G20 Peer Review of Fossil Fuels Subsidies

Self-Report

Italy

November 2018

Summary

List of acronyms and abbreviations

APEC	Asia-Pacific Economic Cooperation
ARERA (ex AEEGSI)	Italian Regulatory Authority for Energy, Networks and Environment (ex Italian Regulatory Authority for Electricity Gas and Water)
CAP	Common Agriculture Policy
CBD	Convention on Biological Diversity
CMO [OCM]	Common Market Organization
CNG	Compressed Natural Gas
DECC	Department for Energy and Climate Change (UK)
DEFRA	Department for Environment, Food and Rural Affairs (UK)
DG-SVI	Directorate General for Sustainable Development & International Affairs of MATTM
e.g.	for example (*exempli gratia*)
ECFIN	Directorate General for Economic & Financial Affairs (European Commission)
EEA	European Environmental Agency
EFS	Environmentally Friendly Subsidy
EHS	Environmentally Harmful Subsidy
ENS	Environmentally Neutral Subsidy
EPA	Environmental Protection Agency (USA)
ETS (or EU-ETS)	European Union - Emission Trading System
FAO	Food and Agriculture Organization of the United Nations
FIP	Feed-in-Premium
FIT	Feed-in-Tariff
G7	Group of 7 Countries: Canada, France, Germany, Italy, Japan, UK,USA
G8	Group of 7 Countries + Russia
G20	Group of 20 Countries (G8 + Argentina, Australia, Brazil, China, India, Indonesia, Mexico, Saudi Arabia, South Africa, South Korea, Turkey, EU)
GBE	Green Budget Europe
Gcm	Cubic gigameters
GHG	Green House Gases
GIZ	Gesellschaft für Internationale Zusammenarbeit (Aid Agency Germany)

GSI	Global Subsidies Initiative
HGV	Heavy Goods Vehicles
HSC	High Sulphur Content (or ATZ)
ICAO	International Civil Aviation Organization
IEA	International Energy Agency
IEEP	Institute for European Environmental Policies
IGA	Inspection Générale de l'Administration (France)
IGAS	Inspection Générale des Affaires Sociales (France)
IGF	Inspection Générale des Finances (France)
IISD	International Institute for Sustainable Development
IMF	International Monetary Fund
IMO	International Maritime Organization
INDC	Intended Nationally Determined Contribution
LNG	Liquefied Natural Gas
LPG	Liquid Petroleum Gas
LSC	Low Sulphur Content (or BTZ)
MATTM	Italian Ministry of Environment, Land & Sea
MEFOP	Company for the development of the Pension Funds Market
MiSE	Italian Ministry of Economic Development (Industry, Trade and Energy)
OECD	Organisation for Economic Co-operation and Development
OPEC	Organization of the Petroleum Exporting Countries
RDP	Rural Development Programme
RES	Renewable energy sources
TEEB	The Economics of Ecosystems and Biodiversity
TSO	Transmission System Operator
UNCED	United Nations Conference on Environment and Development
UNEP	United Nations Environment Programme
UNRIC	United Nations Regional Information Centre for Western Europe
WB	World Bank
WRI	World Resource Institute
WTO	World Trade Organization

INTRODUCTION: WHY FOSSIL FUEL SUBSIDIES

The ratification of the Paris Agreement and the subscription of the 2030 UN Agenda with its Sustainable Development Goals (SDGs) represent a turning point in combating climate change and tackling environmental issues: since then, different policy changes around the world took place heavily involving fossil fuel subsidies (FFS). As reported in OECD (2018a) "*India and Indonesia have made great strides in phasing-out their consumer price supports […], a number of fuel tax exemptions have been phased-out in OECD countries, and carbon taxes have been introduced in Mexico and France to internalize the external costs of fossil fuel consumption*".

Moreover, G20 and APEC countries are contributing with self-reports on FFS: these peer reviews highlight the importance of transparency and accountability in this domain, where environmental, climate, health and economic issues are at stake. It is essential, indeed, to share best practices, progress reports, issues and receive feedbacks from partners on a topic that has a global echo and is unanimously seen as a major obstacle in reaching common climate goals. Indeed, FFS cause excessive consumption of fossil fuels, exacerbate environmental pollution, result in loss of government income and have serious health damages on local population. Common and parallel action by G20 countries may mutually reinforce climate and economic policies.

This is why, in 2009, G20 partners decided to start phasing out fossil fuels subsidies "*over the medium term*" while emphasizing one of the major consequences of such fiscal measures, that is to undermine "*efforts to deal with the threat of climate change*". The first two countries undergoing their peer-reviews just after the ratification of the Paris Agreement were two economies of global importance, China and United States of America, and this bears high symbolic and political meaning in the economic and environmental domains: two of the biggest polluters transparently reported their plans on phasing-out FFS in the medium term, bringing the topic to the international public opinion and launching an impressive monitoring effort. This paved the way to other two important G20 partners, Mexico and Germany, that published their self-reviews in 2017; now, in 2018, it is the turn of Indonesia and Italy.

Several lessons can be learned by participating to G20 FFS self-reports. Countries are encouraged to look at their internal policies and measures in a systematic way; lessons are to be learned from experts part of the peer review team providing feedbacks on the state of the art and on the way to reform FFS in a given country; countries might achieve awareness on the environmental, social and economic impact of their fiscal policy sharing this knowledge base across Ministries; revelation on the heterogeneity of approaches among different countries on the definition of "subsidy" might arise.

Hopefully, this self-review will contribute to keep up the momentum on the support on fossil fuels, that constitutes a major environmental, economic and social issue of our time. This work aims at sharing with countries, think tanks and international organizations, the state of the art of FFS in Italy and the huge potential for reform. Furthermore, this experience might encourage other countries, G20 and beyond, to investigate and disclose information on the topic, moving towards the path of phasing-out FFS as the scientific and international communities ask us.

1. DEFINITIONS OF SUBSIDIES, NATIONAL AND INTERNATIONAL EXPERIENCES

Definitions of subsidies in literature

In recent years, scholars reported different definitions of subsidies that can be summarized in three main areas of scope:

1. A subsidy is defined as the transfer from the Government to a private actor. This definition classifies as a subsidy any financial transfer from a public body that provides an advantage or benefit to a private actor. The IGF-IGAS-IGA (2007) adopts the same definition, indicating as a subsidy "*any transfer of revenue from a public body (or from a private through public funds) to a beneficiary, with a goal of public utility and subject to specific constraints*". The subsidy might take the form of a direct transfer or the abandonment of the claim by the State of recovering revenue from a private actor (e.g. tax credits).
2. The second definition identifies as a subsidy any public action that confers a private benefit in terms of revenues or costs. This follows the definition from OECD (2005) where a subsidy is, in general, "*a result of a government action that confers an advantage on consumers or producers, in order to supplement their income or lower their costs*". This comprehensive definition is applicable to cases where a State might postpone or refuse to apply an international legislation that could bear more costs to its own private actors. A similar context could indicate a *de facto* subsidy (Sainteny Report, 2012).
3. A third definition identifies a subsidy as "*the difference from the observed price and the marginal social cost of the production that would internalize the damage to the collectivity*" (Sainteny Report, 2012). This definition, adopted in the Sainteny Report (2012), refers to consumption subsidies whenever the price of a good is below its marginal social cost, and a production subsidy when the price of the good is above its marginal social cost. Among international organizations, the IMF shares this definition and adds a further distinction: pre-tax subsidy when the price is below the marginal social cost and post-tax subsidy when the price is below the marginal social cost and a Pigouvian tax internalizing the externalities (Coady et al., 2015). This definition is overarching and includes a particular category of subsidies, "implicit" subsidies that is whenever the current tax system does not internalize the externalities caused by a specific anthropogenic activity (Sainteny, 2012; Teeb, 2009). This approach was already analyzed in Pieters (1997) that has proposed a wider definition of subsidy as "*deviation from full pricing*". It poses relevant challenges, since it is hard to define the price that internalizes externalities through heterogeneous sectors.

As specified in EEA (2004), subsidies might be on-budget or off-budget. The former comes from the State budget or can be derived from public accounts; they include direct subsidies, i.e. transfers, cost recovery schemes or the provision of services excluding infrastructures. The latter includes tax expenditures, such as tax benefits, deductions and the non-internalization of externalities.

Among IOs, the widest definition is provided by the World Trade Organization (WTO) in the "*Agreement on Subsidies and Countervailing Measures*". The ASCM currently has 164 WTO members as signatories.

A government introduces a subsidy when (WTO, 1994):

- provides a potential or effective direct subsidy;
- renounces or recognizes not being able to collect its full potential revenue;
- provides goods and services below the market price or purchases them above the market price;

- provides support to the revenue generated from a good or its price.

This definition is wide and it includes the public provision of infrastructures or services to a specific sector and/or the implementation of protectionist measures.

Often, the definition of what constitutes a subsidy varies from one sector to the other. For instance, studies on externalities and subsidies in the transport sector are conspicuous, and this allows scholars to adopt the third definition. On the other hand, if we move to the energy sector, consensus on definitions is often not unanimous.

The definition of subsidy adopted in the current work

In this work, we adopt the same definition of the Italian Catalogue on Environmentally Harmful and Friendly Subsidies (Catalogue on Environmental Subsidies – CES henceforth) that is "*a subsidy is a measure that keeps prices for consumers below market levels, or keeps prices for producers above market levels or that reduces costs for both producers and consumers by giving direct or indirect support*" (OECD, 2006). We believe that this definition is the most inclusive and reflects the spirit of this work by including both direct and indirect subsidies (see Table 1).

We define direct subsidies as the on-budget transfers. These include direct transfers to firms and households in form of reimbursements and transfers.

Tax expenditures, such as tax credits, deductions, tax benefits, support given by regulatory mechanisms (e.g. feed-in-tariffs), preferential entry to a specific market (e.g. reduction of requirements to participate to "green tenders"), are part of the off-budget measures. Table 1 summarizes all the voices included, while on a more pragmatic approach, we include the Table 2:

Table 1: Classification of subsidies

Description	*Classification*	
Direct transfers of funds	On-budget	Direct subsidies
Potential direct transfers of funds		
Foregone revenues	Off-budget	Indirect subsidies (tax expenditures, exemptions, tax credits, etc.)
Regulatory support mechanisms		
Tax exemptions and rebates		
Selective exemptions of government standards		
Implicit income transfers resulting from a lack of full cost pricing		

Table 2: Classification of subsidies – Empirical Approach

First level classification	Second level classification (case studies)	Who covers the subsidy and how
Direct subsidies	Direct transfers of public resources to economic agents	Public bodies (public expenditure)
	Potential transfer of public resources to economic agents	
	Direct transfers of resources withdrawn through tariffs on public services	Public service users (e.g. electricity bills)
Indirect subsidies	Tax expenditures (any form of exemption, exclusion, reduction of tax base or rate as a consequence of current regulations[1]): - Selective exemptions of specific categories of beneficiaries deviating from general principles and obligations, as provided by current regulations (e.g., exemption from tax rates or duties) - tax rate reductions (implementation of a reduced tax rate with respect to an ordinary one); - tax base deduction (e.g., deduction from total revenue, reliefs, e.g. royalties oil & gas); - reduction of taxation (deduction, tax credit, substitute taxes); - reimbursement of taxes; - tax deferrals; - favourable tax regimes (tax regimes alternative to ordinary ones); - implementation of a flat-rate criteria to determine the tax base and that can potentially bring to foregone revenue (e.g. fringe benefit for company cars).	Public bodies (foregone revenue)
Indirect subsidies	Implicit subsidies arising from different fiscal treatment of comparable and equivalent activities or products (excise duties on fuels used for electricity production vs industrial uses, different tax treatment among diesel/gasoline, underpricing of natural resources, etc.)	Public bodies (foregone revenue)
	Tariff benefits or exemptions to specific categories of consumers (cross-subsidies) (e.g. bonus to poor families, etc.)	Specific public service users (treatment inequality that determine environmental damage)
Out of Scope	Implicit financial transfers resulting from a lack of full cost pricing (external costs)	Public bodies (foregone revenue), citizens (burden of environmental costs from polluters to collectivity)

Source: Second edition of the CES

[1] In line with art. 21, par. 11-bis, of Law n.196 of the 31st December 2009, and as modified in art.1, par. 3, letter b) of the Legislative Decree n. 160 of 24th September 2015 "Estimate and screening of fiscal evasion and screening and reordering of fiscal erosion, implementing artt. 3 and 4 of law n. 23 of 11th March 2004".
In the following, we quote the text of art. 1 of Legislative Decree n. 160/2015:
Art. 1 – Screening of tax expenditures and coordination with financial public procedures.
[…] 3. To art. 21 of Law n. 196 of the 31st December 2009, we introduce the following modifications:
[…] b) after paragraph 11, we introduce the following:
«11-bis. In the report of the estimates of revenue it has to be enclosed an annual report on tax expenditures, listing any form of exemptions, exclusion, reduction of tax rate or base or in any favourable fiscal regime, deriving from current regulations, with different descriptions for those introduced in the past year and in the first six months of the current. […]».

In this document, we are not including implicit subsidies, that is subsidies given by the non-internalization of externalities in the tax system. These subsidies are in place when the Government, due to *inertia* or lack of political will, fails at internalizing external costs, expressed here as the difference between the marginal private and social costs (so-called marginal external costs). As mentioned above, important IOs such as the IMF, include these external costs in their own definition of subsidy (e.g. IMF, 2014). Nevertheless, the inclusion of implicit subsidies would require a constant monitoring activity by the Government that is not yet in place, although strongly recommended in order to assess the ex-ante impact of subsidies in all their forms and correctly enhance the polluter-pays-principle (CES, 2017).

Moreover, we are not yet in condition to include as a subsidy the provision of public infrastructures and services. This definition, still well-debated in the scientific community, would add further complexity to the exercise and go beyond the scope of this self-report.

Furthermore, the present self-report analyses individual public expenditures concerning fossil fuels and makes no attempt at a microeconomic analysis of the service that the public expenditure contributes financing (e.g. when discounted electricity/gasoline/diesel contributes financing urban public transportation), does not analyse cross-elasticities of demand between substitute sectors (e.g. demand for public transport vs. demand for private transport; demand for air travel vs. demand for high speed train travel) and finally does not analyse the limits to taxation in relation to disposable income. Obviously, on a policy ground, the implementation of an Environmental Fiscal Reform (i.e. lowering emissions and/or local pollution through economic instruments) without causing unwanted repercussions on the environment, on illegal behaviour (e.g. encouraging tax evasion, black market, illegal or irregular use of fuel) or cause other market failures should include such analysis at the microeconomic level.

One of the widest definition of subsidies is the one provided by the WTO (1994) as reported in the Agreement on Subsidies and Countervailing Measures (ASCM):

"For the purpose of this Agreement, a subsidy shall be deemed to exist if:

(a)(1) there is a financial contribution by a government or any public body within the territory of a Member (referred to in this Agreement as "government"), i.e. where:

(i) a government practice involves a direct transfer of funds (e.g. grants, loans, and equity infusion), potential direct transfers of funds or liabilities (e.g. loan guarantees);

(ii) government revenue that is otherwise due is foregone or not collected (e.g. fiscal incentives such as tax credits);

(iii) a government provides goods or services other than general infrastructure, or purchases goods;

(iv) a government makes payments to a funding mechanism, or entrusts or directs a private body to carry out one or more of the type of functions illustrated in (i) to (iii) above which would normally be vested in the government and the practice, in no real sense, differs from practices normally followed by governments;

or

(a)(2) there is any form of income or price support in the sense of Article XVI of GATT 1994; and

(b) a benefit is thereby conferred."

This definition, which is wide, covers different typologies of subsidies, going from direct transfer of funds, foregone revenues (e.g. tax expenditures), transfer of risk to government (e.g. export credit guarantees). We do not envisage price support through regulatory mechanisms.

Subsidies in Italy – The national experience

In Italy, different Governments analysed the role of subsidies in the tax system, especially when considering tax expenditures. The Commission for the Reform of the tax system guided by prof. Cosciani, established in the yearly '60s, recorded a non-homogeneous number of tax benefits provided to different sectors and beneficiaries and suggested a first reduction in numbers and modes of employment. These considerations will constitute the starting point for the fiscal reform of the '70s (Bottarelli, 2004). The aim was to "reduce the bunch of tax expenditures, decreasing them drastically and keeping only those with strategic goals" (Ceriani, 2011).

The first attempt of reform, partially successful, started through the Decree of the President of the Republic n.601/1973. Basic principles were drawn to abolish tax expenditures with the exception of those deemed to be of primary interest to the country. The second part, with the effective abrogation of these measures, never took place and only a few years later, through Law n. 468/1978, a first table with a screening of tax expenditures was enclosed to the Financial Law.

After nearly two decades, the political debate drew again its attention on the inhomogeneity of tax expenditures in the Italian fiscal system: the Minister of Finance Formica gathered from the Parliament the mandate to reform different fiscal measures, including exemptions and deductions. The end of the legislature stopped this attempt.

The interest to the topic was again part of the political agenda in 2009, when it was made compulsory for the Government to enclose a revised list of tax expenditures to the annual Budget Law.

In the same year, the Commission on fiscal erosion chaired by prof. Ceriani analysed tax expenditures in the Annex to the Budget Law 2011 with the goal of "*identifying the area of fiscal erosion, […] meant as the distance between the fiscal rule and the deviation from it (as for exemptions, deductions, etc.)*"(Ceriani, 2011). The work of the Commission identified over 720 measures against the 242 enclosed annually to the Budget Law (the so-called "Ceriani report").

In 2012, the Government asked prof. Giavazzi to prepare a report, "Analysis and Recommendations on public support to firms" (so-called "Giavazzi report"). The subject of the study was the identification of support measures, in their widest definition, to Italian firms and the effect of their potential removal on the country's economy. The results of the report suggest that removing € 10 billion support to the firms could potentially result to an increase of 1.5% GDP (given that the revenue used would be invested to lower fiscal pressure).

In November 2013, the Special Commissioner for Spending Review analysed and proposed a programme for the revision of public expenditure, including measures on tax expenditures[2].

International Organizations and the case of EHS/FFS

Different IOs devoted part of their efforts on identifying subsidies that are environmentally relevant, reaching the conclusion that subsidies harming the environment should be phased out and reformed to make them compatible with a path of sustainable development. This is even more relevant since a subsidy distorts the price signal for the use of a specific resource contributing to health-related pollution, especially in the case of fossil fuels, and violating the "polluter-pays-principle".

[2] http://www.camera.it/leg17/561?appro=la_spending_review_e_il_rapporto_cottarelli

OECD

OECD, for instance, developed different methodologies to identify and assess whether a subsidy is environmentally sustainable or not. In 1998, the Organization proposed the quickscan that connects the economic and environmental impact of a subsidy with existing environmental policies and the absorptive capacity of the environmental asset under consideration (OECD, 1998). Since this methodology has high-data requirements, in 2005 a simpler framework, the checklist, was proposed. This methodology aims at identifying the conditions that make it optimal to remove an EHS under the environmental perspective (OECD, 2005). One of the advantages of the checklist with respect to the quickscan is that it might be used for purely qualitative analysis. However, both these innovative instruments are not taking into account the social dimension, that usually is the motivation behind the introduction of many subsidies. For this purpose, in 2007, OECD introduced the integrated assessment framework with the aim of integrating socio-economic and environmental dimensions of a subsidy, with a particular focus on the original goal for its introduction, direct and indirect beneficiaries and sectors and industries harmed by its existence.

Beyond proposing policy tools, the OECD collects and publishes data on EHS. For instance, in the case of FFS, it identified already over 800 measures from OECD and outreach countries (Argentina, Brazil, China, India, Indonesia, Russia and South Africa) with an yearly total amount of $160-200 billion for the year 2010-2014. The largest share of this amount is provided by consumer subsidies.

On the political ground, *inertia* plays a role in the persistency of FFS, since two thirds of EHS in OECD countries were introduced before the year 2000 (OECD, 2015a). In the agricultural sector, OECD developed a database to estimate the consumer and producer support schemes. The database provides time-series data, starting from the '80s, and covers 14 OECD member countries and 9 non-member countries. The goal is to estimate the support to the consumption and production of agricultural products. The rationale does not include providing any indication on the environmental impact of these measures, but is useful to provide a quantitative framework to work on the issues of EHS.

On FFS, OECD and IEA manage international databases for fossil fuels subsidies and provide on regular basis the Inventory on Fossil Fuels Subsidies worldwide. Figure 1 shows the country coverage by the two institutions.

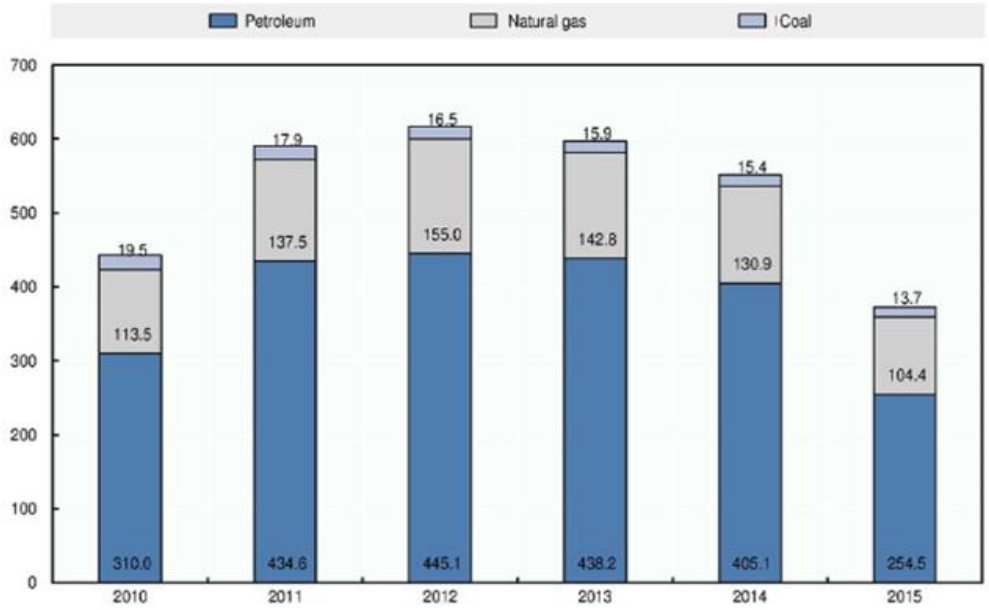
Indeed, the most recent review from OECD (OECD Companion to the Inventory of Support Measures for Fossil Fuels 2018, 2018a) describes the way to reconcile the diverse estimates and computations by the two institutions (OECD based on budgetary support and tax expenditures and IEA on consumer support), thereby providing a most complete estimate on both production and consumption sides. The resulting aggregate estimates of fossil fuels support ranges between 373 and 617 USD billion over the period 2010-2015 (Figure 2). The assessment covers 76 economies worldwide and 94% of global carbon dioxide emissions.

Figure 1: Fossil Fuel Support Country Coverage by OECD and IEA

Note: This chart illustrates coverage by the IEA in *grey*, by the OECD in *light blue*, and represents the overlapping countries in *dark blue*. Where there is no colour, this signifies that the country is either not covered by the IEA or the OECD, or that it has not been identified as giving substantially large support to fossil fuels.

Source: OECD (2018a)

Figure 2: OECD-IEA joint estimates of support for fossil fuels



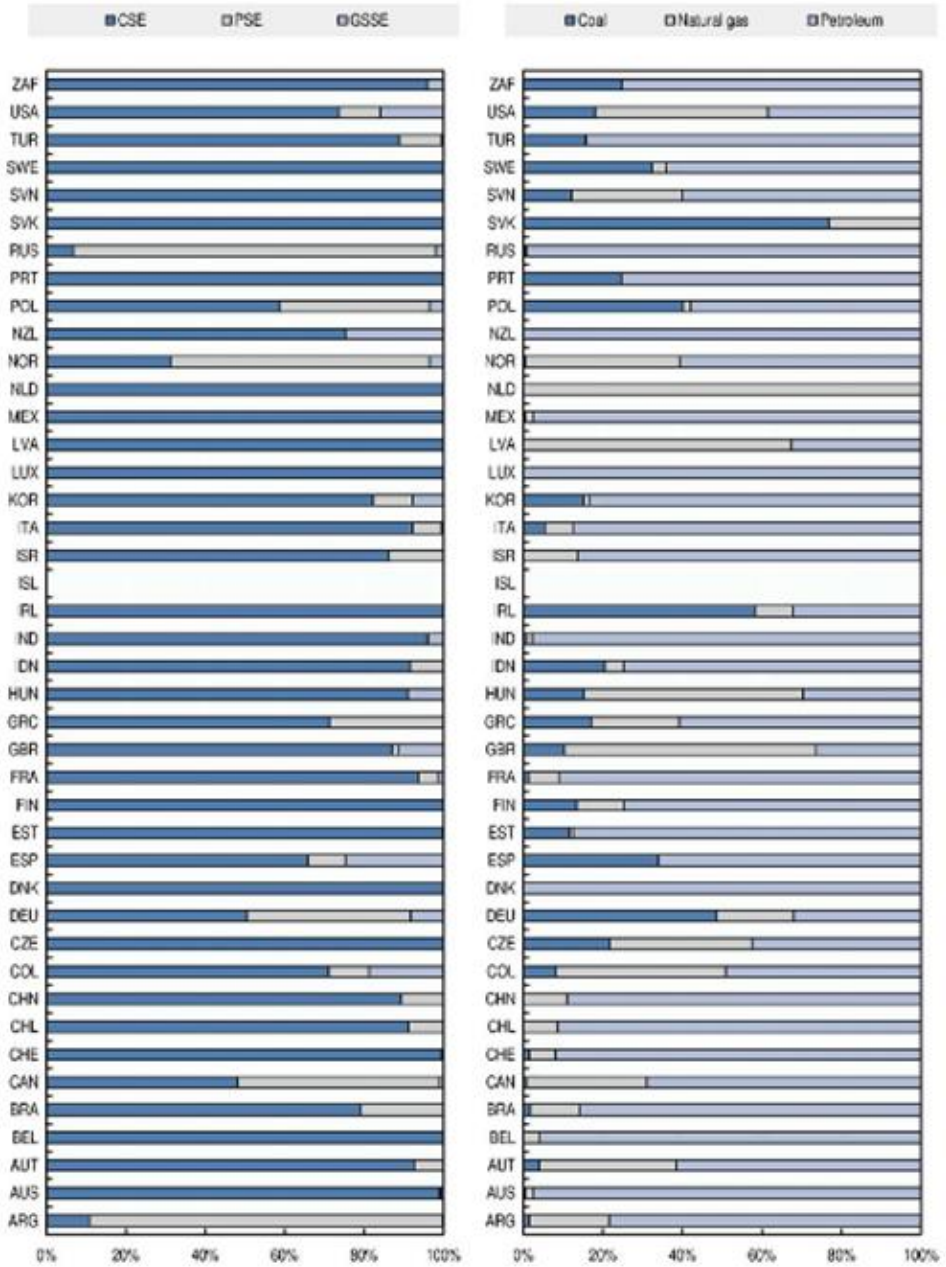
Note: This figure is based on a rule-of-thumb to combine the IEA estimates of consumer price support with OECD *Inventory* estimates. Since the IEA quantifies the price transfers resulting from under-pricing fossil fuels or foregone revenue stemming from selling products at prices lower than international prices, individual support measures in the OECD *Inventory* are sorted according to whether they lower the domestic price and then used to estimate an equivalent price transfer estimate. The rule-of-thumb then instructs to choose the estimates for which the six-year period total is the larger of the two. This rule-of-thumb addresses the potential sources of discrepancies between the two estimates that can stem from budgetary reporting rules, measurement errors, or time lags in the price pass-through.
Source: (IEA, 2016[13]), (OECD, 2015[11]).

Source: OECD (2018a)

The report highlights the urgency for action to enhance efforts for effective climate policies, describing the reform initiatives already undertaken (updated to 2016) at the international level. Moreover, it provides methodological insights to further improve computation of data on subsidies.

The report is composed of two main Chapters. Chapter 1 is the core inventory delivering the magnitude and the nature of support for fossil fuels by country. Figure 3 below depicts the current comparative situation at country level with total support by indicator and by fuel.

Figure 3: Composition of Total Support by Indicator (Left) and by Fuel (Right)

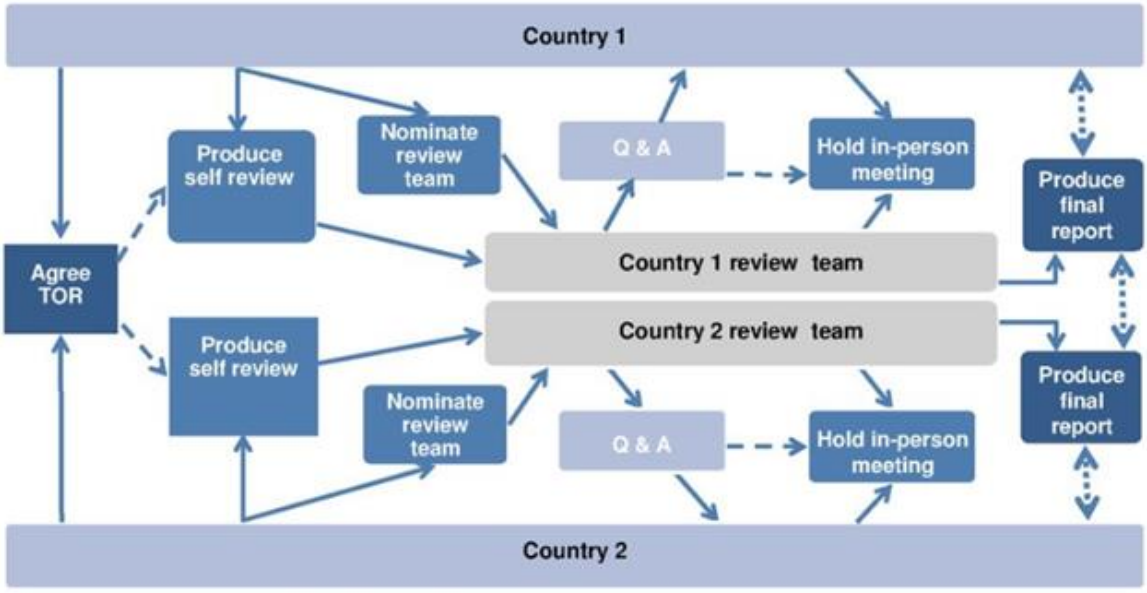


CSE: Consumer Support Estimate
PSE: Producer Support Estimate
GSSE: General Service Support Estimate

Source: OECD (2018a)

Interestingly, Chapter 1.2 reports international efforts and initiatives in tracking fossil fuels support, explicitly acknowledging the G20 peer-reviews assessment as a fruitful experience to share elements for mutual learning in data collection, methodological procedures and policy actions (Figure 4).

Figure 4: The mechanism behind the G20 peer review process



Note: Starting from the left side of the chart, the process begins with an agreement on the ToR and ends with a final report. This was the process for the first four peer reviews but could change at the request of member countries.

Source: OECD (2018a)

Chapter 2 is then devoted to assess government credit support instruments such as loan guarantees and concessional loans. Again, consolidated definitions and methodologies will help define a clearer picture of fossil fuels support measures and taxonomy.

A take-home message from OECD (2018a) is that coordination among institutions and national governments is a key-factor to succeed in the joint effort towards rationalization of fossil fuels support.

Other recent reports strengthen this insight. OECD (2018b) claims that monitoring robust and comparable indicators allows assessing the potential of fossil fuels reduction as an element to promote transition towards green growth, provided that environmental policy stringency may be considered an opportunity rather than an obstacle for innovation and competitiveness. In fact, energy subsidies even reduce investments in energy efficiency and counteract the signal of carbon pricing (IEA, 2018).

International Energy Agency (IEA)

The IEA publishes each year, in the World Energy Outlook, an estimate on FFS covering over 40 non-OECD countries. In 2016, the Agency estimated a global amount of FFS related to consumption in $ 260 billion, with the largest share on electricity subsidies ($ 107 billion).

International prices and the introduction of new policies are able to influence this amount significantly. In the last few years, trends on the amount of FFS were negative, although not in all countries: countries that export fossil fuels have registered a slight increase in the years 2009-2014, as in Middle-East where the share of FFS on the global amount of subsidies passed from 35% to 40% (CES, 2017). Adding North African countries would bring the value to 50%.

Generally, the Agency recommends a gradual removal of these subsidies passing through four main steps:

1) Guarantee the correct price signal: Energy prices should fully reflect the economic cost of energy supply. International market prices should, therefore, be fully reflected into energy prices. This might be complicated with electricity supply. Tariffs must cover all potential price fluctuations and should be transparent and monitored by public bodies.
2) Introduce the reform gradually: Go ahead through gradual steps without adopting the reform abruptly.
3) Manage the effects: In order to protect poor households, removal of FFS should go in parallel with a reform of social protection that guarantees support to the poorest.
4) Communicate all the steps of the reform to the public: A sound communication strategy might ensure awareness and support to the reform. This should be thoroughly explained to the population, especially to those that might be heavily affected.

There is momentum for FFS reform in different developing countries. Just to provide a summarized and non-exhaustive insight, Table 3 reports some of the most relevant reforms in the last 3 years.

Table 3: Main reforms among countries in the IEA dataset

Countries	Main fuels under reform	Recent development
Angola	Petrol, gasoline, kerosene, electricity	December 2014: subsidies reduced for gasoline and diesel.
Argentina	Electricity	From January to March 2017: increased electricity prices for most of residential customer classes by reducing subsidies.
Bangladesh	Natural gas	February 2017: increased gas price for power, industry, commercial and residential sectors by reducing subsidies.
China	LPG, natural gas, electricity	February 2015: announced a unique tariff of natural gas for big industrial consumers.
Egypt	Gasoline	October 2016: raised gasoline prices (RON 92) by 35% to 3.5 EGP and diesel prices by 31% to EGP 2.35 to reduce fuel subsidies. July 2017: raised prices of gasoline by 55% to EGP 3.65 as well as prices of other fuels.
Ghana	Gasoline, diesel	June 2015: liberalized prices of oil products.
India	Kerosene, LPG, natural gas, electricity	October 2014: Removed subsidies to diesel. New pricing system for domestic gas. January 2015: Introduced a new system to subsidize LPG for domestic consumers.
Indonesia	Electricity	February 2017: gradually reduced subsidies and increased electricity prices for 900-VA customers every two months by 32%.
Iran	Gasoline	May 2015: Increase of gasoline prices.
Kuwait	Diesel, electricity	January 2015: increase of diesel prices. In May 2017, increased electricity prices for commercial sector.

Countries	Main fuels under reform	Recent development
Malaysia	Natural gas, gasoline, diesel	January 2014: Increased electricity tariffs on average by 15% and reform of subsidies to natural gas through the introduction of a fixed subsidy. May 2014: 26% increase of natural gas prices for specific segments of consumption. December 2014: Removal of subsidies on gasoline and diesel. December 2016: increased gas prices for power sector and industrial customers by 7.6% to 21.20 RM ($5.2) per MMBtu, and by 5.8% to 27.35 RM ($6.7) per MMBtu, respectively.
Mozambique	Gasoline, diesel, kerosene, LPG	March 2017: increased gasoline, diesel, kerosene and LPG prices to reduce subsidies.
Oman	Natural gas	January 2015: Price increase of natural gas for industrial consumers. Annual increase of 3% for gas consumers in the industrial sector.
Pakistan	Gasoline and diesel	January and February 2017: increased prices of gasoline and diesel.
Thailand	LPG, CNG	October 2014: increase of compressed natural gas prices of 0.03 €/kg for vehicles starting from class THB1. December 2014: phasing out of subsidies on LPG.
UAE	Diesel, gasoline	August 2015: oil prices aligned with international prices.
Vietnam	Electricity	March 2015: Electricity tariffs increased (+7.5%).
Zambia	Electricity	May 2017: increased electricity tariff for all consumers by 50% and plans to increase it further by 25% in September.

Source: IEA (2017)

World Bank and IMF

Phasing out FFS remains a major global challenge as highlighted by World Bank Group President Jim Yong Kim in December 2017, during the One Planet Summit in Paris. As a consequence, the World Bank Group will no longer finance upstream oil and gas, after 2019. For instance, just before the Summit, the WB and the Government of Egypt signed a $1.15 billion development policy loan aimed at reducing FFS and creating the environment for low-carbon energy development.

In 2015, World Bank Group laid out five key areas where policies and growth choices can help reduce the drivers of climate change:

1. Put a price on carbon.
2. End FFS.
3. Build low-carbon, resilient cities.
4. Increase energy efficiency and use of renewable energy.
5. Implement climate-smart agriculture and nurture forest landscapes.

The results of the most recent analysis, published in March 2015, entitled "Fossil Fuel Subsidies Approaches and Valuation", show that an ever growing number of economic resources are assigned for the FFS.

With the same aim, the International Monetary Fund estimates the cost of energy subsidies. According to an IMF study, subsidies are projected to remain high, despite sharp declines in international energy prices. When externalities are included, the unpaid costs of fossil fuels are estimated up to $5.3 trillion.

Eliminating global energy subsidies could reduce deaths related to fossil fuel emissions by over 50% and fossil-fuel related carbon emissions by over 20%. The revenue gain from eliminating energy subsidies offers huge potential for reducing other taxes or strengthening revenue bases in countries where large informal sector constrains broader fiscal instruments.

WB-IMF: The CPLC's Note

In 2015, at Conference of the Parties (COP 21) in Paris, the Carbon Pricing Leadership Coalition (CPLC) was officially launched by the World Bank and the International Monetary Fund. It is a voluntary partnership that brings together leaders from government, private sector, academia and civil society, to share experience working with carbon pricing (e.g. carbon markets like EU-ETS, Carbon Taxes, removal of FFS) and to expand the evidence base for the most effective carbon pricing systems and policies.

Adhesion to the CPLC happens through signing the Carbon Pricing Declaration. The Carbon Pricing Declaration was signed for Italy by the Prime Minister in 2015.

After the 2015 launch meeting, the World Bank and the OECD released a report outlining proposed universal principles for successful carbon pricing, designated by the acronym FASTER, standing for:

a) Fairness
b) Alignment of Policies and Objectives
c) Stability and Predictability
d) Transparency
e) Efficiency and Cost-Effectiveness
f) Reliability and Environmental Integrity

Italy is trying to implement Faster Principles:

a) Fairness

Italy has produced a first review and estimate, through the first Catalogue of Environmentally Harmful and Friendly Subsidies (respectively, EHS and EFS), of FFS and sectors benefitting of subsidies damaging the environment. Encouraging a reform of subsidies may help to restore, in accordance with the Polluter Pays Principle, fairer market conditions and can contribute to an environmental fiscal reform (fiscal shift from labour and firms towards natural resources, i.e. pollution consumption and production damaging the environment).

b) Alignment of Policies and Objectives

Italy participates to the G20 FFS (FFS) Peer Reviews with Indonesia in 2018 (Usa and China launched the exercise in 2016, followed by Germany and Mexico in 2017). This may encourage to remove FFS and align energy policy with climate objectives, providing consistent signals to consumers, producers and investors. The G20 Peer Review Reports recommend an ex-ante environmental impact assessment for future incentives in order to ensure alignment with environmental (including climate) policies.

c) Stability and Predictability

In the Catalogue, Italy considers free allocation of ETS allowances as an EHS. The reduction of free allocations and hence the extension of the PPP has to keep a stable, fast and predictable pace towards full auctioning.

d) Transparency

Italy published the Catalogue on EHS and EFS to make transparent the environmental impact of fiscal policy. The participation to the 2018 G20 FFS Peer Review aims at enhancing further transparency on FFS through the disclosure of data and legislative measures.

e) Efficiency and Cost-Effectiveness

Through the Catalogue, Italy identifies exemptions from current taxes (e.g. excise duties, tax expenditures). Removing these barriers would leave place to Environmental Fiscal Reform (EFR) and

to a better reflection in prices of environmental costs and externalities. This would enable affected entities to adjust consumption and investment decision-making processes.

f) Reliability and Environmental Integrity
Removing EHS would be the first step to discourage environmentally harmful behaviours. Improving the EU-ETS scheme and enhancing EFR will ensure environmental integrity and contribute to reach the Paris Agreement and UN 2030 Agenda SDGs.

Think Tanks

Among the contributions of international think tanks, it is worth mentioning the works by ICTSD (International Centre for Trade and Sustainable Development), ODI (Overseas Development Institute), GSI (Global Subsidies Initiative), GBE (Green Budget Europe) and IEEP (Institute for European Environmental Policy).

The reports published by these Think Tanks shed light on the scope and impacts of fossil fuels subsidies, and on how best to reform them. They facilitate fossil fuel subsidy reforms by increasing awareness about the adverse economic, trade and environmental effects of these measures. Some of these studies suggest ways for enhancing the implementation of the G20 commitment.

ICTSD

The ICTSD Report (2017) "*Phasing Out Fossil Fuel Subsidies in the G20: Progress, Challenges, and Ways Forward*[3]" examines the measures taken so far by G20 in implementing the Pittsburgh Summit commitment to phase out inefficient FFS that encourage wasteful consumption, finding that they are not enough advanced yet. The report focuses on policy options that would advance fossil fuel subsidy reform among G20 countries (see Table 3), ranging from i) clarifying the scope of the commitment by removing the vague terminology and defining FFS; ii) setting clear deadlines for eliminating FFS; iii) enhance transparency, particularly in Trade Agreements and WTO Trade Policy; and iv) taking advantage of the G20's position in global governance to advance fossil fuel subsidy reform in countries outside the group.

IISD - GSI - ODI

The study "*Zombie Energy: Climate benefits of ending subsidies to fossil fuel production*", a joint effort by the International Institute for Sustainable Development (IISD), the Global Subsidies Initiative (GSI) and the Overseas Development Institute (ODI)[4], provides a robust assessment of how global subsidies to coal, oil and gas companies contribute to climate change. It estimates that a complete removal of subsidies to fossil fuel production globally would reduce the world's emissions by 37 Gt of CO_2 overall in 2017-2050 (slightly more than 1 Gt CO_2 per year, that is about 3% of world CO_2 emissions in 2015).

[3] Henok Birhanu Asmelash (Max Planck Institute Luxembourg, *Phasing Out Fossil Fuel Subsidies in the G20: Progress, Challenges, and Ways Forward*, published by ICTSD (International Centre for Trade and Sustainable Development), Geneva, September 2017. The report has been produced under the ICTSD Programme on Climate and Energy and is an element of the ICTSD project "Enhancing Climate Action through Trade Policy: Opportunities for the G20".
[4] The Overseas Development Institute (ODI) is a UK based leading independent think tank on international development and humanitarian issues.

