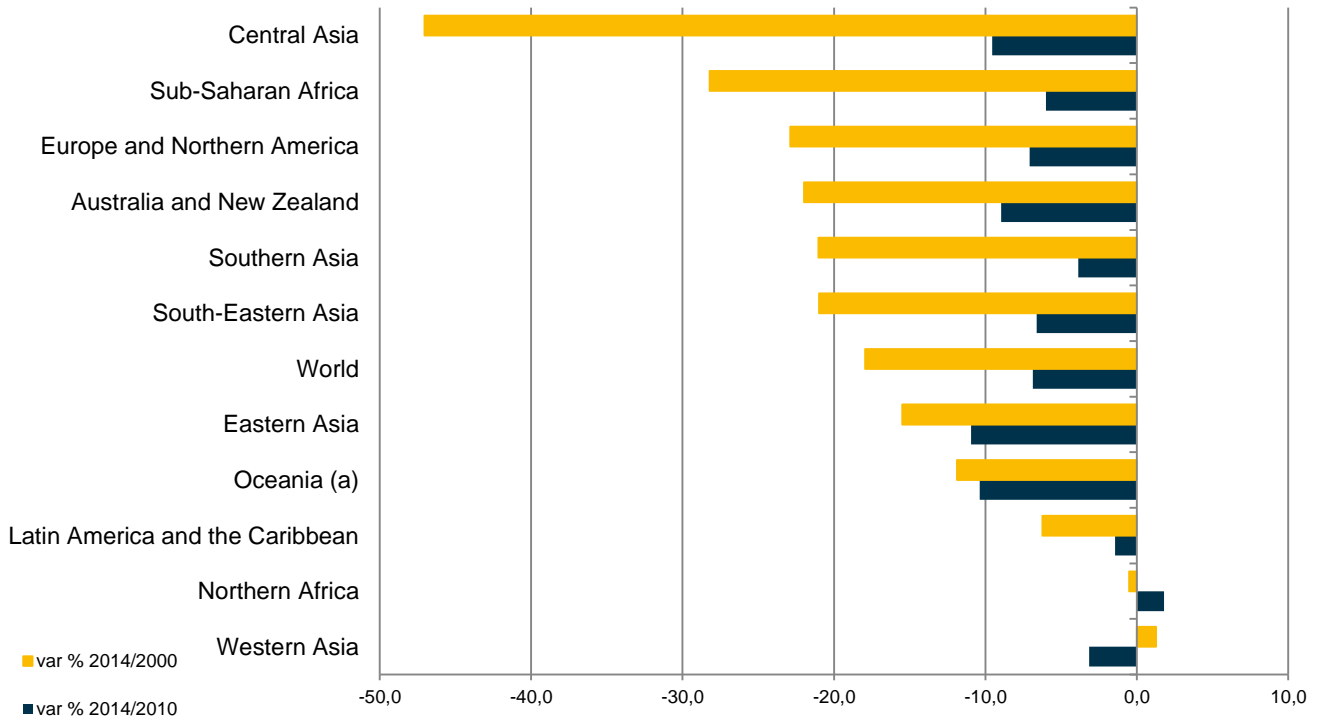
Energy Intensity by geographical area (World=100) – Year 2014



