



MINISTERO DELL'AMBIENTE
E DELLA TUTELA DEL TERRITORIO E DEL MARE



ITALIAN CATALOGUE OF ENVIRONMENTALLY FRIENDLY SUBSIDIES AND ENVIRONMENTALLY HARMFUL SUBSIDIES 2016

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*“DISPOSIZIONI IN MATERIA AMBIENTALE PER PROMUOVERE MISURE DI GREEN ECONOMY
E PER IL CONTENIMENTO DELL’USO ECCESSIVO DI RISORSE NATURALI”*

*[“ENVIRONMENTAL MEASURES TO PROMOTE GREEN ECONOMY
AND REDUCE THE OVER-CONSUMPTION OF NATURAL RESOURCES”]*

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SYNTHESIS



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LIST OF ABBREVIATIONS AND ACRONYMS

AEEGSI	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 (<i>exempli gratia</i>)
ECFIN	Directorate General for Economic and 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 (o 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
GHG	Green House Gasses
GIZ	Gesellschaft für Internationale Zusammenarbeit (Aid Agency Germany)
GSI	Global Subsidies Initiative
HGV	Heavy Goods Vehicles
ICAO	International Civil Aviation Organization
IEA	International Energy Agency
IEEP	Institute for European Environmental Policy
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

MATTM	Italian Ministry of Environment, Land & Sea
MEFOP	Company for the development of the Pension Funds Market
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
UNCED	United Nations Conference on Environment and Development
UNEP	United Nations Environment Programme
WB	World Bank
WRI	World Resource Institute
WTO	World Trade Organization

PREFACE



Gian Luca Galletti
Minister of Environment, Land and Sea

1. La conoscenza dei sussidi ambientalmente rilevanti, sia dannosi che favorevoli, costituisce uno sforzo necessario per il disegno di politiche ambientali ed economiche ambiziose ed efficienti. Politiche che devono essere all'altezza delle sfide globali lanciate con l'Accordo di Parigi sui cambiamenti climatici, l'Agenda 2030 dell'ONU per uno sviluppo sostenibile, con i suoi 17 obiettivi (SDG), dal Piano d'azione di Addis Abeba per una finanza sostenibile e su un piano diverso, ma convergente, dall'enciclica "Laudato Si" di Papa Francesco.

2. Il Catalogo dei Sussidi richiesto dal Parlamento al Governo rientra in uno sforzo generale del Paese di analisi e valutazione dell'erosione fiscale, delle spese fiscali, delle agevolazioni e incentivi esistenti. Si affianca ai tentativi di riforma per un "sistema fiscale più equo, trasparente e orientato alla crescita" (delega fiscale 2014), ai decreti e alle attività che ne sono derivati.

3. Si tratta prima di tutto di identificare i sussidi, di capirne struttura e obiettivi, di riesaminarne la validità, l'efficacia e l'efficienza, spesso numerosi anni dopo la loro introduzione.

In non pochi casi, si tratta di situazioni di privilegio che non hanno più ragione di esistere.

Non pochi sussidi hanno tuttavia tuttora valide motivazioni economiche e sociali. Ma andranno rivisti affinché non siano ragione di effetti ambientali negativi.

4. È infatti difficilmente comprensibile per l'opinione pubblica, per i cittadini, per la comunità scientifica, per gli esperti delle organizzazioni ambientaliste, come delle imprese, che si utilizzino fondi dello stato (attraverso spese dirette) o che si rinunci a fondi del-

1. Knowledge of environmental relevant subsidies, both harmful and friendly, represents a necessary effort to design ambitious and efficient environmental and economic policies. Such policies must rise to the challenges posed by the Paris Agreement on Climate Change, the UN Agenda 2030 for Sustainable Development with its 17 goals, the Addis Ababa Action Plan for a sustainable finance and, although on a different level, the encyclical "Laudato Si" by Pope Francis.

2. The Catalogue of Subsidies, requested by the Parliament to the Government, is part of a general effort of the Country aiming to analyze and evaluate fiscal erosion, tax expenditures as well as existing tax breaks and incentives. Moreover, it supports the attempts of reform for a "fairer, transparent and growth-oriented tax system" (2014 fiscal reform), together with the decrees and activities that have resulted from it.

3. First of all, it is necessary to identify subsidies, understanding their structure and objectives and review their validity, effectiveness and efficiency, in several cases many years after their introduction. Not rarely, they represent cases of privilege, with no further reasons for existing anymore.

On the contrary, several subsidies, however, are still justified by valid economic and social reasons. Nevertheless, these will need to be reconsidered to avoid environmental negative impacts.

4. It is indeed hardly understandable for the public opinion, citizens, the scientific community, experts from environmental NGOs as well as from firms, that public revenue is utilized (by means of direct expenditures) or

lo stato (attraverso spese fiscali, vale a dire agevolazioni, esenzioni o riduzioni) per incoraggiare attività economiche, che abbiano un impatto negativo per l'ambiente.

5. Il Ministero dell'Ambiente sta lavorando per la definizione di politiche ambientali ed economiche ambiziose ed integrate attraverso gli strumenti offerti dalle disposizioni sulla Green Economy e l'Efficienza delle Risorse (L.221/2015), la predisposizione di un Green Act per la decarbonizzazione dell'economia, di nuovo l'efficienza delle risorse (l'economia circolare) e una finanza sostenibile. Altre azioni sono la predisposizione di una Strategia Nazionale di Sviluppo Sostenibile, coerente agli SDG concordati in sede ONU, e l'attuazione della ratifica dell'Accordo di Parigi sui cambiamenti climatici.

In questo stesso periodo sono stati attivati i lavori del Comitato per il Capitale Naturale istituito dal Presidente del Consiglio, anch'esso richiesto, come questo Catalogo dei Sussidi Ambientali, dalla L. 221/2015, per cominciare a calcolare il valore e il contributo del capitale naturale all'attività economica del Paese e per meglio considerarne l'importanza nelle scelte di bilancio, economiche e finanziarie.

6. Mi auguro che questo primo Catalogo possa contribuire ad aiutare Parlamento e Governo, con il consenso convinto di produttori e consumatori, ad avviare un processo progressivo, ma rapido e certo, di eliminazione dei sussidi ambientalmente dannosi, così come ci richiede la comunità scientifica e la comunità internazionale.

reduced (by means of tax expenditures i.e. breaks or exemptions) to stimulate environmentally harmful economic activities.

5. The Ministry of Environment is working on the definition of ambitious and integrated environmental and economic policies through the measures on Green Economy and Resource Efficiency (L.221/2015), the preparation of a Green Act for the decarbonization of the economy, again resource efficiency (circular economy) and sustainable finance. Moreover, we are pursuing the definition of the National Strategy on Sustainable Development, coherent with the SDGs agreed in the UN framework, and the implementation of the ratification of the Paris Agreement on climate change.

In this same period – with the same law on Green Economy and Resource Efficiency that has required the Catalogue of Environmental Subsidies - the activities of the Natural Capital Committee, instituted by the President of the Council of Ministries have been activated; it aims to start the assessment of the value and of the contribution of the national natural capital to the economic activities of the Country so as to better understand its role in the public budget, economic and financial choices.

6. I hope that this first Catalogue can contribute to help the Parliament and the Government, with the strong consensus of producers and consumers, to begin a gradual, although quick and well defined, path towards the elimination of environmental harmful subsidies as the scientific and international community asks us.