Table 4: Recommendations and Policy Options

Recommendations and Policy Options

Recommendations	Policy Options
The G20 should define the scope of subsidies covered by the commitment	- Avoid the use of vague terms such as "inefficient" and "wasteful consumption"; - Adopt a common definition of "subsidy"; - Set out specific and limited exceptions for well-targeted subsidies to the poor and most vulnerable.
The G20 should set clear implementation timelines	- Impose a standstill on new fossil fuel subsidies with carefully defined exceptions; - Set clear and definitive deadlines for phasing out existing fossil fuel subsidies; or - Set different deadlines depending on the types of subsidies, their effects, and the capacity of countries to undertake subsidy reforms.
The G20 should enhance transparency on fossil fuel subsidies	- Introduce mandatory annual reporting of progress in reforming fossil fuel subsidies; - Develop a standard reporting template; - Notify fossil fuel subsidies under the Agreement on Subsidies and Countervailing Measures (ASCM) and the United Nations Framework Convention on Climate Change (UNFCCC); - Use the cross-notification mechanism of the WTO's ASCM; - Strengthen the ASCM notification procedure; - Add a section on fossil fuel subsidies to trade policy review reports of the WTO Trade Policy Review Mechanism (TPRM).
The G20 should request the resubmission of national implementation strategies and timeframes	- Revise national implementation strategies and timeframes in accordance with the newly agreed subsidy definition and timelines; - Authorise the Energy Sustainability Working Group (ESWG) to examine the compliance of national implementation strategies and timeframes with the newly agreed definitions and timelines before approval by the G20 Summit.
The G20 should provide global leadership on fossil-fuel subsidy reform (FFSR)	- Set high standards for phasing out fossil fuel subsidies; - Provide capacity building and technical assistance to developing countries; - Add FFSR commitments to free trade agreements (FTAs) akin to the EU-Singapore FTA; - Join forces with the Friends of Fossil Fuel Subsidy Reform (FFFSR) and other relevant groups in order to bring the fossil fuel subsidy issue to the greater attention of the WTO and to aim for one of the following: (i) Ministerial decision banning environmentally harmful fossil fuel subsidies; (ii) Ministerial decision mandating the WTO to tackle fossil fuel subsidies; (iii) Ministerial Declaration condemning the use of fossil fuel subsidies; (iv) Joint communiqué with the FFFSR and APEC calling for action to phase out fossil fuel subsidies in the WTO.

Source: ICTSD Report (2017)

ODI - CAN

In September 2017, ODI and CAN (Climate Action Network) jointly published the European report titled "*Phase-out 2020, Monitoring Europe's fossil fuel subsidies*" that shows that there is no comprehensive EU level system to monitor subsidies and, beyond few exceptions, European governments have done very limited reporting of their FFS. This report covers eleven European countries and the EU, highlighting that they provided as a whole at least €112 billion in subsidies per year between 2014 and

2016 towards the production and consumption of fossil fuels (€4 billion of these subsidies came from the EU itself). The report is based on Country briefings, including one on Italy[5]: it seems that even if Italy is showing commitment in reporting FFS, as part of the EU agreements as well, all economy sectors reviewed still receive large amount of it (see Table 5). In particular, export support for fossil-fuel production and electricity infrastructure in 10 countries and other global investments, provided through SACE (Servizi Assicurativi del Commercio Estero, public export credit insurance) and Cassa Depositi e Prestiti (CDP, Deposits & Loans Fund), were worth an annual average of €1.3 billion during the period 2014 to 2016.

Table 5: Subsidies to fossil fuel production and consumption in Italy, by activity (€ millions, average 2014-2016)

Activity / instrument	Production				Consumption					TOTAL
	Coal mining	Oil and gas	Electricity	Multiple or unclear	Transport	Industry and business	Households	Agriculture	Multiple or unclear	
National subsidies (Budget expenditure + tax exemptions + price relief)	n/a	1,406	2,422	417	8,746	728	1,670	1,203	13	**16,604**
Public finance	192	1,073	0	1	0	0	0	0	0	**1,266**
Domestic + Europe	*0*	*151*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*151*
International	*192*	*922*	*0.3*	*1*	*0*	*0*	*0*	*0*	*0*	*1,115*
State-owned enterprise investments	0	0	0	0	0	0	0	0	0	0

Note: For sources and data, see country data sheet and summary report available at odi.org/Europe-fossil-fuel-subsidies
** There are no state-owned enterprises (SOEs) that fit the SOE definition adopted by this report.*

Source: ODI (2017) Country brief Italy

GBE

GBE (Green Budget Europe), a no-profit organization whose main scope is supporting a thorough environmental fiscal reform to boost the transitions towards sustainable development, since the inception of its activity (back in 2007) claims the importance on the phasing out of environmentally harmful subsidies. It is involved in the activity proposed the by European Commission to build a roadmap to reform environmentally harmful subsidies[6].

In 2016, GBE analysed the differential in fiscal treatment between diesel and gasoline and reported it to the European Parliament: Italy appears among the top 5 Member States taxing diesel less than petrol (in revenue terms – see Table 6).

[5] https://www.odi.org/sites/odi.org.uk/files/resource-documents/11782.pdf
[6] https://green-budget.eu/our-work/fossil-fuel-subsidies/

Table 6: Taxing diesel less than petrol - top 5 MS (by total revenue)

Country	Diesel subsidy due to lower taxation in 2014 (million €)	Diesel / petrol tax gap (cents per litre)
France	7,974	13.7*
Germany	6,293	18.4
Italy	2,778	11.1
Spain	1,751	15.2
Belgium	1,452	17.2*

*shows the fuel tax gap after the implementation of 2015/2016 reforms.

Source: Green Budget Europe (2016)

IEEP

IEEP (Institute for European Environmental Policy) has recently published a report highlighting the relevance of capacity building for environmental tax reform (IEEP, 2017).[7] It stresses the importance of using market-based instruments to deliver price signals to market. While there is an increasing use of market-based instruments, their further diffusion can help contribute to realize the environmental tax reform. Engaging stakeholders in the design of economic instruments help increase their acceptance. Importantly, IEEP also provides a suite of case studies on environmental tax reform across EU member states (for Italy a phytosanitary tax is analysed)[8].

In 2012, IEEP provided to the European Commission a report on phasing-out EHS ("*Study supporting the phasing out of environmentally harmful subsidies*"), including FFS, following the EU commitment to phase out them by 2020. The study identifies a number of existing EHS in EU Member States across a range of environmental sectors and issues. These subsidies have varying impacts and it emphasizes the importance of transparency in developing and publishing inventories on subsidies.

International Organizations recommendations related to Italy

In recent years, different IOs provided recommendations to Italy to enhance an Environmental Fiscal Reform, with the unavoidable step of removing FFS and reforming other EHS.

For instance, the EEA (2011), after collecting best practices from different European countries, advanced recommendations to Italy in order to green its tax system.

These recommendations pointed out to the potential increase in budget revenue of € 34.5 billion in 2015 if an environmental fiscal reform were to take place, bringing the share of revenues from environmental taxes on the total amount from 6% in 2009 to a potential 10-11% in 2015. In the table below, we summarize its main recommendations[9], together with a first screening of EHS and their financial effects.

[7] IEEP (2017), Building civil society capacity to support environmental tax reform

[8] https://ieep.eu/publications/climate-change-and-energy/new-suite-of-40-case-studies-on-environmental-fiscal-reform

[9] In Italy, VAT on fuels is applied on the price including excise duty.

Table 7: Potential additional revenue due to the Environmental Fiscal Reform for Italy for the years 2012-2015 (mln €)

Environmentally-related taxes

Energy taxes	**2012**	**2013**	**2014**	**2015**	**Comments**
Petrol and diesel excises		821	1,642	2,463	Increase diesel tax rate to petrol tax level (British approach)
				841	Proposed minimum level in consequence of revised Energy Tax Directive (ETD)
Electricity tax		541	1,081	1,081	Households: align to level in Germany/NL/DK/Austria etc.
		1,375	2,750	2,750	Business: align to levels in Germany/NL/DK
Gas		1,098	1,098	1,098	Align to gas propellant ETD minimum rate (2/3 of Germany)
	62	62	62	62	Gas propellants; ETD minimum rate Align
				200	Propellant rate to excise for petrol
Coal	173	173	173	173	Align to same rate as for gas, cf. above – 2.6€/GJ
Mineral oil	556	556	556	556	Align business use to households tax – British approach
CO_2 tax	2,000	2,500	3,000	3,500	Carbon tax introduced at 10€/tCO_2 non-ETS, but rising over time (Irish approach).
Sub-total	2,791	6,577	10,362	12,724	
Pollution and resource taxes	**2012**	**2013**	**2014**	**2015**	**Comments**
Water abstraction levy	460	920	1,380	1,840	Applying Danish rate and system, whereby pipe leakage could be reduced from 30-40% to 10%
Waste and incineration tax	163	325	488	650	Apply rates from Ireland - 50 €/t – supporting reuse and recycling industry
Tax on packaging		400	800	1,250	Applying rates according to environmental burdens as applicable in NL and DK
Waste water effluent		327	653	980	Applying rates applicable in Netherlands to support compliance
SO_2 and NOx	1,000	1,000	1,500	2,000	Applying rates applicable in Norway and Denmark to reduce health costs of air pollution
GHG-nitrogen			50	50	Same rate as carbon tax per tCO_2eq for N_2O of fertilizers
Pesticide tax			600	600	Applying rates applicable in Denmark, support biodiversity
Sub-total	1,623	2,972	5,471	7,370	
Transport taxes	**2012**	**2013**	**2014**	**2015**	**Comments**
Air travel tax	500	500	500	500	Differentiated rates, for instance for longer flight 14€; short flights 3€ per passenger (e.g. UK; Germany)
HGV Vignette scheme	500	1,000	1,000	1,000	Harmonised EU approach of Directive 2011/76 – based on costs of air pollution and noise
Annual tax registration fee		600	1,200	1,800	Noise and air pollution duty similar to HGV
		600	1,200	1,800	Increase to average burden in EU-15
Sub-total	1,000	2,700	3,900	5,100	
Sum of all environmentally-related taxes	5,414	12,248	19,733	23,694	
	2012	**2013**	**2014**	**2015**	
VAT measures (21%)	442	1,191	1,941	2,807	For no-business-related taxes
Total including VAT	5,855	13,440	21,674	28,001	

Removal of EHSs

Category	2012	2013	2014	2015	Comments
Shipping		164	328	492	Fuel tax exemption
Agriculture		272	545	817	Energy tax break
Trucking		32	63	95	Tax relief
Gas & electricity	2,130	2,130	2,130	2,130	Align reduced VAT rates to standard
Gas & electricity	500	500	500	500	Align reduced tax rates to standard
Company cars		767	1,533	2,300	Total subsidy estimated to be 8.2 billion €
Total	2,630	3,865	5,099	6,334	
Grand Total					
All sources	8,485	17,304	26,773	34,335	

Source: EEA (2011b)

In 2013, Italy was under the Environmental Performance Review of the OECD. The report contains different recommendations related to the country and its fiscal policy:

- ✓ implement a wide fiscal reform for environmental taxation in order to:
  - i) phase-out special measures that harm the environment and are economically inefficient;
  - ii) reform energy and car taxes in order to internalize negative externalities (GHG emissions);
  - iii) reform the current environmentally-related taxes and introduce new taxes where needed;
- ✓ monitor tax expenditures;
- ✓ introduce a mechanism that screens systematically direct and indirect subsidies, current or on the verge of introduction, taking into account the potential environmental impact;
- ✓ implement systematically economic instruments (tax on water withdrawal, taxes on pollution) to encourage an efficient use of water sources and a source of revenue potentially directed to climate adaptation;
- ✓ reform energy taxes in order to include explicitly a component based on the carbon content (*carbon tax*), with the aim of establishing a consistent level of carbon pricing for all the sectors of the national economy;
- ✓ develop renewable energy through a national strategy for sustainable development and guarantee consistency across subsidies and address decreasing technology costs in technologies for producing renewable energies;
- ✓ rationalize subsidies for energy efficiency and be sure that subsidies might contribute to lower entry barriers without increasing costs; empower the use of white certificates in the transport sector;
- ✓ extend pricing mechanism, such as tolls for the transport sectors (distance-based taxation) in order to reduce local air pollution; reform vehicle taxation to include CO_2 emissions and other environmental externalities.

In the last few years, the recommendations of the European Semester provided different insights that should be applied into the environmental policies of Member States. On 25th February 2016, the European Parliament recommended MSs to develop their environmental policies through the following principles:

- ✓ outline a fiscal policy that moves towards sustainability, applying the "polluter-pays-principle", providing unbiased price signal towards investment in resource efficiency, innovation of

production processes and encouragement to increase reparability and substitutability of products' components;

- ✓ the need to gradually phase-out EHS, including FFS, and move the fiscal burden from labour to pollution[10].

In the Annual Growth Survey 2015, the EU Parliament invited MS:

- ✓ "*that national policies which are coordinated under the European Semester procedure must be consistent with the European sustainable development strategy;*" and reiterated the need to gradually phase out FFS[11].

Moreover, the recommendations for Italy in 2015, with reference to the National Reform Programme, emphasizes in point 15 that "*Italy has taken significant steps to alleviate the tax burden on labour, which nevertheless remains high…[…]the revision of environmental taxation and the removal of environmentally harmful subsidies have remained unaddressed*[12]."

This recommendation was already introduced in the Annual Growth Survey 2014, in which the European Parliament agreed with the Commission for MS to:

- ✓ restructure their public budget to orient it towards growth;
- ✓ simplify the fiscal system, reducing the tax burden and move it from labour to activities that harm the environment in order to stimulate growth, private investments, job creation and increase R&D investments;
- ✓ reform the tax benefit related to VAT and tax expenditures[13].

Same indications are described in the recommendations of the European Semester in 2011 and 2012 where there is a call for a fiscal reform moving the burden from economic activities to pollution and depletion of natural resources. In particular, Italy received the indication to move the tax burden from capital and labour to property, consumption and environment. In 2013 the same recommendation was made more explicit by guaranteeing budget neutrality.

The debate in G20, G7, international summits and institutions

According to the Sainteny Report[14], there is a "*growing importance of the question of subsidies that are harmful to the environment*" and, as a consequence, we cannot "*remain indifferent and passive*".

As a consequence, it is useful to summarize the debate on environmentally harmful subsidies in international institutions and organizations and follow the path that brought to the most recent commitments on phasing-out the bulk part formed by FFS among G7 and G20 countries.

Starting from the 1980s, in International Fora, countries showed increasing awareness on EHS and FFS and the need for their reform or removal. Table 8[15] below reports the extracts of internationally-approved documents, relations and agreements on the topic of FFS and the path that brought different countries to commit for their phasing-out.

[10] http://www.europarl.europa.eu/sides/getDoc.do?pubRef=-//EP//NONSGML+TA+P8-TA-2016-0058+0+DOC+PDF+V0//IT
[11] http://www.europarl.europa.eu/sides/getDoc.do?pubRef=-//EP//NONSGML+REPORT+A8-2015 0037+0+DOC+PDF+V0//EN
[12] http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32015H0818(17)&qid=1517412630903&from=IT
[13] http://www.europarl.europa.eu/sides/getDoc.do?pubRef=-//EP//NONSGML+REPORT+A7-2014-0084+0+DOC+PDF+V0//EN
[14] Sainteny Commission (2012), Public Subsidies Harmful to Biodiversity, Report of the commission chaired by Guillaume Sainteny
[15] This Table was prepared for the second edition of the Italian "Catalogue on Environmentally Harmful and Environmentally Friendly Subsidies".

Table 8: History of the main decisions in international summits on EHS/FFS

1980	G7 Venice Communiqué[16] (Venice – Italy, 22-23 June 1980): "*Energy.* *7. We must break the existing link between economic growth and consumption of oil, and we mean to do so in this decade.* […] *9.* […] *We will increase efforts, including fiscal incentives where necessary, to accelerate the substitution of oil in industry.* […]"
1985	G7 Bonn Communiqué "The Bonn Economic Declaration: Towards Sustained Growth and Higher Employment" [17] (Bonn – Germany, 4th May 1985): "*13. […] We will increase efforts, including fiscal incentives where necessary, to accelerate the substitution of oil in industry.*"
1990	G7 Houston Communiqué: "The Houston Economic Declaration"[18] (Houston – United States, 11 July 1990): *"Measures Aimed at Economic Efficiency* *16. […] Nonetheless, we emphasize the widespread need for further steps to promote regulatory reform and liberalize areas such as retail trade, telecommunications, transport, labor markets, and financial markets, as well as to reduce industrial and agricultural subsidies, improve tax systems, and improve labor-force skills through education and training."*
1991	G7 London Communiqué: "Economic Declaration: Building World Partnership"[19] (London – United Kingdom, 17 July 1991): *"Economic Policy* *7. We will also, with the help of the Organisation for Economic Co-operation and Development (OECD) and other institutions, pursue reforms to improve economic efficiency and thus the potential for growth. These include: […]* *b) greater transparency, elimination or enhanced discipline in subsidies that have distorting effects, since such subsidies lead to inefficient allocation of resources and inflate public expenditure; […]* *8. We will encourage work nationally and internationally to develop cost-effective economic instruments for protecting the environment, such as taxes, charges and tradeable permits.* *Environment* *[….] 48. Environmental considerations should be integrated into the full range of government policies, in a way which reflects their economic costs."*
1992	Agenda 21 – (UNCED) [20] – Rio de Janeiro "*8.32 [...]* *b. Remove or reduce those subsidies that do not conform with sustainable development objectives;* *c. Reform or recast existing structures of economic and fiscal incentives to meet environment and development objectives*".
1994	G7 Environmental Ministers – Chairman's Notes of the Informal Meeting[21] (Florence – Italy, 12th-13th March 1994):

[16] G7 (1980), G7 Italia Summit Communiqué, 22-23 June 1980, Venice – Italy
[17] G7 (1985), G7 Bonn Communiqué "The Bonn Economic Declaration: Towards Sustained Growth and Higher Employment", 4 May 1985, Bonn – Germany
[18] G7 (1990), G7 Houston Communiqué "The Houston Economic Declaration", 11 July 1990, Houston – United States
[19] G7 (1991), G7 London Communiqué "Economic Declaration: Building World Partnership", 17 July 1991, London – UK
[20] UNCED (1992), Agenda 21, 3 – 14 June 1992, Rio De Janeiro – Brasil

"*Environment regulation is not harmful to trade. In fact, environmental regulation that internalizes environmental costs into the price structure is essential if gains from trade liberalization are to be assured. On the other hand, expanded trade is not intrinsically harmful to the environment insofar as using environmental resources more efficiently is the key to pollution prevention. […]*

The implementation of Agenda 21 could be therefore pursued more effectively:

- *by reducing the currently high volume of environmentally damaging subsidies both in the industrialized and in the developing countries.*"

1998

Communication from the Commission of the European Communities to the Council and the European Parliament on "A European Community Biodiversity Strategy[22]", par. II "Strategy Themes", in Sustainable use of components of biodiversity:

"9. Alongside the identification and introduction of incentives to support conservation and sustainable use of biodiversity, it is necessary to consider removing incentives which have a negative impact.

This includes reviewing certain systems of property and use rights, contractual mechanisms, international trade policies, and economic policies. Therefore, the Community should in particular focus on:

- *shifting incentives to encourage positive effects on the conservation and sustainable use of biological diversity, rather than negative ones;*
- *contributing to the social and economic viability of systems supporting biodiversity as well as to the removal of incentives with perverse effects on the conservation and sustainable use of biodiversity."*

1999

G8 Environmental Ministers Communiqué[23] (Schwerin – Germany, 28th March 1999):

"*Globalisation and Environmental Protection*

3. We will use our efforts to bring about an ecological modernisation of our economies towards sustainable development. […] Internalisation of external costs is important to promote integration of environmental aspects into all policies. Economic activity associated with wasteful and inefficient utilisation of resources must be avoided."

G8 Koln Communiqué[24] (Koln – Germany, 18th – 20th June 1999):

"VIII. Redoubling Efforts to Protect the Environment

31. To underscore our commitment to sustainable development we will step up our efforts to build a coherent global and environmentally responsive framework of multilateral agreements and institutions. We support the outcome of the G8 Environment Ministers' meeting in Schwerin and will expedite international cooperation on the establishment, general recognition and continual improvement of environmental standards and norms. We agree that environmental considerations should be taken fully into account in the upcoming round of WTO negotiations. This should include a clarification of the relationship between both multilateral environmental agreements and key environmental principles, and WTO rules.

[…] 33. We reaffirm that we consider climate change an extremely serious threat to sustainable development."

2001

G8 Environment Ministers Communiqué[25] (Trieste – Italy, 2nd – 4th March 2001):

"*22. Furthermore, we underline that environmental considerations should be taken into account throughout the negotiations of the next WTO round with a view to achieving by the end of the round an overall outcome which*

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[21] G7 Environmental Ministers (1994), Chairman's Notes of the Informal Meeting of the G7 Environmental Ministers, 12 – 13 March 1994, Florence – Italy

[22] Commission of the European Communities (1998), "Communication from the Commission to the Council and the European Parliament on a European Community Biodiversity Strategy", 4 February 1998, COM(1998) 42 def

[23] G8 Environmental Ministers (1999), G8 Environment Ministers Communiqué, 28 March 1999, Schwerin – Germany

[24] G8 (1999), G8 Koln Communiqué, 18-20 June 1999, Koln – Germany

[25] G8 Environmental Ministers (2001), G8 Environment Ministers Trieste Communiqué, 2 – 4 March 2001, Trieste – Italy

respects global and regional environmental commitments and contributes to the advancement of sustainable development. The new round should maximise the potential for positive synergies between trade liberalization, environmental protection and economic and social development, including through the phasing out of environmentally harmful subsidies."

Communication from the Commission of the European Communities – A Sustainable Europe for a Better World: A European Union Strategy for Sustainable Development (Commission's proposal to the Gothenburg European Council[26]) [COM(2001)264 final] (15th - 16th June 2001), par. II Making Sustainable Development Happen: Achieving our ambitions:
"removing subsidies that encourage wasteful use of natural resources"

G8 Genoa Communiqué[27] (Genoa – Italy, 22nd July 2001):
"*A Legacy for the Future*
Environment […]
25. We reaffirm that our efforts must ultimately result in an outcome that protects the environment and ensures economic growth compatible with our shared objective of sustainable development for present and future generations."

2002

Plan of Implementation of the World Summit on Sustainable Development[28], adopted in Johannesburg:
"*20/(p) […]by removing market distortions, including restructuring taxation and phasing out harmful subsidies* […]*;*
20/(q) Take action, where appropriate, to phase out subsidies in this area that inhibit sustainable development […]"

2005

G8 Gleneagles "Climate Change, Clean Energy and Sustainable Development" [29] (Gleneagles – Scotland, 8th July 2005):
"1.a […]We know that increased need and use of energy from fossil fuels, and other human activities, contribute in large part to increases in greenhouse gases associated with the warming of our Earth's surface."

2006

Review of the EU Sustainable Development Strategy (EU SDS) – Renewed Strategy[30], in "Key Objectives":
"*MAKE POLLUTERS PAY*
Ensure that prices reflect the real costs to society of consumption and production activities and that polluters pay for the damage they cause to human health and the environment."
In addition, in "*Financing and Economic Instruments":*
"23. Member States should consider further steps to shift taxation from labour to resource and energy consumption and/or pollution, to contribute to the EU goals of increasing employment and reducing negative environmental impacts in a cost-effective way. In this context, the Commission should gather relevant information by 2007.
24. By 2008, the Commission should put forward a roadmap for the reform, sector by sector, of subsidies that have considerable negative effects on the environment and are incompatible with sustainable development, with a view to gradually eliminating them."

Presidency Conclusions of Brussels European Council (23-24 March 2006)[31] :

[26] Commission of the European Communities (2001), "Communication from the Commission. A Sustainable Europe for a Better World: A European Union Strategy for Sustainable Development (Commission's proposal to the Gothenburg European Council)", COM(2001)264 def
[27] G8 (2001), G8 Genova Communiqué, 22 July 2001, Genoa – Italy
[28] UN (2002), Plan of Implementation of the World Summit on Sustainable Development,
[29] G8 (2005), G8 Gleneagles Climate Change, Clean Energy and Sustainable Development, 8 July 2005, Gleneagles – Scotland
[30] Council of the European Union (2006), Note of General Secretariat "Review of the EU Sustainable Development Strategy (EU SDS) – Renewed Strategy" [10917/06]

"(d) Environmentally sustainable growth

[…] 76. The European Council endorses the following lines for action:

- *[…]further exploration of appropriate incentives and disincentives, and a reform of subsidies that have considerable negative effects on the environment and are incompatible with sustainable development, with a view to gradually eliminating them*"

8° Meeting of Conference of the Parties to the Convention on Biological Diversity[32] (Curitiba – Brazil, 20th – 31st March 2006), in Annex "*List of suggested supporting actions for Parties*" it is identified as objective: "*4.2.1.11. Remove harmful subsidies that encourage unsustainable exploitation of marine and coastal biodiversity, or irreversible loss of critical habitats."*

2007

Green Paper on market-based instruments for environment and related policy purposes[33]:

"2.4. Reform of environmentally harmful subsidies

Many subsidies are not only economically and socially inefficient but can also adversely affect the environment and human health. They can also counterbalance the impact of market-based instruments applied for environmental or health purposes and can generally hinder competitiveness. While their reform or removal could contribute public funds to an environmental fiscal reform, it is also justified in its own right. The Commission intends to work with Member States on reforming environmentally-harmful subsidies, both at Community and national levels.[…]".

2009

OECD Council Ministers, Declaration on Green Growth[34] (25th June 2009):

"6. ENCOURAGE domestic policy reform, with the aim of avoiding or removing environmentally harmful policies that might thwart green growth, such as subsidies […]; or which contribute to negative environmental outcomes. We also work towards establishing appropriate regulations and policies to ensure clear and long-term price signals encouraging efficient environmental outcomes. […]".

G8 L'Aquila Leaders Declaration: "Responsible Leadership for a Sustainable Future" [35] (L'Aquila – Italy, 8th July 2009)

"Green Recovery

39. […] we will ensure proper regulatory and other frameworks facilitating transition towards low-carbon and resource efficient growth. In this light, we call for a reduction of subsidies that artificially encourage carbon-intensive energy consumption. "

Communication from the Commission of the European Communities to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions – Mainstreaming sustainable development into EU policies: 2009 Review of the European Union Strategy for Sustainable Development[36] [COM(2009)0400 final] (24th July 2009):

"The Commission has been mainstreaming the progressive removal of environmentally harmful subsidies into its

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[31] European Council (2006), Presidency Conclusions of Brussels European Council 23/24 March 2006 [7775/1/06 REV 1], Brussel – Belgium, 18 May 2006

[32] UNEP (2006), Report of the eighth meeting of the Parties to the Convention on Biological Diversity, Conference of the Parties to the Convention on Biological Diversity, 20-31 March 2006, Curitiba – Brazil, UNEP/CBD/COP/8/31.

[33] Commission of the European Communities (2007), GREEN PAPER on market-based instruments for environment and related policy purposes, COM(2007) 140 final.

[34] OECD (2009), Declaration on Green Growth, Adopted at the Meeting of the Council at Ministerial Level on 25 June 2009 (C/MIN(2009)5/ADD1/Final)

[35] G8 (2009), G8 Leader Declaration: Responsible Leadership for a Sustainable Future, 8 July 2009, L'Aquila – Italy

[36] Commission of the European Communities (2009), Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions – Mainstreaming sustainable development into EU policies: 2009 Review of the European Union Strategy for Sustainable Development [COM(2009) 400 def], 24 July 2009

sectoral policies, e.g. through the reform of fisheries policy and as part of the CAP health check.
The Commission has also adopted new State aid guidelines on environmental protection[37], which will strike a balance between delivering larger environmental benefits and minimising distortion of competition, thus helping Member States to introduce the right policy instruments and finance eco-innovation."

G20 Leaders Statement "The Pittsburgh Summit"[38] (Pittsburgh – United States, 24th – 25th September 2009):
"*Preamble […]*
24. To phase out and rationalize over the medium term inefficient fossil fuel subsidies while providing targeted support for the poorest. Inefficient fossil fuel subsidies encourage wasteful consumption, reduce our energy security, impede investment in clean energy sources and undermine efforts to deal with the threat of climate change.
25. We call on our Energy and Finance Ministers to report to us their implementation strategies and timeline for acting to meet this critical commitment at our next meeting.
[…] Energy Security and Climate Change […]
29. Enhancing our energy efficiency can play an important, positive role in promoting energy security and fighting climate change. Inefficient fossil fuel subsidies encourage wasteful consumption, distort markets, impede investment in clean energy sources and undermine efforts to deal with climate change. The Organization for Economic Cooperation and Development (OECD) and the IEA have found that eliminating fossil fuel subsidies by 2020 would reduce global greenhouse gas emissions in 2050 by ten percent. Many countries are reducing fossil fuel subsidies while preventing adverse impact on the poorest. Building on these efforts and recognizing the challenges of populations suffering from energy poverty, we commit to:

- *Rationalize and phase out over the medium term inefficient fossil fuel subsidies that encourage wasteful consumption. As we do that, we recognize the importance of providing those in need with essential energy services, including through the use of targeted cash transfers and other appropriate mechanisms. This reform will not apply to our support for clean energy, renewables, and technologies that dramatically reduce greenhouse gas emissions. We will have our Energy and Finance Ministers, based on their national circumstances, develop implementation strategies and timeframes, and report back to Leaders at the next Summit. We ask the international financial institutions to offer support to countries in this process. We call on all nations to adopt policies that will phase out such subsidies worldwide.*

17° APEC Meeting: Leaders' Declaration[39] (Singapore, 14th November 2009):
"*We also commit to rationalise and phase out over the medium term fossil fuel subsidies that encourage wasteful consumption, while recognising the importance of providing those in need with essential energy services."*

2010

2010 APEC Energy Ministerial Meeting – Fukui Declaration[40] (Fukui – Japan, 19 June 2010):
"*11. […] We remain committed to the 2009 Leaders' Declaration to rationalize and phase out over the medium term fossil fuel subsidies that encourage wasteful consumption, while recognizing the importance of providing those in need with essential energy services.*
Instructions from APEC Energy Ministers
ENERGY SECURITY
[…] We also instruct the EWG to work with the IEA to analyze remaining inefficient fossil fuel subsidies that encourage wasteful consumption with a view to their rationalization and phase out."

G20 Toronto Summit Declaration[41] (Toronto – Canada, 27th June 2010):

[37] European Commission (2008), Community Guidelines on State Aid for Environmental Protection [2008/C 82/01] (GU C 82 – 1st April 2008)
[38] G20 (2009), G20 Leaders Statement: The Pittsburgh Summit, 24 – 25 September 2009, Pittsburgh – United States
[39] APEC (2009), Singapore Leaders' Declaration, 14 November 2009, Singapore
[40] APEC Energy Ministerial Meeting (2010), 2010 APEC Energy Ministerial Meeting: Fukui Declaration, 19 June 2010, Fukui – Japan
[41] G20 (2010a), G20 Toronto Summit Declaration, 27 June 2010, Toronto – Canada

"Other Issues and Forward Agenda […]
42. We note with appreciation the report on energy subsidies from the International Energy Agency (IEA), Organization of the Petroleum Exporting Countries (OPEC), OECD and World Bank. We welcome the work of Finance and Energy Ministers in delivering implementation strategies and timeframes, based on national circumstances, for the rationalization and phase out over the medium term of inefficient fossil fuel subsidies that encourage wasteful consumption, taking into account vulnerable groups and their development needs. We also encourage continued and full implementation of country-specific strategies and will continue to review progress towards this commitment at upcoming summits."

10° Meeting of Conference of the Parties to the Convention on Biological Diversity[42] (Nagoya – Japan, 18th – 29th October 2010), Annex "Strategic Plan for Biodiversity 2011-2020 and the Aichi Biodiversity Targets":
"*By 2020, at the least, incentives, including subsidies, harmful to biodiversity are eliminated, phased out or reformed in order to minimise or avoid negative impacts, and positive incentives for the conservation and sustainable use of biodiversity are developed and applied, consistent and in harmony with the Convention and other relevant international obligations, taking into account national socio-economic conditions."*

Annual APEC Ministerial Meeting[43] (Yokohama - Japan, 10-11 November 2010):
"Welcoming Sectoral Initiatives
Energy Security
40. […] We reaffirmed our commitment to the 2009 Leaders' Declaration to rationalize and phase out over the medium term inefficient fossil fuel subsidies that encourage wasteful consumption, while recognizing the importance of providing those in need with essential energy services."

18° APEC Meeting: Leaders' Declaration[44] (Yokohama - Japan, 10th November 2010):
"We will rationalize and phase out inefficient fossil fuel subsidies that encourage wasteful consumption, while recognizing the importance of providing those in need with essential energy services, and review progress toward this goal on a voluntary basis."

G20 Seoul Summit Leaders' Declaration[45] (Seoul – South Korea, 12th November 2010):
"*13. To provide broader, forward-looking leadership in the post-crisis economy, we will also continue our work to […] rationalize and phase-out over the medium term inefficient fossil fuel subsidies; […]"*

2011

Communication from the European Commission to the European Parliament, the Council, the Economic and Social Committee and the Committee and the Committee of the Regions – Our life insurance, our natural capital: an EU biodiversity strategy to 2020[46] [COM(2011) 244 final] {SEC(2011) 540 final} (3rd May 2011)
"*Target 6: Help avert global biodiversity loss*
By 2020, the EU has stepped up its contribution to averting global biodiversity loss.
Action 17: Reduce indirect drivers of biodiversity loss
[…] 17c) The Commission will work with Member States and key stakeholders to provide the right market signals for biodiversity conservation, including work to reform, phase out and eliminate harmful subsidies at both EU and

[42] UNEP (2011), Report of the tenth meeting of the Conference of the Parties to the Convention on Biological Diversity, Conference of the Parties to the Convention on Biological Diversity, 18–29 October 2010, Nagoya – Japan, UNEP/CBD/COP/10/27
[43] APEC Ministerial Meeting (2010), APEC Ministerial Meeting Yokohama Declaration, 10-11 November 2011, Yokohama – Japan
[44] APEC (2010), Yokohama Leaders' Declaration, 10 November 2010, Yokohama – Japan
[45] G20 (2010b), G20 Seoul Summit Leaders' Declaration, 12 November 2010, Seoul – South Korea
[46] European Commission (2011a), Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions – Our life insurance, our natural capital: an EU biodiversity strategy to 2020 [COM(2011) 244 final] {SEC(2011) 540 final}

Member State level, and to provide positive incentives for biodiversity conservation and sustainable use."

Communication from the European Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions – Roadmap to a Resource Efficient Europe[47] [COM(2011) 571 final] {SEC(2011) 1067 final} (20th September 2011):
"3.4. Environmentally harmful subsidies and getting the prices right
[…] prices may be deliberately distorted by Environmentally Harmful Subsidies (EHS) by governments which confer an advantage on certain consumers, users or producers, in order to supplement their income or lower their costs, but in doing so, discriminate against sound environmental practice.

3.4.1. Phasing out inefficient subsidies

[…] EHS lead to higher levels of waste, emissions, resource extraction, or to negative impacts on biodiversity. They can lock in inefficient practices and hinder businesses from investing in green technologies. Such subsidies take different forms, with tax reductions or exemptions being one example. Moving away from EHS can deliver economic, social and environmental benefits, and allow for improved competitiveness. Member States have already been invited to eliminate EHS in the 2011 Annual Growth Survey in order to support budget consolidation. In the process of EHS removal, alternative mitigating arrangements may be necessary for the most affected economic sectors, regions and workers, or for dealing with energy poverty, and the impact of possible displacement of production to other countries needs to be considered.

Milestone: By 2020 EHS will be phased out, with due regard to the impact on people in need."

G20 Cannes Summit Final Communiqué "New World New Ideas"[48] (Cannes – France, 3rd – 4th November 2011):
"Improving energy markets and pursuing the Fight against Climate Change
20. […] We reaffirm our commitment to rationalise and phase-out over the medium term inefficient fossil fuel subsidies that encourage wasteful consumption, while providing targeted support for the poorest."

Annual APEC Ministerial Meeting[49] (Honolulu – Hawaii, 11 November 2011):
"*Promoting Green Growth*
Rationalizing and Phasing-Out Fossil Fuel Subsidies

We agreed to rationalize and phase out inefficient fossil fuel subsidies that encourage wasteful consumption, while recognizing the importance of maintaining essential energy services to those most in need. We instructed officials to review progress toward this goal and report to Leaders on an annual basis, using the voluntary reporting mechanism designed by the APEC Energy Working Group. We also instructed officials to build regional capacity for subsidy reform."

19° APEC Meeting: Leaders' Declaration[50] (Honolulu – Hawaii, United States, 12 November 2011):
"*We will also take the following steps to promote our green growth goals:*

- *Rationalize and phase out inefficient fossil-fuel subsidies that encourage wasteful consumption, while recognizing the importance of providing those in need with essential energy services, and set up a voluntary reporting mechanism on progress, which we will review annually."*

2012

G8 Camp David Declaration[51] (Camp David – United States, 19th May 2012):
"*15. In addition, we strongly support efforts to rationalize and phase-out over the medium term inefficient fossil fuel subsidies that encourage wasteful consumption, and to continue voluntary reporting on progress."*

[47] European Commission (2011b), Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions – Roadmap to a Resource Efficient Europe [COM(2011) 571 final] {SEC(2011) 1067 final}
[48] G20 (2011), G20 Cannes Summit Final Communiqué: New World New Ideas, 3-4 November 2011, Cannes – France
[49] APEC Ministerial Meeting (2011), APEC Ministerial Meeting Honolulu Declaration, 11 November 2011, Honolulu – Hawaii
[50] APEC (2011), Honolulu Leaders' Declaration, 12 November 2011, Honolulu – Hawaii
[51] G8 (2012), G8 Camp David Declaration, 19 May 2012, Camp David – United States

G20 Los Cabos Leaders Declaration[52] (Los Cabos – Mexico, 19th June 2012):

"*Promoting longer-term prosperity through inclusive green growth […]*

74. We welcome the progress report on fossil fuel subsidies, and we reaffirm our commitment to rationalize and phase out inefficient fossil fuel subsides that encourage wasteful consumption over the medium term while providing targeted support for the poorest. We ask Finance Ministers to report back by the next Summit on progress made, and acknowledging the relevance of accountability and transparency, to explore options for a voluntary peer review process for G20 members by their next meeting. We also welcome a dialogue on fossil fuel subsidies with other groups already engaged in this work."

2012 APEC Energy Ministerial Meeting – Saint Petersburg Declaration[53] (Saint Petersburg – Russia, 24 June 2012):

"*10. We reaffirm our commitment to the Green Growth goals set by APEC Leaders in Honolulu, United States in 2011. […] We also reaffirm the commitment of APEC Leaders to rationalize and phase out inefficient fossil-fuel subsidies that encourage wasteful consumption, while recognizing the importance of providing those in need with essential energy services and look forward to voluntary reports from economies on their efforts in this direction. We note that as we continue efforts to expand energy access for poor and rural populations, the reduction of subsidies will encourage more energy efficient consumption, leading to a positive impact on international energy prices and energy security, and will make renewable energy and technologies more competitive.*

Instructions of the APEC Energy Ministers

9. We instruct the EWG to continue to build regional capacity for the reform of inefficient fossil fuel subsidies that encourage wasteful consumption and to report annually on progress using the Voluntary Reporting Mechanism. Accordingly we urge APEC economies to continue to report on progress using the Voluntary Reporting Mechanism."

Annual APEC Ministerial Meeting[54] (Russia, 5 – 6 September 2012):

"Trade and Investment Liberalization, Regional Economic Integration

Strengthening energy security

24 […] At the same time we emphasize the necessity to rationalize and phase out inefficient fossil-fuel subsidies that encourage wasteful consumption.[…]"

11° Meeting of Conference of the Parties to the Convention on Biological Diversity (Hyderabad – India, 8th – 19th October 2012), Decision Adopted XI/7 Business and biodiversity[55]:

" The Conference of the Parties,

3. Invites Parties to:

[…] (c) Consider, according to priorities and national circumstances, policies and legislation that halt biodiversity loss and reduce incentives, including subsidies, that are harmful to biodiversity or have biodiversity impacts, taking into account the needs and circumstances of developing countries and those with economies in transition".

2013

Conclusion of European Council[56] – 22nd May 2013:

". As regards action taken to facilitate investments, priority will be given to:

[…] (d) phasing out environmentally or economically harmful subsidies, including for fossil fuels".

G20 St. Petersburg Leaders' Declaration[57] (St. Petersburg – Russia, 6th September 2013):

[52] G20 (2012), G20 Los Cabos Leaders' Declaration, 19 June 2012, Los Cabos – Mexico

[53] APEC Energy Ministerial Meeting (2012), 2012 APEC Energy Ministerial Meeting: Saint Petersburg Declaration, 24 June 2012, Saint Petersburg – Russia

[54] APEC Ministerial Meeting (2012), APEC Ministerial Meeting Declaration, 5-6 September 2012, Vladivostok – Russia

[55] UNEP (2012), Report of the Eleventh meeting of the Conference of the Parties to the Convention on Biological Diversity, Conference of the Parties to the Convention on Biological Diversity, 8–19 October 2012, Hyderabad – India, UNEP/CBD/COP/11/35

[56] European Council (2013), Conclusions of European Council of 22 May 2013, EUCO 75/1/13 REV 1

"*Sustainable Energy Policy and Resilience of Global Commodity Markets […]*

94. We reaffirm our commitment to rationalise and phase out inefficient fossil fuel subsidies that encourage wasteful consumption over the medium term while being conscious of necessity to provide targeted support for the poorest. […] We welcome the development of a methodology for a voluntary peer review process and the initiation of country-owned peer reviews and we encourage broad voluntary participation in reviews as a valuable means of enhanced transparency and accountability. […]"

Annual APEC Ministers meeting declaration[58] (Bali – Indonesia, 4-5 October 2013):

"*Sustainable Growth with Equity*

Promoting Clean and Renewable Energy and Sustainable Development Mining and Metallurgy

85. We reaffirmed our commitment to rationalize and phase out inefficient fossil fuel subsidies that encourage wasteful consumption, while recognizing the importance of providing those in need with essential energy services. We instructed officials to continue to build regional capacity. We welcome the development of a methodology for a Voluntary Peer Review Mechanism of these inefficient fossil fuel subsidies and encourage broad voluntary participation in these reviews as a valuable means of enhanced transparency and accountability. We welcome the initiation of economy-owned peer reviews and use of the voluntary reporting mechanism."

21° APEC Meeting: Leaders's Declaration[59] (Bali - Indonesia, 8th October 2013):

"18. We recognized that resource scarcity presents an immense challenge that limits our ability to pursue economic growth and we were mindful of the grave economic consequences of natural and human-caused disaster, particularly to the most vulnerable members of society. In response to these challenges, we will take the following steps: […]

e. continue to build regional capacity to assist APEC economies to rationalize and phase out inefficient fossil-fuel subsidies that encourage wasteful consumption, while recognizing the importance of providing those in need with essential energy services;

f. welcome the development of a methodology for a voluntary peer review mechanism of inefficient fossil-fuel subsidies that encourage wasteful consumption, and welcome the initiation of economy-owned peer reviews by some economies;".