(a) Australia and New Zealand excluded

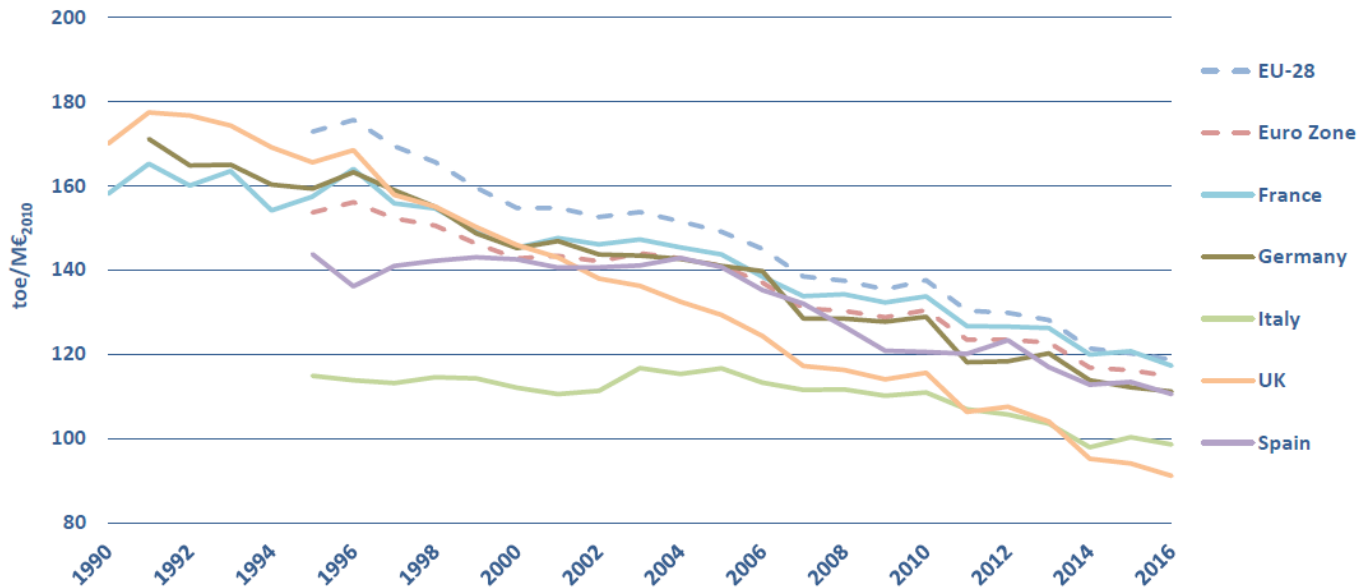
SDG 7.3.1. - Energy intensity at global level (trends)

Energy intensity by geographical area (% var. 2014/2000; 2014/2010)



(a) Australia and New Zealand excluded

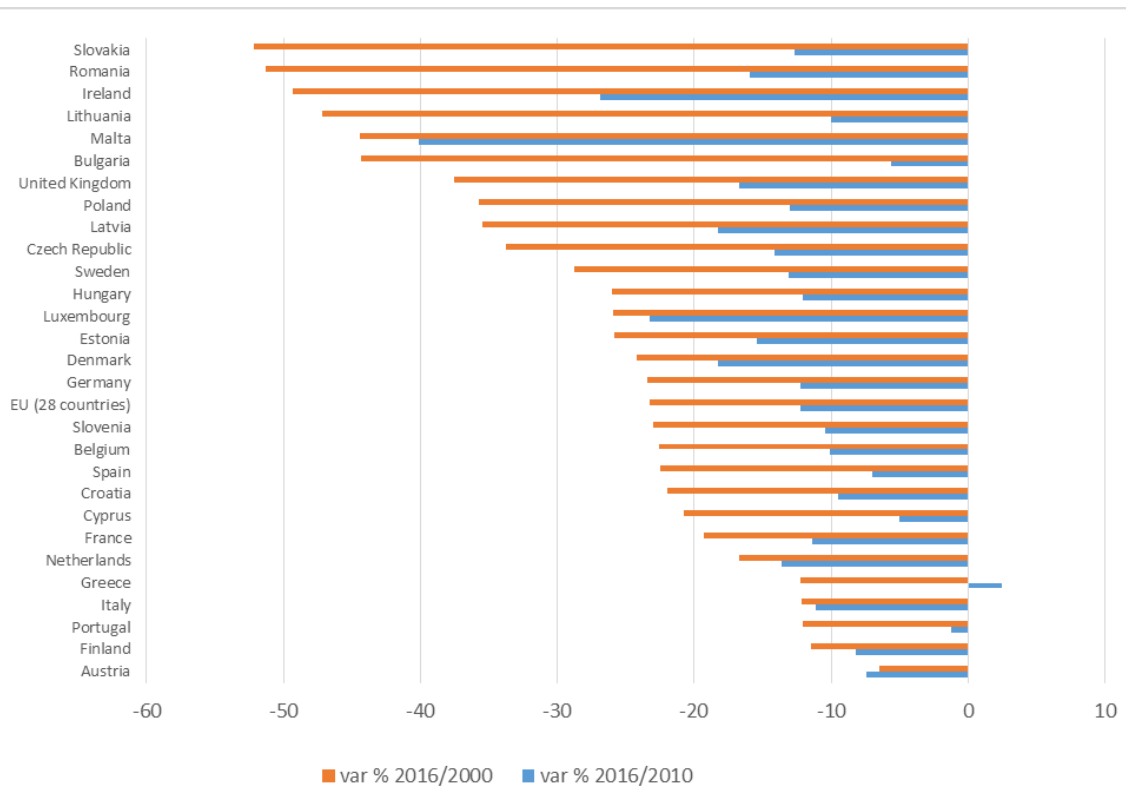
SDG 7.3.1. - Energy intensity in the EU-28 (trends)