FOREWORD



Francesco La Camera
Director General for Sustainable Development, EU
and International Affairs (DG-SVI)

1. Un'estesa letteratura internazionale prodotta da organizzazioni internazionali che vanno dall'OCSE al FMI, dalla Banca Mondiale all'UNEP, ci incoraggia ad eliminare i sussidi ambientalmente dannosi, per ragioni ambientali (non distruggere il capitale naturale, base insostituibile del nostro sistema economico), ma anche per ragioni economiche (competitività internazionale e concorrenza).

Specifiche raccomandazioni del Semestre Europeo, dell'OCSE, dei migliori think tanks internazionali ci incoraggiano in questo senso.

2. Difficilmente raggiungeremo gli obiettivi dell'Accordo di Parigi sui cambiamenti climatici, se non procederemo a un'eliminazione dei sussidi alle fonti fossili nei nostri Paesi.

Sicuramente non raggiungeremo i Targets della Convenzione ONU sulla Biodiversità, che già impegnano i nostri Paesi all'eliminazione dei sussidi dannosi alla biodiversità entro il 2020.

Difficilmente accoglieremo i suggerimenti del Panel Internazionale delle Risorse presso l'UNEP in materia di uso efficiente delle risorse, economia circolare e crescita verde, se non eliminassimo dal sistema economico le distorsioni introdotte dai sussidi all'estrazione di fonti fossili e risorse naturali.

3. Con i proventi risparmiati sui sussidi alle fonti fossili a livello globale, che siano stimati in modo prudente dall'OCSE in 150 miliardi di dollari annui o in modo più approfondito dal FMI in 550 (incluso le esternalità), si potrebbero ampiamente coprire i 100 miliardi di dollari di finanziamento che le economie più industrializzate responsabili dei cambiamenti climatici si sono impegnate ad utilizzare nei paesi ancora bisognosi di sviluppo.

1. An extensive international literature produced by international organizations, ranging from OECD and IMF to World Bank and UNEP, encourages us to eliminate environmentally harmful subsidies, not only for environmental reasons (preserve the natural capital, an irreplaceable basis of our economic system) but also for economic reasons (to increase international competitiveness and foster competition).

Specific recommendations by the European Semester, by the OECD and by most important international think tanks encourage us along this way.

2. We will hardly reach the Paris Agreement's targets on climate change, if we do not start the removal of fossil fuel subsidies in our countries.

For sure, we would not reach the Aichi targets of the UN Convention on Biodiversity, which commits our countries to the elimination of biodiversity harmful subsidies by 2020.

Again, we would not meet the suggestions of the International Resource Panel at UNEP in the area of resource efficiency, circular economy and green growth, if we do not eliminate from the economic system the distortions induced by subsidies in the extraction of fossil fuels and natural resources.

3. With the revenue raised by removing fossil fuel subsidies globally, either if conservatively estimated by the OECD in 150 billion dollars per year or assessed more extensively by the IMF in 550 (with a more complex approach including externalities), it would be possible to largely cover the US\$ 100 billion that the developed countries responsible for climate change have committed to raise to help countries still in need of development.

4. Si tratta di lavorare per un'eliminazione dei sussidi ambientalmente dannosi progressiva nei tempi, ma certa nei modi. Si tratta di dare tempo a consumatori e produttori di riorientare le proprie scelte di consumo e investimento. Resterebbero risorse per una significativa riduzione in molti dei nostri Paesi dell'imposizione sulle imprese e sul lavoro.

5. Si tratta anche di continuare a migliorare l'efficacia e l'efficienza dei sussidi ambientalmente favorevoli, a cui sono stati dedicati, almeno nel caso delle fonti di energia rinnovabile, fondi sostanziosi. Occorre tuttavia che si dia stabilità e certezza nel tempo agli incentivi, orientando i fondi al finanziamento dell'innovazione tecnologica ambientalmente sostenibile.

4. The issue at stake is to work for a gradual in time but clearly defined phase out of environmentally harmful subsidies. We have to give consumers and producers the time to reorient their consumption and investment choices. There would still be enough resources in many of our countries to significantly reduce the tax burden on labour and firms.

5. At the same time, it is also important to continue to improve the effectiveness and efficiency of environmentally friendly subsidies to which our country already devoted in the past, at least in the case of renewable energy sources, substantial funds. Nevertheless, we need to guarantee stable and certain incentives through time, while orienting public expenditure to the funding of environmentally sustainable technological innovation.

EXECUTIVE SUMMARY

1.The Italian Parliament has asked¹ the Italian Ministry of Environment, Land and Sea (MATTM) to provide a Catalogue of environmentally friendly and harmful subsidies. The Ministry, through its Directorate General for Sustainable Development and International Affairs (DG-SVI) and the technical assistance of Sogesid s.p.a., has ensured the first version of the Catalogue presented here. This work will be updated, enriched and possibly completed, thanks to investigations and collaborations activated in the preparation of the first Catalogue, within the 30th June of each year.

2.As it emerges clearly from the wide review of the most accredited national and international literature (see Chap. 1), there are different definitions of what is or is not a subsidy, some larger some narrower:

- a transfer of money from the State to a private (WTO);
- an advantage in terms of revenue (income or minor cost) (OECD);
- a difference between the price observed and the marginal social cost of production, meaning the cost that internalizes harm to the society (IMF).

3.According to art. 68 of the Law n. 221/2015 “the subsidies are considered in their broader definition and include, among others, incentives, benefits, subsidized loans, exemptions from taxes directly related to environmental protection”. It is a definition which matches with the OECD definition, widely shared by most of the scientific community.

4.In terms of classification, this Catalogue divides the subsidies into two main categories: direct subsidies (spending laws) and tax expenditures (or indirect subsidies); the implicit subsidies are excluded in this first version.

5.This is accompanied by a non univoque fully agreed definition of what an EHS (Environmentally Harmful Subsidy or SAD) or an EFS (Environmentally Friendly Subsidy or SAF) is, the knowledge of all the impacts on the environment arising from the subsidy would be required.

6.To solve the identification problem, the Catalogue examines some methodologies (e.g. *quickscan*, *checklist*), with the aim of providing policymakers the information needed for EHS removal and the adoption, strengthening and efficiency of EFS, as well as it illustrates different methodologies for their quantification (e.g. price gap, social marginal cost) (see Chap. 3).

7.Indeed, the debate on subsidies, related to a possible removal of the EHS or the strengthening of the EFS, is a debate that has engaged the international community for about thirty years (see Chap. 2).

8.The largest number of studies and insights are focused on EHS removal, especially – but not exclusively – with regard to energy subsidies to fossil fuels by established organizations, recognized by the international community. Although the estimates that quantify the subsidies are highly different from each other, even the most conservative ones seem to be of huge dimension. For example, according to the OECD, the overall

¹ Article 68 of the Law 28th December 2015, n. 221, “Measures on environmental issue to promote green economy and to reduce the over-consumption of natural resources” (published on Official Journal – General Series n. 13 dated 18th January 2016, entered into force on 2nd February 2016).

value of the fossil fuel subsidies is estimated in US\$160-200 billion annually over the period 2010-2014, while IMF estimates for pre-tax energy subsidies are at US\$492 billion in 2011, a significant difference between them which does not hide the relevance of the phenomenon.

9.The IEA estimate of US\$548 billion for only the consumption subsidies and fossil fuel subsidies in 2013, against the renewable energy subsidies for 121 billion, has impressed all the experts. The GSI estimates fossil fuel subsidies in at least US\$600 billion annually. The sizeable value gap is due to the different subsidy definition, but also to the different methodology used to identify and quantify the subsidies: for example, as it is illustrated in the Catalogue, the OECD focuses its analysis almost exclusively on Developed and Emerging Countries (34 members + 6 large partner economies), while the IMF considers a larger number of Countries (153 Countries); in addition, the OECD analysis is referred to individual support policies adopted by each government, and IMF adopts a price-gap approach.