Decision n. 1386/2013/EU of the European Parliament and of the Council of 20th November 2013 on a General Union Environmental Action Programme to 2020 "Living well, within the limits of our planet", Annex "The 7th Environment Action Programme to 2020 – Living well, within the limits of our planet", in "Thematic Priorities":

"*Priority objective 6: To secure investment for environment and climate policy and address environmental externalities […]76. The Union and its Member States will need to put in place the right conditions to ensure that environmental externalities are adequately addressed, including by ensuring that the right market signals are sent to the private sector, with due regard to any adverse social impacts. This will involve applying the polluter-pays principle more systematically, in particular through phasing out environmentally harmful subsidies at Union and Member State level, guided by the Commission, using an action-based approach […]*

Priority objective 9: To increase the Union's effectiveness in addressing international environmental and climate-related challenges

96. Ensuring the sustainable use of resources is one of the most pressing challenges facing the world today and is central to ending poverty and securing a sustainable future for the world [...] The phasing-out of environmentally harmful subsidies, including fossil fuel subsidies also requires additional action. In addition to translating these commitments into action at local, national and Union level, the Union will engage proactively in international efforts to develop the solutions needed to ensure sustainable development globally."

[57] G20 (2013), G20 St. Petersburg Leaders' Declaration, 6 September 2013, St. Petersburg – Russia

[58] APEC Ministerial Meeting (2013), APEC Ministerial Meeting Bali Declaration, 4-5 October 2013, Bali – Indonesia

[59] APEC (2013), Bali Leaders' Declaration, 8 October 2013, Bali – Indonesia

2014

G7 Brussels Summit Declaration[60] (Brussels - Belgium, 5th June 2014):
"*Climate Change […]*
11.[…] We remain committed to the elimination of inefficient fossil fuel subsidies and continued discussions in the OECD on how export credits can contribute to our common goal to address climate change."

Communication from the European Commission – Guidelines on State aid for environmental protection and energy 2014-2020[61] (2014/C 200/01) (28th June 2014):
"*Introduction*
[…] (6) It should be recalled that the Resource Efficiency Roadmap as well as several Council conclusions call for a phasing out of environmentally harmful subsidies. These Guidelines should therefore consider negative impacts of environmentally harmful subsidies, while taking into account the need to address trade-offs between different areas and policies as recognised by the flagship initiative […]
3.2.3.1. Appropriateness among alternative policy instruments
(43) Different measures to remedy different market failures may also counteract each other. A measure addressing a generation adequacy problem needs to be balanced with the environmental objective of phasing out environmentally or economically harmful subsidies, including for fossil fuels. […]
3.9.1. Objective of common interest
(220) Aid for generation adequacy may contradict the objective of phasing out environmentally harmful subsidies including for fossil fuels. Member States should therefore primarily consider alternative ways of achieving generation adequacy which do not have a negative impact on the objective of phasing out environmentally or economically harmful subsidies, such as facilitating demand side management and increasing interconnection capacity.

2014 APEC Energy Ministerial Meeting – Beijing Declaration[62] (Beijing – China, 2nd September 2014):
"*13. We reaffirm our commitment to APEC Leaders to rationalize and phase out inefficient fossil fuel subsidies that encourage wasteful consumption while still providing essential energy services. We acknowledge Peru and New Zealand for undergoing voluntary peer reviews in 2014 of inefficient fossil fuel subsidies that cause wasteful consumption and sharing their best practices."*

12° Meeting of Conference of the Parties to the Convention on Biological Diversity[63] (Pyeongchang – South Korea, 6th-17th October 2014), Adopted Decision XII/3 Resource mobilization:
"*Modalities and milestones for Aichi Biodiversity Target 3*
[The Conference of the Parties, ndr] *19. Welcomes the analysis of the obstacles encountered in implementing options identified for eliminating, phasing out or reforming incentives that are harmful for biodiversity;*
20. Takes note of the modalities described in the note by the Executive Secretary on modalities and milestones for the full operationalization of Aichi Biodiversity Target 3 and obstacles encountered in implementing options identified for eliminating, phasing out or reforming incentives that are harmful for biodiversity13 as a flexible framework for the full implementation of Aichi Biodiversity Target 3, in a manner that is consistent and in harmony with the Convention and other relevant international obligations, taking into account national socioeconomic conditions;
[…] 23. Invites Parties, in submitting to the Executive Secretary the information referred to in paragraph 28 below in their national reports, to include in particular information on practical experiences in the implementation of biodiversity-related positive incentives and lessons learned in applying options for overcoming obstacles encountered in

[60] G7 (2014), G7 Brussels Summit Declaration, 5 June 2014, Brussels – Belgium
[61] European Commission (2014), Communication from the Commission – Guidelines on State aid for environmental protection and energy 2014 – 2020 (2014/C 200/01), published 28 June 2014
[62] APEC Energy Ministerial Meeting (2014), 2014 APEC Energy Ministerial Meeting: Beijing Declaration, 2nd September 2014, Beijing – China
[63] UNEP (2014), Report of the twelfth meeting of the Conference of the Parties to the Convention on Biological Diversity, Conference of the Parties to the Convention on Biological Diversity, 6–17 October 2014, Pyeongchang – South Korea, UNEP/CBD/COP/12/29

*implementing policies for addressing harmful incentives***".**

Annual APEC Ministers meeting declaration[64] (Beijing, China – 7-8 November 2014):
"Promoting Innovative Development, Economic Reform and Growth
Energy
53. […] We reiterate our aspirational goal of reducing APEC's aggregate energy intensity by 45 percent from 2005 levels by 2035 and to rationalize and phase out inefficient fossil fuel subsidies that encourage wasteful consumption while still providing essential energy services. We acknowledge Peru and New Zealand for initiating voluntary peer reviews of inefficient fossil fuel subsidies that cause wasteful consumption and sharing their best practices, and welcome the commitment from the Philippines to undergo the review in 2015.
54. Recognizing that fossil fuel will continue to play a significant role in the energy mix of this region, in the medium to long term, we therefore reaffirm the importance of the clean and efficient use of fossil fuel. […]"

22° APEC Meeting: Leaders Declaration[65] (Beijing – China, 11th November 2014):
"*New Economy*
36. We affirm our commitment to rationalize and phase out inefficient fossil fuel subsidies that encourage wasteful consumption while still providing essential energy services. We acknowledge Peru and New Zealand for initiating voluntary peer reviews in 2014 of inefficient fossil fuel subsidies that cause wasteful consumption and sharing their best practices, and welcome the commitment from the Philippines to undergo a peer review in 2015."

G20 Brisbane Leaders' Communiqué[66] (Brisbane - Australia, 16th November 2014)
"*Strengthening global institutions […]*
18. […] We reaffirm our commitment to rationalise and phase out inefficient fossil fuel subsidies that encourage wasteful consumption, recognising the need to support the poor."

2015

G7 Schloss Elmau Summit Declaration[67] (Schloss Elmau - Germany, 8th June 2015):
"[…]We remain committed to the elimination of inefficient fossil fuel subsidies and encourage all countries to follow […]"

UN Sustainable Development Agenda[68] (Agenda 2030) (25th September 2015):
"*Goal 2. End hunger, achieve food security and improved nutrition and promote sustainable agriculture*
2.b Correct and prevent trade restrictions and distortions in world agricultural markets, including through the parallel elimination of all forms of agricultural export subsidies and all export measures with equivalent effect, in accordance with the mandate of the Doha Development Round
Goal 12. Ensure sustainable consumption and production patterns
12.c Rationalize inefficient fossil-fuel subsidies that encourage wasteful consumption by removing market distortions, in accordance with national circumstances, including by restructuring taxation and phasing out those harmful subsidies, where they exist, to reflect their environmental impacts […]
Goal 14. Conserve and sustainably use the oceans, seas and marine resources for sustainable development
14.6 By 2020, prohibit certain forms of fisheries subsidies which contribute to overcapacity and overfishing, eliminate subsidies that contribute to illegal, unreported and unregulated fishing and refrain from introducing new such subsidies, recognizing that appropriate and effective special and differential treatment for developing and least developed countries should be an integral part of the World Trade Organization fisheries subsidies negotiation."

2015 APEC Energy Ministerial Meeting - CEBU DECLARATION[69] (Cebu – Philippines, 13

[64] APEC Ministerial Meeting (2014), APEC Ministerial Meeting Beijing Declaration, 7-8 November 2014, Beijing – China
[65] APEC (2014), Beijing Leaders' Declaration, 11 November 2014, Beijing – China
[66] G20 (2014), G20 Brisbane Leaders' Communiqué, 16 November 2014, Brisbane – Australia
[67] G7 (2015), G7 Schloss Elmau Summit Declaration, 8 June 2015, Schloss Elmau - Germany
[68] UNRIC (2015), "Transforming our world: the 2030 Agenda for Sustainable Development", Resolution 70/1 adopted by the General Assembly on 25 September 2015

October 2015)

"*22. We reaffirm the APEC Leaders' commitment, and welcome ongoing initiatives of Member Economies, to rationalize and phase out inefficient fossil fuel subsidies that encourage wasteful consumption while providing energy access to those in need . We are committed to make substantive progress toward this goal in the medium term. We commend Peru and New Zealand for completing voluntary peer reviews, and the Philippines, Viet Nam, and Chinese Taipei for volunteering to initiate peer reviews. We encourage the exchange of best practices and capacity building efforts to facilitate fossil fuel subsidy reform.*"

G20 Antalya Leaders' Communiqué[70] (Antalya – Turkey, 16th November 2015):

"*Buttressing Sustainability […]*

23. […] We reaffirm our commitment to rationalise and phase-out inefficient fossil fuel subsidies that encourage wasteful consumption, over the medium term, recognising the need to support the poor. We will endeavour to make enhanced progress in moving forward this commitment. […]"

Annual APEC Ministers meeting declaration[71] (Manila – Philippines, 16 – 17 November 2015):

"*Priority 4: Building Sustainable and Resilient Communities*

Energy […]

122. We reaffirm Leaders' commitment to rationalize and phase out inefficient fossil fuel subsidies that encourage wasteful consumption, while recognizing the importance of providing those in need with essential energy services. We are committed to making substantive progress toward this goal. We acknowledge Peru and New Zealand for completing Voluntary Peer Reviews on Inefficient Fossil Fuel Subsidies, and welcome the Philippines, Viet Nam, Chinese Taipei and Brunei Darussalam volunteering to participate. We welcome and encourage capacity building activities and sharing of best practices to facilitate progress toward this goal."

23° APEC Meeting: Leaders' Declaration[72] (Manila – Philippines, 19th November 2015):

"*Building Sustainable and Resilient Communities*

4. To build sustainable and disaster-resilient economies

[…] g. We reaffirm our commitment to rationalize and phase out over the medium term inefficient fossil fuel subsidies that encourage wasteful consumption while recognizing the importance of providing those in need with essential energy services. […] We express our appreciation to those economies who have volunteered to undergo a voluntary inefficient fossil fuel subsidy peer review. We welcome ongoing initiatives to share best practices and facilitate capacity building to further progress toward this goal."

2016

G7 Toyama Environment Ministers' Meeting Communiqué[73] (Toyama – Japan, 16th May 2016):

"*15. We emphasize that enhancing decoupling between economic growth and natural resource utilization is necessary for the implementation of the Paris Agreement and the SDGs. We will make every effort to prevent unsustainable consumption of natural resources and associated environmental deterioration from extending to our future generations.*"

G7 Ise-Shima Leaders' Declaration[74] (Ise-Shima – Japan, 26th-27th May 2016):

"*Given the fact that energy production and use account for around two-thirds of global GHG emissions, we recognize the crucial role that the energy sector has to play in combatting climate change. We remain committed to the elimination of inefficient fossil fuel subsidies and encourage all countries to do so by 2025."*

G20 Leaders' Communiqué: Hangzhou Summit[75] (Hangzhou - China, 5th September 2016)

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[69] APEC Energy Ministerial Meeting (2015), 2015 APEC Energy Ministerial Meeting: Cebu Declaration, 13 October 2015, Cebu – Philippines

[70] G20 (2015), G20 Antalya Leaders' Communiqué, 16 November 2015, Antalya – Turkey

[71] APEC Ministerial Meeting (2015), APEC Ministerial Meeting Manila Declaration, 16-17 November 2015, Manila – Philippines

[72] APEC (2015), Manila Leaders' Declaration, 19 November 2015, Manila – Philippines

[73] G7 Environmental Ministers (2016), G7 Tayoma Environmental Ministers' Meeting Communiqué, 16 May 2016, Toyama – Japan

[74] G7 (2016), G7 Ise-Shima Leaders' Declaration, 26-27 May 2016, Ise-Shima – Japan

"*More Effective and Efficient Global Economic and Financial Governance […]*
24. We reaffirm the importance of energy collaboration towards a cleaner energy future and sustainable energy security with a view to fostering economic growth. […] We also reaffirm our commitment to rationalize and phase-out inefficient fossil fuel subsidies that encourage wasteful consumption over the medium term, recognizing the need to support the poor. We welcome G20 countries' progress on their commitments and look forward to further progress in the future. Further, we encourage G20 countries to consider participating in the voluntary peer review process. […]"

Annual APEC Ministers meeting declaration[76] (Lima, Peru – 17-18 November 2016):
"*Energy*
[…] We commit to rationalizing and phasing out inefficient fossil fuel subsidies which encourage wasteful consumption, while still providing essential energy services. We express our appreciation to the economies that have volunteered to undergo a voluntary inefficient fossil fuel subsidy peer review in APEC and the G20, and we encourage more economies to participate in peer review."

24° APEC Meeting: Leaders' Declaration[77] (Lima – Peru, 20th November 2016):
"*We reaffirm our commitment to rationalize and phase out inefficient fossil fuel subsidies, welcome ongoing peer review and capacity building activities, and encourage further efforts to facilitate subsidy reform."*

13° Meeting of Conference of the Parties to the Convention on Biological Diversity[78] (Cancun – Mexico, 4th – 17th December 2016), Decision Adopted XIII/2 Progress towards the achievement of Aichi Biodiversity Targets 11 and 12:
"*32. Further encourages Parties and invites other Governments, as appropriate, to use an appropriate mix of regulatory and incentive measures aligned with national biodiversity objectives, including the elimination, phasing out and reform of incentives harmful to biodiversity in order, inter alia, to reduce habitat loss, degradation and fragmentation […];*
61. Further recognizes Sustainable Development Goal 14 and its targets 2, 4, 5 and 6, which refer to the conservation, sustainable management and restoration of marine ecosystems, the effective regulation of harvesting, the conservation of at least 10% of marine and coastal areas and the prohibition of incentives harmful to biodiversity in fisheries, respectively;"

2017

G7 Bologna Environment Ministers' Meeting Communiqué[79] (Bologna – Italy, 12th June 2017):
"*7. Environmental Fiscal Reform and Sustainable Development*

50. We recognize and support effort by G7 and other countries interested in examining and removing incentives, particularly inefficient fossil fuel subsidies, not coherent with sustainability goals.

51. We recognize the benefits of monitoring progress in the phasing out of incentives, including subsidies, not coherent with the sustainability goals, such as inefficient fossil fuel subsidies which encourage wasteful consumption and we support existing initiatives underway such as the G20 voluntary peer review process.

52. We take note of the OECD work on these issues, and we recognize that OECD is considering further work for improving understanding of incentives, including subsidies.

53. We support G7 and all countries interested in exploring approaches to better align fiscal systems with environmental goals. In particular we intend to contribute to the implementation of the commitment of our Heads of State and Government adopted in Ise-Shima in 2016 for the elimination of inefficient fossil fuel subsidies that encourage wasteful consumption by 2025.

54. Furthermore, we consider the need to exchange views and information, to better understand the impact of fiscal policies and measures on the achievement of our sustainability goals."

[75] G20 (2016), G20 Leaders' Communiqué Hangzhou Summit, 5 September 2016, Hangzhou – China
[76] APEC Ministerial Meeting (2016), APEC Ministerial Meeting Lima Declaration, 17-18 November 2016, Lima – Peru
[77] APEC (2016), Lima Leaders' Declaration, 20 November 2016, Lima – Peru
[78] UNEP (2016), Report of the Conference of the Parties to the Convention on Biological Diversity on its thirteenth meeting, Conference of the Parties to the Convention on Biological Diversity, 4-17 December 2016, Cancun – Mexico, CBD/COP/13/25..
[79] G7 Environmental Ministers (2017), G7 Bologna Environmental Ministers' Meeting Communiqué, 12 June 2017, Bologna – Italy

G20 Hamburg Action Plan[80] (Hamburg – Germany, 8th July 2017)
"*Fossil Fuel Subsidies*
We reaffirm our commitment to rationalise and phase out, over the medium term, inefficient fossil fuel subsidies that encourage wasteful consumption, recognising the need to support the poor. Furthermore, we encourage all G20 countries which have not yet done so, to initiate as soon as feasible a peer review of inefficient fossil fuel subsidies that encourage wasteful consumption."

G20 Hamburg Climate and Energy Action Plan for Growth[81] (Hamburg – Germany, 8th July 2017):
"F.2. Inefficient Fossil Fuel Subsidies that Encourage Wasteful Consumption
Inefficient fossil fuel subsidies (IFFS) that encourage wasteful consumption distort energy markets, impede investment in clean energy sources, place a strain on public budgets, and incentivise unsustainable infrastructure investments. Providing those in need with essential energy services, including the use of targeted cash transfers and other appropriate mechanisms, however, is still important. The US-Chinese peer review on IFFS was concluded, the German-Mexican peer review is ongoing and Indonesia and Italy have announced the continuation of their respective voluntary processes.
G20 Actions

- *We reaffirm our commitment to rationalise and phase out, over the medium-term, inefficient fossil fuel subsidies that encourage wasteful consumption, recognising the need to support the poor and we will endeavour to make further progress in moving forward this commitment.*
- *We encourage all G20 members that have not yet done so to initiate a peer review of inefficient fossil fuel subsidies that encourage wasteful consumption as soon as feasible.*
- *We take note the OECD/IEA progress report and its options on how to further develop and improve the G20 peer review process based on recent experience and how to facilitate the phase out of inefficient fossil fuel subsidies that encourage wasteful consumption."*

Council Conclusions on Climate Finance adopted by the Council[82] (ECOFIN) (7 November 2017):
"The Council::
2. […] UNDERLINES that carbon pricing is a key component of an enabling environment for shifting investments towards green and sustainable production technologies, and for promoting innovative solutions. In this context, SUPPORTS carbon pricing initiatives as well as initiatives promoting the phasing out of environmentally and economically harmful subsidies and inter alia the continued phasing down of financing for emission intensive projects."

2018

Council Conclusions on Climate Diplomacy[83] (26 February 2018):
"EU commitment through action – at all levels
[…] 14. RECALLS the connection between climate and development already set out in the EU Consensus on Development. In this context, EU and its Member States further UNDERLINE that carbon pricing and fossil fuel subsidy reform are key steps in creating and enabling environment for making finance flows consistent with a pathway towards safe and sustainable low greenhouse gas emissions and climate-resilient development and that international science and technology and energy cooperation can play an important role in providing innovative and sustainable solutions in addressing the global challenge of climate change."

Source: Second edition of the CES

[80] G20 (2017a), G20 Hamburg Action Plan, 8 July 2017, Hamburg – Germany
[81] G20 (2017b), G20 Hamburg Climate and Energy Action Plan for Growth, 8 July 2017, Hamburg – Germany
[82] Council of the European Union (2017), Climate Finance – Council Conclusions on Climate Finance (7 November 2017) [14148/17 ECOFIN 925], Brussels – Belgium, 9 November 2017
[83] Council of the European Union (2018), Council Conclusions on Climate Diplomacy – Council Conclusions (26 February 2018) [6125/18], Brussels – Belgium, 26 February 2018

2. POLICY OBJECTIVES AND CONTEXT IN ITALY

The National Strategy on Sustainable Development

In 2017, Italy defined its National Strategy for Sustainable Development (NSSD) in line with the Agenda 2030 Sustainable Development Goals. It took some two years and went through a participatory process involving local and regional governments, businesses, research centres, trade-unions, environmental NGOs and other relevant stakeholders. In July 2017, the Italian Government presented the NSSD in New York at the High-Level Political Forum. In December 2017, the NSSD was formally approved by the Inter-Ministerial Committee for Economic Planning (CIPE), thereby becoming a main pillar for future economic development of the country. For the implementation of the NSSD, Italy's Prime Minister issued a steering document on 16 March 2018 with guidelines for the implementation of the United Nations 2030 Agenda and the National Strategy for Sustainable Development. To this end, through this document, a special "National Committee for Sustainable Development" must be established.

The NSSD structure follows the 5 Ps (People, Planet, Prosperity, Peace, Partnership) of the 2030 Agenda. Each of them is, in turn, classified according to relevant strategic choices, highlighting the most important priorities for Italy (see Table 9). To the purpose of the present report, it is worth noting that within the Prosperity area, focusing on decarbonisation and circular economy, there are two targets related to further move towards a revision of FFS in Italy:

- Promote environmental fiscal reform
- Increase energy efficiency and renewable energy production, avoiding or reducing impacts on natural and cultural heritage and landscapes.

Both targets explicitly acknowledge the importance of a gradual phase out of environmentally harmful subsidies in line with target 12.c of the 2030 Agenda and bringing to a more environmentally-friendly development of the energy system worldwide.

Table 9: National Goals for Sustainable Development and SDGs

PEOPLE		
FIGHT POVERTY AND SOCIAL EXCLUSION, ELIMINATING TERRITORIAL GAPS	Reduce the intensity of poverty	
	Fight food and material deprivation	
	Reduce housing deprivation	
GUARANTEE THE CONDITIONS FOR THE DEVELOPMENT OF HUMAN POTENTIAL	Reduce unemployment for the weakest segments of the population	
	Ensure the effectiveness of social protection and security system	
	Reduce the school drop-out rate and enhance the education system	
	Combat deviance through prevention and social integration of vulnerable individuals	
PROMOTE HEALTH AND WELLBEING	Reduce population exposure to anthropogenic and environmental risk	
	Promote healthy lifestyles and strengthen preventive healthcare systems	
	Guarantee access to effective healthcare services and reduce territorial gaps	

PLANET

HALT THE LOSS OF BIODIVERSITY	Safeguard and improve the conservation status of species and habitats in terrestrial and aquatic ecosystems	
	Halt the spreading of invasive alien species	
	Increase terrestrial and maritime protected areas and ensure their effective management	
	Protect and restore genetic resources and natural ecosystems linked to farming, forestry and aquaculture	
	Mainstream natural capital accounting in planning, programming and national accounting.	
ENSURE THE SUSTAINABLE MANAGEMENT OF NATURAL RESOURCES	Provide biological diverse and dynamic seas and prevent impacts on maritime and coastal environment	
	Halt soil consumption and combat desertification	
	Minimize pollutant loads in soils, water bodies and aquifers, considering the good ecological status of natural systems	
	Implement integrated water resource management at all levels	
	Maximize water efficiency and adjust withdrawals to water scarcity	
	Minimize emissions and reduce air pollutants concentration	
	Ensure sustainable forest management and combat forest abandonment and degradation	
CREATE RESILIENT COMMUNITIES AND TERRITORIES, PROTECT LANDSCAPES AND CULTURAL HERITAGE	Prevent anthropogenic and environmental risk and strengthen urban and territorial resilience	
	Guarantee high environmental performances of buildings, infrastructures and open spaces	
	Boost urban regeneration, ensure sustainable urban accessibility and mobility	
	Ensure ecosystems restoration and defragmentation, strengthen ecological urban-rural connections	
	Ensure the development of potential and the sustainable management of territories, landscapes and cultural heritage	

PROSPERITY

FUND AND PROMOTE SUSTAINABLE RESEARCH AND INNOVATION	Increase the investments in research and development	
	Implement the digital agenda and improve the spread of smart networks	
	Innovate processes and products and promote technological transfer	

ENSURE FULL EMPLOYMENT AND HIGH QUALITY TRAINING	Ensure accessible, high quality and permanent training	
	Increase sustainable and high quality employment	
ENSURE SUSTAINABLE PRODUCTION AND CONSUMPTION PATTERNS	Dematerialize the economy, improving the efficient use of resources and the circular economy	
	Promote environmental taxation	
	Ensure fair access to financial resources	
	Promote social and environmental responsibility in companies and institutions	
	Reduce waste production and promote secondary raw material market.	
	Promote the demand and increase the supply of sustainable tourism	
	Boost sustainable farming and forestry throughout the production and supply chain	
	Boost sustainable fishing and aquaculture throughout the production and supply chain	
	Promote Italian excellence worldwide	
DECARBONIZE THE ECONOMY	Increase energy efficiency and renewable energy production, avoiding or reducing impacts on natural and cultural heritage and landscapes	
	Increase sustainable mobility of people and goods	
	Reduce greenhouse gas emissions in non-ETS sectors	

PEACE

PROMOTE A NON-VIOLENT AND INCLUSIVE SOCIETY	Prevent violence against women and children and provide adequate assistance to victims	
	Guarantee migrants' and asylum seekers' reception and the full integration of ethnic and religious minorities	
END DISCRIMINATION IN ALL ITS FORMS	End all forms of labour exploitation and ensure workers' rights	
	Guarantee gender equality	
	Combat all forms of discrimination and promote respect for diversity	
ENSURE LEGALITY AND JUSTICE	Reinforce the fight against crime	
	Fight bribery and corruption in the public sectors	
	Ensure just and efficient judiciary system	

PARTNERSHIP

GOVERNANCE, RIGHTS AND COMBAT INEQUALITIES	Strengthen good governance and democracy	
	Provide support to national and local institutions, social networks, social protection systems, trade unions, Civil Society Organizations	

	Improve the interaction between State, intermediate bodies and citizens in order to promote human rights and transparency	
	Promote gender equality and the empowerment of women and enhance the role of women in development	
	Combat gender violence and discrimination against women: improve access to and use of health services, education and training systems, economic and social independence	
	Improve young people and minors' living conditions, combating: trafficking of young people, women, children and adolescents; work exploitation of children; new forms of slavery; juvenile crime; disabled minors; minors' sexual exploitation; all forms of abuses, among which sexual mutilations; sexual violence; sexual diseases (HIV AIDS); discriminations on the citizenship rights	
	Encourage youth and children participation to make them "actors of change", promote social integration, inclusive education and training	
MIGRATION AND DEVELOPMENT	Promote the role of migrants as actors for development	
	Promote migrants' and diasporas' professional and entrepreneurial skills, in close connection with the Countries of origin	
	Promote cooperation models between Europe and Africa to prevent and manage migrants' flows by strengthening institutional capacity, creating employment and economic opportunities, supporting micro-entrepreneurship and infrastructure investments	
HEALTH	Improve access to health services and contribute to the extension of universal health coverage	
	Strengthen basic healthcare systems and staff training	
	Limit risk factors and the impact of health emergencies: improve early warning and prevention mechanisms	
	Be committed to fight against pandemics, particularly AIDS, and to promote vaccination campaigns (Global Fund, GAVI)	
	Support scientific research, promote health and prevention awareness	
	Carry on a forceful action to relaunch public health functions and to support health reforms	
EDUCATION	Ensure high quality basic education without gender discrimination	
	Promote training and improve professional skills of teachers, school staff and development workers	
	Provide inclusive education for the most disadvantaged, marginalized and discriminated social groups. Promote social and employment integration of young people and unemployed adults by offering professional training	

	Valorise Universities contribution: - Define training paths offering new professional skills, addressed to students from partner countries; - Contribute to the development and strengthening of institutional capacities; - Train future professionals and leaders in partner Countries; - Provide research tools in order to produce innovation for development and to deliver assessment methods and models in line with good international practices	
SUSTAINABLE AGRICULTURE AND FOOD SECURITY	Ensure governance and access to land, water, natural and productive resources by farmers' families and small-scale producers	
	Support and develop traditional adaptation techniques to biotic and abiotic factors	
	Strengthen the capacity to cope with natural disasters by also promoting "green infrastructure"	
	Promote agricultural, environmental and social policies supporting family farming and craft fishery	
	Encouraging the adoption of measures to promote the competitiveness of products respecting sustainable diet principles	
	Provide qualified technical assistance, training and institutional capacity building in order to strengthen the commitment to the development of key production chains recalling the peculiar Italian development model - SMEs and local districts -, increasing productivity and production, improving quality, enhancing product typicality, spreading good farming practices, preserving production areas, promoting fair trade, technology transfer, agroindustry development and export	
ENVIRONMENT, CLIMATE CHANGE AND ENERGY FOR DEVELOPMENT	Engage the private national sector, from cooperatives to agro-business, by promoting partnerships	
	Promote actions in the fields of reforestation, sustainable urban regeneration, preservation of protected terrestrial and marine areas, wetlands and river basins, sustainable fisheries management, land and soil recovery, particularly by revitalising family farming	
	Contribute to increase resilience and manage new environmental risks in most vulnerable regions	
	Promote technology transfers - also involving profit actors - in areas such as energy, transport, industry and urban management.	
	Promote energy for development appropriate and sustainable technologies optimized for local contexts particularly in rural areas; new models for income generating energy activities; support to the development of enabling policies and regulatory mechanisms that lead to energy governance modernization based on local needs; development of technical and managerial skills of locals, through multi-level training.	

PRESERVATION OF CULTURAL AND NATURAL HERITAGE	Contribute to economic diversification - particularly in rural, mountain and inner areas - to income generation and employment, to sustainable tourism promotion, to urban development and environmental protection, to cultural tourism industry support, to valorisation of local handicraft and traditional crafts recovery	
	Strengthen education and training, institutional capacity, transfer of know-how, technology and innovation and addressing heritage protection, even in post-conflict crisis and natural disasters	
	Launch and set up pilot initiatives oriented towards a greater understanding of landscape and natural heritage, targeted to different groups among the general public, to be properly monitored and assessed in time	
THE PRIVATE SECTOR	Promote innovative financial instruments to stimulate the "leverage" effect with private funds and improving access to credit by SMEs in partner Countries; promote structured dialogue with the private sector and the Civil Society; support the transfer of know-how in the areas of excellence of the Italian economy	
	Encourage innovative forms of collaboration between private profit and non-profit sector, with particular reference to the Civil Society Organizations in partner Countries, in order to support local entrepreneurship, with the aim of contributing to the fight against poverty through creating jobs and inclusive economic growth	

SUSTAINABILITY VECTORS

COMMON KNOWLEDGE	Improving knowledge of natural ecosystems and related services	
	Improving knowledge on quantitative and qualitative status and exploitation of natural, cultural and landscapes resources	
	Improving knowledge on equality, dignity, immigration, social inclusion and legality	
	Developing an integrated knowledge-system to formulate and evaluate development policies	
	Ensuring data and information availability, access and networking	
MONITORING AND EVALUATING POLICIES, PLANS AND PROJECTS	Ensuring the development and population of integrated monitoring and assessment systems for interlinked policies, plans and projects	
	Creating an integrated monitoring and assessment system for the NSDS, ensuring its effective management and unceasing implementation	

INSTITUTIONS, PARTICIPATION AND PARTNERSHIPS	Promoting the active participation of civil society in decision-making processes and policy implementation and evaluation	
	Promoting the establishment of effective mechanisms to promote interaction between the different institutions and implement and evaluate the NSDS	
	Ensuring sustainability, quality and innovation in public-private partnerships	
EDUCATION, AWARENESS AND COMMUNICATION	Turning knowledge into competences	
	Promoting education on sustainable development	
	Promoting and applying solutions for sustainable development	
	Communication	
MODERNISING PUBLIC ADMINISTRATION AND RESTRUCTURING PUBLIC EXPENDITURE	Strengthening public governance	
	Ensuring regulatory simplification and quality	
	Ensuring the efficient and sustainable use of public financial resources	
	Implementing gender budgeting	

Source: National Strategy for Sustainable Development (2018)

SDGs and FFS: the work on SDG 12.c

The preparation of indicators for monitoring of 2030 Agenda's SDGs and Targets is the responsibility of "custodian" organizations supported by technical expert groups. For Target 12.c referring to FFS the custodian has been identified in UNEP that is responsible for leading the methodological development of the SDG12c indicator and for compiling and reporting data on the indicator for the Secretary General's progress report on the SDGs.

Target 12.c reads: "*Rationalize inefficient fossil-fuel subsidies that encourage wasteful consumption by removing market distortions, in accordance with national circumstances, including by restructuring taxation and phasing out those harmful subsidies, where they exist, to reflect their environmental impacts, taking fully into account the specific needs and conditions of developing countries and minimizing the possible adverse impacts on their development in a manner that protects the poor and the affected communities*"; the associated indicator refers to the "*Amount of fossil-fuel subsidies per unit of GDP (production and consumption) and as a proportion of total national expenditure on fossil fuels*".

On 29th September 2017, Italy hosted the second meeting of the technical expert group supporting the development of the methodology to measure the SDG 12.c indicator. The technical expert group is formed by IMF, IEA, IADB, OECD, UN Environment, UN Statistics, EUROSTAT, EC, OPEC Secretariat, Global Subsidies Initiative (GSI), Statistics Sweden, German Federal Ministry for Economic Affairs and Energy and the Italian Ministry of Environment, Land & Sea.

Additional countries invited to the second consultation process on the methodological development as well as the data collection process include China, Egypt, India, Indonesia, Malaysia, Mexico, Norway, Peru, Philippines, S. Africa, Saudi Arabia, Switzerland, USA, UAE and Zambia. UN Environment, after thorough consultations with the expert group, is in the process of submitting a proposal to IAEG shortly, based on a developed methodology paper.

The Environmental Annex to the Financial Law and the Catalogue on EHS and EFS

The National Law 221/2015 "*Environmental measures for promoting green economy and limiting the excessive use of natural resources*" (so-called "*Collegato Ambientale*", i.e. Environmental Annex to the Stability-Financial Law) represents a significant path towards the safeguard of the environment and provides different measures with the aim of encouraging a more efficient, sustainable and circular way of employing resources. It contains 79 articles divided into 11 paragraphs.

One of the main topic is the revision of the National Strategy for Sustainable Development (art.3), a voluntary national label to evaluate and communicate the "greenness" of products called "*Green made in Italy*" (art.21), the establishment of the Natural Capital Committee (art. 67), the introduction of the Italian Catalogue on Environmentally Harmful and Environmentally Friendly Subsidies (art. 68) and the introduction of a scheme for Payment for Ecosystem Services (art. 70).

The aim of the CES is to identify, classify and quantify the amount of subsidies that might imply any relevant environmental impact, both in harmful and friendly cases. The definition of subsidy, as approved by the Italian Parliament, must be the widest possible in order to include "*among others, incentives, tax benefits, preferential financial treatments and exemptions […]*". This report represents a policy tool that the policy maker could use to reform or remove EHS as recommended by different IOs (e.g. OECD, World Bank, IMF). The CES must be transmitted to the Parliament annually by the end of July.

The first edition of the CES was transmitted to the Parliament in 2017 and identified 131 measures for a total financial effect of € 41 bl. These support measures were divided into 5 sectors: Agriculture, Energy, Transport, VAT, Other.

As it is possible to see in Figure 5, measures were mostly identified in the energy sector. Many of these will be commented in detail, since the largest share is represented by FFS. On the other hand, consistently with the goal of the Catalogue, subsidies to renewable energy production and advancements in energy efficiency are included. These off budget subsidies are usually managed through financial mechanisms included in the electricity bill (compensation schemes).

Figure 6 reports, on the other side, that the largest share of direct subsidies were identified in the agriculture sector. These are due to different measures such as:

- Common Agricultural Policy (CAP) direct payments, namely direct aid granted to farmers in order to ensure income stabilization. They include the following schemes: basic payment scheme; specific and voluntary coupled support; payment for agricultural practices beneficial for the climate and the environment (Greening); payment for young farmers;
- Agricultural policy interventions financed through the Common Market Organization (CMO), in which are included wine, fruit and vegetables CMOs. The CMO is the market measures framework, provided under the CAP, setting intervention parameters on agricultural markets and providing support to specific sectors (for example, fruit and vegetables, wine, olive oil, …);
- PAC policy on rural development providing subsidies to activities funded through the 2014-2020 Rural Development Program;

In Italy, according to EEA database, in 2014, the transport sector was responsible for at least 26% of GHG emissions. Despite the relevant environmental impact of the sector, the amount of identified subsidies, tax expenditures and direct subsidies in the Annex to the 2016 Stability Law is € 473.6 million, a lower bound since some items are yet to be quantified. The gap between the importance of this sector and the monetary dimension of the identified subsidies is due to the classification of some

items: although some energy products are used as fuel in the transport sector, they have been inserted in the energy sector.

In the "Other" sector we have subsidies that we do not classify in previous sections (agriculture, energy and transport), but that display relevant environmental effects. Therefore, identified and partially quantified environmental subsidies are:

- building industry, considering both restoration, recovery and renovation of existing buildings which may be public or hotels, for residential use or located in rural areas; both real estate as goods; furniture (appliances and furniture), or devices for remote control installation for heating, hot water and air conditioning;
- water sector, considering both cultural heritage and landscape preservation from hydrogeological risk, application of a social tariff on integrated water service for domestic users in conditions of poverty;
- instrumental goods for existing and new production facilities as well as for manufacturing sector;
- reclamation of asbestos, recovery and disposing asbestos waste material;
- tax relief for fishing sector and jobs in the sector.

Among the 131 measures, 75 are tax expenditures while 56 are direct subsidies. This is equivalent, respectively, to around € 19 billion and € 22 billion (Figure 7).

Figure 5: Number of subsidies divided by sector in 2016

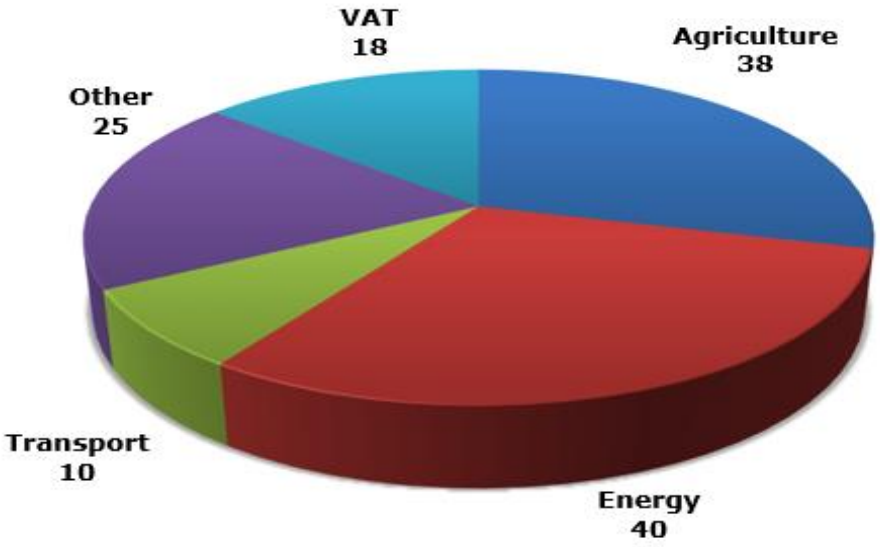


Figure 6: Number of subsidies divided by effects and sectors in 2016

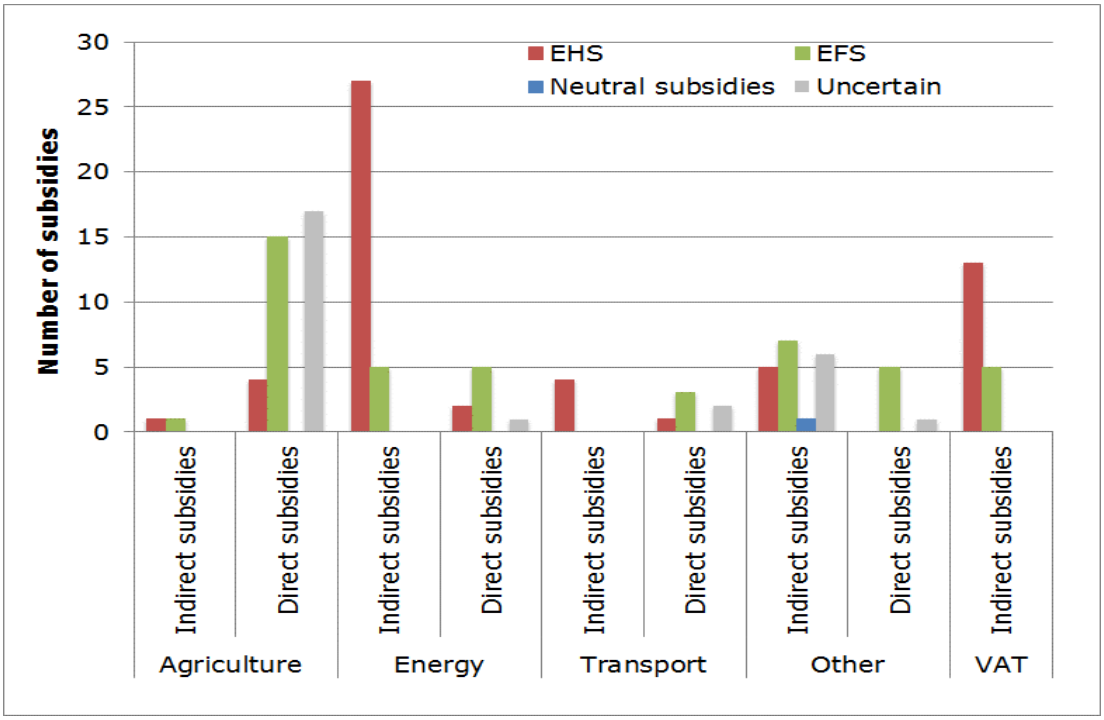
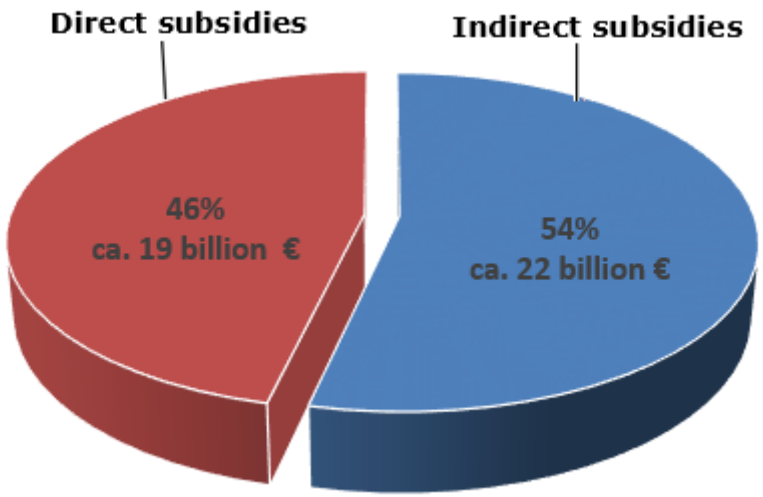


Figure 7: Breakdown by type of subsidies in 2016



The evaluation of the environmental impacts is divided into EHS, EFS, uncertain and neutral. The last two categories occur when the environmental impact generated or encouraged by a subsidy is, respectively, not fully attributable to a (net) positive or negative impact or not relevant, but friendly in case of reform. The CES identifies 57 EHS, corresponding to € 16.2 billion, and 46 EFS, equivalent to € 15.7 billion. "Uncertain" subsidies are around 27, corresponding to € 5.8 billion, while there is one "neutral" measure, accounting for € 3.5 billion.