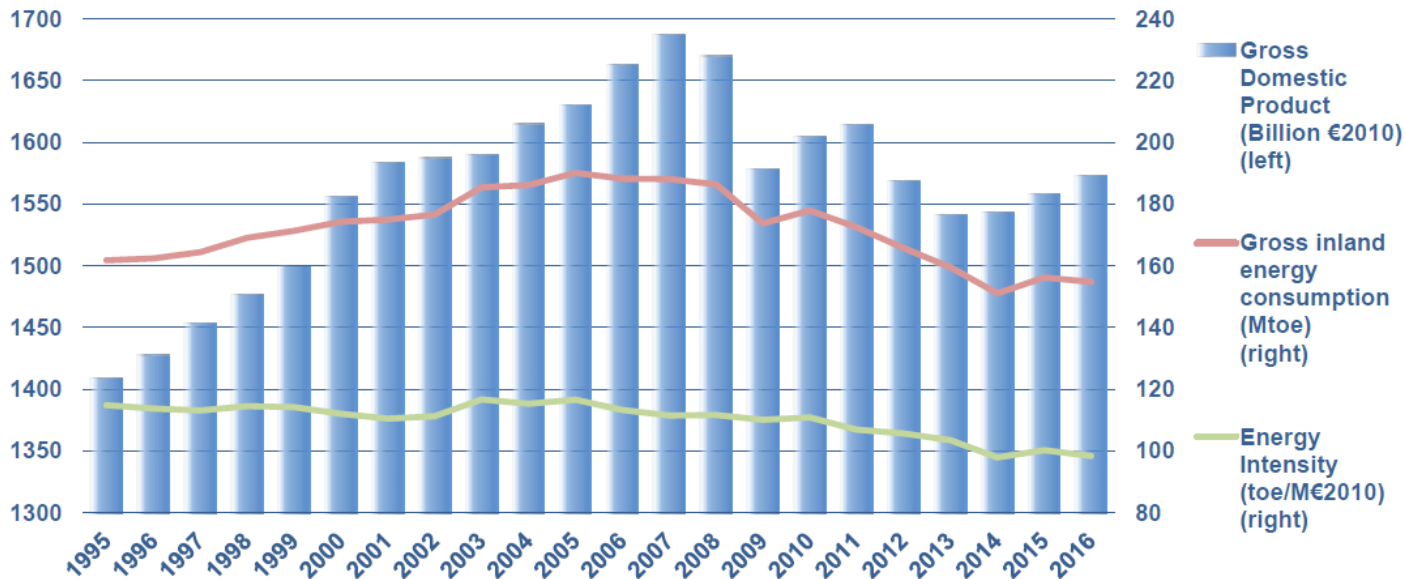
Source: ENEA elaboration of EUROSTAT, ISTAT data

SDG 7.3.1. - Energy intensity in the EU-28 (trends)

Energy Intensity in European Union by Country (% var. 2016/2000; 2016/2010)