10.While the WTO aims to global negotiations that link the needs to fight climate change, which threatens most global economic sectors, to those of international trade, ICAO and IMO pay attention to the international debate on subsidies and their implications: the international aviation and maritime sectors are exempt from fuel tax, despite the international pressure on the two sectors.

11.Nevertheless, the relevance of an intervention to "rationalize and remove" subsidies has been strongly stressed in the various G20 Summits held since 2009; a further step forward in this direction was made during the G7 Summit in 2016 which identified the 2025 deadline for the removal of the main subsidies to fossil fuels and called on all countries to do the same; a commitment that the European Commission has anticipated to 2020 in its Roadmap to a Resource Efficient Europe.

12.Beyond what has been done by international organizations, several Countries have identified and reformed subsidies from an environmental point of view, a reform made to raise the state budget after the financial crisis of 2008. An interesting example is what has been done by the Countries of the Nordic Council, first to use economic instruments in environmental policies. Moreover the EEA estimates on potential environmental tax reform made for some State Members are very interesting (in these analyses, the removal of EHS is crucial). But the attention for EHS goes beyond European borders: in the USA, the EPA is engaged to identify them; Mexico has started reforms on excise duty on transport fuels; India, Indonesia, Malaysia and Ukraine have started reforms on energy subsidies (Chap. 2).

13.Also in Italy, the issue of subsidies has been subject to investigations since the '70s, with various attempts of tax expenditures reform. More recently, with the Ceriani Report (2011), a detailed review of all current tax expenditures in force in Italy in 2011 was completed, identifying 720 measures. The estimate of tax expenditures has become a mandatory attachment to the Stability Law (Legge di Stabilità). In terms of direct subsidies, the Giavazzi Report (2012) estimated in €10 billion per year the savings from public contributions to firms which could be eliminated, savings that could be used to reduce fiscal pressure. According to the Giavazzi Report, subsidies to enterprises are justifiable only when there are "market failures", i.e. "when the markets are not able to achieve socially desirable goals".

14.For the first time ever in an Italian law, the 2014 Fiscal Reform Delegation Law² required an environmental fiscal reform (article 15) aiming at reorienting the market toward sustainable consumption and production modes, with the removal of EHS as a main element, an article which has never been implemented. The bill, moreover, included an article 4 on fiscal erosion, with tax expenditures in primis, in consequence of

²Law 11th March 2014, n. 23, "Delegation of powers to the Government on measures for a more equitable, transparent and growth-oriented fiscal system" (published in the Official Journal - General Series, n. 59, dated 12th March 2014, entered into force on 27th March 2014 and expired, in spite of an extension granted in D.L. n. 4/2015, on 27th June 2015.

which the current Government has established a Commission of Experts for reviewing the report on tax expenditures attached to the Budget Law (Marè Commission)³.

15. According to art. 68, Law 221/2015, this Catalogue aims to support the Parliament and the Council of Ministers in defining environmental policies capable to take into consideration international and European recommendations. This first report aims to identify the subsidies with an environmental impact and evaluated by the MATTM/Sogesid Working Group as EFS (SAF), EHS (SAD) or uncertain (Chap. 4). The latter evaluation is given in cases in which there are a difficulty to establish the environmental impact of the subsidy (positive or negative), postponing their deep analysis in the Catalogue's following editions. An example is the investment in the development of forests and in the improvement of forest profitability, for which it would be useful to analyze single local projects to guarantee the sustainability in reforestation practices and forest management. In addition, the Catalogue provides the identification of some subsidies which, though not environmentally relevant and therefore defined environmentally neutral subsidies (ENS or SAN), are considered interesting because transformable in EFS with a small modification or integration.

16. The Catalogue analyses the subsidies by sector: agriculture, energy, transport, VAT and other subsidies, considering both fiscal expenditures and direct subsidies, with reference to the financial effect in 2016. The evaluation of the identified subsidies has been made after internal discussions of the Working Group who has taken into consideration the indication from the widely scientific literature on this issue. Relating to the agricultural sector, the subsidy identification has been made thanks to CREA, while the evaluation of identified subsidies has been the responsibility of MATTM/Sogesid Working Group. The Ministry of Economy and Finance (MEF) supported the Catalogue through quantitative updates and evaluations connected to the identified tax expenditures.

17. The Catalogue of subsidies aims to be a useful instrument a) for identifying the intervention area for a possible reform of general taxation, in accordance with the PPP (the Polluter Pays Principle), for restoring fairer market conditions, b) for identifying measures able to contribute to an environmental fiscal reform (reduction of fiscal pressure on labour and firms with simultaneous revenue compensation through forms of environmental fiscality borne by consumption and production damaging the environment), c) and, overall, directed at identifying areas of possible reduction of fiscal expenditures in general.

18. There are several recommendations on environmentally-related taxation addressed to Italy by OECD and European Union (Chap. 5) which the policy-makers have to take into consideration. Some additional policy suggestions arise from this Catalogue:

- the need of an activity of assessment of the environmental impact of subsidies, also during the preparation of expenditure and fiscal measures (ex ante valuation);
- the alignment to "normal" VAT rate for goods and services where the subsidy - reducing the price signal for an efficient product or service consumption - causes a distortionary impact;
- the implementation of environmental requirements for subsidies to improve their level of environmental merit, favouring their possible future evolution into environmentally friendly subsidies;
- transferring the tax burden from labour and capital to consumption, property and environment, ensuring fiscal neutrality as a tool for reducing the "cuneo fiscale" (fiscal pressure on labour).

19. The list of fiscal expenditures considered in this first edition of the Catalogue is that reported in the Budget integration note (Nota integrativa al bilancio), attached to the Stability Law since 2011, which in-

³ D.Lgs. 24th September 2015, n. 160, "Estimation and monitoring of fiscal evasion and monitoring and reordering of fiscal erosion measures, implementation of articles 3 and 4 of Law 11th March 2014, n. 23", published in the Official Journal n. 233, dated 7th October 2015 – Ordinary Supplement n. 55; entered into force on 22nd October 2015.

cludes not only the subsidies regarding taxes with an environmental impact (energy, transport vehicles, pollution and resources taxes), but also tax allowances, income deductions and tax credits relating to personal income tax (IRPEF), company income tax (IRES, IRAP) and VAT reduced rates. However, this is a work in progress, in gradual extension and needing regular update.

20. At the moment, it has not been possible to include at least these following subsidies: exemptions and tax expenditures of recent introduction; structural funds used in the National Operational Programmes (NOP) and in Regional Operational Programmes (ROP); direct subsidies (spending measures) from other ministries, including those provided through the regions; direct subsidies granted by Regions and Local Authorities; and, as anticipated, the so-called implicit subsidies. They will be a subject of investigation and assessment in the future editions of the Catalogue.⁴

⁴ Suggestions to correct, improve and complete information and evaluation of this Catalogue will be most appreciated; they can be sent to the Ministry of Environment, Land and Sea at the following email: svi-udg@minambiente.it and ravazzi.aldo@minambiente.it.

THE CATALOGUE AND THE ENGLISH SYNTHESIS

The Italian Catalogue of EHS and EFS - in its three first parts - discusses the definition, describes the methodologies and reviews the scientific and policy literature about EHS and EFS, mainstreaming the Italian Catalogue into the International and European context. The index is reported below: the full original Italian text can be found at <http://www.minambiente.it/pagina/economia-ambientale>

This English synthesis concentrates on the subsidies description in the various categories (Agriculture, Energy, Transport, Other Sectors, Reduced VAT).