Summarizing, as it is possible to see in Figure 8, over 43% of the measures analysed are EHS, 35% are EFS and 21% are uncertain. If we look to their financial effect (Figure 9), the amount of EHS (39%) is closer to the amount of EFS (38%), while uncertain is around 14%.

Figure 8: Breakdown of subsidies in categories (number of measures) in 2016

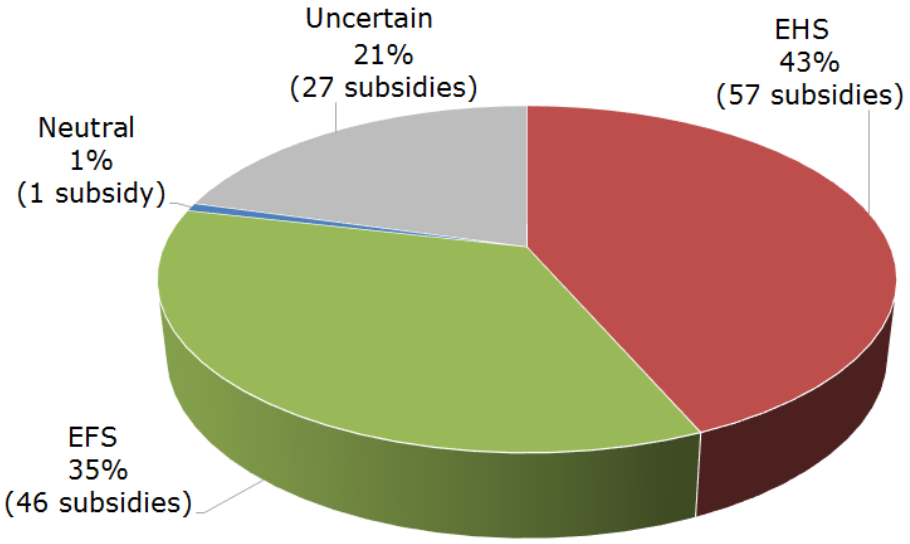
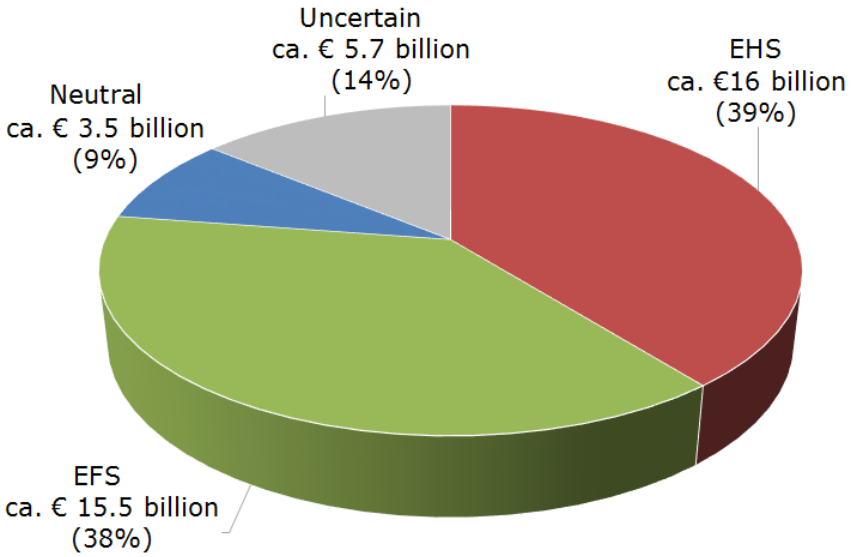


Figure 9: Breakdown of subsidies by categories (financial effect) in 2016



In Table 10, we summarize the main findings of the CES. These are divided by sectors and categories with the financial effects for each voice.

Table 10: Summary statistics of the value of EHS, EFS, Uncertain and Neutral in 2016

Subsidy & Category	EHS	EFS	Neutral	Uncertain	Total (mln €)	Total (%)
Agriculture	154	2,231		4,068	6,453	15.7%
Energy	11,550	12,145			23,695	57.6%
Transport	202	200		65	468	1.1%
Other	700	1,079	3,538	1,634	6,950	16.9%
VAT	3,561	25			3,586	8.7%
Total (mln €)	**16,167**	**15,679**	**3,538**	**5,767**	**41,151**	**100%**
Total (%)	39.3%	38.1%	8.6%	14.0%	100%	

Table 11 reports our disaggregated statistics.
Indeed, it emerges that:

- 71% of indirect subsidies are EHS and 5% are EFS;
- 76% of direct subsidies are EFS and 2% are EHS.

This trend, that should be verified and confronted through the next editions of the CES, deserves attention: indirect subsidies, especially in the form of tax expenditures, seems to be highly involved with the potentially harmful effect of the fiscal policy tool on the environment, while direct subsidies are generally better aligned. These could be due to different reasons, starting from potential monitoring inefficiencies in the case of indirect subsidies to the goals for which a subsidy is introduced. Tax expenditures, for instance, are usually introduced for social and development purposes and exert relevant environmental impacts as a side effect of different policies. It could be the case, moreover, that cross-subsidization among different sectors emerges and it becomes difficult for the policymaker to identify and assess all the relevant effects (both social and environmental). On the other hand, direct subsidies usually have a clearer scope, especially on beneficiaries, and many of them are used to pursue environmentally-relevant goals (e.g. increase the share of renewables in the energy sector). In any case, it emerges for the future the need to introduce an ex-ante environmental impact assessment of subsidies in order to avoid undesirable counter-effects in the medium-long run.

Table 11: Estimate of total amount of subsidies by sectors and typologies (millions of euro) in 2016

Type of subsidy	EHS	EFS	ENS	Uncertain	Total (mln €)
Agriculture					
Tax expenditures	7.49	3.80	n.a.	n.a.	11.29
Direct subsidies	146.19	2,227.59	n.a.	4,067.79	6,441.57
To be identified *	n.a.	n.a.	n.a.	n.a.	n.a.
Total (mln €)	153.68	2,231.39	n.a.	4,067.79	6,452.86
Energy					
Tax expenditures	11,240.48	86.65	n.a.	n.a.	11,327.13
Direct subsidies	310.00	12,058.00	n.a.	n.a.	12,368.00
To be identified *	n.a.	n.a.	n.a.	n.a.	n.a.
Total (mln €)	11,550.48	12,144.65	n.a.	n.a.	23,695.13

Transport					
Tax expenditures	202.20	n.a.	n.a.	n.a.	202.20
Direct subsidies	-	200.00	n.a.	65.40	265.40
To be identified *	n.a.	n.a.	n.a.	n.a.	n.a.
Total (mln €)	202.20	200.00	n.a.	65.40	467.60
Other subsidies					
Tax expenditures	700.10	1,070.42	3,538.00	1,633.60	6,942.12
Direct subsidies	n.a.	8.10	n.a.	n.a.	8.10
To be identified *	n.a.	n.a.	n.a.	n.a.	n.a.
Total (mln €)	700.10	1,078.52	3,538.00	1,633.60	6,950.22
VAT 4%					
Tax expenditures	447.85	24.62	n.a.	n.a.	472.47
To be identified *	n.a.	n.a.	n.a.	n.a.	n.a.
Total (mln €)	447.85	24.62	n.a.	n.a.	472.47
VAT 10%					
Tax expenditures	3,113.14	n.a.	n.a.	n.a.	3,113.14
To be identified *	n.a.	n.a.	n.a.	n.a.	n.a.
Total (mln €)	3,113.14	n.a.	n.a.	n.a.	3,113.14

In this first edition of the CES, many voices need to be quantified, and many national, regional and European budget laws are still under the screening process. Obviously, it is worth to mention that subsidies here are classified according to their environmental impact and there is no integrated assessment concerning the socio-economic effects of such measures. Many subsidies might change classification in the next editions if these are reformed in an environmentally-related direction, such as the introduction of "green" requirements to access a particular subsidy or the reuse for alternative fuels that are the less polluting option in a specific sector.

The National Energy Strategy (SEN)

The National Energy Strategy, approved in 2017, is the ten-year plan that the Italian Government drew up to anticipate and manage the change of the national energy system: a document looking beyond 2030, and laying the groundwork for building an advanced and innovative energy model. The document results from a participative process that involved the Italian Parliament, the Regions, and over 250 stakeholders, including associations, companies, public entities, citizens, and representatives of academia. The numerous contributions given to the process testify the priority that the public opinion assigns to energy and environmental issues. The objective of the Strategy is to make the national energy system more competitive, more sustainable, and more secure. In particular, sustainability should ensure a significant contribution to decarbonisation, in line with the long-term targets of the Paris Agreement on Climate Change; improving energy efficiency, and encouraging energy conservation to mitigate environmental and climate impacts.

On the environmental ground, main targets include:

- curbing yearly energy consumption from 2021 to 2030 (10 Mtoe);

- accelerating the decommissioning of coal-fired thermal power plants by 2025, based on a detailed plan of infrastructural actions;
- doubling investments in research and development of clean-energy technologies: from € 222 million in 2013 to € 444 million in 2021.

Moreover, there is a programme devoted to the development of RES where reconciling energy targets with landscape conservation is a critical issue for the country. This issue concerns, above all, RES with the highest residual potential still to be tapped, i.e. wind and solar photovoltaic. As landscape conservation is a mandatory requirement, the Strategy promotes the revamping and repowering of wind, hydro and geothermal power plants, assigns priority to brownfield sites, and allocates a greater number of resources for RES and energy efficiency enhancements.

To date, Italy has already achieved its RES EU targets by 2020, with a RES penetration of 17.5% in total energy consumption in 2015 vs. a 17% target to be reached by 2020. The target of a 28% share of RES in total energy consumption by 2030 is ambitious but feasible. This RES share will be broken down as follows:

- 55% of RES in Electricity by 2030 (33.5% in 2015)
- 30% of RES in Heating and Cooling by 2030 (19.2% in 2015)
- 21% of RES in Transport by 2030 (6.4% in 2015)

Alongside, the Strategy foresees crucial improvements in energy efficiency: the target of the Strategy in this area is to foster low energy-consumption initiatives having the best cost/benefit ratio, so as to achieve 30% of energy savings by 2030, and give impetus to the Italian energy efficiency industry (e.g. construction of energy-efficient buildings and installation of energy-efficient facilities). In this topic, lines of action are seen as follows: in the residential sector, (i) revising, strengthening and confirming the tax deduction scheme for energy-efficiency investments (so-called "*Ecobonus*"); (ii) putting the energy-efficiency fund into operation, and setting aside a reserve for energy-efficiency loan guarantees furthering the evolution of minimum performance standards. In the transport sector, (i) strengthening sustainable local mobility to reduce urban traffic; (ii) supporting the modal switch to smart mobility (car sharing, car pooling, smart parking and bike sharing), cycle and pedestrian mobility, as well as local public transport improving the energy and environmental efficiency of the national stock of cars. Measures to develop eco-friendly mobility rest on a technology-neutral approach, allowing the target to be reached at the least cost to citizens. These measures include local energy, environmental, and pollutant emission requirements, as well as plans for building infrastructures for intermodal transport. In the service sector, adopting measures to promote energy renovation of buildings, in particular of public buildings adopting new minimum performance standards for public buildings. In the industrial sector, strengthening and streamlining the white certificates scheme promoting the energy efficiency of SMEs, by renewing schemes for co-funding energy audits and energy management systems.

The Strategy aims to speed up the decarbonisation of the energy system, starting from a reduced use of coal in power generation, and to progressively introduce measures spanning the entire energy process, thereby achieving significant environmental and health benefits, and contributing to the attainment of European targets. Hence, the Strategy requires a political commitment to phasing out coal-fired thermal power plants by 2021. Doing so under security conditions makes it imperative to implement the plan for managing the growing share of RES in the electricity sector in a timely manner, to supplement it with additional specific actions on infrastructures, plants and facilities, and to agree on a plan for revamping current sites and converting them into innovative power-generation hubs.

A special Steering Committee will actively monitor the implementation of the overall Strategy.

In the oil market, the target is to decrease primary consumption of oil products by 13.5 Mtoe by 2030 as against its 2015 levels.

The Strategy foresees a potential alignment of the excise duties of gasoline and diesel on the basis of their environmental impact (see para. "The case of different fiscal treatment between gasoline and diesel"). This gradual alignment might be half-way between the two rates, with a decrease of the excise duty of gasoline and an increase of the excise duty on diesel, or by simply aligning the excise duty of diesel to the gasoline one, guaranteeing consistency with environmental policies.

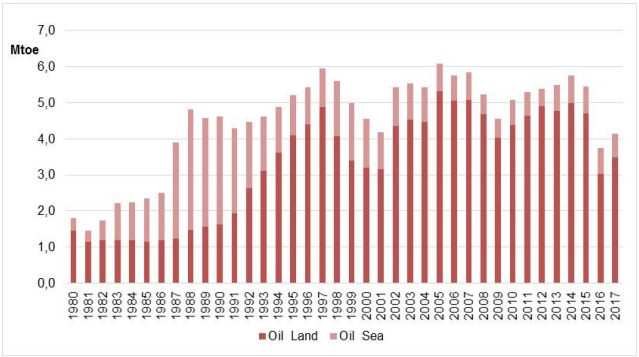
3. AN OVERVIEW OF ITALY'S ENERGY SECTOR: RESOURCES, MARKET STRUCTURE, PRICES AND TAXES

Energy sources

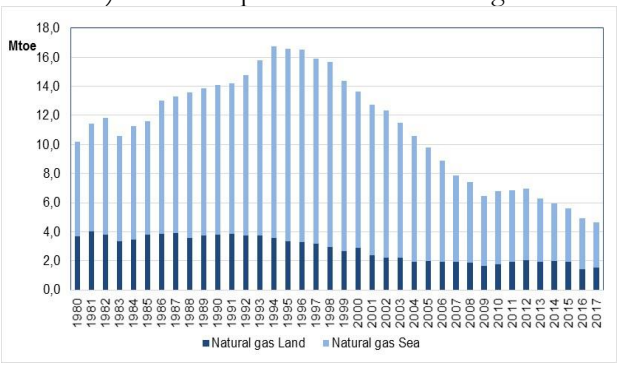
Historically, Italy has always been a great net importer of energy, mainly of oil and natural gas. The Italian import dependency[84] in 2017 was 76.5% (down from over 85% a decade earlier thanks to the contribution of indigenous renewable energy), higher than most other European countries, especially in hydrocarbons, in presence of a limited and declining of domestic production in land and in sea and to the growth of the role of natural gas in electricity generation.

Figure 10 – Italian hydrocarbon production (1980-2017)

a) Domestic production of oil



b) Domestic production of natural gas



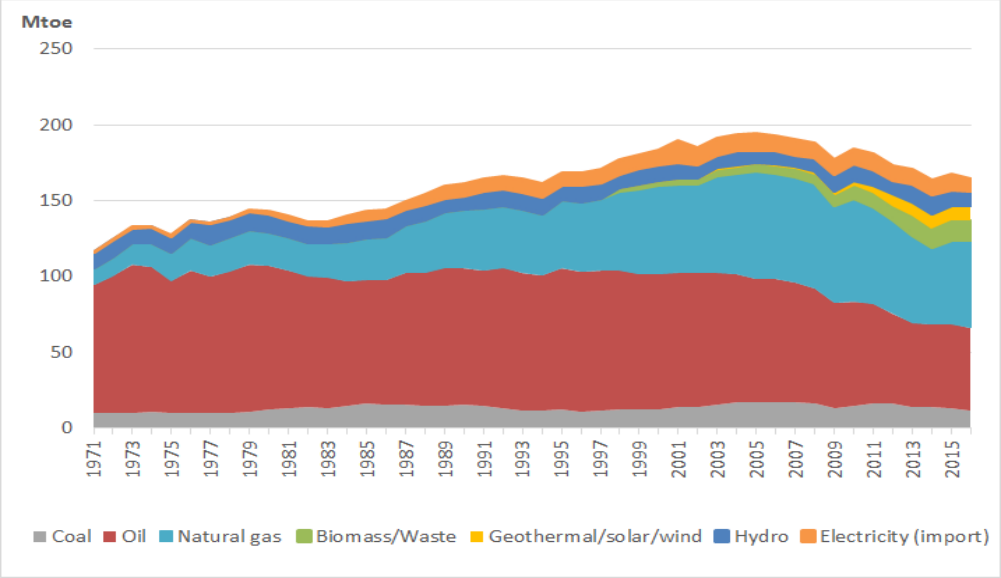
Source: Elaboration on DGS-UNMIG (MISE)

The Italian energy demand (expressed in terms of total primary energy supply - TPES)[85] increased annually, on average, of 1.5% between 1971 and 2006. After a peak in 2006, in correspondence with the global economic crisis (2007-2008), demand has decreased (-3.5% yearly) in 2009 (177 Mtoe compared with 190 Mtoe in 2007). Since then, energy demand has continued to decline steadily both for the persistent economic crisis and as a result of very important energy efficiency improvements (see Fig. 11). In 2017, the TPES was 170 Mtoe, +1.8% compared with 2016.

Fossil fuels make up 75.9% of the Italian primary energy supply in 2017, with a decreasing trend (91% in 1971; 90% in 1990; 87.6% in 2000). Nevertheless, the country's fuel mix, in the last decade, is still dominated by fossil fuels (oil and natural gas respectively 36% and 35%), with the overtaking of natural gas on oil. Renewable energy – including hydro – is playing an increasingly important role in the country's energy mix reaching 19.2% in 2017 (e.g. from 7% in 2006).

[84] Import dependency is the ratio between net import (import – export) and total primary energy supply.
[85] Total primary energy supply (TPES) represents the primary energy demand. It is equal to the sum of energy production and imports, minus both exports and bunker fuel, and algebraic addition of changes in stocks.

Figure 11 – Italy's total primary energy supply (1971-2016)



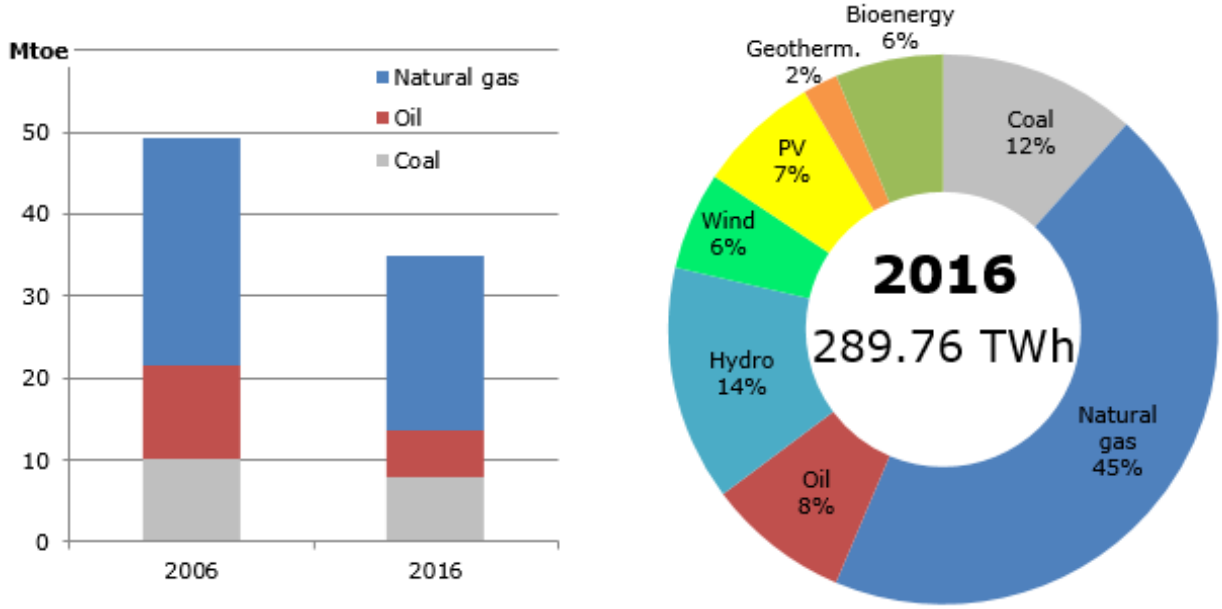
Source: Elaboration on National Energy Balance, MiSE

Italy's electricity generation has substantially changed in recent years: fossil fuels progressively reduced their share, losing 29% in the last decade (see Fig. 12). From 2006 to 2016, the contribution of natural gas to electricity production decreased of 23%, followed by coal (-21%) and oil (-51%). Currently, Italy can provide a very efficient electricity generation system based on natural gas[86] (combined cycle plants and gas turbine) and on an increasing share of renewable energy

Figure 12 – Italian electricity sector in 2016

a) Fossil fuel consumption for electricity production

b) Electricity generation mix



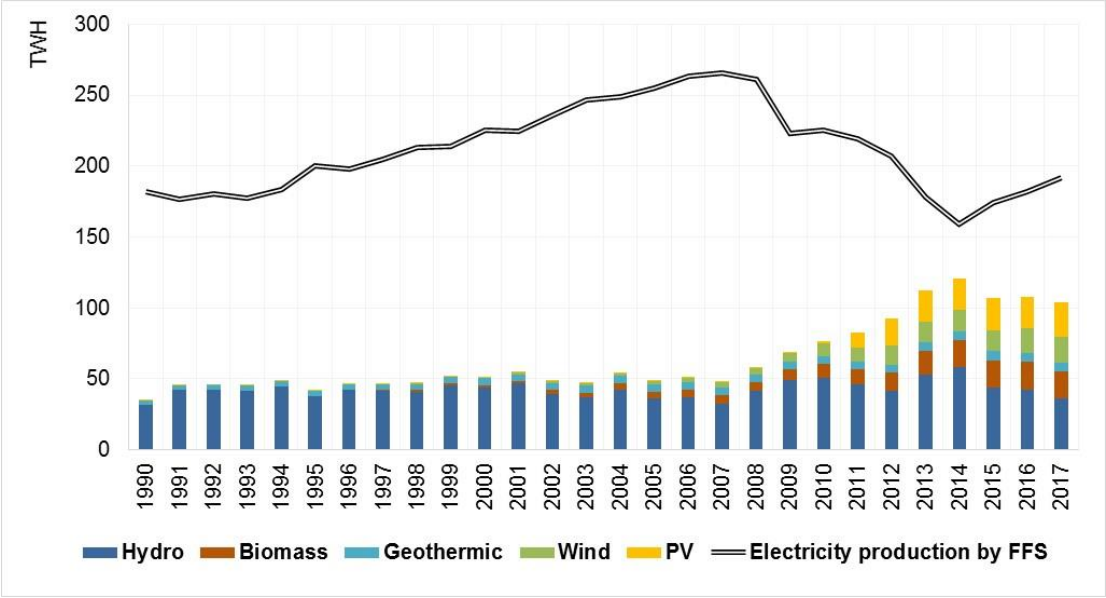
Source: Elaboration on Terna's data

[86] In 2016, the net efficient thermoelectric power was 62.4 GW, 72% related to natural gas, followed by coal (14%) and petroleum products (8.5%).

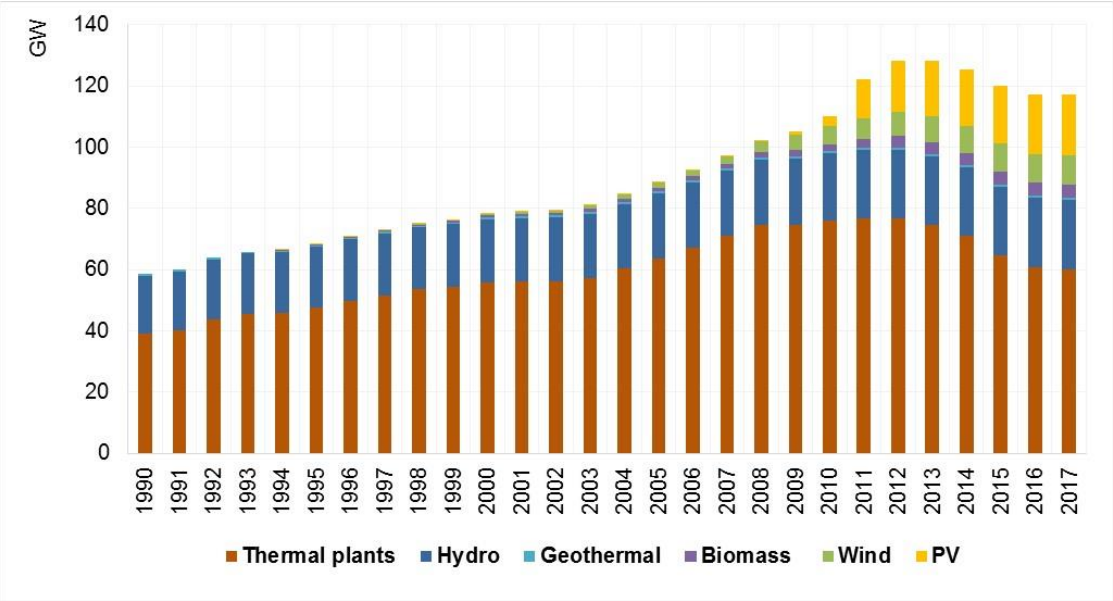
In 2016, natural gas remained the first source with a share of 45%, followed by hydro (14%), which depends on the annual rainfalls, and coal (12%), while the contribution of RES (excluding hydro) was 22% against 4% in 2006. Until 2008, the growing electricity demand was covered both by fossil fuels and by renewable energies, the latter growing at a slower rate. In the period 2008-2013, the electricity production from fossil fuels registered a very rapid decrease and, at the same time, the production from renewables grew. This is due to the combined effect of the increase in international oil prices and of the introduction of incentives aiming at supporting the development of renewable energies. The third period, since 2014 to now, is characterized, on the supply side, by the simultaneously reductions of the international oil price, of incentive tariffs and the failure of repowering both in terms of investments and in terms of legal procedures, and, on the demand side, by the decline of electricity demand (see Fig. 13).

Figure 13 – Evolution of power sector

a) Electricity production by fossil fuels (FFS) and breakdown of RES production (TWh)



b) Power capacity by sources (GW)



Source: Elaboration on Terna's data

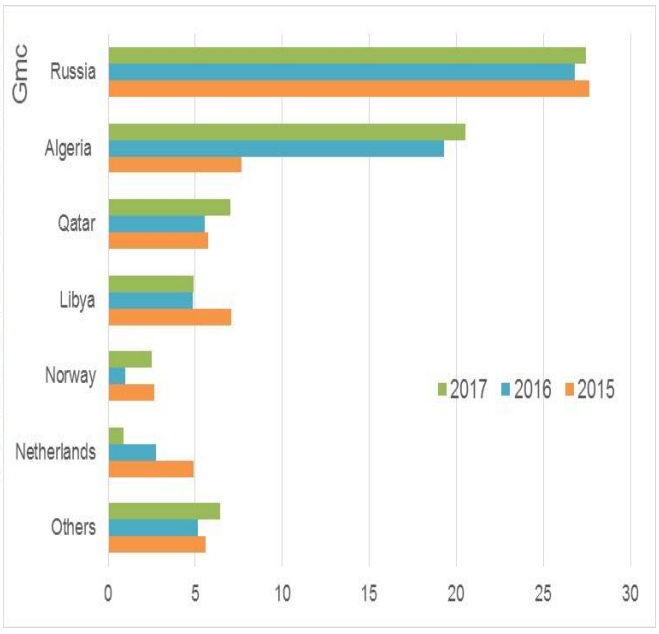
Since 1980, the domestic production of natural gas has progressively decreased both in land and in sea; offshore production decreased (-6.7%) in the last decade, three times more than inland production in the same time period (-2.9%). Approximately 81.5% of all domestic production is extracted from companies related to Eni Group companies, the dominant operator in this segment, long way ahead of the second operator, Royal Dutch Shell Group, that extracts around 8.3% of national natural gas.

The increased domestic demand of natural gas is satisfied through imports via pipeline and via LNG thanks to its 3 regasification plants (Cavarzere, Livorno and Panigaglia) (see Fig. 14a): in 2016, the import of natural gas covered 90.9% of gross domestic consumption of natural gas (67.5 Gcm). Compared with 2015, imports from Libya (-31.6%), Qatar (-3.9%) and Northern Europe (-62.8% from Norway, -44.2% from Netherlands and -3.1% from Russia) decreased, while a significant increase came from countries such as Nigeria (+361%), Algeria (+152.4%) and other EU partners (UK (+44.8%), Denmark (+37%), France (+17.8%) and Croatia (+4%) (see Fig. 14b). Algerian pipeline exports to Italy began in spring 2013, started rising in the last quarter of 2015 due to the gradual operational recovery of the fields damaged in that area and the renegotiation of several long-term gas supply contracts, that allowed for greater degree of flexibility in volumes and price dynamics better aligned with market conditions strongly changed since the pre-crisis period[87].

Figure 14 – Italy's gas import supply

a) 2016: import entry point and flows

b) Import of natural gas by country suppliers



Source: Elaboration on MiSE and Arera

In 2016, the percentage of renewable energy (solar, wind, etc.), excluding hydro, in the electricity generation mix was 21%, including hydro it raises to 34%.

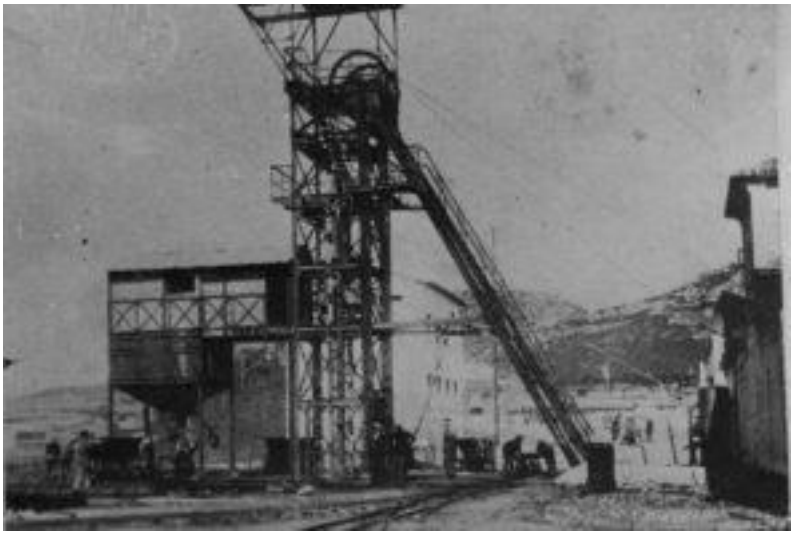
[87] ARERA (2017), https://www.arera.it/allegati/relaz_ann/17/AnnualReport2017.pdf , Report 570/2017/I

In 2016, the share of energy from renewable sources in gross final consumption, calculated through the methodology suggested in Directive 2009/28/EC, is 34%[88], above the 2020 NREAP (National Renewable Energy Action Plan)[89] target trajectory (26.4%).

The Italian Government devoted many efforts to improve energy efficiency both considering the 2020 EU target and the capacity of the Italian energy system in facing challenges due to endogenous resource scarcity.

Italy's total final consumption (TFC[90]) of energy is dominated by oil products (40.6%), followed by natural gas (30.7%) with coal playing a very minor role (2.3%). Oil products are mostly used in the transport sector (73%); natural gas consumption is used both in civil use - residential and tertiary sector (63%) - followed by industrial use (32%). Coal is mostly reserved to industrial use (98%), especially in metallurgical industry (ferrous and non-ferrous materials), chemical and petrochemical production.

Mining activity: the Sardinian case



For several years Sardinia assumed a strategic role in the production of minerals and in their primary transformation both for the particular richness of the island territory and for a series of historical vicissitudes. This mainly concerns a large area of the Sardinian South Western territory, comprising 34 municipalities and called the "Sulcis-Iglesiente-Guspinese" area, identified as a national reclamation site (DM 468/2001) and bounded by Ministry of Environment Decree of 12 March 2003. Today the cultivations of the metalliferous rods (Pb, Zn, Cu, Ag, etc.) have completely ceased due to international economic competition.

The history of Sardinian mining begins around the sixth millennium BC with the extraction and processing of obsidian; the improvement of the mining technique, subsequently allowed the extraction of metallic minerals, in particular lead, silver and copper sulphides.

[88] GSE (2018), Rapporto Statistico. Energia da Fonti rinnovabili in Italia. Anno 2016.
[89] MiSE (2010), Piano di azione nazionale per le energie rinnovabili dell'Italia.
[90] Total final consumption (TFC) is the sum of consumption by different end-use sectors: industry, transport, buildings (including residential and services) and other (including agriculture and non-energy use). It excludes International marine and aviation bunkers.

At the beginning of the eighteenth century, with the entry of Sardinia into the Savoy kingdom, there was a new resumption of mining activities. At that time there were 59 mines in Sardinia, mainly of lead, iron, copper and silver. The Savoy state gave a strong impetus to the mining development of the island when, in 1848, extended to Sardinia the mining law; the law provided for the separation of the property of the subsoil, which was due to the State, from that of the land that remained with the private sector and with which the right to directly exploit or grant the subsoil was attributed. Until the WWI, production steadily increased, until when the impossibility to export the mineral in the German, French, English and Belgian markets, determined a crisis of Sardinian mines, which also followed the 1929 crisis (Osservatorio Economico della Sardegna, 2007).

In the '50s Sardinia, thanks to the weight of the extractive industry, showed a high level of industrialization. Until the mid-1960s, the mines were, between highs and lows, a leading sector of the Sardinian economy. Later the mines entered in a second crisis: the causes of the decline are a) the high production costs that made the Sardinian mineral uncompetitive on the market, b) the decrease in the value of metals and c) the exhaustion of the strands of greater value.

From the end of the nineteenth century to the present day, mining activities in Sardinia were gradually abandoned both due to the progressive depletion of resources and the imposition in the world market of mining products from developing countries that, given their low cost, resulted in tight competition.

There are 241 Sardinian mining companies that are active and registered in the Chamber of Commerce Register, 0.2% of the total regional enterprises. The majority of them (99.2%) are part of the extraction of non-energy minerals and, in particular, of non-metallic minerals (95.9%), which also includes construction stones (and ornamental ones).

The category of building stones is ranked first for the number of companies registered in the Business Register in 2005 with 74.7% of the regional extraction companies; followed by industrial minerals with 11.6% and minerals for chemistry (6.2%) (Regione Autonoma Della Sardegna, 2015).

The framework for mining concessions, updated to March 2007, is shown in table B.1, where the mining concessions classified by the state of activity of the mining industry and by the administrative status of the title are counted on a regional basis (Regione Autonoma della Sardegna, 2007).

Out of a total of 241 mining licenses, we currently have 30 active mines; There are 30 mines in operation with suspended mining cultivation; the mines in phasing.out processes are 65 (title of mining concession expired or renounced); There are 115 abandoned mines (Regione Autonoma della Sardegna, 2007).

The mining sector was a major contributor not only to the material needs, but also to the development and economic growth of the Sardinia. On the other hand, it is obvious that exploitation of mineral resources requires a responsible approach to avoid adverse effects on the environment. The progressive closure of the Sardinian mines determined by economic / financial needs has given to the region the possibility to direct the regional economy towards new productive sectors. The Sardinia represents a national best-pactis for the redevelopment of the former mining areas.

Table B.1: Mining concessions and historical abandoned mines

Breakdown by administrative status							Breakdown by sector					
PROVINCE	Total Concession	Current concession: Active Mines	Current concession: Suspended mines	Closing concessions	Archived concessions	Abandoned historic mines	IM- Industrial Minerals	MC – Minerals for chemistry	EM – Energy minerals(including coal)	FM –Ferrous minerals	MM –Metallify minerals	PM – Precious minerals
CAGLIARI	**32**	6	7	2	17	**49**	20	4		1	5	2
CARBONIA IGLESIAS	**103**	5	7	53	38	**19**	6	27	8	2	60	
MEDIO CAMPIDANO	**34**		1	5	28	**11**	23	2		1	7	1
NUORO	**23**	6	5	3	9	**6**	16	2		1	2	
OGLIASTRA	**6**	1			5	**18**	1	2	1		2	
ORISTANO	**15**	2	3	2	8	**5**	14					
OLBIA_TEMPIO	**4**	1			3		2				1	
SASSARI	**24**	9	7		8	**7**	19			3	2	
SARDINIA	**241**	30	30	65	116	**115**	101	37	9	8	79	3

Source: Regione Autonoma della Sardegna (2007), Piano Regionale delle Attività Estrattive, Assessorato all'Industria

Market structure

In Italy, the gas market was liberalized in 2003, while the electricity market, after an intense progressive process, will be fully liberalized in the near future with the discontinuation of the so called "protected market" (households and SMEs). Both gas and electricity operators are subject to regulation of ARERA (Regulatory Authority for Energy, Grids and Environment - *Autorità di Regolazione per Energia Reti e Ambiente*).

In 2016, the number of companies operating in the wholesale gas market did not increase, while there was an increase on the overall volume of gas traded. Indeed, 193 suppliers, six less than 2015, sold nearly 18 Gcm more than in the previous year. In 2016, as in 2015, the concentration of this market has declined. In 2016, the share of the first three companies (Eni, Eni Trading & Shipping and Enel Trade) dropped from 31.4% to 30.8% in 2015. Similarly, the cumulative share of the top five companies dropped from 46.1% to 45.6% (the three mentioned earlier plus Engie Global Markets and Edison).

In general, the gas final market could be divided into three areas: i) open market; ii) standard conditions and iii) self-consumption. In 2016, compared with 2015, the self-consumption, which rests mostly with the thermoelectric power generation industry, experienced a significant increase (7.2%), the open market showed an increase (10.4%), while there was a decrease (7.8%) in sales at standard market conditions.

Moving to the electricity sector, there are various incentive mechanisms that use different methods to promote the electricity generation plants powered by renewable resources. Costs originating from the incentives of renewable energy sources are covered by tariff component "A3", with the sole exception of the costs associated with negotiated Green Certificates, which are re-paid by electricity market prices.

Overall, for 2016 it is estimated that the costs deriving from incentives on renewables sources amounted to 13.6 billion euros (12.5 in 2015)[91]. In addition to these, tariff component A3 also allows the distribution of special commercial regimes with guaranteed minimum prices and on-the-spot trading.

In the electricity retail market, the number of electricity sellers increased by 61 in 2016 due to the entry of new players both from adjacent sectors (notably the sale of gas) and from other branches, bringing the number of active companies up to 402. Thus, the trend of expansion in the sales segment, which persists almost without interruption since 2008, is maintained. The standard offer market share decreased - both in terms of energy supplied and number of customers supplied - to the advantage of the open market, while the safeguarded category grew slightly, at least in terms of energy. The sales volumes of the standard offer market[92] fell by -7.4% compared with 2015, while the open market lost just 1.5% compared with the year before (-0.8%); however, under the safeguard system[93] sales grew by 0.4 TWh. In 2016 as well, the movement of domestic consumers towards the open market continued. The domestic withdrawal points grew by approximately 175,000 units in 2016, but the standard offer market lost 683,000 compared with 2015, while the open market recorded 869,000 more. The electricity supplied on the open market in 2016 showed a slight fall: the level of sales fell by 1.5% compared with 2015. However, the number of customers served in total grew by more than one million units, more in the domestic sector (+9.2%) than in the non-domestic sector (+6.6%). Therefore, in 2016 the protected market acquired overall 21% of all the energy sold to the final market (against 22.2% in 2015), the safeguard service absorbed 1.7% (against 1.5% of 2015) and the open market purchased 77.3% (against 76.3% in 2015).

Since 2015, ARERA initiated a process for the definition of a reform path (so called Roadmap) with the overall objective of developing an efficient electricity retail market, through the consolidation of the free market supply, as the only ordinary mode of supply for small customers (household and small customers). However, taking into account the actual capacity of small customers to evaluate the offers on the market and the evolution of that capacity over time, the commencement data has been postponed to 1st July 2018. To address this change, the Authority has introduced a "guided and supervised" protection mechanism with the overcoming of the current alternation between the enhanced protection service and the free market through two initiatives:

- the introduction of "Tutela Simile", i.e. a contract similar to a free market supply, but with conditions (not price) set by the Authority;
- the exposure of orientations on free price offers under equivalent protection conditions, i.e. future "Placet" offers, that sellers will be required to offer to customers.

In the meanwhile, a project aimed at simplification and greater flexibility and transparency, the

[91] ARERA (2017)

[92] Domestic and small business consumers connected in low voltage that have not signed a trade agreement on the open market use the standard market or standard offer regime. The service is guaranteed by dedicated sales companies or by distributors with less than 100,000 users connected to their network, based on financial conditions and trade quality indicated by the Authority

[93] The safeguarding services includes non-domestic customers that find themselves, even temporarily, without an electricity trade contract in the open market, but are not eligible to access the standard offer service. These same customers, furthermore, are admitted to the safeguarding service when an arrears situation persists. Since 2008 the service is issued by sales companies selected via auction, which obtain the right to provide the service for two consecutive years. In Autumn 2016, the Authority reviewed the auction regulations and introduced a number of new features to the credit rating system, the guarantees the vendors have to present to Terna and on the role of the Integrated Information System (SII), which has to provide information about the customers managed by the system to the vendors interested in participating. After this review, the safeguarding service for the two-year period 2017-2018 was awarded at the end of November 2016 to the same companies that managed it in the 2014-2016 period: Enel Energia and Hera Comm.

"Bolletta 2.0" (a new model of more transparent electricity bill) came into force on 1st January 2016.

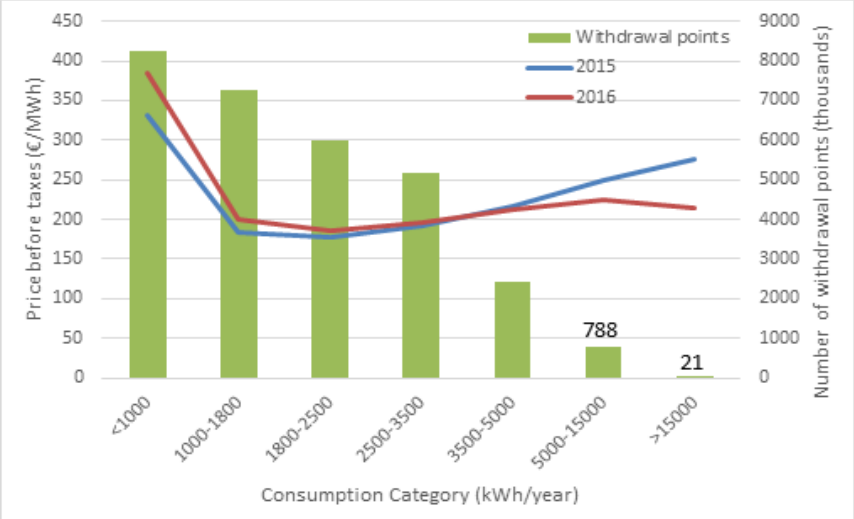
The dominant operator in the entire Italian electricity market remains the Enel group with a share that has risen up again in 2016 to 35.3% and is still a long way ahead of the Edison group behind it. The share of the Edison group in 2016 also fell two percentage points with regard to 2015, stopping at 4.7%. In third place, the Eni group with 4.3% (around the same percentage that it had in the previous year). The Enel group kept its position in the overall market thanks to its substantial dominance in the so-called mass market, consisting of the domestic sector and the non-domestic customers connected at low voltage: more than half of this market (54.7%) is in fact served by Enel, while Eni is in second place with a share of 4.1%. In any case in 2016 Enel also regained first position in the non-domestic customers in medium and in high /very high voltage, which it had lost in 2013.