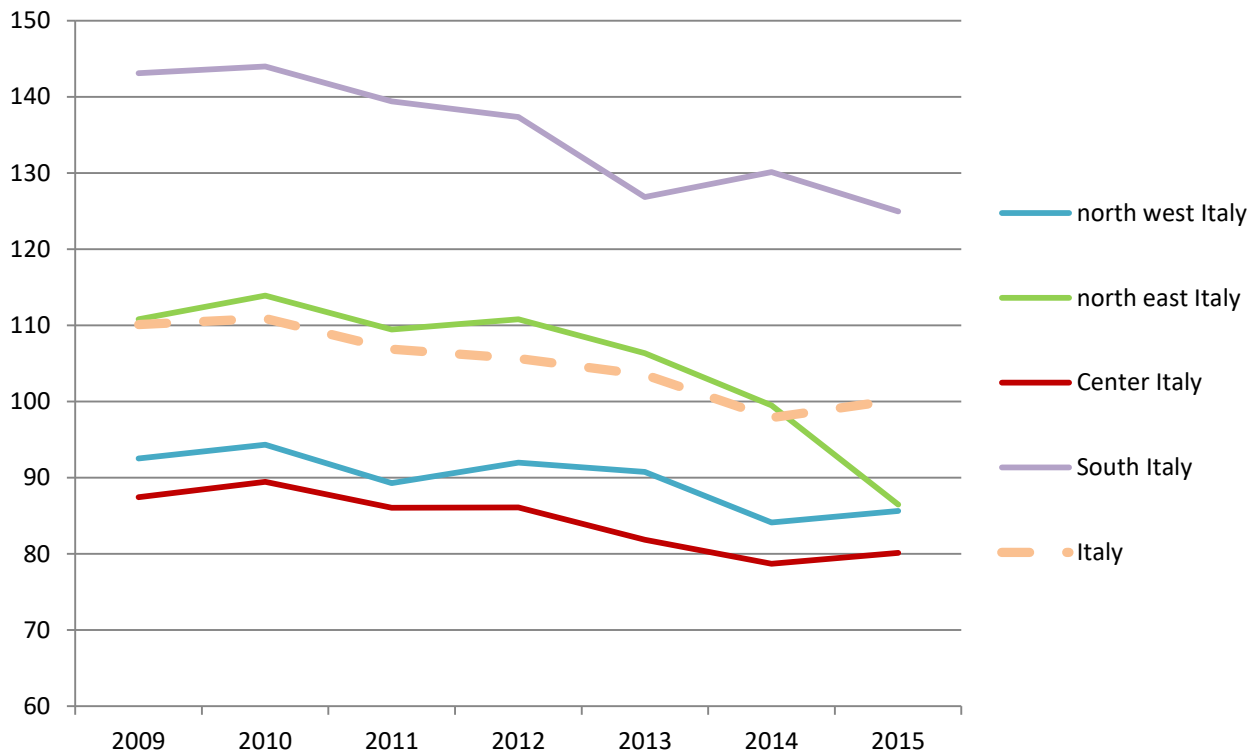
Energy intensity in Italy



Source: ENEA elaboration of EUROSTAT, ISTAT data

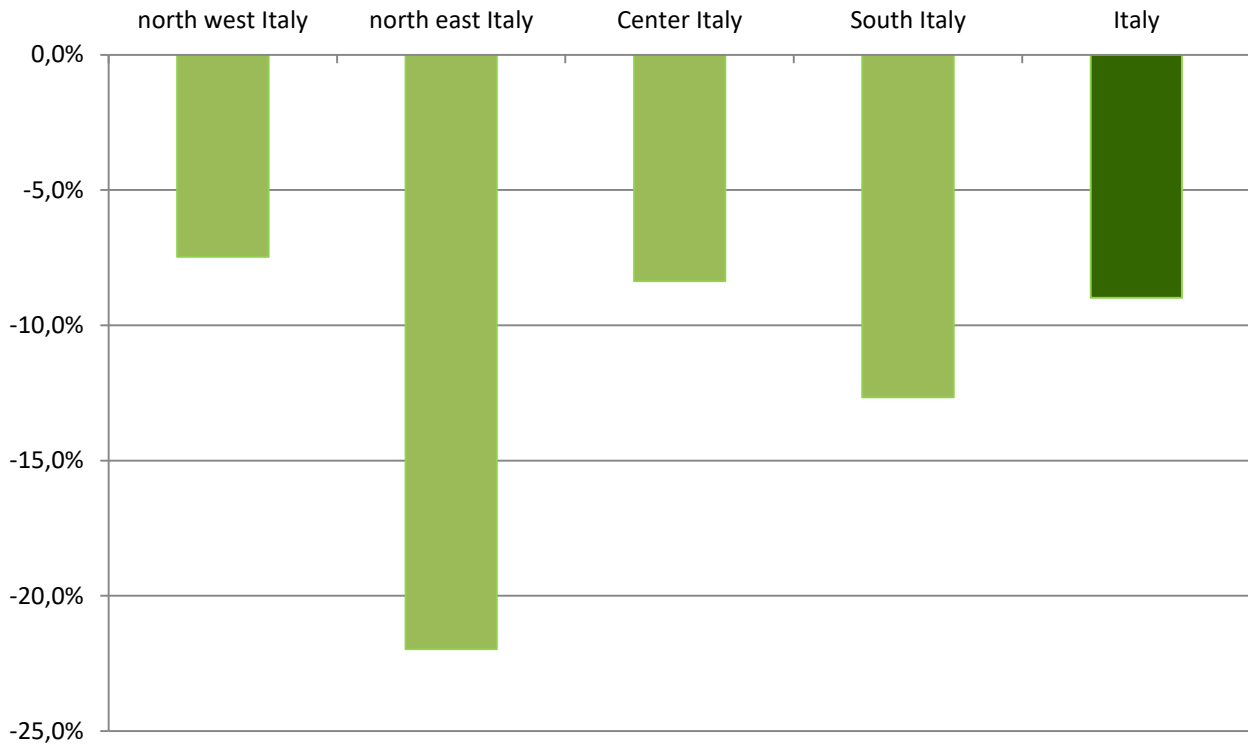
Macro region level – trend

Energy Intensity in Italian macro regions (kg of oil equivalent per 1,000 Euro of GDP)



Source: ENEA elaboration of EUROSTAT, ISTAT data

Macro region level – % change in 2009-2015



Energy efficiency is a priority for national and international policies

- ✓ **UN Agenda 2030**
Target 7.3 - By 2030, double the global rate of improvement in energy efficiency
- ✓ **UE 20-20 "Climate-Energy Package":**
20% improvement in energy efficiency (Directive 2012/27/UE)
- ✓ **UE "2030 climate and energy framework"** (new targets for the year 2030):
At least 27% improvement in energy efficiency
- ✓ **UE "Clean Energy for All Europeans" package:**
"Putting energy efficiency first": model of energy governance focused on energy efficiency, as a means of economic and employment promotion and sustainability