1. WHAT IS A SUBSIDY?

1.1. Subsidy definition

1.2. How to define an Environmentally Harmful Subsidy (EHS)

1.3. How to define an Environmentally Friendly Subsidy (EFS)

1.4. The definition of subsidy adopted in the Catalogue

2. NATIONAL AND INTERNATIONAL FRAMEWORK

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2.1.1. Organisation for Economic Co-operation and Development (OECD)

2.1.2. International Energy Agency (IEA)

2.1.3. Group of 20 countries (G20)

2.1.3.1 Fossil fuel subsidies in China

2.1.3.2 Fossil fuel subsidies in USA

2.1.4. Group of 7 countries (G7)

2.1.5. United Nations Environmental Programme (UNEP)

2.1.6. The Economics of Ecosystems and Biodiversity (TEEB)

2.1.7. International Monetary Fund (IMF)

2.1.8. World Bank (WB)

2.1.9. World Trade Organization (WTO)

2.1.10. International Civil Aviation Organization (ICAO) and International Maritime Organization (IMO)

2.1.10.1. Air navigation

2.1.10.2. Maritime transport

2.2. European Union

2.2.1. European Commission

2.2.2. Institute for European Environmental Policy (IEEP)

2.2.3. European Environment Agency (EEA)

2.2.4. Eunomia

2.3. National Experiences

2.3.1. Countries in the Nordic Council

2.3.2. Sweden

- 2.3.3. Ireland
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- 2.3.6. France
- 2.3.7. Spain
- 2.3.8. Portugal
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2.4. Scientific debate

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- 2.5.1. The first attempt to reform tax expenditures: the Seventies
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- 2.5.3. Tax expenditures: the Ceriani report (2011)
- 2.5.4. Direct subsidies to firms: the Giavazzi report (2012)
- 2.5.5. The Fiscal Reform Delegation (“Delega Fiscale”) art. 4 – art. 15 (2014)
- 2.5.6. The Environmental Annex (“Collegato Ambientale”) to the Stability Law (Law n. 221/2015)
- 2.5.7. Budget Law 2016
- 2.5.8. The Maré Commission on tax expenditures (2016)

2.6. The recommendations of international institutions to Italy

- 2.6.1. Reformability analysis of the EEA (2011)
- 2.6.2. Recommendations OECD (2013)
- 2.6.3. Recommendations of the EU European Semester (2011-2016)
- 2.6.4. Recommendations of the national Green Economy Council

2.7. Industry, research and civil society

- 2.7.1. Industry
- 2.7.2. Civil society
- 2.7.3. Research

3. THE METHODOLOGY

3.1. Tools to identify EHS and EFS

- 3.1.1. Quickscan
- 3.1.2. Checklist
- 3.1.3. The integrated assessment framework
- 3.1.4. EHS reform tool
- 3.1.5. DPSIR
- 3.1.6. The TEEB framework

3.2. How to quantify a subsidy

- 3.2.1. Price Gap approach
- 3.2.2. Producers/consumers estimates of a subsidy
- 3.2.3. Resource rent
- 3.2.4. Marginal social cost
- 3.2.5. Externalities
 - 3.2.5.1. External costs in public policy
 - 3.2.5.2. Computation methods

AGRICULTURE

The subsidies in the present section are identified by the Council for Agricultural Research and Analysis of Agricultural Economics (Italian acronym CREA), while the DG-SVI of MAT*TM is responsible for the evaluation of their potential environmental impact.

Subsidies, related to the main government interventions in agricultural policy, are identified as follows:

- 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 Program⁵;
- National tax breaks.

Tax Expenditures

Direct Subsidies

N°	Law references	Description	Type of subsidy	Financial effect in 2016 (mln €)
1	Article 5, paragraph 2, Law n. 413/1991	50% of the value added tax for holiday farms.	EFS	3.80
Total EFS tax expenditures in agriculture				3.80
2	1) Article 4, paragraph 2, Decree Law n. 457/1997; art. 1, paragraph 172, Law n. 244/2007; art. 2, paragraph 2, Law n. 203/2008; 2) Article 6-bis, paragraph 1, and art. 4, paragraph 1, Decree Law n. 457/1997	Tax base reduction for IRPEF (personal income tax) and IRES (corporate income tax). 1) Article 4, paragraph 1 of D.L. n. 457/1997. Extension of the benefit, within the limit of 80%, to commercial coastal fishing and to commercial fishing in inland waters and lagoon. Article 2, paragraph 2, of Law n. 203/2008 establishes this benefit starting from fiscal year 2009 2) Article 4, paragraph 1 of the Decree Law n. 457/1997. Extension of the benefit to commercial fishing beyond the straits and, within the limit of 70%, to Mediterranean commercial fisheries.	EHS	7.49
Total EHS tax expenditures in agriculture				7.49
Other national, regional and municipal tax expenditures				to be quantified
Total tax expenditures in agriculture				11.29

⁵ Since the new European Programme is ongoing, for some measures the amounts are defined by the Programme..

N°	Law references	Description	Type of subsidy	Current (C) or Estimate (E) expenditures		
				Million of euro		Year
1	Measure 3 RDP 2014-2020	Quality schemes for agricultural and food products.	EFS	9.14	E	2016
2	Measure 5 RDP 2014-2020	Restoration of agricultural production potentially damaged by natural disasters and catastrophic events; introduction of appropriate prevention measures.	EFS	7.02	E	2016
3	Measure 10 RDP 2014-2020	Agro-environmental-climate payments.	EFS	363.36	E	2016
4	Measure 11 RDP 2014-2020	Organic agriculture.	EFS	253.40	E	2016
5	Measure 12 RDP 2014-2020	“Natura 2000” compensation and compensations linked to Water Framework Directive.	EFS	14.67	E	2016
6	Measure 13 RDP 2014-2020	Compensation for areas with environmental constraints or other specific restrictions.	EFS	214.31	E	2016
7	Measure 14 RDP 2014-2020	Animal welfare.	EFS	24.20	E	2016
8	Measure 15 RDP 2014-2020	Forest-environmental and climate services and forest conservation.	EFS	7.23	E	2016
9	Articles 52-53, Reg. (EU) 1307/2013, Ministerial Decree 18 th November 2014 n. 6513; following changes and extensions	Specific support to bovine zootechnics: suckler cows.	EFS	40.78	C	2015
10	Articles 52-53 Reg. (EU) 1307/2013, Ministerial Decree 18 th November 2014 n. 6513; following changes and extensions	Specific support for arable crops: protein crops, in particular sunflower and colza; leguminous grains, in particular peas, bean, lupine, chick and lentil; annual leguminous herb.	EFS	14.16	C	2015
11	Articles 52-53 Reg. (EU) 1307/2013, Ministerial Decree 18 th November 2014 n. 6513; following changes and extensions	Specific support for arable crops: leguminous grains, in particular peas, beans, lupine, chickpeas, lentils and annual leguminous herbs.	EFS	11.80	C	2015
12	Articles 52-53 Reg. (EU) 1307/2013, Ministerial Decree 18 th November 2014 n. 6513; following changes and extensions	Premium measures for olive oil sector and that has particular economic, social, territorial and environmental importance. Olive producers that adopt quality systems.	EFS	12.88	C	2015
13	Articles 43-47 Reg. (EU) n. 1307/2013	Payment for farming practices beneficial for climate and environment.	EFS	1,170.61	C	2015
14	Articles 50-51 Reg. (EU) n. 1307/2013	Payment for young farmers.	EFS	39.02	C	2015