Energy prices and taxes

The electricity price in Italy presents high variability due to the offers made by sellers in different kinds of final markets (standard offer market, open market and safeguarded category service).

The range of average prices applied to domestic customers is divided by consumption category, going in 2016 from a minimum of 186.7 €/MWh, for the 1800-2500 kWh/year category, to a maximum of 384.1 €/MWh for the smallest category (0-1000 kWh/year). The price drops with the increase in customer size consumption up to the third category (1800-2500 kWh/year), and rise subsequently for bigger customers, with the exception of the last category (over 15000 kWh/year) which presents a value slightly lower than the previous one. So, the characteristic U-trend emerged in the last few years is progressively smoothing (see Fig. 15). This can be attributed to the implementation of the first phase of the grid tariff reform[94], aimed at phasing out the progressive structure of the tariffs (progressive in respect of consumption).

Figure 15: U-trend for domestic customers in 2015 and 2016



* *The number of withdrawal points is related to 2016.*
Source: Elaboration on ARERA data

[94] The resolution 582/2015/R/eel of 2nd December 2015 aims to realize a gradual tariff reform of domestic consumers of electricity, in according to the art. 11, par. 3 Legislative Decree n. 102/2014 (as from Directive 2012/27/UE). This new step of reform intends to overcome the current progressive structure of grid tariff and general system charges. The reform process needed three year, so from 1st January 2018, the grid tariff (transport and metering) together with the general system charges will be the same for all and for all consumption categories.

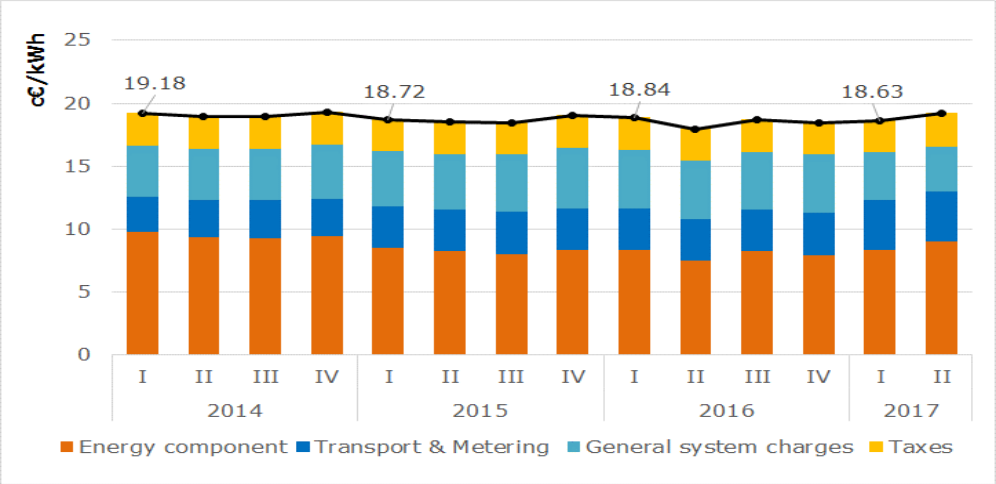
One of the final markets is the open market. Here, the electricity price is determined by demand and supply conditions, where the energy component price ("*materia energia*") is based on the Italian Power Exchange[95] and, in some cases, on bilateral contracts.

The second final market is the standard offer market, where the electricity price comprises several components. The trend of the electricity price results from the evolution of each component:

- energy component (or "*materia energia*"), composed by EPD (energy price + dispatching services + equalization) and sales costs, is the main factor. In the period January 2014 – June 2017, the energy component has fallen by 10% (0.98 c€/kWh), while the final price has remained stable;
- general system charges. They rose until the last quarter of 2015 (A3 component for RES) with a following decline, due to the temporary suspension of the "A_E" component related to the fiscal treatment of energy intensive companies;
- transport and metering component: this shows an increasing trend, due to the combined effect of reduction of the volume distributed and of the implementation of the tariff reform.

Figure 16 displays the evolution of different components contributing to the final electricity price on standard offer market to domestic consumers for each quarter from 2014 to the second quarter of 2017.

Figure 16 – Price evolution in standard offer market (domestic consumers) (taken the annual consumption to 2700 kWh and power equal to 3 kW) – c€/kWh



Source: ARERA (2017b), Relazione Annuale

The third market, the safeguarded category service applies when: a) non-domestic customers find themselves, even temporarily, without an electricity trade contract in the open market, b) are not eligible to access the standard offer service and c) might present arrears with electricity payments. In this framework, the electricity price is composed by the PUN (the Single National Price[96]) added with a

[95] The Power Exchange is the virtual venue where wholesale electricity supply and demand meet. In Italy, the GME (*Gestore dei Mercati Energetici*) plays as Clearing House in the transactions on the Italian Power Exchange (IPEX) under art. 5 of Legislative Decree n. 79/99.

[96] The resolution 582/2015/R/eel of 2nd December 2015 aims to realize a gradual tariff reform of domestic consumers of electricity, in according to the art. 11, par. 3 Legislative Decree n. 102/2014 (as from Directive 2012/27/UE). This new step of reform intends to overcome the current progressive structure of grid tariff and general system charges. The goal of this reform is that the grid tariff reflects the provision of services. The reform process took three years and completely entered into force on 1st January 2018. The grid tariff (transport and metering) together with the general system charges are now the

parameter "Ω" - differentiated by region - which represents a penalty surcharged for not being covered by standard schemes. The parameter Ω and the suppliers are established by *Acquirente Unico* (AU – Single Buyer) according to Decree n. 73/2007.

In Table 12, the breakdown, electricity taxation is divided for the typology of final consumers and classes of power and monthly consumption. The final price of natural gas for domestic consumers grew until the first quarter of 2013, reaching the peak around 92.78 c€/cm. Since then, a declining trend was due to the reduction of the energy component ("*componente materia prima*") connected to the so-called "gas reform", a measure enhanced to reduce the dependence of the standard offer on long-term import contracts. In particular, the reform was implemented through a weighting mechanism between such contracts and the prices set on the short-term gas markets (spot markets) that were characterised, for a long period of time, by excess supply due to the availability of unconventional gas and a corresponding fall in demand due to the international economy recession of 2007/2008.

Table 12: Electricity taxation – last update July 2014

Excise	c€/kWh
Domestic use	
For primary residential property ("prima casa"):	
Up to 3kW*	
- consumption up to 150 kWh/month	0
- consumption over 150 kWh/month	2.27
Over 3kW	2.27
For non-resident second-home owners ("seconda casa"):	2.27
Public Lighting (to all levels of consumption)	1.25
Other uses	
Up to 1,200,000 kWh/month	
For consumption of the first 200,000 kWh/month	1.25
For consumption over 200,000 kWh/month	0.75
Over 1,200,000 kWh/month	
For consumption of the first 200,000 kWh/month	1.25
For consumption over 200,000 kWh/month	4820 € as fix rate
VAT	**Rate**
Domestic use and similar – Condominiums (household building)	10%
Public lighting	22%
Other use:	
- mining, agricultural and manufacturing industries	10%
- Other activities	22%

* For 1.5 kW committed power: in case of consumption below or equal to 150 kWh/month, the excise has been payed; for more consumption, kWh untaxed has gradually reduced.
For 1.5 kW to 3 kW committed power: in case of consumption up to 220 kWh/month, the first 150 kWh are untaxed; for more consumption, kWh untaxed has gradually reduced.

Source: ARERA

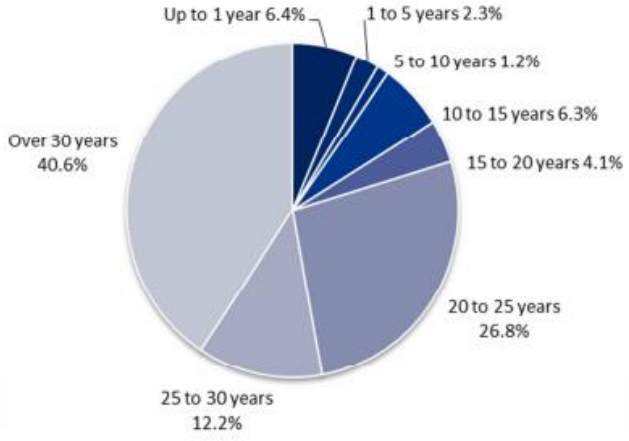
same for all domestic consumers and for all consumption categories. According to this reform, the grid tariff is no more progressive: metering, distribution and commercial costs are covered by a fixed fee (€/year) and by power capacity (€/kW/year); transmission cost is covered by electricity consumption (c€/kWh). The general system charges are differentiated between residential customers, for whom the charge is proportional to electricity consumption, c€/kWh and non-residential customers (a fixed fee, €/year, plus electricity consumption, c€/kWh).

Before 2011, in Italy and Europe, gas and oil prices were strongly interconnected, partly due to the physical switching possibilities, and to the use of oil-linked formulas in long term contracts. The disruptive availability of unconventional gas caused a drop of the international price in spot markets. As a consequence, the need to renegotiate long-term contracts arose. Since then, the gas natural price, determined in the past by long-term contracts through oil-linked formulas, was gradually replaced with the price trend of short-term gas markets (spot markets): this phenomenon is known as "decoupling of gas and oil price":

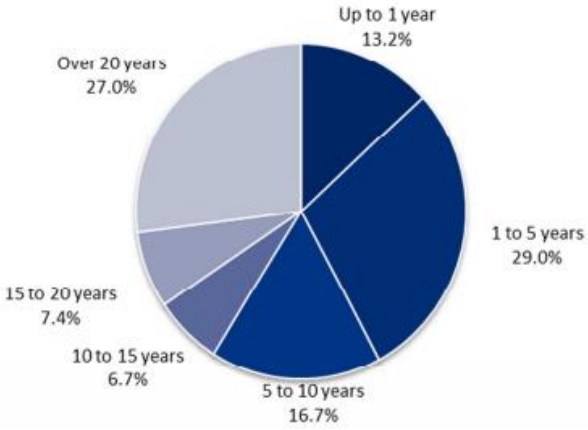
As shown in Figure 17.a, the share of long-term contracts of natural gas, that is, those with a duration of over 20 years, stands at 79.7%, an increase compared to last year (76%). The ratio of short-term imports, i.e. those with a maturity of less than five years, decreased (8.6% against 11.7% in 2015), while that of medium-term contracts (5-20 years) fell slightly compared to last year (11.7% instead of 12.3% in 2015) when it was halved (24.1% in 2014). In terms of residual life (Fig. 17.b), the existing contracts as of 2016 turned out to be overall still quite long, but the contract structure is shortening, albeit very slowly: 58.9 % of contracts (56.2% in 2015) will expire within the next ten years and 42.2% of those (35.8% in 2015) will end within the next five years. 34.5% of the contracts in force today have a residual life of over 15 years (35.8% in 2015).

Figure 17 – Structure of (annual and multi-annual) import gas contracts active in 2016

a) According to the full duration



b) According to residual life



Source: ARERA (2017)

This process determines a new final price mechanism. The energy component (raw material - "*materia prima*"), in addition to the TTF price, formed in the Dutch gas spot market, now includes:

- transport cost to PSV (*Punto di Scambio Virtuale*, or Virtual Trading Point), the main trading platform in the wholesale market in Italy managed by the main transport network operator, Snam Rete Gas;
- supply and risk management costs (risks linked to the climate fluctuation and volume), this implicitly includes storage costs, both in relation to seasonality (the difference between requirements and prices in summer and winter) and coverage of exceptional events, and

infrastructure costs[97].

This transition to the new system brought the introduction of an adjustment mechanism, with the inclusion of the following variables:

- the graduality component (GRAD), to cover the costs that sales companies must bear in order to restructure their gas portfolio in order to obtain an appropriate distribution of short- and long-term contracts;
- the pro-renegotiation component (CPR), to incentivise the renegotiation of long-term contracts in order to have them in line with the economic and regulatory changes, in addition to funding a mechanism for partially protecting final customers from the greater price volatility that characterises short-term spot markets.

The provisional analysis of the data shows that in 2016 the average net gas price (weighted by the quantities sold) charged by companies selling on the final market totalled 33.8 c€/cm. The price in 2015 was equal to 38.9 c€/cm. Overall, therefore, the average price of gas in Italy showed a decrease of 13%, that involved all customer sizes. The classes with the greatest decrease, in both absolute (-4.7c€/cm) and relative terms (18%), are connected to big consumers (over 20 million cubic metres). This contributed to widen the price gap between smaller and larger customers, which during the five-year period under consideration annually increased from 23.5 to 30 c€/cm.

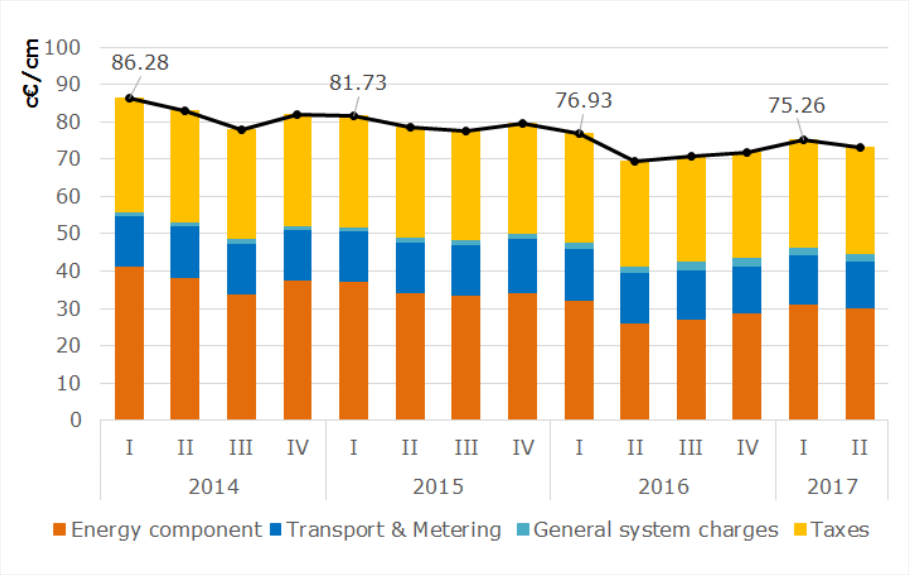
With the increase in consumption, prices tend to drop, due to the reduction of fixed costs per unit. In particular, the incidence of distribution fees is much higher for smaller consumption segments whereas for larger customers, who are connected directly to the transport network, this component does not exist. Moreover, small power consumption is characterised by a higher correlation with seasonal and weather conditions, which leads to higher modulation charges. In addition, supplies to large customers are characterised by a more flexible price system, in which the indexing formulas respond more quickly and intensely to the structural changes in international markets. Finally, the ability to get more affordable supply conditions is directly proportional to the size of the customer, based on greater knowledge of the market and greater attention paid to contractual terms.

Figure 18 shows the evolution of natural gas price for final domestic consumers from 2014 to the second quarter of 2017.

In Table 13, the breakdown of natural gas taxation for typology of final use and classes of consumption.

[97] Before this new formulation, the storage and transport and distribution infrastructural costs were two separate components.

Figure 18 – Natural gas price for final domestic consumer – c€/cm (Householder with individual heating and annual consumption of 1400 cm)



Source: ARERA (2017b), Relazione Annuale

Table 13: Natural gas taxation – last update June 2017 (c€/m3)

Tax	**Civil use**				**Industrial use**	
Range of annual consumption	< 120 m³	120-480 m³	480-1560 m³	> 1560 m³	< 1.2 M(m³)	> 1.2 M(m³)
Excise						
Normal rate	4.4000	17.5000	17.0000	18.60	1.2498	0.7499
Territories of ex *Cassa del Mezzogiorno*(A)	3.8000	13.5000	12.0000	15.00	1.2498	0.7499
Regional additional rate (B)						
Piemonte	2.2000	2.5800	2.5800	2.5800	0.6249	0.5200
Veneto	0.7747	2.3241	2.5823	3.0987	0.6249	0.5165
Liguria						
– climatic zones C and D	2.2000	2.5800	2.5800	2.5800	0.6249	0.5200
– climatic zones E	1.5500	1.5500	1.5500	1.5500	0.6249	0.5200
– climatic zones F	1.0300	1.0300	1.0300	1.0300	0.6249	0.5200
Emilia Romagna	2.2000	3.0987	3.0987	3.0987	0.6249	0.5165
Toscana	2.2000	3.0987	3.0987	3.0987	0.6000	0.5200
Umbria	0.5165	0.5165	0.5165	0.5165	0.5165	0.5165
Marche	1.5500	1.8100	2.0700	2.5800	0.6249	0.5200
Lazio						
– territories of ex *Cassa del Mezzogiorno*(A)	1.9000	3.0990	3.0990	3.0990	0.6249	0.5160
– Other areas	2.2000	3.0990	3.0990	3.0990	0.6249	0.5160
Abruzzo						
– climatic zones E and F	1.0330	1.0330	1.0330	1.0330	0.6249	0.5160

– Other areas	1.9000	2.3241	2.5823	2.5823	0.6249	0.5160
Molise	1.9000	3.0987	3.0987	3.0987	0.6200	0.5200
Campania	1.9000	3.1000	3.1000	3.1000	0.6249	0.5200
Puglia	1.9000	3.0980	3.0980	3.0980	0.6249	0.5165
Basilicata	1.9000	2.5823	2.5823	2.5823	0.6249	0.6249
Calabria	0.5165	0.5165	0.5165	0.5165	0.5165	0.5165
VAT Rate (%)	**10**	**10**	**22**	**22**	**10(C)**	**10(C)**

(A) Territories indicated by Decree n. 218 of the President of the Republic of 6 March 1978: indicatively South Italy and major islands (Sardinia and Sicily).

(B) The regional additional rate is due on consumption in ordinary statute Regions, not in special statute regions. Since 2002, the regional additional rate has been not applied in Lombardia (Regional Law 18 December 2001, n. 27). The regional additional tax and the substitute tax have not applied for consumption due to the automotive, production and self-production of electricity, armed force for appropriate use; embassies/consulates and diplomatic sites; recognised International organizations and their members; taking into consideration the limits and the conditionality of the conventions or agreement; and for uses considered outside the scope of the excise duties.

(C) Tax rate for mining, agriculture and manufacturing industries, for other industries the rate is the normal one.

Source: ARERA

4. FOSSIL FUEL SUBSIDIES IN ITALY

In part 4 of the report, we present files related to each subsidy identified deserving discussion, followed by a table summarizing FFSs financial effects. It is worth to note that, the definition adopted by the "Commission for drafting the annual report on tax expenditures" designated by the Ministry of Economy & Finance, in its report, reduced tax rate on VAT is not considered a tax expenditure. Support measures 22 to 26 in this chapter should be treated with caution from a methodological point of view. In any case, they distort the price signal of different energy products and this makes it interesting to include them for discussion with experts.

We dedicate a separate section to FFS that deserve particular attention, since they raise particular environmental, social and economic issues that should be investigated thoroughly; we then move on to international agreements to which Italy is a party to that under certain circumstances could be likened to FFS; the reform of any such subsidies in Italy would require a reform action at international level, while room would be possible only in particular cases (e.g., implement an Air Passenger Duty to internalize the exemption of excise duty in aviation). We then end up with a first macroeconomic estimate of the economic and environmental effects of the removal of FFS in Italy and different policy scenarios related to different options of revenue reuse.

Fossil fuel subsidies in Italy

1. Reduction of excise on gasoil emulsions or fuel in water employed as fuel

Sector	Energy 
Name of financial assistance	Excise on gasoil emulsions or fuel in water - Reduction
Aim	Incentivize the use of products potentially less polluting
Legal source	Art. 21-bis, TUA (Consolidated Law on Excise-duty) as modified by art. 1, paragraph 634, Law 147/2013
Type of subsidy	Reduced excise duty
Rate	Normal rate: - emulsion of fuel oil from gasoil (heating use): 403.21391 €/1000 litres; - emulsion of HSC fuel oil dense (heating use): 128.26775 €/t; - emulsion of HSC fuel oil dense (industrial use): 63.753751 €/t; - emulsion of LSC fuel oil dense (heating use): 64.24207 €/t; - emulsion of LSC fuel oil dense (industrial use): 31.38870 €/t. Reduced rate: - emulsion of fuel oil from gasoil (heating use): 245.16 €/1000 litres; - emulsion of HSC fuel oil dense (heating use): 99.32 €/t; - emulsion of HSC fuel oil dense (industrial use): 41.69 €/t; - emulsion of LSC fuel oil dense (heating use): 29.52 €/t; - emulsion of LSC fuel oil dense (industrial use): 20.84 €/t.
Co-financed by EU	No
Year of introduction	2014
Year of cessation (if sunset clause expected)	2019
Level of reformability	National
Environmental, economic and social aspects	On the environmental ground, emulsions in water allow to reduce combustion temperature resulting in a decrease in NO_x and particulate emissions. Literature on environmental benefits due to emulsions is scarce and suggests 20-30% reduction (Yahaya Khan et al., 2014). Nevertheless, emulsions in water need as an input gasoline that emits high level of GHG and on the legal ground the definition of "alternative fuels" as provided by Directive 2014/94 (LNG, LPG, hydrogen, electricity and others) does not include emulsions in water. As a consequence, a subsidy associated to emulsions might offset the potential use of alternative fuels that are usually associated to lower GHG and atmospheric emissions. On the other side, emulsions are more expensive with their traditional counterparts (diesels without any emulsions), so the absence of this subsidy might incentivize the economic agent to move back to traditional fossil fuels.

	2014	2015	2016
Financial effects (mln €):	2.20	2.20	2.20

2. Exemption from consumption fee for lubricating oils

Sector	Energy 
Name of financial assistance	Consumption fee for lubricating oils used in the production and processing of natural and synthetic rubber for its manufactured articles, in the production of plastic materials and artificial or synthetic resins, including adhesive glues, in pesticide production for fruit plants. Exemption
Aim	Reduction of production costs for specific types of products (plastics, rubbers, etc.)
Legal source	Art. 62, paragraph 2, TUA
Type of subsidy	Exemption
Rate	Normal rate: 787.81 €/t Reduced rate: 0
Co-financed by EU	No
Year of introduction	1993
Year of cessation (if sunset clause expected)	-
Level of reformability	National
Environmental, economic and social aspects	On the environmental ground, lubricating oils derived by mineral oil have very high level of emissions and might provoke huge damages due to illegal disposal. At our best knowledge, there is no evidence on lower environmental impacts on the usage of lubricating oil in the production processes included in this measure.

	2014	2015	2016
Financial effects (mln €):	1.00	1.00	1.00

3. Reduction of the excise duty for energy products used by railway transport of passengers and goods

Sector	Transport 
Name of financial assistance	Excise duty for energy products used by railway transport of passengers and goods – application of a 30% of the ordinary rate.
Aim	Reduction of costs for railway transport, generally seen as less polluting.
Legal source	Table A, point 4, TUA
Type of subsidy	Reduced excise duty
Rate	Normal rate: gasoil: 617.40 €/1000 litres Reduced rate: 185.22 €/1000 litres
Co-financed by EU	No
Year of introduction	1993
Year of cessation (if sunset clause expected)	-
Level of reformability	National - Authorized at EU level according to Art. 15, par (e) of Directive 2003/96/EC (ETD).
Environmental, economic and social aspects	The subsidy encourages the use of diesel for railway transport. Diesel is used on railway lines that have not been electrified yet, and therefore with no access to electricity, seen as a less polluting alternative. Literature on external costs emphasizes relevant atmospheric emissions associated to the use of diesel. External costs per km are higher with respect to electricity (as provided, for instance, in table 21, Ricardo – EEA, 2014). This subsidy is to disappear through the completion of the electrification of all railway lines in Italy; out of 16.787 km of railway tracks 4.765 km have yet to be electrified. Without this subsidy, moreover, passengers and economic operators might face an increase in tickets and costs. This should be avoided by the policymaker through the completion of the ongoing electrification of the railway transport.

	2014	2015	2016
Financial effects (mln €):	2.10	7.70	11.15

4. Exemption from excise on fuels for draining and settling flooded soils

Sector	Households and public services 
Name of financial assistance	Excise on fuels for draining and settling flooded soils in flood-affected areas - Exemption
Aim	Reduction of costs in emergency contexts such as floods.
Legal source	Table A, point 6, TUA
Type of subsidy	Exemption
Rate	Normal rate: gasoil for fuel use: 617.40 €/1000 litres Reduced rate: 0
Co-financed by EU	No
Year of introduction	1993
Year of cessation (if sunset clause expected)	-
Level of reformability	National
Environmental, economic and social aspects	Fossil fuels, in this particular context, are used in emergency situations where economic principles and environmental concerns give way to primary needs (safety and protection from immediate threats to human health and life). Nevertheless, the subsidy is directed to fossil fuels and this encourages their use that displays high environmental impacts. Possible phase out of this subsidy will come from technological development of non-stationary stored energy.

	2014	2015	2016
Financial effects (mln €):	0.50	0.50	0.50

5. Exemption from excise on fuels for water lifting

Sector	Households and public services 
Name of financial assistance	Excise on fuels for water lifting to facilitate the cultivation of rustic fields on reclaimed lands – Exemption
Aim	Reduction costs for reclamation activities
Legal source	Tab. A, point 7, Legislative Decree n.504/1995
Type of subsidy	Exemption
Rate	Normal rate: gasoil for fuel use 617.40 €/1000 litres Reduced rate: 0
Co-financed by EU	No
Year of introduction	1993
Year of cessation (if sunset clause expected)	-
Level of reformability	National
Environmental, economic and social aspects	Fossil fuels, in this particular context, are used for environmental restoration (e.g. conversion to agricultural use from recovered fields). Nevertheless, this excise duty exemption is still encouraging the use of fossil fuels, providing harm to the environment.

	2014	2015	2016
Financial effects (mln €):	0.50	0.50	0.50

6. Reduction from excise on fuels for experimental trials and testing

Sector	Transport 
Name of financial assistance	Excise on fuels for experimental trials and testing of aviation and marine engines- Reduction
Aim	Decrease costs for firms producing engines in the aviation and navigation sector
Legal source	Tab. A, point 8, Legislative Decree n.504/1995
Type of subsidy	Reduced excise duty
Rate	Normal rate: - gasoil for fuel use: 617.40 €/1000 litres; - kerosene: 337.49064 €/1000 litres. Reduced rate: - gasoil for fuel use: 185.22 €/1000 litres; - kerosene: 101.24719 €/1000 litres.
Co-financed by EU	No
Year of introduction	1993
Year of cessation (if sunset clause expected)	-
Level of reformability	National - Reduction not compulsory and authorized at EU level according to Art. 15, par. 1(j) of Directive 2003/96/EC (ETD).
Environmental, economic and social aspects	In this case, this reduced excise duty violates the "polluter-pays-principle" and favours the use of fossil fuels. On the other side, these trials are compulsory for security reasons and the removal of the subsidy would increase the operative costs of the economic agent.

	2014	2015	2016
Financial effects (mln €):	0.50	0.50	0.50

7. Reduction from excise on natural gas used in hydrocarbon extraction

Sector	Energy 
Name of financial assistance	Reduction from excise on natural gas used in worksites, fixed engines and operations for hydrocarbon extraction- Reduction
Aim	Decrease costs for firms extracting hydrocarbons or using natural gas for engines used in worksites
Legal source	Tab. A, point 10, Legislative Decree n.504/1995
Type of subsidy	Reduced excise duty
Rate	Normal rate: natural gas (industrial use) 12.498 €/1000 cm Reduced rate: 11.730 €/1000 cm
Co-financed by EU	No
Year of introduction	2007
Year of cessation (if sunset clause expected)	-
Level of reformability	National
Environmental, economic and social aspects	This reduction for extracting hydrocarbon is a producer subsidy that encourages the use of fossil fuels for industrial purposes, damaging the environment and sending the wrong price signal as an input to be used in the production process.

	2014	2015	2016
Financial effects (mln €):	0.30	0.26	0.27

8. Exemption from excise on energy products used for electricity produced in gasification plants

Sector	Energy 
Name of financial assistance	Excise on energy products used for electricity produced in gasification plants- Exemption
Aim	Promotion of implants that gasify fossil fuels in order to reduce local air pollution
Legal source	Tab. A, point 11-bis, Legislative Decree 504/1995
Type of subsidy	Exemption
Rate	Normal rate: - coal (heating use): 4.6 €/t; - HSC dense fuel oil (industrial use): 63.75351 €/t; - LSC dense fuel oil (industrial use): 31.38870 €/t. Reduced rate: 0
Co-financed by EU	No
Year of introduction	2011
Year of cessation (if sunset clause expected)	-
Level of reformability	National - Reduction not compulsory, but authorized at EU level according to Annex II of Directive 2003/96/EC (ETD).
Environmental, economic and social aspects	Gasification is a chemical process used to transform a solid fuel rich of carbon as coal, oil or biomass, in a gas that has lower calorific value with respect to the original fuel (syngas or synthetic gas). This is mainly done through thermochemical decomposition with a limited use of combustion. Syngas is mainly formed of carbon monoxide and hydrogen and, to a lesser extent, methane and CO_2 (Bassano, 2012). At the second stage, there is a purification process meant to remove elements that might interfere with the combustion process such as sulphur, chlorine and potassium and achieve a very "clean" gas. On the environmental ground, gasification of fossil fuels might result in lower emissions and consequently decrease the level of air pollution. On the other side, if we focus on GHG emissions, the net balance of a lifecycle assessment (including gasification process), keeping fixed the same originating fuel, is strongly negative: emissions increase, for instance, by 36% and 82% for coal (Yang and Jackson, 2013). Syngas produced by gasifying biomass has a neutral balance with respect to CO_2 emissions (MATTM, 2012). However, this particular subsidy is used to favour the re-use of gasified fuels that could, in other cases, be discarded. Removing the subsidy might induce the operator to buy "high-quality" energy products on the market without incentivizing any re-use.

	2014	2015	2016
Financial effects (mln €):	0.50	0.50	0.50

9. Excise discount for fuels used by taxi

Sector	Transport 
Name of financial assistance	Excise discount for fuels used by road and boat taxi
Aim	Reduce operating costs of taxi
Legal source	Tab. A, point 12, Legislative Decree n.504/1995
Type of subsidy	Reimbursement
Rate	Normal rate: - gasoline: 728.40 €/1000 litres; - gasoil: 617.40 €/1000 litres. Reduced rate: - gasoline: 359.00 €/1000 litres; - gasoil: 330.00 €/1000 litres.
Co-financed by EU	No
Year of introduction	1993
Year of cessation (if sunset clause expected)	-
Level of reformability	National - Reduction not compulsory, but authorized at EU level according to Annex II of Directive 2003/96/EC (ETD).
Environmental, economic and social aspects	The reduction of excise duty for taxi drivers targets gasoline, diesel, LPG and methane (with a 40% reduction on the ordinary tax rate for the latter two). This subsidy incentivizes the consumption of all fuels used by taxis without any connection with their environmental performance. Since taxi cabs compete with more sustainable forms of public transport such as buses and subways (IMPACT (2008); Ricardo - EEA (2014)), the subsidy results in higher emissions and external costs of passenger transport.

	2014	2015	2016
Financial effects (mln €):	25.34	22.88	12.66

10. Reduction of excise on fuels used in ambulances

Sector	Households and public services 
Name of financial assistance	Excise on fuels used in ambulances.- Reduction
Aim	Decrease costs for the National Healthcare System
Legal source	Tab. A, point 13, Legislative Decree n.504/1995
Type of subsidy	Reduced excise duty
Rate	Normal rate: - gasoline: 728.40 €/1000 litres; - diesel: 617.40 €/1000 litres. Reduced rate: - gasoline: 359.00 €/1000 litres; - diesel: 330.00 €/1000 litres.
Co-financed by EU	No
Year of introduction	1993
Year of cessation (if sunset clause expected)	-
Level of reformability	National - Reduction not compulsory, but authorized at EU level according to Annex II of Directive 2003/96/EC (ETD).
Environmental, economic and social aspects	This subsidy is applied on all types of fuels, unconditional on their environmental performance. This subsidy could be improved by conditioning it on the use of alternative fuels such as those listed in Directive 2014/94 (electricity, LPG, methane, LNG and hydrogen). On the other hand, this measure is socially sensitive, thus it could be reformed after a very careful assessment on the alternative modes of transport and their relative performance in emergency contexts. Direct subsidies to ambulance transport might replace a subsidy which reduces the price signal on an environmentally harmful consumption.

	2014	2015	2016
Financial effects (mln €):	4.90	4.97	2.90

11. Exemption from excise on energy products used in the magnesium production from sea water

Sector	Energy 
Name of financial assistance	Excise on energy products used in the magnesium production from sea water- Exemption
Aim	Promote this particular type of production through a reduction in costs
Legal source	Tab. A, point 14, Legislative Decree n.504/1995
Type of subsidy	Exemption
Rate	Normal rate: - Diesel: 617.40 €/1000 litres - HSC dense fuel oil (industrial use): 63.75351 €/t; - LSC dense fuel oil (industrial use): 31.38870 €/t Reduced rate: 0
Co-financed by EU	No
Year of introduction	1993
Year of cessation (if sunset clause expected)	-
Level of reformability	National - Reduction not compulsory, but authorized at EU level according to Art. 16, par. 1 of Directive 2003/96/EC (ETD).
Environmental, economic and social aspects	Exemption from excise duty on energy products used in the magnesium production might harm the environment and represent a fossil fuel subsidy in all cases, except for non-polluting renewable sources.

	2014	2015	2016
Financial effects (mln €):	0.50	0.50	0.50

12. Reduction of excise on LPG for industrial use and public transport services

Sector	Industry and transport 
Name of financial assistance	Excise reduced to 10% of the ordinary rate on LPG used by industrial centralized plants and urban and extra-urban buses used for public transport services
Aim	Reducing operating costs for industrial plants and public passenger transport services providers using LPG as energy input
Legal source	Tab. A, point 15, Legislative Decree n.504/1995
Type of subsidy	Reduced excise duty
Rate	Normal rate: - LPG for heating use: 189.94458 €/t - LPG for transport use: 227.77 €/t Reduced rate: - LPG for industrial use 18.994458 €/t (heating use) - LPG for public transport services: 22.777 €/t *(N.B. the normal LPG rate for industrial use doesn't exist)*
Co-financed by EU	No
Year of introduction	1993
Year of cessation (if sunset clause expected)	-
Level of reformability	National
Environmental, economic and social aspects	LPG for Industrial Use: According to the National Energy Balance Sheet (2015, Eurostat methodology), LPG for industrial use currently accounts for 1.2% of industrial final consumptions of energy products (excluding electricity), while natural gas prevails with 51%. LPG is mainly used in industries not connected to gas grid, as a cleaner fuel if compared to coal and other petroleum fuels (gasoil, fuel oil). The reduced excise duty on LPG was introduced many years ago, when more environmentally friendly options than LPG were not available. If a life cycle approach is adopted (as in Eucar, JRC, Concawe, 2007), LPG shows higher CO_2 emissions in atmosphere with respect to both non fossil fuels (for example biogas) and a fossil fuel such as natural gas. For industries not connected to gas grid, new technological opportunities to store biogas and natural gas in compressed and liquid forms are growingly considered commercially viable options. The deployment of distribution networks for biogas and natural gas in compressed and/or liquid form is currently supported by Directive 2014/94/EU on alternative fuels infrastructure (DAFI). The reduced excise rate on LPG for industrial use obstacles a fair competition with cleaner fuels diffusion, particularly with biogas in compressed or liquefied

	form. LPG use in Public Transport: According to the National Energy Balance Sheet (2015, Eurostat methodology), LPG currently accounts for 5.4% of road transport final energy consumptions, while 88.4% are conventional fuels, 3.5% biodiesel, 2.7% natural gas, bio-methane and electricity use are currently marginal. Under a life cycle approach, LPG as a transport fuel shows higher CO_2 emissions than other technologically viable transport options such as bio-methane, methane and electricity produced with a mix of gas and renewable sources. The deployment of distribution networks for electric vehicles, bio-methane and natural gas (both in compressed and liquefied forms) is currently supported by Directive 2014/94/EU on alternative fuels infrastructure (DAFI). The reduced excise duty on LPG used by buses prevents a fair competition with cleaner alternative fuels suitable for public transport, particularly with bio-methane in compressed or liquefied form and electric charging stations self-producing from renewable energy sources.

	2014	2015	2016
Financial effects (mln €):	n.a.	6.29	11.66

13. Exemption from excise on energy products injected in the blast furnaces

Sector	Industry 
Name of financial assistance	Excise on energy products injected in the blast furnaces during production processes - Exemption
Aim	Promote the steel industry
Legal source	Tab. A, point 16, Legislative Decree n.504/1995
Type of subsidy	Exemption
Rate	Normal rate: - HSC dense fuel oil (industrial use): 63.75351 €/t; - LSC dense fuel oil (industrial use): 31.38870 €/t Reduced rate: 0
Co-financed by EU	No
Year of introduction	1993
Year of cessation (if sunset clause expected)	-
Level of reformability	National - Reduction not compulsory at EU level according to Art. 17, par. 1 (a) of Directive 2003/96/EC (ETD).
Environmental, economic and social aspects	Production processes involving the use of blast furnaces are related to high levels of air pollution. The Italian Office for National Statistics (ISTAT) provides data useful to derive carbon intensity with respect to the sectoral added value (NAMEA database). The two main sectors using blast furnaces are C23 (production of other products derived by the deployment of non-metal ores) and C24 (manufacture of basic metals) and they respectively display a carbon intensity of 3036 $tCO_2eq.$ and 1647 $tCO_2eq.$ per million euro of value-added, against a benchmark of 437 $tCO_2eq.$/million euro for the manufacturing sector, 715 tCO_2eq/million euro of the industrial sector and 244 tCO_2eq/million euro for the entire national economy. Thus, on the environmental ground, this exemption encourages the use of fossil fuels without respecting the "polluter-pays-principle" and discouraging the potential employment of biofuels. On the other hand, the introduction of this subsidy might be seen as a mean to preserve the competitiveness of the Italian industrial sector and discourage potential "carbon leakage" (off-shoring of energy intensive industries towards countries with lower environmental and emissions standards).

	2014	2015	2016
Financial effects (mln €):	1.00	1.00	1.00

14. Reduction from excise on fuels used by National Armed Forces

Sector	Households and public services 
Name of financial assistance	Excise on fuels used by National Armed Forces – Reduction
Aim	Reduction of costs for the National Army
Legal source	Tab. A, point 16-bis, Legislative Decree n.504/1995
Type of subsidy	Reduced excise duty
Rate	Normal rate: - Gasoline (transport): 728.40 €/1000 litres - Gasoil (transport): 617.40 €/1000 litres - LPG (transport): 267.77 €/t - Natural gas (transport use): 3.31 €/1000 cm - Gasoil (heating use): 403.21391 €/1000 litres - LPG (heating use): 189.94458 €/t - Natural gas (civil use): consumption up to 120 cm/y: 44.00 €/1000 cm; > 120cm/y consumption < 480 cm/y: 175.00 €/1000 cm; > 480 cm/y consumption <1560 cm/y: 170.00 €/1000 cm; consumption > 1560 cm/y: 186.00 €/1000 cm Reduced rate: - Gasoline (transport): 359 €/1000 litres - Gasoil (transport): 330 €/1000 litres - LPG (transport): 0 €/t - Natural gas (transport use): 0 - Gasoil (heating use): 21 €/1000 litres - LPG (heating use): 0 €/t - Natural gas (heating use): 11.66 €/1000 cm
Co-financed by EU	No
Year of introduction	1993
Year of cessation (if sunset clause expected)	-
Level of reformability	National - Reduction not compulsory at EU level according to Annex II of Directive 2003/96/EC (ETD).
Environmental, economic and social aspects	On the environmental ground, this subsidy encourages the use of fossil fuels, locking-in with respect to the potential use of alternative fuels.

	2014	2015	2016
Financial effects (mln €):	26.10	26.70	24.90

15. Deduction flat-rate from the corporate income to favour fuel distribution plants

Sector	Energy 
Name of financial assistance	Deduction from the corporate income to favour fuel distribution plants. The deduction follows the following thresholds with respect to the gross income: - 1.1% of the corporate income tax when the gross income is up to € 1,032,000; - 0.6% of the corporate income tax when the gross income is below € 1,032,000 and up to € 2,064,000; - 0.4% of the corporate income tax when the gross income is below € 2,064,000.
Aim	This reduction was introduced to counterbalance the impact of the excise duties on the income of fuel distribution plants owners.
Legal source	Art. 21, paragraph 1 of Law n. 448/98;
Type of subsidy	Deduction
Rate	Normal rate: see above Reduced rate: see above
Co-financed by EU	No
Year of introduction	1998
Year of cessation (if sunset clause expected)	-
Level of reformability	National
Environmental, economic and social aspects	This deduction favours fuel distribution plants by increasing their revenue. On the environmental ground, this subsidy might be harmful, especially if this deduction, by increasing the income disposal of plants, decreases the final price charged on the final consumer. Having this said, we have no quantitative data to corroborate this statement, that should be further tested by emphasizing the link between gross income disposal and final price charged on consumers. Furthermore, fuel distributors also distribute alternative fuels (charging stations, natural gas, bio-methane, etc.) contributing to the spread of alternative fuels and vehicles. In this, fuel distribution appears to be fairly neutral with respect to the kind of fuels that are distributed, reflecting the state of the art in technological development. Within the implementation of the DAFI Directive, the Ministry of Economic Development together with the Regions has launched a process by which all fuel distributors above a certain threshold will have to offer at least one alternative fuel in addition to gasoline and diesel.