Italy's National Energy Strategy (NES) 2017

1

Competitiveness

To bridge the gap between Italian energy prices and costs and European ones



2

Security

To improve the security of energy supply and the flexibility of energy systems



3

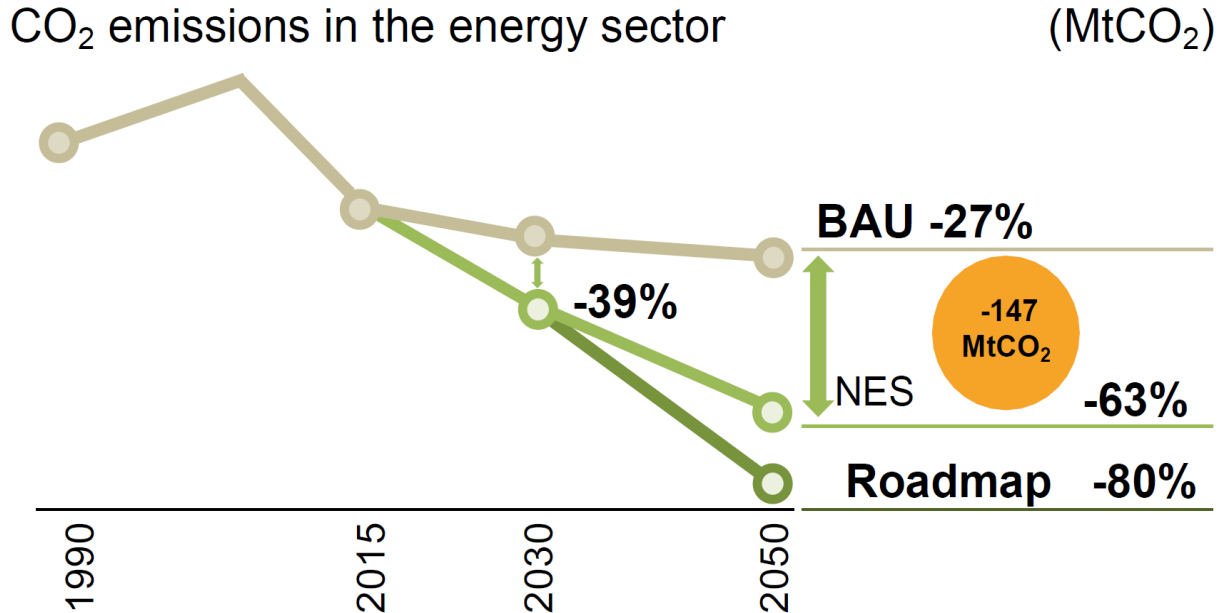
Environment

To go beyond 2030 targets, in line with the COP21 and 2050 Roadmap targets



Source: Ministry of Economic Development

Towards a decarbonized energy sector by 2050



Source: Ministry of Economic Development

The expected path shows that energy intensity would need to decrease

Achieved savings (final energy, Mtoe/year), 2011-2017

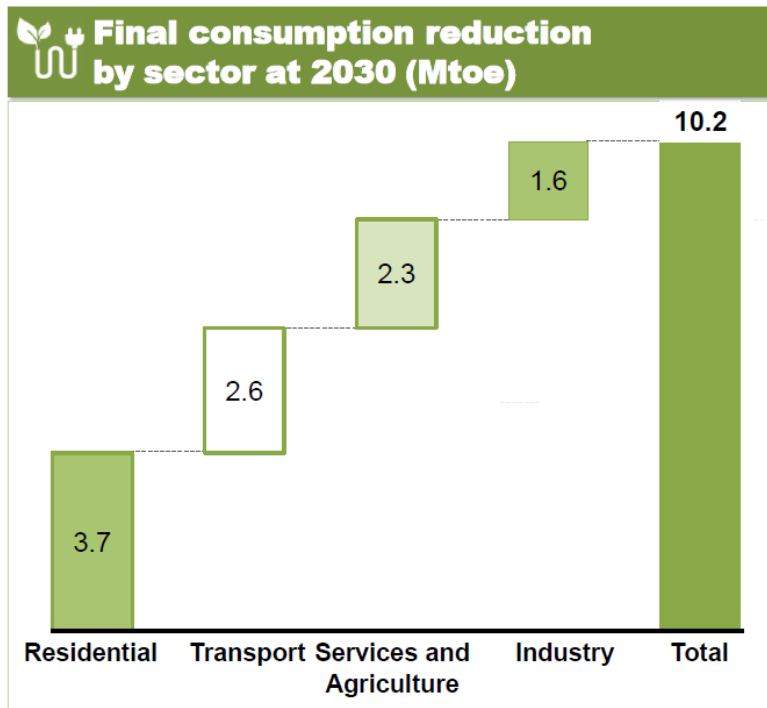
Sector	Measure White Certificates	Tax Relief *	Conto Termico	Impresa 4.0 National Plan *	European Regulations and High-Speed Rail *	Italian Legislative Decreets 192/05 and 26/6/15 **	Energy savings		Achieved target (%)
							Achieved in 2017 **	Expected by 2020	
Residential	0.71	2.08	-	-	-	0.85	3.64	3.67	99.2%
Services	0.15	0.02	0.005	-	-	0.04	0.22	1.23	17.5%
Industry	2.1	0.03	-	0.3	-	0.07	2.5	5.1	49.0%
Transport	0.01	-	-	-	1.68	-	1.69	5.5	30.7%
Total	2.97	2.13	0.005	0.3	1.68	0.96	8.05	15.5	51.9%

* Estimate for the year 2017.

** Estimate for the period January –September 2017. The residential sector includes the savings from there placement of large house hold appliances also.

Source: ENEA elaboration of data from the Ministry of Economic Development, ISTAT, Gestore dei Servizi Energetici S.p.A., ENEA, FIAIP, GfK

The role of energy efficiency in NES



Source: Ministry of Economic Development

Residential: revising, strengthening and confirming the tax deduction scheme for energy-efficiency investments (so-called “Ecobonus”); putting the energy-efficiency fund into operation.

Services: adoption of Energy Performance Contracting (EPC) for the renovation of public buildings; energy renovation programme for public buildings.