N°	Law references	Description	Type of subsidy	Current (C) or Estimate (E) expenditures		
				Million of euro	Year	
15	Paragraphs from 862 to 865, Law 28 th December 2015 n. 208 (“ <i>Disposizioni per la formazione del bilancio annuale e pluriennale dello Stato</i> ”) [“Measures for the preparation of the yearly and multi-annual State Budget”]	Paragraphs 862 and 863 set up an INAIL Fund to finance purchase or rental of new agricultural or forestry tractors, agricultural and forestry machinery characterized by innovative solutions to reduce polluting emissions and noise pollution, to improve farms performance and global sustainability (initial budget of € 45 million for 2016 and annually 35 million from 2017). The aim of this measure is to improve health and safety workplace conditions. Only micro and small enterprises, operating in primary production of agricultural products, are eligible for financing. Benefits criteria are determined by INAIL with public notice, within the first half of each year. Financial coverage costs to establish the fund, under Article 864, is guaranteed as follows: the annually € 20 million are allocated by INAIL itself using resources that originate upon 20% deduction on social security transfers related to the insurance of agricultural workers; € 25 million for 2016 and 15 million for 2017, using part of INAIL resources allocated for projects and training on health and safety at work.	EFS	45.00	E	2016
Total EFS direct subsidies in agriculture				2,227.59		
16	Paragraph 455, Law 28 th December 2015 n. 208 (“ <i>Disposizioni per la formazione del bilancio annuale e pluriennale dello Stato</i> ”)	Extension of agricultural programs to fisheries and aquaculture; programs that are in ISMEA's jurisdiction through funding to agricultural farms including the European Fund for Maritime Affairs and Fisheries.	EHS	n.a.	E	2016
17	Articles 52-53 Reg. (EU) 1307/2013 Ministerial Decree 18 th November 2014 n. 6513 and following changes and extensions	Specific support to dairy cattle.	EHS	75.11	C	2015
18	Articles 52-53 Reg. (EU) 1307/2013 Ministerial Decree 18 th November 2014 n. 6513 and following changes and extensions	Specific support to dairy buffalo.	EHS	4.12	C	2015
19	Articles 52-53 Reg (EU) 1307/2013 Ministerial Decree 18 th November 2014 n. 6513 and following changes and extensions	Specific support to beef cattle breeding: cattle slaughter.	EHS	66.96	C	2015
Total EHS direct subsidies in agriculture				146.19		

N°	Law references	Description	Type of subsidy	Current (C) or Estimate (E) expenditures		
				Million of euro		Year
20	Measure 2 RDP 2014-2020	Consultancy and assistance services to farms management.	Uncertain	0.20	E	2016
21	Measure 8 RDP 2014-2020	Investments into the development and profitability of forests area.	Uncertain	202.61	E	2016
22	Articles 52-53 Reg (EU) 1307/2013 Ministerial Decree 18 th November 2014 n. 6513 and following changes and extensions	Specific support to dairy cattle in mountain areas.	Uncertain	9.87	C	2015
23	Articles 52-53 Reg (EU) 1307/2013 Ministerial Decree 18 th November 2014 n. 6513 and following changes and extensions	Specific support to arable crops: premium for soybeans.	Uncertain	9.87	C	2015
24	Articles 52-53 Reg (EU) 1307/2013 Ministerial Decree 18 th November 2014 n. 6513 6513 and following changes and extensions	Specific support to arable crops: premium for rice.	Uncertain	22.75	C	2015
25	Articles 52-53 Reg (EU) 1307/2013 Ministerial Decree 18 th November 2014 n. 6513 and following changes and extension	Specific support to arable crops: sugar beet premium.	Uncertain	17.21	C	2015
26	Articles 52-53 Reg (EU) 1307/2013 Ministerial Decree 18 th November 2014 n. 6513 and following changes and extensions	Specific support: olive base premium.	Uncertain	44.21	C	2015
27	Articles 52-53 Reg (EU) 1307/2013 Ministerial Decree 18 th November 2014 n. 6513 and following changes and extensions	Specific support: additional oil premium.	Uncertain	13.31	C	2015
28	Articles 21-26 Reg. (EU) n. 1307/2013	Basic Payment Scheme.	Uncertain	2,274.77	C	2015
29	Paragraph 489, Law 28 th December 2015 n. 208 (<i>Disposizioni per la formazione del bilancio annuale e pluriennale dello Stato</i>)	Refinancing the rationalization and conversion of beet-sugar production in Italy with funds established by Italian agency for agriculture financial support (AGEA). For the most part production conversion is oriented towards the production of biomass energy (bioethanol, biodiesel, electricity and thermal energy).	Uncertain	1.00	E	2016
30	Articles 52-53 Reg. (EU) 1307/2013 Ministerial Decree 18 th November 2014 n. 6513 and following changes and extensions.	Specific support to sheep and goats animal husbandry.	Uncertain	15.02	C	2015
31	Measure 4 RDP 2014-2020	Investments in tangible fixed assets.	Uncertain	685.77	E	2016
32	Measure 6 RDP 2014-2020	Farms and agricultural businesses development.	Uncertain	112.23	P	2016

N°	Law references	Description	Type of subsidy	Current (C) or Estimate (E) expenditures		
				Million of euro		Year
33	Common Market Organization (CMO) – Reg. (EU) n.1308/2013 (articles 32-38)	Aid to fruit and vegetables sector: Support programs to Fruit and Vegetable Producer Organizations; School Fruit and Vegetables Schemes.	Uncertain	263.20	C	2015
34	Common Market Organization (CMO) – Reg. (EU) n.1308/2013 (articles 39-54)	Support program to wine sector.	Uncertain	324.61	C	2015
35	Articles 52-53 Reg. (EU) 1307/2013 Ministerial Decree 18 th November 2014 n. 6513 and following changes and extensions	Specific support for arable crops: industrial tomato support scheme.	Uncertain	11.29	C	2015
36	Articles 52-53 Reg. (EU) 1307/2013 Ministerial Decree 18 th November 2014 n. 6513 and following changes and extensions	Specific support for arable crops: durum wheat.	Uncertain	59.88	C	2015
Total direct subsidies with uncertain environmental effects in agriculture				4,067.79		
Other national, regional and municipal direct subsidies				To be quantified		
Total direct subsidies in agriculture				6,441.57		

ENERGY

In order for us to identify energy subsidies, in addition to direct subsidies and tax expenditures provided by the Note to the State Account 2016-2018, we consider other sources of law (for instance, incentive mechanisms for renewable energy and energy efficiency, Emissions Trading Scheme, etc.). Consistently with the goal of this Catalogue, we include subsidies to renewable energy production and advancements in energy efficiency. These off budget subsidies are usually managed through financial mechanisms included in the electricity bill (compensation schemes).

The Legislative Decree N. 28 published on 3rd March 2011, adopting the European Directive 2009/28/EC of the European Parliament and Council, establishes that “*energy from renewable sources*” (RES) is the energy produced from “*wind, solar, aerothermal, geothermal, hydrothermal and ocean energy, hydropower, biomass, landfill gas, sewage treatment plant gas and biogases*”.

Italy adopts different incentive schemes for renewable electricity production such as purchase/resale & net metering, all-inclusive feed-in tariff, Green Certificates (GCs), and CIP6/1992.

The European Directive 2012/27/EC, adopted through the Legislative Decree n. 112 of 16th July 2014, remarks the fundamental role played by energy efficiency as a strategic instrument of the current European scenario. The Decree provides specific support schemes for energy efficiency such as White Certificates, Heating & Cooling Support Scheme and the National Fund for Energy Efficiency.