	2014	2015	2016
Financial effects (mln €):	76.64	110.20	51.00

16. Diesel excise duty reduction for freight and passenger transport services

Sector	Transport 
Name of financial assistance	Excise duty reduction on diesel fuel used by freight and passenger transport services companies, starting from 2000, increased in diesel excise duty are not applied.
Aim	This reduction was introduced to reduce operational costs of companies providing road vehicle based freight and passenger transport services.
Legal source	DPR n. 277/2000; Art 6, paragraph 2 of Legislative Decree n. 26/2007, and subsequent provisions; Art. 61 paragraph 4, Decree Law n. 1 of 24th January 2012. Stability Law for 2015 (art 1 paragraph 233 of Law n. 190/2014) excluded from the subsidy those diesel vehicles with Euro 0 emission standard or lower. Stability Law for 2016 (art.1 , paragraph 645 of Law n. 208/2015) has further restricted the application field of the diesel excise duty reduction by excluding Euro 2, or lower emission standard diesel vehicles from 1st January 2016. In this way, law 208/2015 confirmed the subsidy phasing out strategy started the year before.
Type of subsidy	Reduced excise duty
Rate	Normal rate: gasoil: 617.40 €/1000 litres Reduced rate: gasoil: 403.1622 €/1000 litres
Co-financed by EU	No
Year of introduction	2001
Year of cessation (if sunset clause expected)	-
Level of reformability	National
Environmental, economic and social aspects	This subsidy exists to protect competitiveness of freight and passenger transport services with respect to neighbouring countries. The tax discount protects competitiveness of those manufacturing sectors with a high demand of road freight transport, as well. Further, this subsidy encourages a lower effort for energy saving measures by transport companies as compared to the higher ordinary excise rate, increasing the environmental impacts of diesel fuelled heavy vehicles. As widely documented in scientific literature, diesel fuelled vehicles produce high level of emissions, particularly NOx and thin PM, generating significant health externalities (IMPACT, 2008; Ricardo-AEA, 2014). Viable alternatives to diesel fuel for road transport are growingly available. The National Strategic Plans for alternative fuels approved with Legislative Decree n. 256/2016 (enforcement of Directive 2014/94/EU) promotes the following alternative fuels: electricity mainly in urban passenger transport, CNG in both passenger and freight transport (low-medium mileage segment), LNG in freight transport (high mileage segment), and

	sustainable biofuels and hydrogen for all transport modes in the longer term. The subsidy phasing out strategy started with the 2015 and 2016 Financial/Stability Laws can entail significant additional revenue for the State budget. In 2016, the Ministry of Economy and Finance estimated short-term revenues connected to these subsidy restrictions for about € 160 mln.

	2014	2015	2016
Financial effects (mln €):	1,268.69	1,292.32	1,264.42

17. Reduction of 40% of ordinary rate on natural gas for big industrial consumers excluding power generation

Sector	Energy 
Name of financial assistance	60% of ordinary rate on natural gas for industrial uses (0.012498 €/cm in basis to Annex I of TUA) excluded power generations, for annual consumption beyond 1,200,000 cm/year.
Aim	The goal is to increase competitiveness of industries using high levels of gas as an input and exposed to international competition by reducing their energy costs
Legal source	Art. 4 of Law n. 418/2001 and art. 2, paragraph 11 of Law n. 203/2008
Type of subsidy	Reduced excise duty
Rate	Normal rate: natural gas (industrial uses): 12.4980 €/1000 cm Reduced rate: natural gas (industrial uses): 7.4988 €/1000 cm
Co-financed by EU	No
Year of introduction	2001
Year of cessation (if sunset clause expected)	-
Level of reformability	National - Reduction not compulsory, but authorized at EU level and partially under Art. 15, par. 1 (h) of Directive 2003/96/EC (ETD).
Environmental, economic and social aspects	As known, natural gas, like oil and coal, is a fossil fuel that, when burnt, releases CO_2 emissions in the atmosphere, contributing to climate change. Moreover, significant methane fugitive emissions during the extraction, liquefaction, transportation and distribution phases of natural gas life cycle are well documented, notwithstanding existing regulations to control and prevent methane slicks.[98] In the last IPCC assessment report (2013) methane GWP_{100} value relative to CO_2 is 28, implying that small percentages of fugitive emissions from methane sinks may significantly contribute to total emissions and climate change.[99] From an economic point of view, the subsidy presents profiles of inefficiency: the subsidy is provided to gas consumers with an annual consumption beyond 1,200,000 cm/year, without any reference to the industry real exposure to international trade

[98] Australian Government, Department of the Environment and Energy, Update on Recent Empirical Evidence on Fugitive Emissions From the Gas Industry, May 2017
US Environment Protection Agency (2016). *Inventory of U.S. Greenhouse Gas Emissions and Sinks 1990–2014, Revisions to Natural Gas Transmission and Storage Emissions*, April 2016
Howarth, R.W., D. Shindell, R. Santoro, A. Ingraffea, N. Phillips, and A. Townsend-Small. 2012. "Methane emissions from natural gas systems". Background paper prepared for the National Climate Assessment. Reference number 2011-0003. http://www.eeb.cornell.edu/howarth/publications/Howarth_et_al_2012_National_Climate_Assessment.pdf
[99] http://www.ghgprotocol.org/sites/default/files/ghgp/Global-Warming-Potential-Values%20%28Feb%2016%202016%29_1.pdf

	competition, nor to the real share of gas consumptions to the industry revenue (as compared, for example to the incidence of labour cost). From the environmental point of view, the subsidy reduces the stimulus to energy efficiency that the ordinary gas excise duty provides to industrial consumers, encouraging a wasteful consumption from large gas consumers and it violates a fair implementation of the "polluter-pays-principle". The rationale for this subsidy is to guarantee the competitiveness of big energy gas consumers, since the purchase costs for such operator is very high in the country.

	2014	2015	2016
Financial effects (mln €):	61.90	60.10	58.11

18. Reduction of excise duty for energy products in agricultural activities and similar sectors (horticulture, breeding, forestry, fish breeding and floriculture)

Sector	Agriculture 
Name of financial assistance	Uses of energy products in agricultural activities and similar sectors (horticulture, breeding, forestry, fish breeding and floriculture) – application of 22% of ordinary rate for diesel and 49% of ordinary rate for gasoline (for fuel uses). Exemption for vegetal oils not chemically modified. Reduction and exemption
Aim	The goal is to reduce the production costs for agricultural products
Legal source	Tab. A, point 5, Legislative Decree n.504/1995
Type of subsidy	Reduced excise duty and exemption
Rate	Normal rate: - Gasoline: 728.40 €/1000 litres - Diesel: 617.40 €/1000 litres Reduced rate - Gasoline: 356.916 €/1000 litres - Diesel: 135.828 €/1000 litres
Co-financed by EU	No
Year of introduction	1993
Year of cessation (if sunset clause expected)	-
Level of reformability	National - Reduction not compulsory, but authorized at EU level according to Art. 15, par 3 of Directive 2003/96/EC (ETD).
Environmental, economic and social aspects	This subsidy encourages the use of gasoline and diesel for agricultural activities, increasing their convenience with respect to less-polluting fuels that might be produced locally (biomethane, vegetable waste oil). The agricultural sector, as pointed out in the literature and in database, has relevant emissions (e.g. Ispra, 2016). We might emphasize, for instance, through the database NAMEA published by ISTAT, that the ratio of emissions to value-added in the "Crop and animal production, hunting and related service activities". In 2013 it was 1452 $tCO_2eq./mln$ €, six times the average amount for the entire economy (244 $tCO_2eq./mln$ €). If we add to the agricultural sector fishing and forestry, we arrive to 1361 $tCO_2eq./mln$ €. Findings in Molocchi and Aspromonte (2013) suggest that external costs are over € 1 billion. This subsidy, furthermore, reduces a more efficient use of fossil fuels sending, thus, a price signal that is not consistent with its environmental externalities. Furthermore, this kind of subsidy encourages the irregular and illegal use of subsidized agricultural diesel in non-entitled non-agricultural vehicles. The only fuel typology that cannot be included as an FFS are vegetal oils, that have an environmentally neutral performance (emissions are entirely absorbed). On the other hand, the subsidy represents an important source of economic benefits for small and subsistence farmers. A phase out of

	the subsidy would have to be carefully calibrated with direct (non-fuel) subsidies to affected individuals.

	2014	2015	2016
Financial effects (mln €):	955.30	885.80	830.43

19. Price reduction for LPG and diesel for heating in geographically and climatically disadvantaged areas

Sector	Households and public services 
Name of financial assistance	Price Reduction of the excise duty for LPG and diesel for heating in geographically and climatically disadvantaged areas
Aim	The goal is to help people that live in areas where access to energy is difficult due to morphological constraints or adverse climatic conditions. The subsidy is provided to: • Municipalities in climatic zone F (mountain areas) • Municipalities not connected to the gas-grid in climatic zone E • Municipalities in Sardinia and small islands (where the gas grid doesn't exist). After applying the price discount to the final customer, the fuel supplier applies for a tax credit.
Legal source	Art. 8, paragraph 10, letter c) of Law 448/98 and art. 2, paragraph 12 of Law n. 203/2008; art. 1, paragraph 242 of Law 190/2014 (Stability Law 2015)
Type of subsidy	Final price discount
Rate	Normal price: market price Discount on price: 12.3 ct€/litres gasoil, 15.1 ct€/kg LPG
Co-financed by EU	No
Year of introduction	1998
Year of cessation (if sunset clause expected)	-
Level of reformability	National - Reduction not compulsory, but partially authorized (for LPG) at EU level and partially under Art. 15, par. 1 (l) of Directive 2003/96/EC (ETD).
Environmental, economic and social aspects	On the environmental ground, in areas not connected to the gas supply grid and taking into account the complexity of building up a distribution system for potentially alternative fuels such as compressed bio-methane or LNG, LPG constitutes the "cleanest" alternative for domestic heating. LPG has lower emissions of NO_X and particulate than biomass (wood or pellets) and other FFS (kerosene, oil, coal) as in ENEA (2015). On the social ground, this subsidy constitutes an economic instrument to support disadvantaged areas where energy distribution infrastructure is still scarce and, thus, cost of energy provision results higher. There are obviously alternative measures for helping disadvantaged areas without under-pricing fossil fuels.

	2014	2015	2016
Financial effects (mln €):	231.00	231.00	219.40

20. Reduced excise duty rates for fuels used for electricity production by registered plants

Sector	Energy 
Name of financial assistance	Direct and indirect production of electricity by plants subject to registration. Reduced fuel excise duty rates for: - natural gas, LPG, diesel, fuel oil, crude and natural energy products, coal, lignite and coke (codes CN 2701, 2702 and 2704); - self-production of electricity; - combined production of electricity and heat.
Aim	The goal is to provide a fiscal allowance to electricity producers as compared to other industrial producers
Legal source	Tab. A, point 11, Legislative Decree n.504/1995
Type of subsidy	Reduced excise duty[100]
Rate	Normal rate (Annex 1 of Legislative Decree n.504/1995): - Natural gas (industrial use): 12.498 €/1000 cm; - LPG (heating use): 189.94458 €/t; - Gasoil (heating use): 403.21391 €/1000 litres; - HSC dense fuel oil (industrial use): 63.75351 €/t; - LSC dense fuel oil (industrial use): 31.38870 €/t; - Coal (heating use companies): 4.6 €/t. Reduced rate (Tab A – "Use of energy products with excise exemption or facilitated excise rate"): - Natural gas: 0.4493 €/1000 cm; - LPG: 0.6817 €/t; - Gasoil: 12.72601 €/1000 litres; - Fuel oils (HSC and LSC): 15.33154 €/t; - Coal: 2.6 €/t. For self-production of electricity, an additional tax reduction is provided, since the excise duty rate amounts to 30% of Tab. A levels. A more complex tax treatment is in force for fossil fuels used by Combined Heat and Power (CHP) plants.[101]

[100] The excise duties on fuels used for electricity generation are listed in TUA table A, entitled "Use of energy products that carry out an exemption or a reduced excise duty rate", and they are levied for "environmental policy reasons" under TUA art. 21 comma 9. Since in national economic accounts conventions the electricity generation sector belongs to the wider industrial sector, this provision can be considered as a deviation from a more general reference rate (tax expenditure).

[101] In case of Combined Heat and Power (CHP) plants, Legislative Decree n.504/1995 establishes that the facilitated excise duties for electricity production (Tab. A of the same Decree) must be applied to the share of fuel used for electricity production, while the ordinary (and higher) excise duties required for fuels used for industrial or residential heating purposes (Annex 1 of the Decree) must be applied to the share of fuel used for producing heat. In order to calculate these fuel shares for each plant, a formula whose parameters are fixed by Resolution 16/1998 of Electricity and Gas Authority must be applied. The formula is based on a plant level comparison with a reference specific fuel consumption for electricity produced: if the real specific consumption of the CHP plant is lower than the reference value, the whole amount of fuel used by the plant is accounted as the "electricity share" and the plant will pay only the facilitated excise duty for producing electricity (no excise duty for the output heat will be paid). Otherwise, if the real specific consumption of the CHP plant overcome the fixed value, only the fuel corresponding to the additional specific consumption will pay the higher fuel excise duty for industrial or civil use of heat produced. For example (taken from Ferone, 2014), the reference specific consumption for CHP plants using natural gas is 0,220 Sm^3/kWh; if the real specific consumption of the CHP industrial plant is 0,242 Sm^3/kWh (10% above) and the electricity production of the plant is 1.000.000 kWh, 220.000 Sm^3 of gas will pay the facilitated excise duty for gas used for electricity production, while the remaining 22.000 Sm^3 of gas will pay the excise duty for gas used for industrial purpose. The provision on CHP plants rewards those plants with a high electric efficiency rate (it

Co-financed by EU	No
Year of introduction	1998
Year of cessation (if sunset clause expected)	-
Level of reformability	Nationally established excise duties on fuels used for electricity production are authorized by EU for environmental policy reasons under art. 14 c1 of Directive 2003/96/EC (ETD). Nationally established exemptions and allowances for fuels used in CHP plants are allowed under Art. 15, par. 1 (c) of the same Directive.
Environmental, economic and social aspects	Facilitated fuel excise duties in electricity production reward a higher level of demand of fossil fuels rather than renewable sources for electricity production. On the environmental ground, electricity produced through FFS has serious environmental and health impacts as compared to renewable energy sources. Several scientific studies show the health and environmental damages due to fossil fuel emissions (mainly from coal, oil and to a lesser extent to natural gas) used as inputs in producing electricity (ExternE (1997a, 1998a, 1998b, 1998c, 2005); CASES (2008a; 2008b), NEEDS (2008); EXIOPOL (2010), EEA (2011a, 2014a), Ecofys (2014)). Moreover, in national economic accounts, electricity sector is a subsector of the industrial sector. A reduced excise duty rate for fossil fuels used for electricity production as compared to the same fuels used for other industrial purposes distorts competition between fuels and electricity in energy choices. As to CHP plants provisions, it is widely acknowledged that valuation of energy efficiency of CHP plants should take account both electric and heat output: instead the fuel excise exemption on heat share is provided to certain plants by taking into account electric efficiency only, thus penalizing instead of rewarding CHP technologies producing or recovering high amounts of energy in the form of heat. In other words, CHP that have higher share of production in the form of heat pay on the heat's share of fuel the ordinary fuel excise duty for industrial use, while those that produce a higher share of electricity are exempted from paying the fuel excise duty for industrial use on the heat's share of fuel. It must be underlined that the financial effect of the subsidy here reported is limited to the first type of subsidy described (reduced fuel excise duties for electricity production as compared to industrial use), while self-production and cogeneration are excluded.

	2014	2015	2016
Financial effects (mln €):	365.60	365.60	365.60

is certainly a subsidy when the formula exempts the CHP plant from payment of fuel excise duty used for producing the heat share) while it seems not to reward plants with a high heat efficiency rate. Elimination of the subsidy (by applying the industrial use excise duty level) would imply to pay the same excise duty for the whole amount of fuels used by CHP plants.

21. Support scheme for assimilate energy sources

Sector	Energy 
Name of financial assistance	The support scheme for assimilate energy sources (*) is based on the compensation of energy through a feed-in-tariff regularly updated. Currently, it is no longer possible to access this incentive mechanism that is still active for plants that signed the Convention during the enforcement of the measure. (*) The plants which run on assimilate energy sources, as artt. 20 and 22 of Law 9/91, are cogeneration, plants using exhaust heat and fumes, and other forms of recoverable energy in processes and systems; plants using residues derived from manufacturing and production processes and/or process waste and those using fossil sources produced only by isolated mineral deposits. In addition, for the waste-fuelled plants, the charges relating to the incentive of the non-biodegradable part are included.
Aim	The goal behind the introduction of the measure is to favour less emitting fuels from the CO_2 perspective. This is not the case if we take into account other pollutants that play a major role in local air pollution and external costs (e.g. congestion, road consumption due to diesel use).
Legal source	Disposition n. 6/1992 of Inter-Ministerial Prices Committee ("CIP6")
Type of subsidy	Direct subsidy
Co-financed by EU	No
Year of introduction	1992
Year of cessation (if sunset clause expected)	The scheme has been discontinued in 2009 and all fossil fuel powered plants have been put under an accelerated phase out regime. By 2021 the last agreement will expire and with it the scheme will come to an end.
Level of reformability	National
Environmental, economic and social aspects	This measure compensates the kWh produced by third parties from RES and assimilates such as through coal and natural gas derived by the gasification process of any fuel or residue (see subsidy n. 13 for details). The exemption, on the environmental ground, it is harmful for all plants generating electricity from waste, exhaust heat and fumes and any original fossil fuel. Furthermore, we estimate the foregone revenue relative to "CIP6" for assimilated sources as the ratio between the cost of energy delivery and the A3 incomes in electricity bills (46.7% in 2014). In 2015, the total cost of energy delivery is around € 663 million.

	2014	2015	2016
Financial effects (mln €):	n.a.	662.90	582.50

22. Reduced VAT rate for domestic electricity consumption

Sector	Households and public services 
Name of financial assistance	Electricity for domestic energy use – VAT reduction
Aim	The implicit goal is to reduce electricity costs for final domestic customers, favouring access to energy to low-income households.
Legal source	Table A, part III of DPR n. 633/72 (reduced VAT rate of 10%)
Type of subsidy	Reduced rate
Rate	Normal rate: 22% Reduced rate: 10%
Co-financed by EU	No
Year of introduction	1972
Year of cessation (if sunset clause expected)	-
Level of reformability	National - Reduced rate not compulsory, but authorized at EU level under Art. 102 of Directive 2006/112/EC (Common System of Value added Tax).
Environmental, economic and social aspects	As mentioned in IEEP (2009), on the environmental ground, "*The application of a reduced rate of VAT on energy products (electricity, natural gas, heating, oil and coal) for domestic use does not encourage efficient/reduced energy use, and the associated production, distribution and use of domestic energy is likely to have a negative impact on the environment in terms of greenhouse gas emissions, acidification, depletion of non renewable energy resources etc. Only a small part of the subsidy reaches the intended recipients (low-income households), high-income households receive most of the benefits, as the income elasticity of demand for energy is positive. The support is considered to be worthy of further scrutiny to assess whether its reform/removal would benefit the environment*". In Italy, this is particularly true when we refer particularly to the provision of electricity for domestic use. Electricity production has serious environmental impacts related to the 65% produced from fossil fuel based thermo-electric plants (see e.g. Ispra, 2016; E-PRTR, 2016). On the distributional impact in Italy, OECD (2008) suggests that VAT distributional impact might have regressive effects in Italy, thus the benefit of an increase of VAT rate would damage poorer households more than richer ones. With reference to National Statistics, NAMEA database provided by Istat, the sector "Electricity, gas, steam and air conditioning supply" shows a carbon intensity of 4,404 tCO_2eq/mln € of value added in the sector, that is six times higher than the average of the industrial sector (715 t/mln €) and eighteen times higher than the average value of the Italian economic system (244 t/mln €). Different studies, moreover, highlight the high level of health and environmental external costs of these emissions (Molocchi and Aspromonte, (2013) and (2014)) making consistent the potential environmental damage due to this subsidy. This measure constitutes an EHS and is an

	FFS, at least for the part relative to fossil fuels used as input in the electricity production. A direct subsidy in the bill (partial compensation of expenses) for electricity poverty is already provided in Italy to economically disadvantaged households (Art. 1, comma 375 of Law 266/05; Interministerial Decree 28 December 2007; Ministerial Decree 29 December 2016). The compensation amounts to about 30% of the average household gross expense. About 765,000 households benefited of the electricity bonus in 2017 (ARERA)[102].

	2014	2015	2016
Financial effects (mln €):	872.87	920.12	1,008.8

[102] For further details see https://www.arera.it/allegati/docs/18/342-18.pdf

23. Reduced VAT rate for electricity and gas used in industrial processes

Sector	Industry 
Name of financial assistance	Electricity and gas used in industrial processes such as mining, agriculture and manufacture, including polygraph, editorial and similar; electricity for irrigation, lifting and drainage water systems, used by irrigation and consortia for reclamation; electricity supplied to wholesalers as referred in article 2, paragraph 5, Decree Law n. 79; gas, natural gas and liquefied petroleum gas, in distribution networks pipelines to be subsequently discharged, as for electricity producers – VAT reduction
Aim	The goal is to favour industries that operate in sectors that are strategic for small and medium firms (mainly agriculture and manufacturing).
Legal source	Table A, part III of DPR n. 633/72 (reduced VAT rate of 10%)
Type of subsidy	Reduced rate
Rate	Normal rate: 22% Reduced rate: 10%
Co-financed by EU	No
Year of introduction	1972
Year of cessation (if sunset clause expected)	-
Level of reformability	National- Reduced rate not compulsory, but authorized at EU level under Art. 102 of Directive 2006/112/EC (Common System of Value added Tax).
Environmental, economic and social aspects	On the environmental, social and economic aspects, same arguments apply as for subsidy n. 29

	2014	2015	2016
Financial effects (mln €):	n.a.	n.a.	n.a.

Note: Figures reported here are estimated for 2016. In the preparation of the forthcoming 2nd edition of the CES 2018, new estimates are as follows: 1,308.00 in 2015 and 1,354.72 in 2016

24. Energy products for different uses

Sector	Industry 
Name of financial assistance	Crude minerals, combustibles and aromatic extracts used to generate, directly or indirectly, electricity, provided that installed power is not less than 1 kW; crude minerals, fuel oil (except liquid fuel oil for heating) and filter lands deriving from manufacturing lubricating oils, containing no more than 45% in weight of petroleum products, to be used directly as fuels in boilers and furnaces; fuel oils used in producing driving power with fixed engines in industrial, agricultural-industrial, laboratories, building sites; Fuel oils other than special types devoted to gas transformation to be distributed through urban distribution networks; non-refined liquid paraffin derived from the primary distillation of crude natural oil or from the processing of plants that convert liquid paraffin into different chemical products typologies, having an inflammability (in a closed form) of less than 55 °C, in which the distilled component at 225 °C is less than 95% in volume and at 300 °C is at least 90% in volumes, for gas processing distributed through urban distribution networks.– VAT reduction
Aim	The goal is to encourage energy production, transformation and distribution from heterogeneous sources.
Legal source	Table A, part III of DPR n. 633/72 (reduced VAT rate of 10%)
Type of subsidy	Reduced rate
Rate	Normal rate: 22% Reduced rate: 10%
Co-financed by EU	No
Year of introduction	1972
Year of cessation (if sunset clause expected)	-
Level of reformability	National
Environmental, economic and social aspects	The VAT reduction is devoted to mineral oil and fuel oil used for different energy conversion processes (electricity production, process-heat, motive power, gas to be introduced in the distribution process). This measure excludes direct use for heating. Different scholars, on the environmental ground, stressed the harmful effects provided by the combustion process of oil for electricity production (ExternE, 2005; Cases - Cost Assessment of Sustainable Energy Systems, 2008; Ecofys, 2014). Process of gas refinement too have relevant environmental impacts, thus this FFS constitutes, environmentally speaking, an EHS.

	2014	2015	2016 (est.)
Financial effects (mln €):	n.a.	n.a.	n.a.

25. Petroleum products for agricultural use and inland fishing

Sector	Agriculture 
Name of financial assistance	Petroleum products for agricultural use and inland fishing – VAT reduction
Aim	The goal is to favour agricultural activities (including forestry) and fishery in inland waterways by reducing the cost of diesel and gasoline.
Legal source	Table A, part III of DPR n. 633/72 (reduced VAT rate of 10%)
Type of subsidy	Reduced rate
Rate	Normal rate: 22% Reduced rate 10%
Co-financed by EU	No
Year of introduction	1972
Year of cessation (if sunset clause expected)	-
Level of reformability	National- Reduced rate not compulsory, but partially authorized (in particular, for the agricultural sector) at EU level under Art. 98 of Directive 2006/112/EC, Annex III (11) (Common System of Value added Tax).
Environmental, economic and social aspects	Through the dataset NAMEA, we are able to investigate part of the environmental impact of the VAT reduction with respect to the agricultural and fishing sector in inland waterways. On the agricultural side, for instance, the sector "crop and animal production, hunting and related service" in 2013 resulted in 1452 tCO_2eq./mln € of value added that is higher to the value for the sector "agriculture, forestry and fishing" (1361tCO_2eq./mln €) and of the entire Italian economy (244 tCO_2eq./mln €). In the fishing sector, our indicator displays a much better environmental performance (508 tCO_2eq./mln €), which is lower with respect to road transport (648 tCO_2eq./mln €), but higher than the whole Italian economy. Overall, this FFS constitutes an EHS, since it does not encourage beneficiaries to use efficiently fossil fuels connected to the activities under exam.

	2014	2015	2016
Financial effects (mln €):	233.00	n.a.	n.a.

26. Reduced VAT rate on Natural Gas and LPG used for cooking and water-heating purposes

Sector	Households and public services 
Name of financial assistance	Reduced VAT rate on Natural Gas and LPG used for cooking and water-heating purposes
Aim	This measure grants a VAT of 10% instead of 22% on natural gas and LPG used for cooking and water-heating purposes.
Legal source	Table A, part III of DPR n. 633/72 (reduced VAT rate of 10%)
Type of subsidy	Reduced rate
Rate	Normal rate: 22% Reduced rate 10%
Co-financed by EU	No
Year of introduction	1972
Year of cessation (if sunset clause expected)	-
Level of reformability	National - Reduced rate not compulsory, but authorized at EU level under Art. 102 of Directive 2006/112/EC (Common System of Value added Tax).
Environmental, economic and social aspects	This subsidy favours the use of fossil fuels such as LPG and natural gas for cooking and water-heating purposes. In the case of water heating, more sustainable alternatives are available since many years, such as solar thermal or solar photovoltaic coupled with high energy efficient boiler. The viability of these solutions depend from building suitable conditions to host the solar plant. In the case of cooking, more sustainable alternatives to gas are linked to the efficient use of electricity, such as magnetic induction cooking. Summing up, more sustainable technological alternatives are available, but discouraged by this FFS. From a social point of view, the preferential VAT rate allows access to energy for low-income households, although on the distributional side, the benefit is available also for high income households. A direct subsidy in the bill (partial compensation of expenses) for gas poverty is already provided in Italy to economically disadvantaged households (gas bonus, Decree Law 29 November 2008 n. 185 converted into Law 28 January 2009, n. 2). The compensation amounts to about 15% of the average household expense and is differentiated per climatic zone. About 500,000 households benefited of the bonus gas in 2017 (ARERA)[103].

	2014	2015	2016
Financial effects (mln €):	n.a.	n.a.	n.a.

[103] For further details see https://www.arera.it/allegati/docs/18/342-18.pdf

27. Facilitated ship anchorage fee in trans-shipment ports

Sector	Transport 
Name of financial assistance	Facilitated ship anchorage fee in trans-shipment ports
Aim	This measure refers to the tax relief on anchorage tax paid by ships when anchoraging in trans-shipment ports (trans-shipment traffic >80% of whole port traffic)
Legal source	Article 1, paragraph 367, law 28th December 2015 n° 208.
Type of subsidy	Reduced rate
Rate	Level of reduction is defined by each port Authority
Co-financed by EU	No
Year of introduction	2016
Year of cessation (if sunset clause expected)	-
Level of reformability	International - Art. 14, par. 1 (c) of Directive 2003/96/EC (ETD)
Environmental, economic and social aspects	The aim of the reduced anchorage fee is to attract trans-shipment container traffic from other North-African ports in the Mediterranean sea to Italy, but it also favours maritime transport in general. The measure indirectly increases fossil fuel consumptions in Italy and eventually at the global scale.

	2014	2015	2016
Financial effects (mln €):	n.a.	n.a.	1.80

28. Royalty-Free Thresholds

Sector	Energy 
Name of financial assistance	Royalty-Free Thresholds
Aim	Italy's royalty regime is set out in a legal act which was adopted in November 1996 (Law Decree n. 625) but rates have recently been increased both for onshore production (10% for both oil and natural gas as of January 2009) and for offshore production (7% for oil and 10% for natural gas as of July 2009). The additional revenues thus collected are meant to finance a reduction in fuel prices for those consumers living in areas where oil and gas extraction takes place. Meanwhile, the overall royalty framework remains characterized by lower rates applicable to offshore production (4% for oil and 7% for natural gas). Royalty revenues are generally divided between different jurisdictions, with the central government retaining between 30% and 45% of the total. The latest act on this subject provides a royalty relief on the first 20 000 tonnes of oil produced onshore per year (50 000 tonnes in the case of offshore production). A similar provision applies to natural gas for the first 25 million cubic metres (80 million cubic metres in the case of offshore production). [Source: OECD on data of the Ministry of Economic Development]
Legal source	Law Decree n° 83, 22 June 2012.
Type of subsidy	Reduced rate
Rate	Normal rate: Royalty on onshore production: 10% for both oil and natural gas; Royalty on offshore production: 7% for oil; 10% for natural gas Reduced rate: thresholds oil produced: 20,000 t/year onshore; 50,000 t/year offshore; natural gas: 25,000,000 cm/y onshore; 80,000,000 cm/y offshore
Co-financed by EU	No
Year of introduction	1997
Year of cessation (if sunset clause expected)	-
Level of reformability	National
Environmental, economic and social aspects	The latest act on this subject provides a royalty relief on the first 20 000 tonnes of oil produced onshore per year (50 000 tonnes in the case of offshore production). A similar provision applies to natural gas for the first 25 million cubic metres (80 million cubic metres in the case of offshore production). The royalty relief provides an economic incentive to extraction of oil and natural gas and might be thus considered a FFS.

	2014	2015	2016
Financial effects (mln €):	n.a.	85.60	52.00

29. R & D funding in oil, gas and coal sector

Sector	Energy 
Name of financial assistance	Governmental support to Research, Development and Demonstration (RD&D) in the efficient use of fossil fuels (oil, gas, coal)
Aim	Support to Research, Development and Demonstration (RD&D)
Legal source	
Type of subsidy	Budgetary transfer to Government owned research institutions
Rate	Normal rate: n.a. Reduced rate: n.a.
Co-financed by EU	No
Year of introduction	1970
Year of cessation (if sunset clause expected)	-
Level of reformability	National
Environmental, economic and social aspects	State support for Research and Development (R & D) in the oil and natural gas sector. Source of R & D data is International Energy Agency - IEA[104] (communicated to IEA by the MiSE). The financial size of the support concerns the phases of extraction, transport, processing, combustion, conversion of oil, natural gas and coal. Instead, it excludes carbon capture and sequestration, energy efficiency, electricity storage and cross-cutting research.While it is not *per se* a subsidy that directly encourages fossil fuel consumption, the currently prevailing assessment is that available public resources for R&D in Italy are limited and could be directed towards clean energy technologies (energy efficiency, renewables, hydrogen, power T&D, etc.). The recent commitment of the Italian Government with the National Energy Strategy to double funding for clean energy R&D (€187.145 mln in 2015) in the framework of Mission Innovation by 2021 provides a setting in which a partial the redirection of funds could take place.

	2014	2015	2016
Financial effects (mln €):	81.16	n.a.	n.a

Source: IEA[105] https://www.iea.org/statistics/rdd/ Last available data is for 2014.

[104] http://wds.iea.org/WDS/ReportFolders/ReportFolders.aspx.
[105] IEA's Energy Technology RD&D Budget Database.

30. Tax treatment of personal use of company cars by employees

Sector	Transport 
Name of financial assistance	Tax treatment of personal use of company cars by employees - Reduction of the tax base
Aim	The aim of the flat assumption on company cars' personal use is simplification of fringe benefit taxation. The purchase of a company car and its use by an employee for personal aims is a fringe benefit (the employee do not pay for any car related cost). Under national law, fringe benefits must be considered in the payroll and are subject to the employee income tax. The amount of the "saved costs" for the employee is calculated under a "forfait" assumption on the extent of personal use, that is an yearly mileage of 4500 km for personal purposes (calculated as 30% of an average yearly mileage of 15,000 kilometers). There are concerns that the flat mileage assumed is underestimated as compared to real mileage for personal use, thus favoring private car mobility and fuel consumptions. The taxation system of personal use of the company car for employees can be considered as a form of tax expenditure (an allowance on the tax base).
Legal source	Art. 51 of D.P.R. 917/1986
Type of subsidy	Deduction
Co-financed by EU	No
Year of introduction	1986
Year of cessation (if sunset clause expected)	-
Level of reformability	National
Environmental, economic and social aspects	This subsidy is likely to increase the number of cars per household, the size of cars (with higher specific consumptions) and the intensity of car use for private mobility. These consequences on consumer preferences are likely to increase fossil fuel consumptions, resulting in higher emissions of greenhouse gases and local air pollutants, traffic congestion, wear-and-tear of road infrastructure, and accidents. While international literature on subsidies in company car taxation is available, specific literature on the Italian case is rare (Zatti, 2017, provides an extensive review of the issue). Harding (2014) estimated the subsidy level of company car taxation in different OECD countries, including Italy. The revenue loss linked to the tax expenditure is defined as the difference between a benchmark

	scenario where all the benefits given by the personal use of the car are taxed (fiscal neutrality) and the current tax setting in the country. In most of the countries examined it appears to be an underestimation (in many cases substantial) of the benefits for the employee associated with the personal use of a company car. The study estimates a benchmark mileage for company cars of 30,000 km, 20,000 of which for personal use (67%). The revenue loss calculated for Italy under this benchmark is equal to € 2.018 mln for the year 2012 (with extreme values due to different assumptions /scenarios ranging from € 1.231 mln to € 2.371 mln).

	2014	2015	2016
Financial effects (mln €):	n.a.	n.a.	n.a.

Summary of fossil fuel subsidies in Italy

N°	Law references	Description	Category	Financial effect 2015	Financial effect 2016	Financial effect 2017	Financial effect 2018 (est.)	Financial effect 2019 (est.)	Financial effect 2020 (est.)
1	Art. 21-bis, TUA (Consolidated Law on Excise-duty) as modified by art. 1, paragraph 634, Law 147/2013	Reduction of excise on diesel emulsions or fuel in water employed as fuel.	ENERGY	2.20	2.20	2.20	2.20	2.20	n.a.
2	Art. 62, paragraph 2, TUA	Exemption from consumption fee for lubricating oils used in the production and processing of natural and synthetic rubber for its manufactured articles, in the production of plastic materials and artificial or synthetic resins, including adhesive glues, in pesticide production for fruit plants.	ENERGY	1.00	1.00	1.00	1.00	1.00	1.00
3	Table A, point 4, TUA	Fuels for passenger and goods in railway transport – application of a 30% of the ordinary rate.	TRANSPORT	7.70	11.15	7.60	16.90	16.90	16.90
4	Table A, point 6, TUA	Exemption from excise on fuels for draining and settling flooded soils in flood-affected areas.	HOUSEHOLDS AND PUBLIC SERVICES	0.50	0.50	0.50	0.50	0.50	0.50
5	Table A, point 7, TUA	Exemption from excise on fuels for water lifting to facilitate the cultivation of rustic fields on reclaimed lands.	HOUSEHOLDS AND PUBLIC SERVICES	0.50	0.50	0.50	0.50	0.50	0.50
6	Table A, point 8, TUA	Reduction from excise on fuels for experimental trials and testing of aviation and marine engines.	TRANSPORT	0.50	0.50	0.50	0.50	0.50	0.50

N°	Law references	Description	Category	Financial effect 2015	Financial effect 2016	Financial effect 2017	Financial effect 2018 (est.)	Financial effect 2019 (est.)	Financial effect 2020 (est.)
7	Table A, point 10, TUA	Reduction from excise on natural gas used in worksites, fixed engines and operations for hydrocarbon extraction.	ENERGY	0.26	0.27	0.27	0.30	0.30	0.30
8	Table A, point 11-bis, TUA	Exemption from excise on electricity produced by gasification plants.	ENERGY	0.50	0.50	0.50	0.50	0.50	0.50
9	Table A, point 12, TUA, D.P.C.M. 20th February 2014 as required by art. 1, paragraph 577, of the Law n. 147/2013, art 1, paragraph 242 of the Law n. 190/2014 (Stability Law 2015)	Reduction of normal rate of excise on fuels for taxi cabs. The D.P.C.M. 20th February 2014 established the cut of the share of tax credit for an amount not below of 85% compared with the normal law on tax credit. According to paragraph 242 of the art. 1 of Law n. 190 of 23rd December 2014 (Stability Law 2015) a further reduction of tax credit share is possible.	TRANSPORT	22.88	12.66	10.76	12.70	12.70	12.70
10	Table A, point 13, TUA	Reduction of excise on fuels used in ambulances.	HOUSEHOLDS AND PUBLIC SERVICES	4.97	2.90	2.60	2.40	2.40	2.40
11	Table A, point 14, TUA	Exemption from excise on energy products used in the magnesium production from sea water.	ENERGY	0.50	0.50	0.50	0.50	0.50	0.50
12	Table A, point 15, TUA	Excise reduced to 10% of the ordinary rate on LPG used in the centralized plants for industrial use.	INDUSTRY	6.29	11.66	11.41	14.50	14.50	14.50
13	Table A, point 16, TUA	Exemption from excise on energy products injected in the blast furnaces during production processes.	INDUSTRY	1.00	1.00	n.a.	n.a.	n.a.	n.a.

N°	Law references	Description	Category	Financial effect 2015	Financial effect 2016	Financial effect 2017	Financial effect 2018 (est.)	Financial effect 2019 (est.)	Financial effect 2020 (est.)
14	Table A, point 16bis, TUA	Reduction from excise on fuels used by National Armed Forces.	HOUSEHOLDS AND PUBLIC SERVICES	26.70	24.90	29.60	47.60	47.60	47.60
15	Art. 21, paragraph 1 of Law n. 448/98; Art. 6, paragraph 3 of Law n. 388/2000; Art. 1 paragraph 129 of Law n. 266/2005; Art. 1, paragraph 393 of Law n. 296/2006; Art. 1 paragraph 168 of Law n. 244/2007 Art. 1 paragraph 7 of Decree Law n. 194/09; Art. 2 paragraph 5 of Decree Law n. 225/2010; Art. 34, paragraph 1-3 of Law n. 183/2011	Deduction flat-rate from the corporate income to favour fuel distribution plants. The deduction proves the following rate thresholds in relation to the gross income with a maximum cap: a) 1.1% of gross income up to € 1,032,000; b) 0,6% of gross income below € 1,032,000 and up to € 2,064,000; c) 0,4% from income below €2,064,000.	ENERGY	51.00	51.00	51.00	41.20	41.20	41.20

N°	Law references	Description	Category	Financial effect 2015	Financial effect 2016	Financial effect 2017	Financial effect 2018 (est.)	Financial effect 2019 (est.)	Financial effect 2020 (est.)
16	DPR n. 277/2000; Art. 6, paragraph 2 of Legislative Decree n. 26/2007, and subsequent provisions Art. 61 paragraph 4, Decree Law n. 1 of 24th January 2012 Art. 24-ter TUA, as added by art. 4-ter, par.1, let. F), Decree n.195/2016, amended by Law n.225/2016.	Refund of greater burden resulting from the increase in excise duty on diesel fuel used for freight transport and other categories of passenger transport, starting from 2000 and for subsequent increases in excise duties. The Law n. 208 of 28th December 2015 (Stability Law 2016), in its art. 1, paragraph 645, has reduced the application field of this concession excluding diesel for vehicles with standard from Euro 2 and below from 1st January 2016. In this way, the law 208/2015 absorbed the previous exclusion introduced by art 1 paragraph 233 of Law No.190 (Stability Law 2015) of 23rd December 2014, with effect from 1stJanuary 2015, for the diesel fuel consumption of euro-type vehicles 0 or lower.	TRANSPORT	1,292.32	1,264.32	1,257.34	1,264.40	1,264.40	1,264.40
17	Art. 4 of Law n. 418/2001 and art. 2, paragraph 11 of Law n. 203/2008	Reduction of 40% of ordinary rate on natural gas for industrial uses (0.012498 €/cm in basis to Annex I of TUA) excluded power generations, by those who have a consumption up to 1,200,000 cm/year.	ENERGY	60.10	58.11	58.11	60.00	60.00	60.00

N°	Law references	Description	Category	Financial effect 2015	Financial effect 2016	Financial effect 2017	Financial effect 2018 (est.)	Financial effect 2019 (est.)	Financial effect 2020 (est.)
18	Table A, point 5, TUA	Uses of energy products in agricultural activities and similar sectors (horticulture, breeding, forestry, fish breeding and floriculture) – application of 22% of ordinary rate for diesel and 49% of ordinary rate for gasoline (for fuel uses). Exemption for vegetal oils not chemically modified.	AGRICULTURE	885.80	830.43	843.20	864.80	864.80	864.80
19	Art. 8, paragraph 10, letter c) of Law 448/98 and art. 2, paragraph 12 of Law n. 203/2008; art. 1, paragraph 242 of Law 190/2014 (Stability Law 2015)	a) Diesel and LPG used as heating in geographical and climatic disadvantages areas (mountain, Sardinia, small islands): price reductions. b) Reduction rate of credit tax as art. 1 paragraph 242 of Law n. 190 of 23rd December 2014 (Stability Law 2015).	HOUSEHOLDS AND PUBLIC SERVICES	231.00	219.40	159.60	152.80	152.80	152.80
20	Table A, point 11, TUA	Direct and indirect production of electricity by plants subject to registration as established by the provisions covering the consumption tax on electricity. Reduced rates for: a) natural gas, LPG, diesel, fuel oil, crude and natural energy products, coal, lignite and coke (codes CN 2701, 2702 and 2704); b) self-production of electricity; c) combined production of electricity and heat.	ENERGY	365.60	365.60	365.60	n.a.	n.a.	n.a.

N°	Law references	Description	Category	Financial effect 2015	Financial effect 2016	Financial effect 2017	Financial effect 2018 (est.)	Financial effect 2019 (est.)	Financial effect 2020 (est.)
21	Disposition n. 6/1992 of Inter-ministerial Prices Committee ("CIP6")	The support scheme for assimilate energy sources (*) is based on the compensation of energy through a feed-in-tariff regularly updated. Currently, it is no longer possible to access this incentive mechanism that continues to have an effect on those plants that have signed the Convention during the enforcement of the measure. (*)The plants which run on assimilate energy sources, as artt. 20 and 22 of Law 9/91, are cogeneration, plants using exhaust heat and fumes, and other forms of recoverable energy in processes and systems; plants using waste processing and/or process waste and those using fossil sources produced only by isolated mineral deposits. In addition, for the waste-fuelled plants, the charges relating to the incentive of the non-biodegradable part are included.	ENERGY	662.90	582.50	445.90	n.a.	n.a.	n.a.
22	Table A, part III of DPR n. 633/72 (reduced VAT rate of 10%)	103) Electricity for domestic energy use.	HOUSEHOLDS AND PUBLIC SERVICES	920.12	1.008,90	n.a.	n.a.	n.a.	n.a.