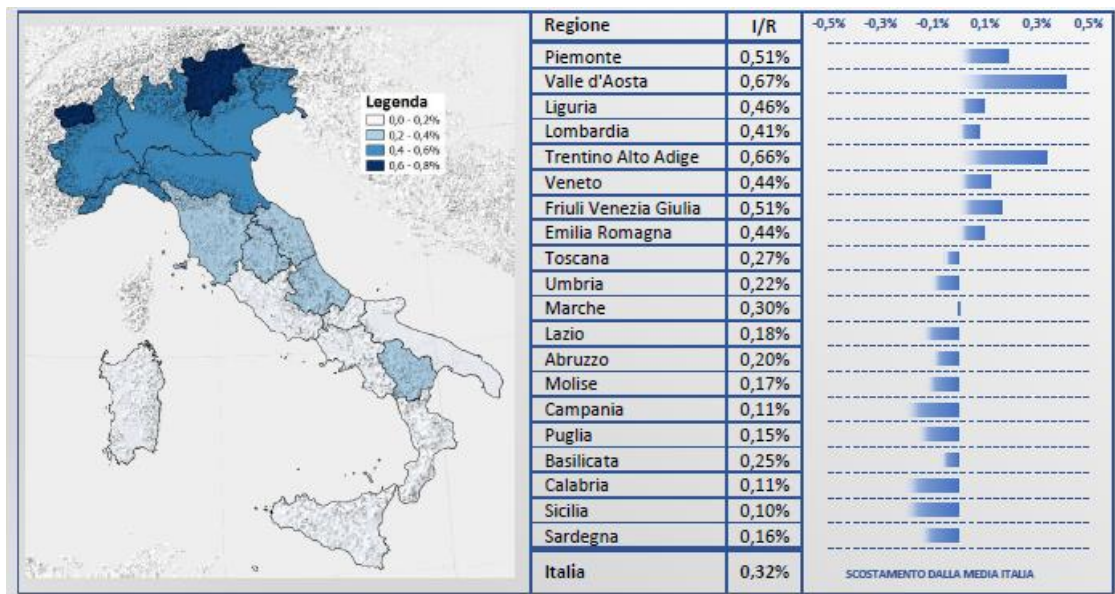
Ecobonus – Regional distribution of investments

Tax deductions scheme for the energy renovation of existing residential buildings were introduced in Italy by the Budget Law for 2007.

They have been a key driver of energy efficiency improvements in the housing sector:

- More than 3.3 million of implemented actions
- Almost 35.5 billion euros of leveraged private investments

Ratio between activated investments and net available income (I/R) by region and difference relative to the average, year 2016



Source: ENEA elaboration of ENEA, ISTAT data

- ✓ During the past 15 years much progress has been made in reducing energy intensity and containing energy consumption
- ✓ In Europe, the *Clean Energy for All Europeans* package strengthened the *Energy Efficiency first!* Principle
- ✓ Despite the improvements achieved over time, the policy targets are still far from being achieved and the disparities between countries are still relevant
- ✓ In Italy, at 2017 half of the expected path towards the 2020 targets has been covered
- ✓ From a statistical point of view, work is still in progress. Further developments will be in the direction of improving methodology, enlarge the number of available indicators and the geographical level of dissemination
- ✓ The possibility of develop Energy Intensity indicators by regions (NUTS 3) is under study and preliminary results seem interesting

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2018 Ecobonus Annual Report
Executive summary in English:

<http://www.enea.it/it/seguici/pubblicazioni/pdf-volumi/2018/detrazioni-2018-executivesummary-en.pdf>

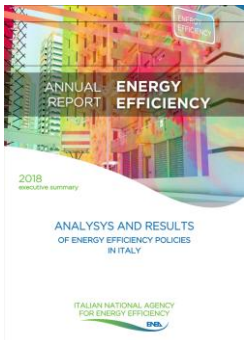


Energy Efficiency roadshow

#ItaliainClasseA: a 6-month journey, 3750 km long
<https://www.youtube.com/watch?v=coljoWlxY4g>

ITALY IN A CLASS

National Energy Efficiency Campaign
<http://www.italiainclassea.enea.it/>



2018 Energy Efficiency Annual Report
Executive summary in English:

<http://www.enea.it/it/seguici/pubblicazioni/pdf-volumi/2018/raee-2018-executivesummary-en.pdf>



Rapporto SDGs 2018.

Informazioni statistiche per l'Agenda 2030 in Italia: prime analisi
<https://www.istat.it/it/files//2018/07/SDGs.pdf>