The two abovementioned Legislative Decrees face different challenges such as: 1) reducing global emissions; 2) guaranteeing sustainability of primary energy; 3) fighting climate change; 4) boosting economic growth; 5) generating new jobs; 6) increasing industrial competitiveness.

These goals are in line with recommendations to Italy coming from the international community in order to support economic growth and, at the same time, comply with the climate constraints underwritten and envisaged in the Paris Agreement, whose global effort tends to not overcome the increase of 1.5° C by 2030 with respect to pre-industrial levels.

Moreover, the Catalogue estimates the “foregone revenue” due to allowances allocated free of charge in the European Emission Trading System (ETS). We consider the share of allowances free of charge covering power stations and industrial plants on ETS as subsidies, as they distort the price of carbon going against the international requirements for emissions reduction (Paris Agreement). Indeed, in 2008, the European Commission published a proposal for amending the European Directive 2003/87/EC “*establishing a scheme for greenhouse gas emission allowance trading within the Community*” by adding a paragraph where “*The Commission shall, upon the approval by the Community of an international agreement on climate change leading to mandatory reductions of greenhouse gas emissions comparable to those of the Community, review those measures to provide that free allocation is only to take*

place where this is fully justified in the light of that agreement".

In order to estimate the foregone revenue, the assumption of the Catalogue is to consider the volume of allowances allocated free of charge in 2015 in Italy, totalling around 86 million tons of CO₂. 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 change⁶, 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 €/tCO₂) 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 of euro⁷.

Furthermore, we estimate the EHS 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. We apply the same methodology to estimate the EFS for RES different from solar energy sources.

Finally, we consider as subsidy the different fiscal treatment of gasoline and diesel. In Italy, the excise duty for diesel vehicles is lower than the gasoline excise:

- 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.

From an environmental point of view, this difference determines a significant distortion by encouraging the purchase and employment of fuel 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.

The European handbook on external transport cost, a standard reference for technical evaluation of public policies and projects that include specific transport and energy products, reports that the marginal external costs (cent euro/vkm) for air pollution emissions are higher in diesel rather than in gasoline vehicles, in particular cars and light commercial vehicles⁸.

⁶ Cfr. art. 6 of Legislative Decree n. 30 of 13th March 2013, "*Attuazione della direttiva 2009/29/CE, che modifica la direttiva 2003/87/CE al fine di perfezionare ed estendere il sistema comunitario per lo scambio di quote di emissione di gas ad effetto serra*".

⁷ This methodology is in line with the Catalogue of Environmentally Harmful Subsidies published by German Environmental Agency in the report "Technical Brochure - Environmentally Harmful Subsidies in Germany, updated edition 2014".

⁸ Cfr. tables 17 and 18 of EEA, Ricardo (2014), "Update of the Handbook on External Costs of Transport", contain the marginal external costs (c€/vkm) of car and light duty vehicles for each category of Euro standard and for different type of driving cycle of road transport (urban, peri-urban, rural and highway).

Recently, Parry et al. (2014), through a homogeneous methodology applied over several different countries in the world, reports in absolute external cost terms, the existence in Italy of a strong difference between gasoline and diesel: while the external costs of the former is around 0.4% of Italian GDP (around € 6 billion), diesel is around 1% of GDP (around € 15 billion) in 2010⁹.

Indeed, the 2011 proposal for amending the Directive on energy taxation¹⁰, after acknowledging different distortions (competition, technology, environment, etc.) due to the different excises applied by Member States, suggests an harmonization of the European minimum excise system based on a double taxation criteria of different fuels according to the energy and carbon content (respectively 9.6 €/GJ and 20 €/tCO₂).

In the Catalogue, we consider the different excises applied on gasoline and diesel as an EHS. We estimate that the revenue from excise tax considering the annual average excise level (gap was around 5 €/GJ in favour of diesel in 2015) and the Italian consumption of diesel and gasoline for the same year¹¹ could be raised from the € 17 billion to € 22 billion in 2015, with a foregone revenues equal to € 5 billion (precisely € 4,969 million) excluding the diesel refund recognized to road truck drivers.

Tax Expenditures Direct Subsidies

N°	Law references	Description	Type of subsidy	Financial effect in 2016 (mln €)
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.	EHS	2.20
2	Art. 52, paragraph 3, letter c), TUA	Exemption from excise on electricity used in railways.	EHS	64.52
3	Art. 52, paragraph 3, letter d), TUA	Electricity used in urban and intercity lines of transport - Exemption from excise.	EHS	7.70
4	Art. 52, paragraph 3, letter e), TUA	Exemption from excise on electricity used in residential houses with a power capacity up to 3 kW and monthly consumption up to 150 kWh.	EHS	634.08
5	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.	EHS	1.00
6	Table A, point 2, TUA	Exemption from excise on energy products used as fuels for aviation other than private aviation and for educational flights.	EHS	1,551.09

⁹The kind of externalities included in the estimate of Parry et al. (2014) are those associated to GHG emissions, air pollution, noise, incidents and congestions. Concerning the diesel category, the externalities due to the usage of road not covered by any fiscal measure (so not “internalized”) are included.

¹⁰ Commission's proposal for a new Energy Tax Directive (ETD, COM(2011)169).

¹¹ In 2015, in Italy, 7.822 million of ton of gasoline and 23.249 million of ton of diesel were sold (source: MISE, 2016).

N°	Law references	Description	Type of subsidy	Financial effect in 2016 (mln €)
7	Table A, point 3, TUA	Exemption from excise on energy products used as: 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.	EHS	456.90
8	Table A, point 4, TUA	Fuels for passenger and goods railway transport – application of a 30% of the ordinary rate.	EHS	11.15
9	Table A, point 6, TUA	Exemption from excise on fuels for draining and settling flooded soils in flood-affected areas.	EHS	0.50
10	Table A, point 7, TUA	Exemption from excise on fuels for water lifting to facilitate the cultivation of rustic fields on reclaimed lands.	EHS	0.50
11	Table A, point 8, TUA	Reduction from excise on fuels for experimental trials and testing of aviation and marine engines.	EHS	0.50
12	Table A, point 10, TUA	Reduction from excise on natural gas used in worksites, fixed engines and operations for hydrocarbon extraction.	EHS	0.27
13	Table A, point 11-bis, TUA	Exemption from excise on electricity produced by gasification plants.	EHS	0.50
14	Table A, point 12, TUA, D.P.C.M. 20 th 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. 20 th 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 23 rd December 2014 (Stability Law 2015) a further reduction of tax credit share is possible.	EHS	25.30
15	Table A, point 13, TUA	Reduction of excise on fuels used in ambulances.	EHS	2.90
16	Table A, point 14, TUA	Exemption from excise on energy products used in the magnesium production from sea water.	EHS	0.50
17	Table A, point 15, TUA	Reduction of excise to 10% of the ordinary rate on LPG used in the centralized plants for industrial use.	EHS	11.66
18	Table A, point 16, TUA	Exemption from excise on energy products injected in the blast furnace during production processes.	EHS	1.00
19	Table A, point 16bis, TUA	Reduction from excise on fuels used by National Armed Forces.	EHS	24.90
20	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: - 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.	EHS	51.00