N°	Law references	Description	Category	Financial effect 2015	Financial effect 2016	Financial effect 2017	Financial effect 2018 (est.)	Financial effect 2019 (est.)	Financial effect 2020 (est.)
23	Table A, part III of DPR n. 633/72 (reduced VAT rate of 10%)	103) Electricity and gas used in industrial processes such as mining, agriculture and manufacture, including polygraph, editorial and similar; electricity for irrigation, lifting and drainage water systems, used by irrigation and consortia for reclamation; electricity supplied to wholesalers as referred in article 2, paragraph 5, Decree Law n. 79; gas, natural gas and liquefied petroleum gas, in distribution networks pipelines to be subsequently discharged, as for electricity producers.	INDUSTRY	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

N°	Law references	Description	Category	Financial effect 2015	Financial effect 2016	Financial effect 2017	Financial effect 2018 (est.)	Financial effect 2019 (est.)	Financial effect 2020 (est.)
24	Table A, part III of DPR n. 633/72 (reduced VAT rate of 10%)	104) Crude minerals, combustibles and aromatic extracts used to generate, directly or indirectly, electricity, provided that installed power is not less than 1 kW; crude minerals, fuel oil (except liquid fuel oil for heating) and filter lands deriving from manufacturing lubricating oils, containing no more than 45% in weight of petroleum products, to be used directly as fuels in boilers and furnaces; fuel oils used in producing driving power with fixed engines in industrial, agricultural-industrial, laboratories, building sites; Fuel oils other than special types devoted to gas transformation to be distributed through urban distribution networks; non-refined liquid paraffin derived from the primary distillation of crude natural oil or from the processing of plants that convert liquid paraffin into different chemical products typologies, having an inflammability (in a closed form) of less than 55 °C, in which the distilled component at 225 °C is less than 95% in volume and at 300 °C is at least 90% in volumes, for gas processing distributed through urban distribution networks.	INDUSTRY	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
25	Table A, part III of DPR n. 633/72 (reduced VAT rate of 10%)	106) Petroleum products for agricultural use and inland fishing.	AGRICULTURE	233.00	233.00	n.a.	n.a.	n.a.	n.a.

N°	Law references	Description	Category	Financial effect 2015	Financial effect 2016	Financial effect 2017	Financial effect 2018 (est.)	Financial effect 2019 (est.)	Financial effect 2020 (est.)
26	Table A, part III of DPR n. 633/72 (reduced VAT rate of 10%)	127-bis) Natural Gas and LPG used for cooking and water-heating purposes.	HOUSEHOLDS AND PUBLIC SERVICE	t.b.q.	t.b.q.	t.b.q.	t.b.q.	t.b.q.	t.b.q.
27	Article 1, paragraph 367, law December 28th, 2015 n° 208	Tax Relief on Energy Products Used by Ships Involved in Transhipment Operations.	TRANSPORT	n.a.	1.80	n.a.	n.a.	n.a.	n.a.
28	Article 35, Decree Law n° 83, 22 June 2012	Royalty-Free Thresholds.	ENERGY	85.60	52.00	n.a.	n.a.	n.a.	n.a.
29	-	Petroleum, gas and coal RD&D Funding.	ENERGY	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
30	Art. 164 of D.P.R. 917/1986	Tax treatment on company cars	TRANSPORT	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total FFS				**4,862.94**	**4,686.40**	**3,197.69**	**2,442.10**	**2,442.10**	**2,439.90**
	Other national, regional and municipal tax expenditures			t.b.q.					

(*) Note: Differences between years in the financial effects might be due to estimates not being available. The financial effects reported might not correspond to the potential revenue that the Government might re-collect or save in case of removal of the abovementioned subsidies.

Case studies and subsidies to be discussed

This section investigates FFS that are usually discussed among scholars and bear different socio-economic and environmental aspects. For instance, we investigate a particular type of subsidy, that is the different fiscal treatment between diesel and gasoline, with taxation favouring the use of the former, despite its relevant environmental costs, especially in terms of local air pollution.

We then group subsidies that are entailed with local public transport and railways, two modes of transport that are preferable, environmentally and socially, to private road transport. On the other hand, these subsidies might be classified as FFS, since electricity is still in large part produced through fossil fuels. These elements deserve thus a separate further attention due to their contrasting net environmental effect and their impact on sustainable mobility in urban areas.

The exemption of the excise duty for threshold in domestic consumption and power capacity might encourage energy savings, while favouring singles or small families on the social side. It might, nevertheless, contribute to encourage consumption for people that are just below the maximum level of consumption and be inefficient, since it might target non-primary dwellings.

We treat separately export credit guarantees that deserve a discussion, since the effect of this particular family of subsidies are displayed in third countries and not in Italy.

Finally, particular focus is needed for subsidies related to the compensation scheme for particularly big energy consumers who provide instantaneous or emergency interruptibility services. Next to the compensation scheme, under specific circumstances, big energy consumers might exploit a special exemption from the payment of certain electricity bill components. This subsidy too deserves particular attention.

All the comments and the analysis are displayed, as for the previous section, in separate tables, with the exception of the case study on the different fiscal treatment between diesel and gasoline.

The case of different fiscal treatment between gasoline and diesel

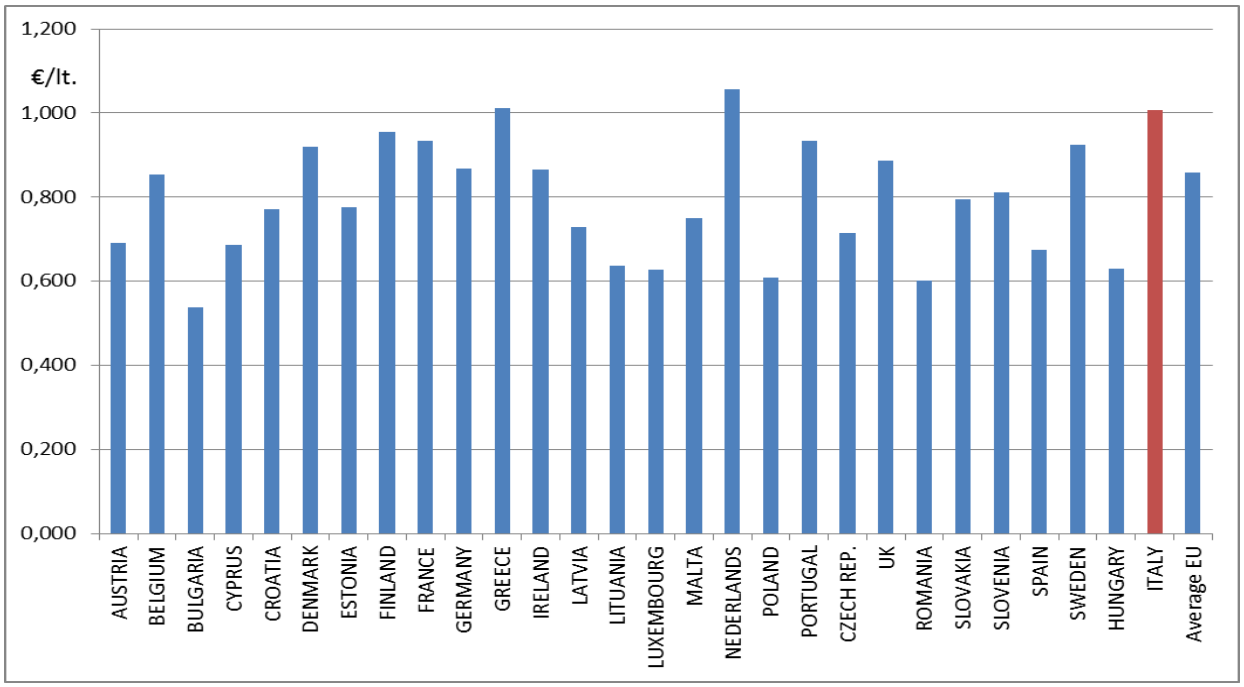
Historically, the original reason for introducing excise taxes was to raise revenue. Today, they are used to influence behaviour, in particular when related with products that harm health or the environment. The most famous case is the excise related to tobacco or alcohol: these forms of taxation help to decrease consumption that represents a health hazard. For oil related to road transport, over the last decade, environmental concerns have played an increasing role in determining the nature and application of taxation. For instance, OECD analysis confirms the advantage of environmental taxes over many other environmental policy instruments in terms of environmental effectiveness, economic efficiency, the ability to raise public revenue, and transparency. This rationale is related, in the energy sector, to the capacity to mitigate global warming (OECD, 2016).

As in most OECD countries, in Italy the percentage revenue of excises as a percentage of total taxation decreased substantially over the years: this passed from 14.8% in 1965 to 6.9% in 2014 (OECD, 2016). This is particularly counter-intuitive for Italy if we look to the extent to which taxation influences the final price: 67.9% for premium unleaded gasoline and 64.3% for automotive diesel in 2015 (OECD, 2016, pp. 147-149). Comparing it with other OECD countries, this is the third largest share for both fuels (behind Netherlands and United Kingdom for the former and Chile and United Kingdom for the latter) and reflects the high level of excise taxes in the road transport sector applied in the country. If we compare this figure taking into account the "fiscal component" (i.e. including VAT) with respect to

other EU Member States, more recent data are available and the results are striking: Italy is among the first three countries in EU Member States for energy taxation on gasoline (Figure 19). This is true for diesel alike, where Italy is just behind the UK (Figure 20).

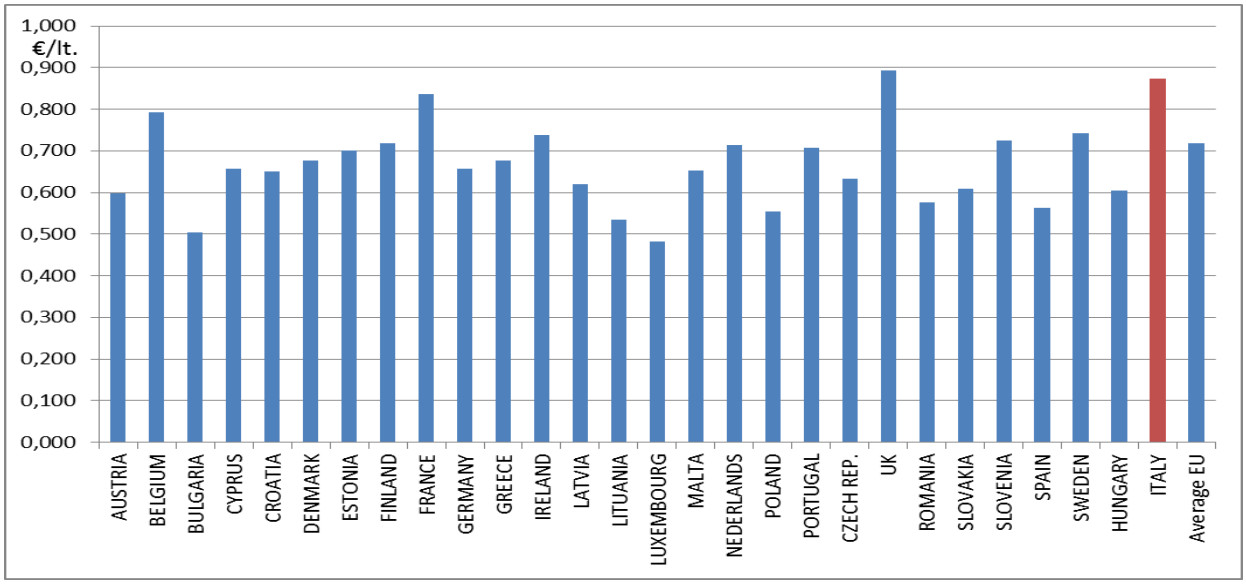
As in many other countries, Italy has a different tax treatment for gasoline and diesel, with a more favourable tax treatment on diesel. The excise duty for diesel vehicles is lower than the gasoline excise (CES, 2016):
- at a first glance, taking volume as equal, in 2015 there is a difference of 15% between the two excise duties (617.4 €/1000 litres for diesel, compared to 728.4 €/1000 litres for gasoline);
- by estimating the difference on the energy fuel content, diesel excise is 23% lower than gasoline (17.30 €/GJ for diesel, 22.35 €/GJ for gasoline);
- a useful caveat is to mention that this difference does not include the preferential tax treatment granted to truck drivers.

Figure 19: Fiscal component in EU Member Countries - Gasoline



Source: Unione Petrolifera – March 2018

Figure 20: Fiscal component in EU Member Countries – Diesel



Source: Unione Petrolifera – March 2018

The difference in excise tax relative to diesel fuel is not justified from an environmental point of view and contrasts with the European legislation on emission standards.

In fact, this difference determines a significant distortion by encouraging the purchase and employment of vehicles that have, according to the European law on standard (Euro) emissions, higher emission limits than gasoline vehicles. In spite of the current convergent process among emission standards for diesel and gasoline vehicles, the most recent standard (Euro 6) imposes a NO_x limit of 80 mg/vkm against 60 mg/vkm for gasoline vehicles.

As noted in Camporeale et al. (2018), the European Commission, in its European Implementation Review (EIR), emphasized the need to remove more favourable excise duty treatments given to diesel fuel as compared to gasoline in different Member States, since better air quality and lower health risks reduction targets should be reached in the near future. In particular, "*Italy has a diesel differential of around 85% (as a benchmark a figure of 100% means the same level of taxation for petrol and diesel cars, i.e. no diesel differential), whereas externalities associated with diesel are higher than petrol and therefore it would justify higher taxation*" (European Commission, 2017). On a regulatory basis, less stringent air pollutant emissions limits in "Euro standard" series required from diesel cars as compared to gasoline, reflects the lower air emission performance of diesel in terms of Particulate Matter (PM) and Nitrogen Oxides (NOx). On the other hand, it is a widespread opinion that diesel engines are more energy efficient as compared to gasoline ones, thus allowing reductions of specific CO_2 emissions (gCO_2/km), coherently with CO_2 emissions reduction targets.

According to ISPRA:

- ✓ diesel car fleet consumes 8% less fuel /km in average as compared to gasoline fleet;
- ✓ diesel car fleet emits 7% less CO_2 emissions (171.6 g/km for diesel vs 183.9 g/km for gasoline cars).

A contribution to the debate is provided by Camporeale et al. (2018). The authors, in order to test whether the claims of diesel receiving a more favourable tax treatment with respect to gasoline have a solid ground in

environmental assessment terms, adopt an external cost approach related to passenger cars, specifically with respect to air pollution and climate change[106] according to a unique monetary criteria.

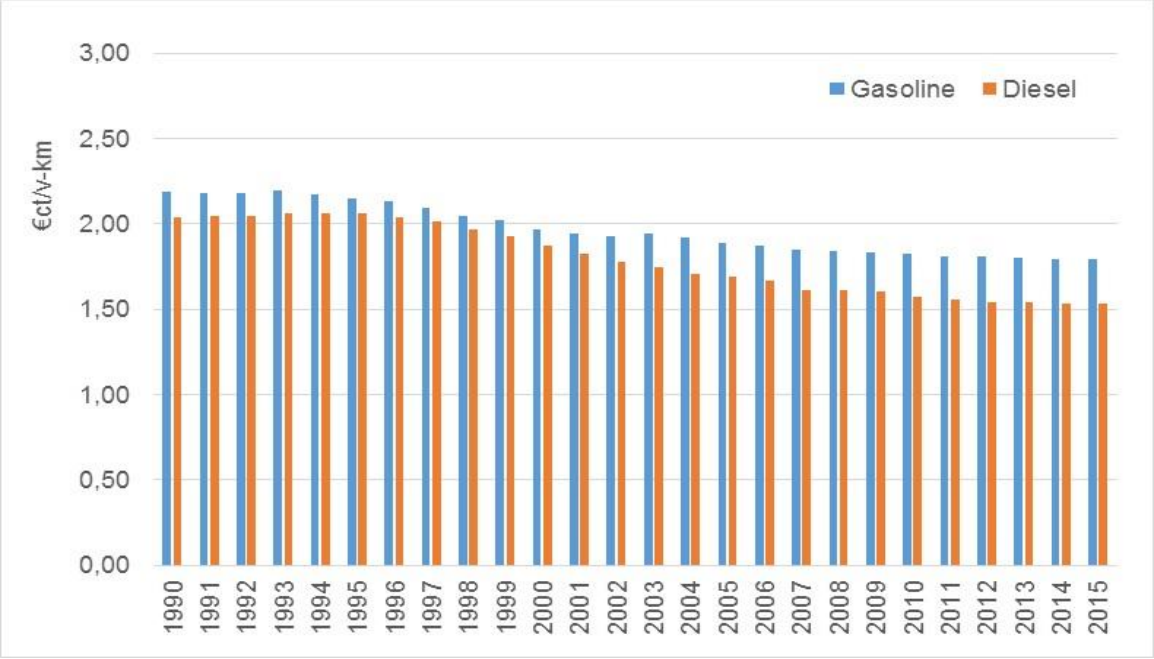
The starting point is the road transport *mileage data-base* elaborated by ISPRA, that reports the vehicle-kilometres (v-km) made by passenger cars for each Euro standard category, with breakdown for fuels types (gasoline, diesel and other fuels) and for driving cycles (urban, rural and highway) and to calculate the external cost the authors have assumed the marginal cost values recommended by the last version of the *Handbook on External Costs of Transport* published by European Commission – DG MOVE (Ricardo and AEA, 2014).

In terms of climate change, estimates for the year 2015 suggest that gasoline cars perform higher costs than diesel on urban road (+18%), rural road (+ 5.5%) and highways (+1.7%) (Figure 21). It is worth noting, however, that in the period 1990-2003, climate cost linked to diesel was higher than with gasoline cars in rural roads and highway.

Costs related to air pollution, in the year 2015, emphasize that the most dangerous fuel impact to air pollution is linked to diesel. Indeed, the average marginal cost of diesel is estimated in 1.05 €ct/v-km compared to 0.22 €ct/v-km of gasoline car for urban road. The gap halves if we consider rural roads (diesel 0.80 €ct/v-km vs gasoline 0.27), while in highways the average marginal air pollution cost is equal to 0.55 €ct/v-km for diesel compared with 0.15 €ct/v-km of gasoline (Figure 22).

Although preliminary and descriptive, results suggest that there is no reason to treat favourably, on the fiscal ground, diesel with respect to gasoline and this is in line with suggestions coming from international institutions. As it seems, thus, environmentally speaking, the different tax treatment of diesel on gasoline is an implicit subsidy to the most pollutant fuel.

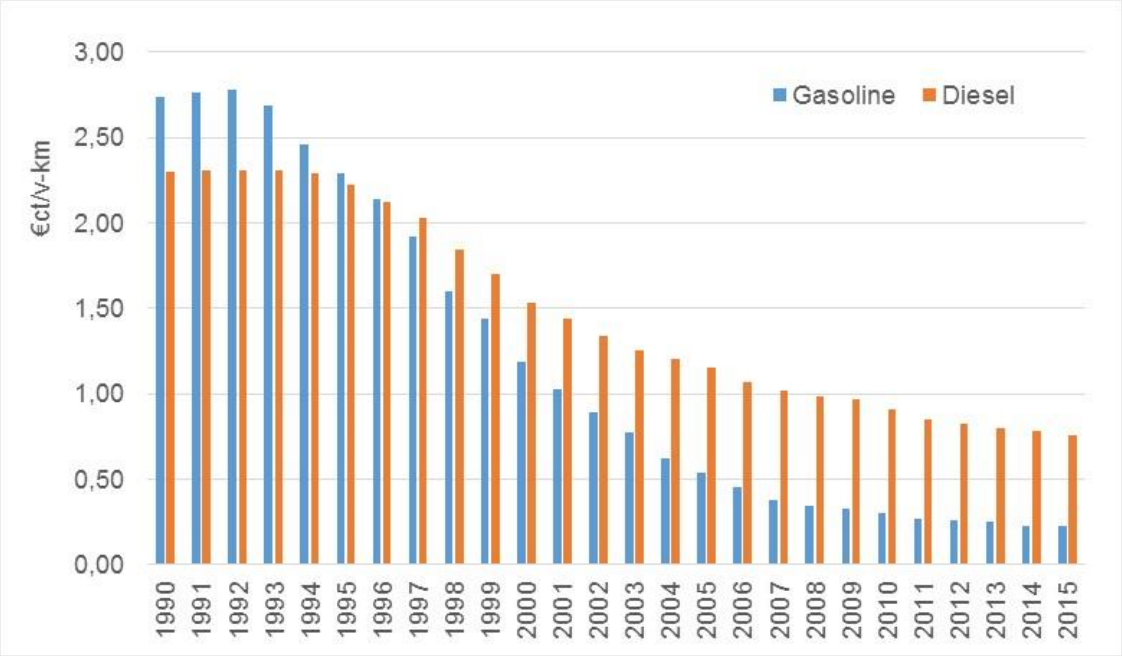
Figure 21: Climate change costs related to road fleet



Source: Camporeale et al. (2018)

[106] In the paper, only external costs related to fuel type have been considered.

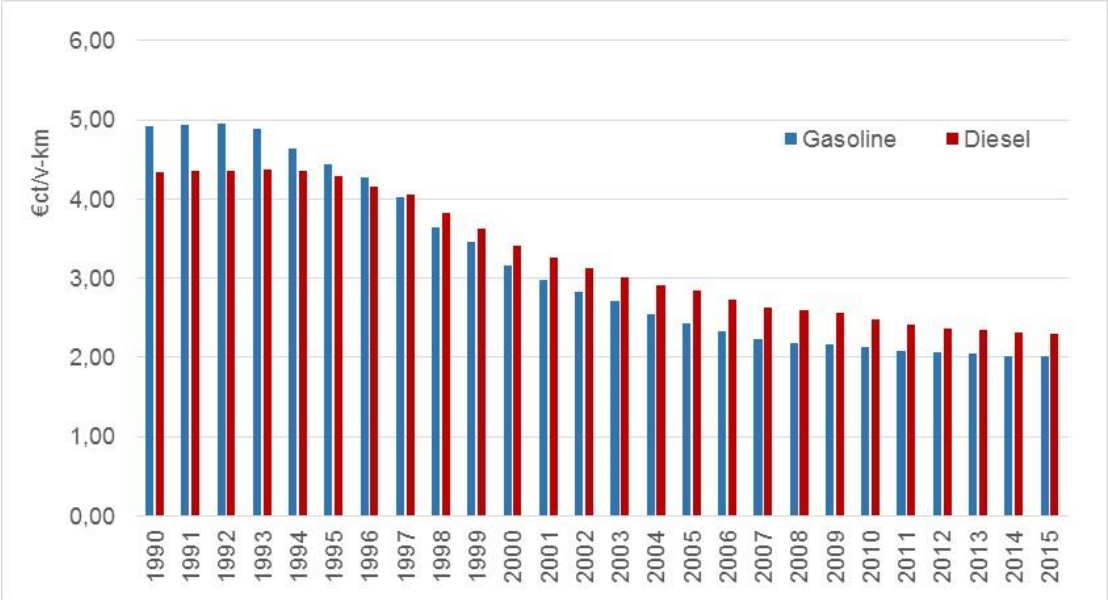
Figure 22: Air pollution costs related to road fleet



Source: Camporeale et al. (2018)

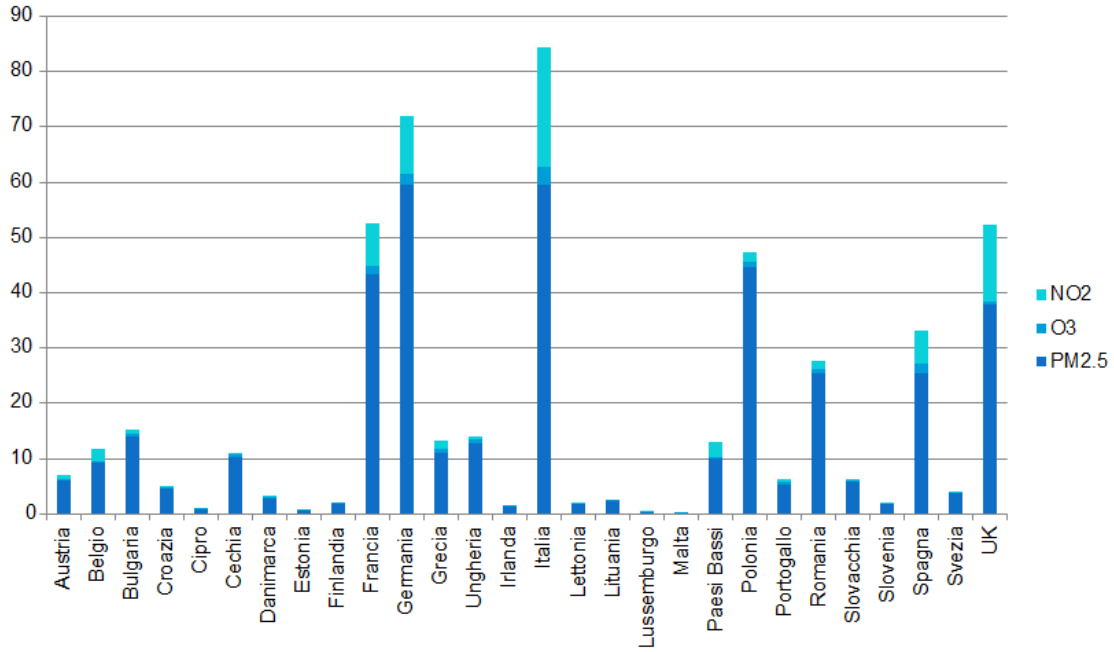
Considering the specific external costs of total air emissions (climate change and air pollutants), the external costs of diesel car fleet are about 15% higher than those of the gasoline fleet, so the results show that there is no justification for the diesel excise duty preferential rate under an overall environmental comparison (Figure 23). In addition, it is important to consider that Italy ranks first for exposure to air pollution (Figure 24) for which diesel is the most responsible for PM and NO_2 emissions and ozone formation, disregarding the PPP ("polluter pays principle").

Figure 23: Total air emissions (climate change + air pollution) costs related to road fleet



Source: Camporeale et al. (2018)

Figure 24: Premature deaths due to air pollution in EU-28 (in thousands)



Beyond the undesirable environmental effects, in the Italian context, high taxation led to an increase in the illegal trade of petroleum products: as a consequence of the last, strong increase in 2011, we observe that the sector is interested by smuggling posing a strong monitoring issue. This is usually related to tax evasion (excise and VAT), with small fleet introducing products coming from unspecified countries with prices that are much lower with respect to the legal market. Thefts among oil pipelines too saw a huge increase in the last few years. This damages the correct market structure, damaging the economic and productive sector with potential spillovers on the environment originating from the uncertain provenance of the energy products.

Table 14: Monitoring activity on petroleum products in Italy

Contrast in excise evasion	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**
Number of investigations	3,740	3,714	4,006	3,681	3,409	3,854	5,125
Seized energy products (kg)	8,306,624	1,746,102	2,053,267	9,262,742	4,377,523	4,595,693	10,902,804
Consumed energy products in illegal markets (kg)	70,782,586	57,926,808	72,265,710	50,410,862	100,474,590	191,655,794	159,029,926

Source: Guardia di Finanza

Many energy products come or are intermediated in other EU countries, with lubricating oils registered as fuels. Italy, namely the Ministry of Economic Development together with the Ministry of Economy and Finance, issued new regulatory tools to contrast illegal smuggling of energy products included in the 2017 Financial Stability Law.

List of subsidies deserving specific discussions

31. Different fiscal treatment between gasoline and diesel

Sector	Energy 
Name of financial assistance	Different fiscal treatment between gasoline and diesel - difference in fiscal treatment
Aim	The goal is to favour the less emitting fuel from the CO_2 perspective. This is not the case if we take into account other pollutants that play a major role in local air pollution and external costs due to the use of diesel (congestion, road consumption).
Legal source	Annex I, TUA
Type of subsidy	Implicit subsidy
Rate	Normal rate: gasoil 757 €/1000 litres (level of excise duty equivalent to energy content of gasoline) Reduced rate: gasoil: 617.40 €/1000 litres
Co-financed by EU	No
Year of introduction	Before 1970
Year of cessation (if sunset clause expected)	-
Level of reformability	National
Environmental, economic and social aspects	See related paragraph

	2014	2015	2016
Financial effects (mln €):	n.a.	n.a.	6,061.29

32. Exemption from excise duty on electricity used by railways

Sector	Transport 
Name of financial assistance	Excise on electricity used by railways – Exemption
Aim	Reducing costs of less polluting mode of transport
Legal source	Art. 52, paragraph 3, letter c) of Legislative Decree n. 504/1995
Type of subsidy	Exemption
Rate	Excise duty on electricity - Normal rate(as art. 3bis, letter b) of Law n. 447/2012):: a) monthly consumption < 1.2 GWh: - 0.0125 €/kWh for the first 0.2 GWh/month; - 0.0075 €/kWh above 0.2 GWh/month; b) monthly consumption > 1.2 GWh: - 0.0125 €/kWh for the first 0.2 GWh/month; - 4820 €/month (lump sum) above 0.2 GWh Exemption: 0
Co-financed by EU	No
Year of introduction	2007 (last update)
Year of cessation (if sunset clause expected)	-
Level of reformability	National - Exemption not compulsory at EU level but authorized according to Art. 15, par. 1 (e) of Directive 2003/96/EC (ETD).
Environmental, economic and social aspects	The contribution of fossil fuels to electricity production in Italy is at 65%. Electricity produced through fossil fuels brings high level of emissions (e.g., Ispra 2016; E-PRTR 2016). There is a vast literature on health and environmental impacts due to fossil fuels (coal, fuel oil and natural gas) used as inputs in producing electricity (ExternE (1997a, 1998a, 1998b, 1998c, 2005); CASES (2008a; 2008b); NEEDS (2008); EXIOPOL (2010); EEA (2011a, 2014a); Ecofys (2014)). The exemption reduces the price signal for energy efficiency measures in electrified mass transport, allowing higher electricity consumptions and indirect fossil fuel combustion. On the other hand, railways and electrified public transport are usually associated with lower GHG and local emissions, lower congestion and accidents with respect to road transport. The exemption contributes to contain prices and tariffs of electrified mass transport sector, avoiding people preferences for private transport.

	2014	2015	2016
Financial effects (mln €):	66.00	65.46	64.52

33 Exemption from excise duty for the electricity used by road urban and inter urban lines of transport

Sector	Transport 
Name of financial assistance	Excise on electricity used by road urban and inter urban lines of transport - Exemption
Aim	Reducing costs of less polluting modes of transport
Legal source	Art. 52, paragraph 3, letter d), of Legislative Decree n. 504/1995
Type of subsidy	Exemption
Rate	Excise duty on electricity - Normal rate (as art. 3bis, letter b) of Law n. 447/2012): a) monthly consumption < 1.2 GWh: - 0.0125 €/kWh for the first 0.2 GWh/month; - 0.0075 €/kWh above 0.2 GWh/month; b) monthly consumption > 1.2 GWh: - 0.0125 €/kWh for the first 0.2 GWh/month; - 4820 €/month (lump sum) above 0.2 GWh: Exemption: 0
Co-financed by EU	No
Year of introduction	2007
Year of cessation (if sunset clause expected)	-
Level of reformability	National – Exemption not compulsory at EU level but authorized according to Art. 15, par. 1 (e) of Directive 2003/96/EC (ETD).
Environmental, economic and social aspects	The contribution of fossil fuels to electricity production in Italy is at 65%. Electricity produced through fossil fuels brings high level of emissions (e.g., Ispra 2016; E-PRTR 2016). There is a vast literature on health and environmental impacts due to fossil fuels (coal, fuel oil and natural gas) used as inputs in producing electricity (ExternE (1997a, 1998a, 1998b, 1998c, 2005); CASES (2008a; 2008b); NEEDS (2008); EXIOPOL (2010); EEA (2011a, 2014a); Ecofys (2014)). The exemption reduces the price signal for energy efficiency measures in electrified mass transport, allowing higher electricity consumptions and indirect fossil fuel combustion. On the other hand, railways and electrified public transport are usually associated with lower GHG and local emissions, lower congestion and accidents with respect to road transport. The exemption contributes to contain prices and tariffs of electrified mass transport sector, avoiding people preferences for private transport.

	2014	2015	2016
Financial effects (mln €):	7.00	4.80	7.70

34. Exemption from excise on electricity used in households with a power capacity up to 3 kW and monthly consumption up to 150 kWh

Sector	Households and public services 
Name of financial assistance	Excise on electricity used in households with a power capacity up to 3 kW and monthly consumption up to 150 kWh – Exemption
Aim	Reducing the electricity cost of small domestic electricity customers (average consumptions of a 3 persons household are 2700 kWh). The measure is limited to customers with a power capacity <3 kW. Italian meters are equipped with circuit breakers that physically break power supply every time the customer draws more than 3kW from the grid (the meter needs to be manually rearmed after each break), encouraging consumption behaviours aimed at smoothing peaks and spreading demand along the 24h in a day. Excise exemption for small domestic customers must be considered in the broader framework of the electricity bill structure in Italy. In the wake of the oil shocks in the 1970s, the electricity bill has been structured with higher rates for customers > 3kW and with a strong progressivity of rates (higher cost per unit of electricity at higher levels of consumption) for all customers. Progressivity has been designed not only in the fiscal component (through the excise exemptions for lower consumptions), but also in the electricity transport & distribution fees and in the "general system" charges in the bill. This framework encouraged energy saving behaviours, allowing over 21.7 million customers (out of 31 million) to remain within the 3kW threshold. More recently, growing concerns have been raised both on the real distributional impacts of the progressive structure of the tariff (consumption thresholds and brackets expressed per point of delivery do not take into account the number of people served by each point, with higher tariff rates being paid by big households as compared to singles) and on its barrier effect on the diffusion of high energy efficient innovations based on electricity (heat pumps, car recharging, etc.). After the approval of Legislative Decree n. 102/2014 (transposing Directive 2012/27/EU on energy efficiency), the progressive nature of T&D fees and of general system charges has been abolished by the Energy Regulatory Authority with the aim to increase the share of electricity consumption in total energy consumption. The cross subsidization of small electricity customers through larger electricity customers has effectively come to an end. The reform was completed on 1st January 2018; the effects of the rebalancing of the tariff structure in favour of electricity consumption have yet to be assessed.
Legal source	Art. 52, paragraph 3, letter e), TUA
Type of subsidy	Exemption

Rate	Normal rate: 0.0227 €/kWh (domestic consumers) Reduced rate: 0
Co-financed by EU	No
Year of introduction	2007; precursor measures were introduced in the 1970s following the oil shocks as a mean to reduce power consumption which at the time was prevailingly produced in oil fired power plants
Year of cessation (if sunset clause expected)	-
Level of reformability	National
Environmental, economic and social aspects	Social and distributive aspects: ✓ This particular measure was introduced many years ago for social purposes, in order to support small end-users. ✓ The social aspect was arguable, since households receiving support peaked at 94%. The energy and environmental aspects were however largely defendable. ✓ The progressive feature of electricity tariffs now resides exclusively in the excise exemption for small customers. However, distributional concerns of this subsidy remain, since the monthly consumption threshold is still expressed per point of delivery, without being a function of the number of people served by each point. The threshold does not express minimal per capita energy needs. ✓ A direct subsidy for energy poverty has recently been introduced to low income households (electricity bonus). Environmental aspects: ✓ The environmental impact of this measure might be harmful for the share of electricity produced through fossil fuels (65% in 2016). ✓ With a threshold at 150 kWh/month (1800 kWh/year) the exemption could favour wasteful electricity consumptions among singles and couples. ✓ More research is needed to assess the real effectiveness of excise exemption for small customers in promoting energy efficiency behaviours rather than favouring higher energy consumptions. ✓ The establishment of the Integrated Information System (a centralized entity collecting metering data at national level) and the deployment of second generation smart meters in Italy allowing real-time monitoring and the programming of consumption profiles will allow for a more targeted monitoring and interactive use of the fiscal benefit by customers

	2014	2015	2016
Financial effects (mln €):	570.00	597.10	634.08

35. Export Credit Guarantees for coal, oil, gas-fired and nuclear power plants in third countries

Sector	Energy 
Name of financial assistance	Export Credit Guarantees for coal, oil, gas-fired and nuclear power plants in third countries
Aim	Export credit guarantees are public resources aimed to cover risks (political, economic, commercial, exchange rate, catastrophes risks) of companies and banks associated to export transactions with third countries.
Legal source	Legislative Decree 31 March 1998, n.143 Title I, integrated with Legislative Decree 27 May 1999, n.170
Type of subsidy	Export Credit Guarantee
Rate	Normal rate: Reduced rate
Co-financed by EU	No
Year of introduction	1998
Year of cessation (if sunset clause expected)	-
Level of reformability	International
Environmental, economic and social aspects	The primary role of officially supported Export Credits is to promote trade in a competitive environment, exerting positive economic incentives for enterprises and private actors to enter risky markets. Export credits can therefore support projects with potential adverse effects on environment, namely supporting energy production plants (ex: natural gas processing plants, oil-fuelled power plants, oil-extraction platforms, coal-fired power plants). However, official providers of export credits have existing obligation, among others, to protect human rights and fundamental freedoms, key international labour standards, and commitments undertaken under the United Nations Framework Convention on Climate Change. OECD Ministers in 2001 recognized that export credit policy can contribute positively to sustainable development and should be coherent with its objectives. In this context, OECD member states adhered to the so called "Common Approaches on Environment and Officially Supported Export Credits", which requires a social and environmental evaluation of officially supported project. Moreover, in Chapter IV of the "Arrangement on officially supported export credits", an arrangement published by the OECD in order to "*provide a framework for the orderly use of officially supported export credits*", there is a call for reviewing and monitoring in 2019 and again in 2021 "*in order to contribute to the common goal of addressing climate change and to continue phasing down official support for coal-fired power plants, including with a view to reducing the use of less efficient coal-fired power plants*"(OECD, 2018c). This section would therefore take into account support addressed towards category A and B projects (i.e. high

	environmental risk projects) under the OECD framework to identify whether the support is to be considered as a fossil fuel subsidy. As an example, between 2015 and 2017, Italy subsidized: - A natural gas extraction plant in Russian Federation; - An oil pipeline and natural gas extraction plant in Oman; - Support facilities for oil extraction platforms in Brazil; - Thermal combined cycle power plants (natural gas and light fuel oil) in Egypt; - Coal-fired power plant in Dominican Republic; - Enlargement of nuclear power plant in Slovak Republic; - Drilling and extraction of natural gas in Azerbaijan.

36. Exemption from payment of bill components benefitting large energy consumers for interruptibility

Sector	Industry 
Name of financial assistance	Exemption from the payment of certain electricity bill components benefiting particularly large energy consumers who provide instantaneous or emergency interruptibility services (in addition to the ordinary compensation recognized for these services).[107]
Aim	Not explained in the legal source
Legal source	Art 30, comma 19 of Law 23 luglio 2009, n. 99 ("Disposizioni per lo sviluppo e l'internazionalizzazione delle imprese, nonché in materia di energia" [Measures for the development and internationalisation of firms, and in energy matters])[108]
Type of subsidy	Tariff component exemption
Rate	Standard condition: The compensations amount to € 150,000 per MW/year for sudden interruptions, € 100,000 per MW/year for emergency interruptions and € 300,000 per MW/year for sudden interruptions to industries located in Sardinia or Sicily ("super interrompibilità") Additional benefit to standard condition: customers that have contracted an interruptible power of not less than 40 MW per site are exempted from payment of the following electricity tariff components: - fees for the procurement of resources in the market for dispatching services; - costs of the essential units for system security; - costs for the remuneration of the availability of production capacity; - costs for the remuneration of the load interruptibility service.
Co-financed by EU	
Year of introduction	2009
Year of cessation (if sunset clause expected)	
Level of reformability	Italy

[107] The Italian TSO, Terna, contracts annual capacity of demand-side response (DSR) from energy-intensive industries with an electricity consumption usually higher than 7 GWh. The participation in this scheme, which is entirely voluntary and needs to be requested by the industries themselves, implies that the provision of electricity to these industries can be interrupted without prior notice in case of need from the TSO. The compensations amount to € 150,000 per MW/year for sudden interruptions, € 100,000 per MW/year for emergency interruptions and € 300,000 per MW/year for sudden interruptions to industries located in Sardinia or Sicily ("super interrompibilità"). The general principle of the interruptibility service offered by energy-consuming customers is that of a remunerated compensation. The subsidy consists of an additional benefit provided to costumers with a particularly high contracted interruptible power, as provided by comma 19 of art. 19 of Law 23 July 2009, n. 99.

[108] Comma 19: "End customers providing instantaneous or emergency interruptibility services are exempt, in relation to the withdrawals of electricity on sites that have contracted an interruptible power of not less than 40 MW per site and only for the part subtended to the interruptible power, from the application of the fees referred to in Articles 44, 45, 48 and 73 of Annex A of the Authority's resolution for electricity and gas no. 111/06 of 9 June 2006." The articles mentioned in the resolution refer to the following electricity tariff components:
Article 44: Fees for the procurement of resources in the market for dispatching services.
Article 45: Amount to cover the costs of the essential units for system security.
Article 48: Amount to cover the costs for the remuneration of the availability of production capacity.
Article 73: Amount to cover the costs for the remuneration of the load interruptibility service.

Environmental, economic and social aspects	From an energy/environmental point of view, the tariff exemptions provide additional economic incentives to certain electricity consumers, thus favouring additional energy consumptions (a higher price of electricity would otherwise favour a higher level of efficiency in energy consumption). On the other hand, such services contribute to the balancing of the electricity grid on the demand side and avoid the need for the TSO to buy system services on the system services market from actual power plants that in Italy are mainly powered by fossil fuels. The financial effect, in 2013[109], was € 98 mln

	2014	2015	2016
Financial effects (mln €):	n.a.	n.a.	n.a.

Source: OCSE http://stats.oecd.org/Index.aspx?DataSetCode=FFS_ITA

[109] "In 2013 the exemptions referred to in Article 30, comma 19, of Law n. 99/2009 involved 28 companies (including those that provided the load interruptibility service in Sicily and Sardinia) that contracted an interruptible power of not less than 40 MW per site. Approximately 9 TWh of consumption benefited from the exemption for a total amount of approximately 98 million euro." Source: Parliamentary Question to the Minister of Economic Development http://www.senato.it/japp/bgt/showdoc/frame.jsp?tipodoc=Sindispr&leg=17&id=826247

FFS that should be reformed in international contexts

This section groups FFSs that are applied in Italy as a result of international agreements, the reform of which can be achieved only through an international effort. We include here the exemption of the excise on energy products used as fuels for aviation and navigation. These exemptions, established at the international level, are FFSs and, although not entirely reformable on the national ground, might encourage wasteful consumption and pose serious environmental impacts. Discussions on these subsidies are central, since the involvement of such sectors is crucial to guarantee carbon coverage and pricing and reach the global climatic goals set in the Paris Agreement. If, on the one side, environmental rationales, such as potential pollution havens, are used to justify the implementation of such measures, on the other, the role of these sectors is crucial to reach climatic goals and the international community calls for their involvement in GHG reductions by 2030. The debate on these three measures is ongoing among scholars and discussion on this family of subsidies is vital to keep the momentum on FFSs and nourish the debate on the topic.

We also include the free allocation of emission allowances in the EU-Emission Trading System (ETS). This has gone over the so-called "phase 3", that reformed the way allowances are auctioned and is attempting to correct the CO_2 price signal in order to encourage companies to move further in the path of sustainability. Nevertheless, companies in the Carbon Leakage List are still entitled to receive free allowances and this violates the "polluter-pays-principle". The inclusion of EU-ETS in the report is aimed at encouraging international partners to persist in the improvements of existing carbon pricing systems and extend one globally that would reduce the global risk for carbon leakages, providing a fully-efficient device to contrast climate change.