N°	Law references	Description	Type of subsidy	Financial effect in 2016 (mln €)
21	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 24 th January 2012	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 28 th 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 1 st 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 23 rd December 2014, with effect from 1 st January 2015, for the diesel fuel consumption of euro-type vehicles 0 or lower.	EHS	1,295.80
22	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.	EHS	58.11
23	Table A, point 5, TUA	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.	EHS	830.43
24	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)	- Diesel and LPG used as heating in geographical and climatic disadvantages areas (mountain, Sardinia, small islands): price reductions; - Reduction rate of credit tax as art. 1 paragraph 242 of Law n. 190 of 23 rd December 2014 (Stability Law 2015).	EHS (diesel concession); EFS (LPG concession)	219.40
25	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: - 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.	EHS	365.60
26	Art. 20-23 of Legislative Decree n. 30 of 13 rd March 2013 “Attuazione della direttiva 2009/29/CE, che modifica la direttiva 2003/87/CE al fine di perfezionare ed estendere il sistema comunitario per lo scambio di quote di emissione di gas ad effetto serra”, Commission Decision of 27 th April 2011 n. 2011/278/EU; Commission Decision of 5 th September 2013 n. 2013/448/EU	Free allocation of ETS allowances.	EHS	654.00
27	Annex I, TUA	Different fiscal treatment between gasoline and diesel.	EHS	4,968.97
Total EHS tax expenditures in energy				11,240.48

N°	Law references	Description	Type of subsidy	Financial effect in 2016 (mln €)
28	Paragraph 911 of Law n. 208 of 28 th December 2015 (“ <i>Disposizioni per la formazione del bilancio annuale e pluriennale dello Stato</i> ”)	It is established that article 52, paragraph 3, letter b) of Legislative Decree no. 504/1995 - which exempts electricity from renewable power plants with capacity up to 20 kW and consumed by self-production companies in places other than homes - also applies to electricity produced by plants operated by renewable sources with a capacity exceeding 20 kW, consumed by members of production and distribution cooperative companies as in article 4, paragraph 1 n.8 of Law n. 1643/1962 (i.e. production and distribution cooperative companies for electricity that have not been transferred to ENEL) in places other than residential houses.	EFS	n.a.
29	Art. 52, paragraph 3, letter b), TUA	Exemption from excise on electricity produced by RES in plants with a capacity up to 20 kW for self-consumption.	EFS	49.15
30	Art. 1, paragraph 2, of Decree Law n. 324/97; art. 1, paragraph 54 of the Law n. 239/04, art. 5-sexies of the Decree Law n. 203/05; D.P.C.M. 20 th February 2014 (cfr. Art. 1, paragraph. 577 of the Law n. 147/2013)	Tax credit for the purchase of vehicles using methane, LPG or electricity or for the installation of methane and/or GPL.	EFS	7.00
31	Art. 8, paragraph 10, letter f) of Law n. 448/98	Tax credit on district heating powered by biomasses and geothermal energy.	EFS	30.00
32	Table A, point 11, TUA (point on vegetal oil not chemically modified)	Direct and indirect production of electricity by plants subject to registration as established by the provisions covering the consumption tax on electricity. Exemption for vegetal oil not chemically modified.	EFS	0.50
Total EFS tax expenditures in energy				86.65
Other EU, national, regional and municipal tax expenditures				to be quantified
Total tax expenditures in energy				11,327.13

n.a. = not available

Tax Expenditures

Direct Subsidies

N°	Law references	Description	Type of subsidy	Financial effect in 2016 (mln €)
1	Art 10 of Law n. 221 of 28 th December 2015; paragraph 26 of European Communication C(2012) 3230	The revenues of ETS auction should be used to compensate the helping costs to companies as defined by paragraph 26 of European Communication C(2012) 3230 def with priority to companies ISO 50001 accredited (“ <i>Rules on Energy Management System – Specification with guidance for use</i> ”). The mentioned paragraph 26 of European Communication C (2012) 3230 is inserted in a chapter dedicated to measures helping companies which risk carbon leakage.	EHS	n.a.

N°	Law references	Description	Type of subsidy	Financial effect in 2016 (mln €)
2	Disposition n. 6/1992 of Inter-ministerial Prices Committee (“CIP6”)	<p>The support scheme for assimilate energy sources (*) is based on the compensation of energy through an incentive tariff regularly updated.</p> <p>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.</p> <p>(*)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.</p> <p>In addition, for the waste-fuelled plants, the charges relating to the incentive of the non-biodegradable part are included.</p>	EHS	310.00 (Last date available 2015)
Total EHS direct subsidies in energy				310.00
3	<p>Paragraphs from 149 to 151 of Law n. 208 of 28th December 2015</p> <p>(“<i>Disposizioni per la formazione del bilancio annuale e pluriennale dello Stato</i>”)</p>	<p>Paragraph 149 introduces an incentive for energy production until 31st December 2020 for biomass, biogas and bio liquids power plants that ceased to be beneficiaries of subsidies before the 1st January 2016 or within the 31st December 2016, to ensure the achievement of 2020 national goals on RES. This scheme is an alternative way to what is provided by art. 24, paragraph 8 of Legislative Decree n. 28/2011 on integrating income for power plants by RES without incentives.</p> <p>Paragraph 150 indicates that the incentive corresponds to 80% of those recognized by Ministerial Decree of 6 July 2012 for new RES plants, paid by GSE, according to the Decree and from the first day following the stop of previous incentive.</p> <p>The payment has received the positive decision of the European Commission in order to aid-of-State rules as by paragraph 151. According to paragraph 151, within 31st December 2016, the producers had to provide to the Economic Development Ministry (MISE) all the information needed to EU Commission on aid-of-State in order to verify the correct application of aid-of-State in favour of environment and energy 2014-2020 (Communication 2014/C 200/01).</p>	EFS	n.a.
4	<p>Art. 12 of Law n. 221 of 28thDecember 2015</p> <p>(“<i>Disposizioni in materia ambientale per promuovere misure di green economy e per il contenimento dell’uso eccessivo di risorse naturali</i>”)</p>	<p>a) On the “User Efficiency Systems” (SEU) the Law referred to delete the cap for power plants of nominal capacity not exceeding 20 MW and total installed in the same site. The law covers the application of special schemes for the exemption from payment of general system charges and distribution and transmission rates for the SEUs made prior to the date of entry into force of Decree 115/2008. In particular, for those SEUs, the Decree establishes that the ownership of the units of production and consumption of electricity connected may be attributed to companies belonging to the same group of companies.</p> <p>b) The electricity self-production with ORC (Organic Rankine Cycle) using recovery of heating from industrial and fuel combustion processes will receive white certificates.</p>	<p>a) Uncertain</p> <p>b) EFS</p>	n.a.