37. Exemption from excise duty on energy products used by aviation

Sector	Transport 
Name of financial assistance	Excise on energy products used as fuels for aviation other than private aviation and for educational flights - Exemption
Aim	Reduction of costs for flights and aviation
Legal source	Table A, point 2, TUA
Type of subsidy	Exemption
Rate	Normal rate: 337.49064 €/1000 litres Reduced rate: 0
Co-financed by EU	No
Year of introduction	1993
Year of cessation (if sunset clause expected)	-
Level of reformability	International - Art. 14, par. 1 (b) of Directive 2003/96/EC (ETD).
Environmental, economic and social aspects	The excise duty exemption on energy products used as fuels for aviation encourage the use of fossil fuels such as kerosene or jet fuel. Literature on the environmental impacts and external costs generated by aviation is vast and reveals high GHG emissions associated with the consumption of fossil fuels (CE Delft, 2003, 2008; Ricardo – EEA, 2014). This Exemption is difficult to tackle in regulatory terms and this is due to different reasons: • To implement national regulatory initiatives due to multilateral and bilateral agreements (the 1944 Chicago Convention exempts, in art. 24, excise duties for airplanes landing in one of the ICAO (International Civil Aviation Organization) Member States). The goal is to liberalize and avoid discriminatory policies with respect to foreign aviation companies; • Domestic and intra-EU flights, that is flights that are internal to the EU + Iceland: formally subject to ETS (Directive 2008/101/EC); • International flights, i.e. flights that go from EU to other destinations: ICAO approved a global mechanism for the reduction of GHG in the international aviation sector. (CORSIA), that will be implemented from 2021. In conclusion, the only way to reform such FFSs is to modify the Chicago Convention and bilateral agreements or adopt indirect forms of fuel taxation, such as ETS or passenger duties based on flight distance. In light of an expected strong increase in demand for air travel by 2030, keeping on pursuing international effort for reducing CO_2 emissions could yield positive.

	2014	2015	2016
Financial effects (mln €):	1,603.50	1,539.30	1,551.09

38. Exemption from excise duty on energy products used by maritime transport

Sector	Transport 
Name of financial assistance	Excise on energy products used as: 1) fuel for maritime navigation (including fishing), excluding private recreational boats; 2) fuel for inland waterway navigation, limited to freight transport, dredging of navigable rivers/lakes and ports. Exemption.
Aim	Reduction of costs for maritime transport and fishing
Legal source	Table A, point 3, TUA
Type of subsidy	Exemption
Rate	Normal rate: - Gasoil as fuel. 617.40 €/1000 litres; - HSC dense fuel oil: 63.75351 €/t (industrial use) – 128.26775 €/t (heating use); - LSC dense fuel oil: 31.38870 €/t industrial use) – 64.2421 €/t (heating use). Reduced rate: 0
Co-financed by EU	No
Year of introduction	1993
Year of cessation (if sunset clause expected)	-
Level of reformability	International - Art. 14, par. 1 (c) of Directive 2003/96/EC (ETD)
Environmental, economic and social aspects	The exemption encourages the use of fossil fuels. Literature on environmental impacts reveals high GHG emissions and external costs, related in particular to heavy fuel oil bunker. Health and environmental impacts are generally serious, although still lower, for the vast majority of shipping categories, when compared to other transport modes, such as road transport (CAFE (2005b); Methodex (2007); Maffii et al. (2007); IMPACT (2008); NEEDS (2008), Ricardo-EEA (2014).

	2014	2015	2016
Financial effects (mln €):	641.00	598.10	456.90

39. Free allocation of ETS allowances

Sector	Industry 
Name of financial assistance	Free allocation of ETS allowances - Exemption
Aim	The goal is to avoid relocation of strategic sectors favouring a smooth transition.
Legal source	Art. 20-23 of Legislative Decree n. 30 of 13rd March 2013, Commission Decision of 27th April 2011 n. 2011/278/EU; Commission Decision of 5th September 2013 n. 2013/448/EU
Type of subsidy	Free allocation of ETS allowances
Rate	Normal rate: average price of allowances 2015: 7.6 €/t Reduced rate: 0
Co-financed by EU	No
Year of introduction	2013
Year of cessation (if sunset clause expected)	-
Level of reformability	International - It has to be reformed at the EU level.
Environmental, economic and social aspects	The free allocation of emission allowances in the EU-Emission Trading System (ETS), from phase 3 onward, is based on product-related GHG-emission benchmarks, historical activity level and corrections factors. Whereas emission allowances were largely allocated free of charge in the first and second trading periods, the greater part of allowances in the current trading period are to be auctioned. Furthermore, the entitlement to free allocations should fall from 80% in 2013 to 31% in 2021 and 0% in 2030. However, installations in industries classified as carbon leakage risks are exempted from this last provision. This is intended to ensure that the emission trading rules do not result in industrial production and the related emissions being relocated from EU countries to non-EU countries. As a consequence, several activities are still granted free allowances in different sectors where the use of fossil fuels appears significant. These categories include aviation, manufacture of electronic components and steam and air conditioning supply (listed under the code combustion of fuels), refining of mineral oil, production of coke, production or processing of ferrous metals and so on. All these data are contained in the EEA's data viewer (*) where in many categories there is still a significant number of freely allocated allowances. The free allocation is thus connected to sectors that are linked with the consumption of fossil fuels, violating the "polluter pays principle" established by Article 174 of the EC. According to this, global carbon pricing coverage would ensure against the risk of carbon leakage and favour the debate on setting aside free emission allowances. In order to estimate the foregone revenue, we consider the volume of allowances allocated free of charge in 2015 in Italy, totalling around 86 million tons of CO_2. Since auction revenues and accrued interest are transferred to a special State Treasury

	account and subsequently reallocated to spending chapters related to measures to fight climate change, free allocation represents foregone revenue that public bodies could invest in mitigation and adaptation. We estimate the foregone revenue by taking the average price of allowance in 2015 (€7.60/tCO_2) as provided on the EEX platform (where the average bid price is weighted on the amount of auctioned allowances in the reference period). The relative amount is equal to around 654 million €. Obviously, this amount is likely overestimating the foregone revenue if we focus on the share of free allowances allocated to plants that use intensively or exclusively fossil fuels in their production process. The same methodology was employed for estimates in 2016: the foregone revenue decreased due to a lower price of the allowance (€5.30/tCO_2) and -3,4% of free allowances distributed to Italian companies. (*) https://www.eea.europa.eu/data-and-maps/dashboards/emissions-trading-viewer-1

	2014	2015	2016
Financial effects (mln €):	n.a.	654.00	444.00

A macroeconomic assessment of fossil fuels subsidies removal

The removal of environmentally harmful subsidies (EHS, henceforth) is at the centre of the international debate especially after the signature and entrance into force of the Paris Agreement.

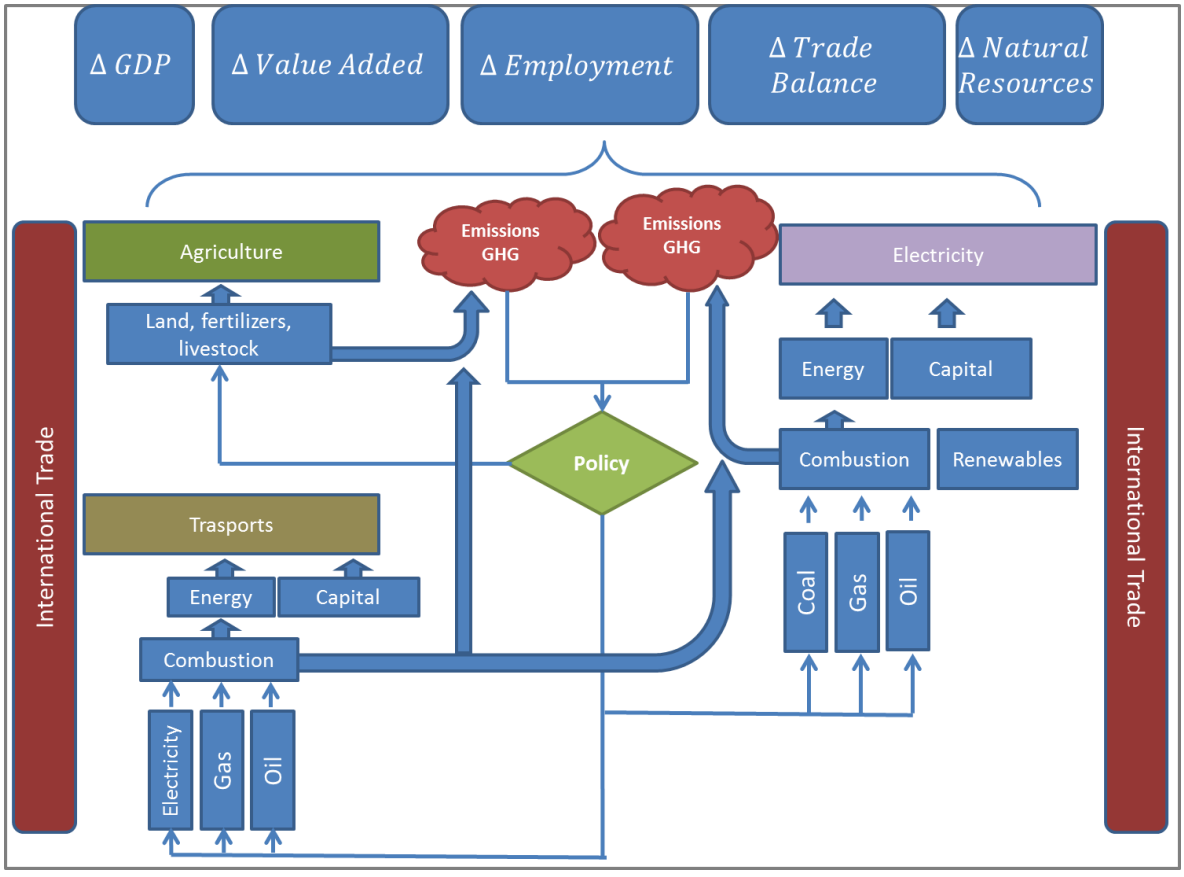
The present work analyses the effect of the removal of EHSs in the Italian economy. In addition, through the estimates of a general equilibrium model, it analyses the effects of the removal of subsidies on a time scale (gradually or at once) in different sectors and the welfare effects provided by the different use of revenues posterior to the removal.

To evaluate the macroeconomic benefits stemming from the removal of fossil fuels subsidies we employed ERMES (Economic Recursive-dynamic Model for Environmental Sustainability) a global dynamic general equilibrium model. It is based on the static model Gtap-E (McDougall et al., 2007) and on the Gtap 9 database (Aguiar et al., 2016) and includes representative firms and households and production factors.

This type of models has been used extensively for the evaluation of fossil fuels subsidies removal (Burniaux, Martin and Oliveira-Martins, 1992; Saunders and Schneider, 2000; Burniaux and Chateau, 2011 and 2014, Bosello and Standardi, 2013; Jewell et al. 2018).

This category of models (also called top-down) allows us to analyze the effects of energy and climate policies on specific sectors and its propagation to the entire economic system (see Figure 25). Indeed, the model reconciles the various economic sectors (on a national and international scale) through input-output relations.

Figure 25 – The model architecture



The Gtap 9.2 database includes 140 countries and regions of the world and 67 economic sectors in an open economy. International trade considers the bilateral flows between all these regions for each economic sector. It is based on the development of the neoclassical theory of comparative advantages and on the so-called Heckscher-Ohlin-Samuelson model, which identifies the causes of the difference in comparative costs between different countries and, therefore, the causes of (and incentives for) international trade in their different factorial endowments. Like most models of general economic equilibrium, it is hypothesized that substitutability in consumption between goods produced in different countries is not perfect, following the approach proposed by Armington (1969).

The model simulates the functioning of an economic market system with neoclassical assumptions such as the existence of perfect competition, the achievement of equilibrium in all markets and the presence of international trade. Flexibility, that is the variation of relative prices, is the means by which, in markets characterized by conditions of perfect competition, the demand is guaranteed equal to the supply and that, whenever there is an exogenous shock, it is always reached a new balance.

The original structure of the Gtap-E model has been extensively modified and updated:

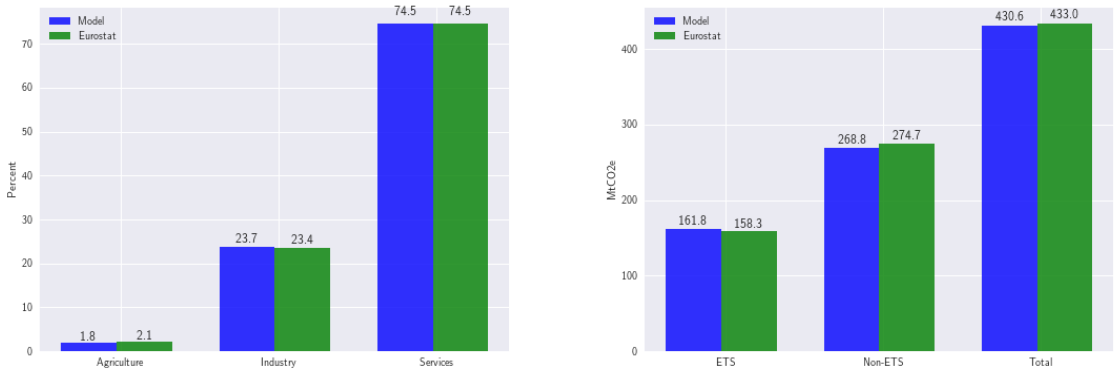
- the capital stock is not fixed but varies over time based on the so-called recursive dynamics;
- the model uses the latest version of the Gtap database or 9.2b, which for Italy and the EU updates the input-output tables to the most recent ones available in 2010;
- the energy system of the model has been carefully extended and considers the substitution between 11 different types of technologies, including renewable and clean energy;
- the substitution between energy sources uses functional forms of the CRESH type (Constant Ratios of Elasticities of Substitution, Homothetic) (Hanoch, 1975) with different substitution levels for each technology;
- considers the CO_2 emissions deriving from energy processes but also those of CH_4, N_2O and FGASS deriving from agriculture, industrial processes and residential;
- it is possible to analyse the macroeconomic impacts of shocks on the international prices of fossil fuels;
- the climate policy module is flexible enough to select the types of gas (CO_2, CH_4, N_2O, FGAS), the sectors (for example, distinguishing between ETS and non-ETS) and the country/region.

The sectoral and regional level of detail is shown in Table 18 and Table 19 in the Appendix. We consider all 67 economic sectors and 15 countries/regions of the World.

The base year 2015

The model has been calibrated from 2011 to 2015 to replicate the main macroeconomic variables. Economic and physical data relative to GHG emissions (CO_2, CH_4, N_2O and FGAS) are in line with the real data.

Figure 26 – Sectoral value added, % share (left) and GHG emissions (right) in 2015



Scenarios and Results

The contribution of this work is threefold: first of all, it exploits and presents a novel database, based on the G20 Self-Report on Fossil fuel subsidies in Italy that integrates the 2018 Inventory on fossil fuels subsidies recently released by the OECD. Data are capable of encompassing at once different economic and productive sectors, going from agriculture to transport.

Secondly, our study focuses on fossil fuels subsidies and involves an inter-sectoral analysis that allows to fully estimate the effects of their removal on different actors in the Italian economy such as firms and households. Furthermore, it emphasizes the possibility of removing them in different layers of time.

Thirdly, through the use of a CGE model, we explore the welfare effects provided by different use of revenues, going from a decrease in the income tax for low-income households to the increase of environmentally friendly subsidies on energy efficiency.

We simulate three static scenarios. A first reference scenario ("Scenario A") in which the removal of subsidies would only result in a reduced government expenditure (e.g. for purposes such as reducing government deficit and debt); a second scenario ("Scenario B") where revenues that result from the removal are split equally in three types of recycling: i) increase the current budget savings, ii) subsidize renewables and iii) improve energy efficiency of the industry sector; a third scenario ("Scenario C") where government savings are recycled lump-sum to reduce the labour costs of "skilled" workers.

The amount of subsidies considered in the scenarios is equal to 11.6 billion euro (see Table 15).

Table 15: Amount and description of Subsidies considered

Description	Financial effect (mln €)
Exemption from excise on electricity used in railways.	64.5
Electricity used in urban and intercity lines of transport - Exemption from excise.	7.7
Exemption from excise on electricity used in residential houses with a power capacity up to 3 kW and monthly consumption up to 150 kWh.	634.0
Exemption from excise on energy products used as fuels for aviation other than private aviation and for educational flights.	1,551.1
Exemption from excise on energy products used as: 1) fuel for navigation marine (including fishing), excluding private pleasure boats; 2) fuel for inland waterway, limited to freight transport, dredging of navigable rivers/lakes and ports.	456.9
Fuels for passenger and goods railway transport – application of a 30% of the ordinary rate.	11.1
Reduction of normal rate of excise on fuels for taxi cabs. The D.P.C.M. 20th February 2014 established the cut of the share of tax credit for an amount not below of 85% compared with the normal law on tax credit. According to paragraph 242 of the art. 1 of Law n. 190 of 23rd December 2014 (Stability Law 2015) a further reduction of tax credit share is possible.	25.3
Reduction of excise on fuels used in ambulances.	2.9
Reduction of excise to 10% of the ordinary rate on LPG used in the centralized plants for industrial use.	11.7
Reduction from excise on fuels used by National Armed Forces.	24.9
Deduction flat-rate from the corporate income to favour fuel distribution plants. The deduction proves the following rate thresholds in relation to the gross income with a maximum cap: - 1.1% of gross income up to € 1,032,000; - 0,6% of gross income below € 1,032,000 and up to € 2,064,000; - 0,4% from income below €2,064,000.	51.0
Refund of greater burden resulting from the increase in excise duty on diesel fuel used for freight transport and other categories of passenger transport, starting from 2000 and for subsequent increases in excise duties. The Law n. 208 of 28th December 2015 (Stability Law 2016), in its art. 1, paragraph 645, has reduced the application field of this concession excluding diesel for vehicles with standard from Euro 2 and below from 1st January 2016. In this way, the law 208/2015 absorbed the previous exclusion introduced by art 1 paragraph 233 of Law No.190 (Stability Law 2015) of 23rd December 2014, with effect from 1stJanuary 2015, for the diesel fuel consumption of euro-type vehicles 0 or lower.	1,295.8
Reduction of 40% of ordinary rate on natural gas for industrial uses (0.012498 €/cm in basis to Annex I of TUA) excluded power generations, by those who have a consumption up to 1,200,000 cm/year.	58.1
Uses of energy products in agricultural and similar sectors (horticulture, breeding, forestry, fish breeding and floriculture) – application of 22% of ordinary rate for diesel and 49% of ordinary rate for gasoline (for fuel uses). Exemption for vegetal oils not chemically modified.	830.4

Diesel and LPG used as heating in geographical and climatic disadvantages areas (mountain, Sardine, small islands): price reductions; Reduction rate of credit tax as art. 1 paragraph 242 of Law n. 190 of 23rd December 2014 (Stability Law 2015).	219.4
Direct and indirect production of electricity by plants subject to registration as established by the provisions covering the consumption tax on electricity. Reduced rates for: - natural gas, LPG, diesel, fuel oil, crude and natural energy products, coal, lignite and coke (codes CN 2701, 2702 and 2704); - self-production of electricity; - combined production of electricity and heat.	365.6
Different fiscal treatment between gasoline and diesel.	6,061.3
Totale	**11,671.8**

Results are shown in Table 16. As expected in all scenarios emissions are reduced significantly due to the public budget reform and restructuring of the public expenditure. Regarding the effects on GDP, results differ between scenarios. In the first scenario a), we observe a low but significant GDP reduction of -0.58% while in the in the b) and c) scenarios where budget savings are recycled to foster economic activity results indicate a raise in GDP by 0.82% and 1.60% respectively.

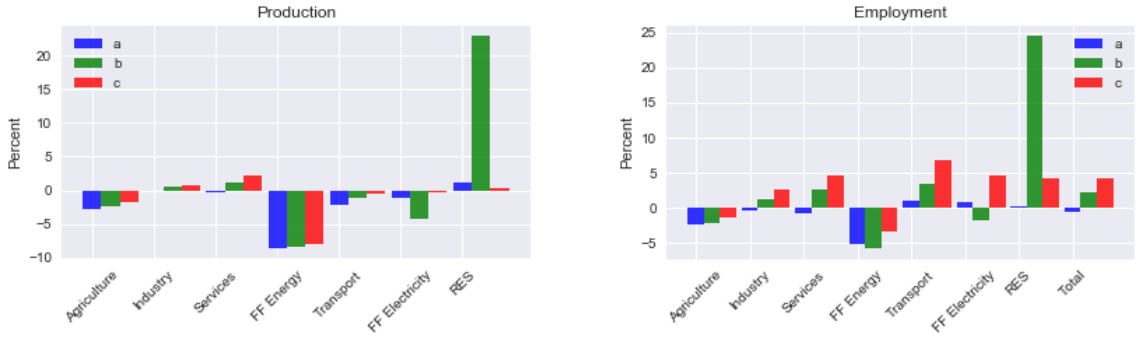
Table 16 – GDP and GHS's Emissions (% change wrt 2015)

	a)	b)	c)
GDP	-0.58%	0.82%	1.60%
Emissions	-2.13%	-2.68%	-0.88%

Among sectors, the energy supply (referred to below as FF energy) and transport sectors show the highest reductions in production (Figure 27). On the contrary, the renewables sector is found to increase significantly in all three scenarios: by 1.1%, 22.9% and 0.3% respectively.

The service and industry sectors increase slightly only in the B and C Scenarios respectively by 0.6% and 1.2% and by 0.7% and 2.2%. For the same scenarios, results also show a total positive impact on employment which increases by 2.3% and 4.2%.

Figure 27 – Production and Employment (% change wrt 2015)



Finally, given that ERMES is a global model, it is worth looking at the carbon leakage effect that the subsidies removal may induce in other countries. 16 shows that, in all scenarios considered, the carbon leakage is positive with the largest increase observed in the a) scenario. The sectors most exposed to carbon leakage are agriculture, industry and transport.

Table 17 – Carbon Leakage

	Rest of the world emissions ($MtCO_2e$)	In % of Italy emissions
scenario a)	13.7	3.2
scenario b)	5.3	1.2
scenario c)	4.8	1.1

5. FINDINGS

The present self-report is the first attempt to present to a national and international audience the screening effort on subsidies related to fossil fuels in Italy, a topic that is entailed with energy and environmentally-related taxation with their pros and cons. It has been a collective effort, led by the Ministry of Environment, Land & Sea and the Ministry of Economic Development, and the involvement of other Ministries in charge of main measures, in particular the Ministry of Economy & Finance[110]. The frank and open inter-agency debate, that was initiated by the publication in February 2017 of the "Catalogue of Environmentally Harmful and Environmentally Friendly Subsidies", has much contributed to improving the understanding at national level of the nature of energy taxation and its social, economic and environmental effects.

From a general EU competition policy point, the Commission recommends the removal of all energy subsidies (including environmentally friendly subsidies) and financing all policies (including the promotion of renewable energy) through general taxation in order to complete the single market and avoid distortion in competition and off-shoring of production within EU or, worse, towards the rest of the World. This seems in contrast with other recommendations from the Commission, such as those concerning the lowering of the tax burden on labour. The right balance between these seemingly contrasting recommendations has yet to be found.

The key takeaways of the debate and the present self-report can be summarized as follows:

1. Italy's energy taxation regime is historically among the highest in the world. In 2017 taxes and charges (including cross subsidies of renewables) on energy products amounted to a total of 45.6 billion euros, equalling to 6.3% of total taxation and 2.7% of GDP. Italy's total energy taxation is over 42% higher than the EU average of 1.9% of GDP and the implicit tax rate per tonne of oil equivalent of 348 euros is second only to Denmark (400 euros) and about 64% higher than the EU average[111]. The high taxation still stands out in international comparison although it does not come as a surprise in a country with scarce energy sources.
2. Historically, the high taxation and the limited indigenous energy production have kept consumption (including fossil fuel consumption) at very low levels with respect to nations comparable in geography and economy. Some of the highest energy taxes were introduced in the 1970s in the wake of the oil shocks. This has allowed Italy to be for many years one of the OECD leaders in terms of energy intensity.
3. Within the very high taxation regime, over the years, various exemptions have been introduced in order to provide immediate economic benefits to specific categories of consumption and

[110] The G20 Fossil Fuel Subsidies Self-Report for Italy has received contributions by:
- Ministry of Environment, Land & Sea: Francesco La Camera (Director General), Aldo Ravazzi Douvan (chief economist, scientific coordinator of the self-report), Gionata Castaldi (technical coordinator), Cecilia Camporeale (technical coordinator), Fabio Eboli, Luca Grassi, Mario Iannotti, Greti Lucaroni, Andrea Molocchi, Carlo Orecchia, Karima Oustadi, Giacomo Pallante, Francesca Rocchi (environmental economics team, Sogesid Technical Assistance);
- Ministry of Economic Development (industry, energy and trade): Gilberto Dialuce (Director General), Emanuele Piccinno, Sebastiano Maria Del Monte, Wolfgang Vittorio D'Innocenzo, Giovanni Perrella;
- Ministry of Economy & Finance: Fabrizia Lapecorella (Director General), Maria Teresa Monteduro, Silvia Carta, Leonardo Di Stefano, Pietro Orsini, Giovanni Spalletta.

[111] Situazione Energetica Nazionale 2017 (June 2018, Ministry of Economic Development).

production, mostly in the form of fiscal expenditures. While most benefits address policy objectives worthy of being continued (protection of vulnerable or low income customers, public transport, support to farmers, SMEs, etc.), the environmental effects of the measures are indeed in some cases potentially negative and would require a review of the policy in question. In some cases, technological development already hints at possible future solutions (e.g. non-stationary batteries), in other cases support measures would have to be reviewed in an environmentally friendly perspective or transformed into direct transfers to specific categories.

4. Up to some analysts, a complete discontinuation of fiscal expenditures in all sectors *ceteris paribus* would drive the already high share of energy taxation on GDP to economically unbearable levels and would probably cause market failures and unintended distortions. Up to other analysts, the removal of fossil fuel subsidies should be gradual in time but certain, in order to give producers and consumers the time to adjust consumption, production and investment decisions.
5. The macroeconomic model suggests that a further increase of extraction of value added from the economy in the form of reduced fiscal expenditure in energy would cause a considerable hit to GDP. Two possible compensations hypotheses have been made on how to recycle the extra taxation in the economy: (a) the recycling of newly available funds in the economy in the form of reduced taxation of labour would benefit economic growth; (b) the recycling newly available funds in equal parts in reduction of the national public debt, investments in renewables and investments in energy efficiency would result in the highest reductions in CO_2 emissions.
6. Although Italy's energy related environmental performance is high in international comparison (low consumption, low emissions, no nuclear), there is still room to improve the Italian energy taxation from an environmental perspective without harming the economy. Removing FFSs, that are part of the larger family of EHS, is a crucial part of a potential Environmental Fiscal Reform.

In conclusion, the G20 peer review on FFSs is an important technical exercise to help policy-makers to adopt efficient and transparent decisions about fiscal, energy and environment/climate policy. The issue is key for achieving needed and ambitious targets adopted by the global community and each country in the Paris Agreement and the UN 2030 Agenda.

Appendix A

The ERMES Model

To evaluate the macroeconomic impacts stemming from the fossil fuel subsidies removal, we employed the ERMES (Economic Recursive-dynamic Model for Environmental Sustainability) model. It builds on the Gtap-E general equilibrium model (McDougall et al. 2007) and the Gtap 9.2b[112] database (Aguiar et al., 2016). The model includes representative firms and households and production factors and has detailed information on the power sector distinguishing between 11 different sources of electricity. To model substitution between these sources, a CRESH function (Constant Ratios of Elasticities of Substitution, Homothetic - Hanoch, 1975) with different levels of substitution for each single technology. The model is recursive dynamic where the stock of capital is endogenously determined over time and accounts for all Kyoto GHG emissions (CH_4, N_2O e FGASS) which are endogenously determined in each simulation period as a result of different economic activities.

This category of models (also called top-down) allows you to analyze the effects of energy and climate policies on specific sectors and its propagation to the entire economic system. In fact, the model reconciles the various economic sectors (on a national and international scale) through input-output relations.

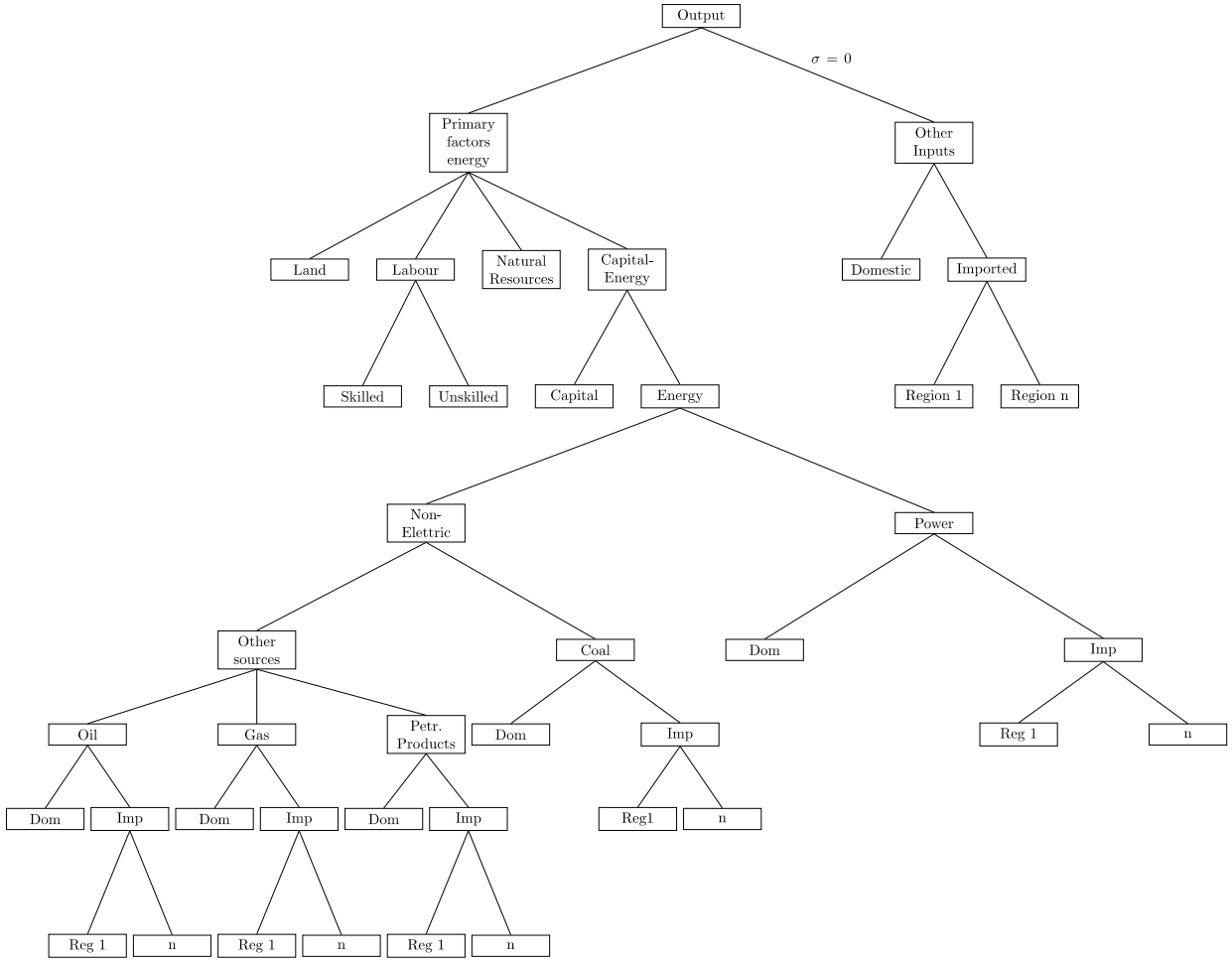
The Supply

Industries are "typically" modelled through a representative cost-minimizing firm, taking input prices as given. In turn, output prices are given by average production costs.

Figure 28 illustrates the nested production function of each representative firm (that coincides with the concept of sector) within the model. Each node in the tree combines single or composite factors of production in a constant elasticity of substitution (CES) production function. All sectors use primary factors such as labour and capital-energy, and intermediate inputs. In some sectors (fossil fuel extraction industries and fishery), primary factors include natural resources, (e.g. fossil fuels or fish), in some other (agricultural sectors) land. The nested production structure depicted in is the same across all sectors, and diversity in production processes as well as technologies are captured through sector-specific productivity and substitution elasticity parameters.

[112] https://www.gtap.agecon.purdue.edu/databases/v9/default.asp

Figure 28 – ERMES Supply structure



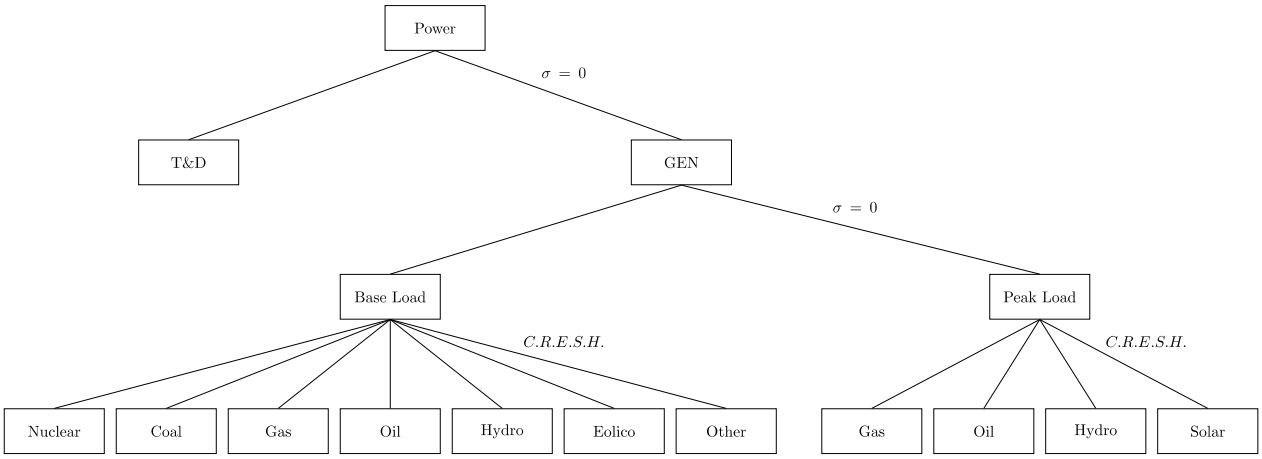
The power sector

In modelling the electricity production part, Peters' approach was followed (2015). Electricity is the result of two components, the "generation" that is the production of electricity and the "transmission and distribution" that includes the distribution of electricity produced through the electricity grid. Between these two components there is no replacement or, in other words, the transmission and distribution costs are directly proportional to the amount of electricity generated. Finally, generation distinguishes between peak and base load technologies.

A peculiar characteristic of the electricity sector is that the supply must satisfy the demand instantly. Electricity demand can fluctuate considerably throughout the day (during daylight hours electricity demand is higher than night, and during peak day hours demand peaks near the central hours), week (during the weekdays the demand is usually higher than weekends and holidays) and the seasons (the demand during the winter months is lower than the summer one). Some technologies can adapt more easily to these fluctuations by adjusting production (supply) instantly, while others require longer technical times. For example, coal-fired power plants cannot easily regulate electricity production in response to sudden changes in demand that may occur over the day and are therefore classified as "base" production, which means that they are not competitive in meeting demand peaks or instant

demand variations. On the other hand, power plants powered by natural gas and oil are able to quickly adapt electricity supply and are therefore competitive in meeting peak demand. To replicate these characteristics of electricity generation in the model, the technologies were separated into two virtual nodes, base and peak. The basic technologies are nuclear, coal, gas, oil, hydropower, wind and "other sources". Peak technologies are gas, oil, hydroelectric and solar.

Figure 29: ERMES electricity sector

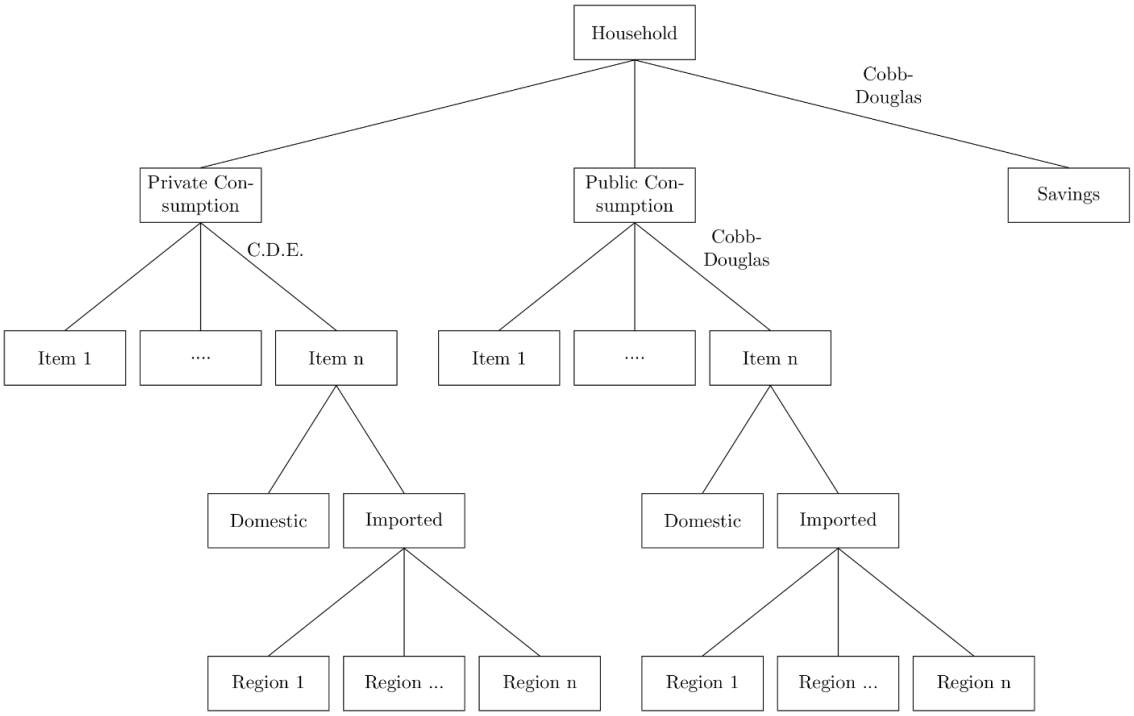


The demand side

In each region, a representative utility maximizing household receives income, originated by the service value of national primary factors (natural resources, land, labour, and capital), that she/he owns and sells to the firms. Capital and labour are perfectly mobile domestically but immobile internationally (note however that investment is mobile, see section 4 below). Land and natural resources, on the other hand, are industry-specific. The regional income is used to finance three classes of expenditure: aggregate household consumption, public consumption and savings. These expenditure shares are generally fixed, which amounts to saying that the top-level utility function has a Cobb-Douglas specification. Also notice that savings generate utility and this can be interpreted as a reduced-form of intertemporal utility.

Both private and public sector consumption are addressed to all commodities produced by each firm/sector. Public consumption is split into a series of alternative consumption commodities (item 1 to item n in figure 27), again according to a Cobb-Douglas specification. However, almost all public expenditure is actually concentrated in the specific sector of Non-market Services, including education, defence and health.

Figure 30: Demand structure



The dynamics

Following the same methodology of Ianchovichina and McDougal (2012), the capital stock varies over time based on a dynamic recursive approach. In each simulation, the capital stock is equal to that of the previous period net of depreciation and increased by the investment as follows:

$$K_{r,t} = I_{r,t} + (1-\delta)K_{r,t-1} \quad (1)$$

where $K_{r,t}$ is capital in region *r* at the end of period t, $K_{r,t-1}$ is capital at time t-1, δ is the depreciation rate and I_r is the investment *r*.

Savings of each region are collected by a "global bank" which then decides how much and in which region to invest according to the rule

$$I_{r,t} = \varphi_r PROD_{r,t}\, e^{[(\rho_{r,t}(R^E_{r,t}-R^W)]} \quad (2)$$

where PROD it is an index of total production, $\rho_{r,t}$ e φ_r are given parameters, $R^E_{r,t}$ e R^W are the expected rate of return on capital in the r region and the global rate of return on capital, respectively.

According to equation (2), a region demands (or, otherwise, is able to "attract") investments as long as its production increases, or its expected rate of return is higher than the world rate of return. Investment demand is negatively correlated to R^W, which in turn is determined by the general equilibrium condition that requires equality between global savings and investments.

The parameter $\rho_{r,t}$ reflects the flexibility of capital movements related to changes in the current rate of return. If $\rho_{r,t}$ it's low then it will reduce the effect of the growth of the current rate of return when

compared to the growth of the global rate of return; fundamentally it can be assumed that it reflects "political" restrictions.

The regional and sectoral aggregation

Table 18 shows the sectoral breakdown while Table 19 the regional aggregation.

Table 18: Detailed Sector Breakdown

Sectors	
01 Paddy rice	35 Ferrous metals
02 Wheat	36 Other metals
03 Cereal grains nec	37 Metal products
04 Vegetables, fruit and nuts	38 Motor vehicles and parts
05 Oil seeds	39 Transport equipment nec
06 Sugar cane, sugar beet	40 Electronic equipment
07 Plant-based fibers	41 Machinery and equipment
08 Crops nec	42 Rest of manufacture
09 Bovine cattle, sheep and goats, horses	43 Transmission and Distribution
10 Animal products nec	44 Nuclear power
11 Raw milk	45 Coal-fired power
12 Wool, silk-worm cocoons	46 Gas-fired power as base load
13 Forestry	47 Wind power
14 Fishing	48 Hydroelectric power as base load
15 Coal	49 Oil-fired power as base load
16 Oil	50 Other power sources: waste, biomass, geothermal, etc.
17 Gas	51 Gas-fired as peak load
18 Other minerals	52 Hydroelectric as peak load
19 Bovine meat products	53 Oil-fired as peak load
20 Other meat products	54 Solar power: photovoltaics and thermal
21 Vegetable oils and fats	55 Water
22 Dairy products	56 Construction
23 Processed rice	57 Trade
24 Sugar	58 Road and rail transports
25 Rest of Food products	59 Water transport
26 Beverages and tobacco products	60 Air transport
27 Textiles	61 Communication
28 Wearing apparel	62 Financial services nec
29 Leather products	63 Insurance
30 Wood products	64 Business services nec
31 Paper products, publishing	65 Recreational and other services
32 Petroleum, coal products	66 Public Administration, Defense, Education, Health

33 Chemical, rubber, plastic products	67 Dwellings
34 Other mineral products	

Table 19: Regional breakdown

Regions	
Italy	China
Germany	Russia
France	South Asia
Spain	Latin America
UK	Middle East and North Africa
Poland	SSA (Sub-saharan Africa)
Rest Of EU	Rest of the World
USA	

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