N°	Law references	Description	Type of subsidy	Financial effect in 2016 (mln €)
5	I) Ministerial Decrees 28 th July 2005 and 6 th February 2006 (I CE) II) Ministerial Decree of 19 th February 2007 (II CE) III) Ministerial Decree of 6 th August 2010 (III CE) IV) Ministerial Decree of 5 th May 2011 (IV CE) V) Ministerial Decree of 5 th July 2012 (V CE)	The feed-in scheme (Conto Energia or CE) is a support scheme dedicated to photovoltaic plants. The first feed-in tariff was characterized by a fixed premium given on the basis of energy production. The mechanism was modified through the Ministerial Decree 5 July 2015 (Fifth CE). In this new version, the incentive is provided on the basis of energy production and self-consumption (premium) and energy production injected into the grid (on this part, in the form of an all-inclusive feed-in tariff for plants up to 1MW and the difference between a reference tariff and the hourly zonal price for plants over 1 MW). Since 6 July 2013 (30 days after reaching a cumulative yearly cost of € 6.7 billion) new photovoltaic plants were not allowed to receive this support. However, the subsidy continues to be recognized for those plants that had access to the mechanism.	EFS	6,297.00
6	Ministerial Decree of 23 rd June 2016	The Ministerial Decree of 23 rd June 2016 updates the support mechanisms of RES plants excluding solar energy sources, introduced by Ministerial Decree of 6 th July 2012. In particular, it supports electricity produced by: 1. Hydroelectricity plants; 2. Geothermic; 3. Wind 4. Landfill gasses; 5. Sewage gasses; 6. Biogases; 7. Bio liquids; 8. Biomasses* 9. Solar thermodynamics. (* for the plants using waste, the charges are referred only to the support of the biodegradable quota.	EFS	5,761.00
7	Legislative Decree n. 102/2014, Ministerial Decree of 5 th September 2011; Inter Ministerial Decree of 28 th December 2012, and Legislative Decree n. 102/2014 and Inter Ministerial Decree of 16 th February 2016 (Heating & Cooling Support Scheme 2.0)	Promotion of energy efficiency and energy production through thermal RES (cogeneration and High-efficiency CHP) through the mechanisms of White Certificates and the new Heating & Cooling Support Scheme 2.0).	EFS	n.a.
Total EFS direct subsidies in energy				12,058.00
Other EU, national, regional and municipal direct subsidies				to be quantified
Total direct subsidies in energy				12368.00

n.a. = not available

TRANSPORT

According to EEA report “*European Environment: State and Outlook 2015*” (SOER 2015)¹², the transport sector exerts high global pressures on the environment: it is responsible for 25% European GHG emissions and plays a significant role in air pollution, noise and habitat fragmentation¹³. The introduction of emission standards (Euro) and the use of catalytic converters reduced the total CO emissions by at least 70% in the period 2000-2013.

Direct or indirect transport subsidies are widely used in EU (EEA, 2015b), even if in some cases they could encourage wasteful consumption, such as tax exemption for fuel used by international aviation and marine or grant to purchase company cars. Anyway, it is possible to mitigate the harmful effects of such subsidies by integrating environmental conditionality in their design.

In Italy, according to EEA database, in the year 2014, the transport sector was responsible for at least 26% GHG emission. Despite the relevant environmental impact of the sector, the amount of identified subsidies, tax expenditures and direct subsidies in the Annex to 2016 Stability Law is € 473.6 million, a lower bound since some items are yet to be quantified in the following editions of the Catalogue.

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 (cfr. par. 4.3).

Tax Expenditures		Direct Subsidies		
N°	Law references	Description	Type of subsidy	Financial effect in 2016 (mln €)
1	Par. 367 of Law n. 208 of 28 December 2015	The possibility to reduce or exempt from mooring rates cargo ships in ports in which the transshipment is more than 80% of the global traffic has been introduced exceptionally from 2016 to 2018. The extent of this measure will be defined by Port authorities. In addition, in these ports there is a reduction of excises on energy products for the ships operating within the port.	EHS	1.80

¹² EEA (2015a), EEA, 2015a, SOER 2015 — The European environment — state and outlook 2015, European Environment Agency (<http://www.eea.europa.eu/soer>) accessed 19th October 2015.

¹³ The natural habitat fragmentation is considered the main anthropic threat to the biological diversity (cfr., among many others, Wilcove et al., 1986; Wilson, 1993; Dobson et al., 1999; Henle et al., 2004). Destruction and transformation of natural habitats, their reduction in area and the increasing segregation are all components of the fragmentation process. They have impact on structure and dynamic of specific population and sensitive animals and vegetation, as they risk to distort the community parameters, ecosystem function and ecological processes. (Battisti C., 2004).

N°	Law references	Description	Type of subsidy	Financial effect in 2016 (mln €)
2	A) art.4, par. 1 and art. 6 par. 1, Decree Law n. 457/97 B) art. 13, par. 2 of Law n. 488/1999	A) Tax credit and reduction of social security contributions for shipping companies on personal income for personnel on board registered in the International Shipping Register; B) Income tax credit to workers (or companies) who, on the basis of contractual relations with the ship-owner, on board cruise ships operate additional or ancillary commercial activities, related to the main service.	EHS	180.00
3	Art.4, par. 2 of Decree Law n. 457/97, art. 13, par. 3 of Law 488/1999 and art. 145, co. 66, of Law n. 388/2000	A) Reduction of 80% of tax basis for IRPEF and IRES for vessels included in the International Shipping Register (so, the income linked to the use of vessels in International Shipping Register is considered only for the 20% on income basis for IRPEF and IRES); B) Reduction of 80% of tax basis of IRPEF and IRES for persons or companies who, on the basis of contractual relations with the ship-owner, on board cruise ships make additional or ancillary commercial activities, related to the main service.	EHS	11.00
4	Artt. from 155 to 161 of TUIR (Consolidation Act on Income Tax)	It is introduced a specific regime (so-called tonnage tax) to determine the income as art. 73, par. 1, letter a) of TUIR for the indicated vessels as the art. 8-bis, par. 1, letter a) of DPR n. 633/1972, in the International Shipping Register as Decree Law n. 457/1997, modified and transformed in Law n. 30/1998. The optional regime provides flat-rate income according to the criteria of art. 156 of TUIR.	EHS	9.40
Total EHS tax expenditures in Transport				202.20
Other EU, national, regional and municipal tax expenditure				to be quantified
Total fiscal expenditures in Transport				202.20

Tax Expenditures

Direct Subsidies

N°	Law references	Description	Type of subsidy	Financial effect in 2016 (mln €)
1	Par. 85 and 86 of Law n. 208 of 28 th December 2015	The article introduces subsidies up to € 8,000 for replacement, through scrappage, of “Euro0”, “Euro1” or “Euro2” European categories caravans with new ones, with emission not less than “Euro5”. The incentive is for new vehicles bought from 1 st January to 31 st December 2016 and registered within the 31 st March 2017.	EFS	5.00

N°	Law references	Description	Type of subsidy	Financial effect in 2016 (mln €)
2	Art 5 of Law n. 221 of 28 th December 2015 (“ <i>Disposizioni in materia ambientale per promuovere misure di green economy e per il contenimento dell’uso eccessivo di risorse naturali</i> ”)	Legislative measure to incentivize the sustainable mobility: national experimental programme on sustainable mobility home-school and home-work (only for local authorities in a geographic area with more than 100,000 inhabitants), to support sustainable mobility (including walking-bus, car-pooling, car-sharing, bike-pooling and bike-sharing initiatives), the creation of protected routes, also for cars and motorbikes between home and school, on foot or by bike, laboratory and education visits on sustainability mobility, educational and security road programmes, programmes devoted to the reduction of traffic, air pollutants and car parking near schools or workplace to contrast sedentary life. These programmes should include ”vouchers” for workers who use the public sustainable transport.	EFS	35.00
3	Par. 645 and 646 of Law n. 208 of 28 th December 2015 (“ <i>Disposizioni per la formazione del bilancio annuale e pluriennale dello Stato</i> ”)	From the 1 st January 2016, according to par. 645 the tax credit for diesel excise is not applied to road truck drivers with vehicles Euro2 or less. The economic and monitoring activities will be made by an ad hoc decree of the Economic and Financial Ministry. Par. 646 states that the savings caused by par. 645 should be used to buy more efficient road trucks (around 15% of savings) and to fund the purchase of regional and local public means of transport (85% of savings).	EFS	160.00
Total EFS direct subsidies in transport				200.00
4	Par. 593 and 594 of Law n. 208 of 28 th December 2015 (“ <i>Disposizioni per la formazione del bilancio annuale e pluriennale dello Stato</i> ”)	According to par. 594, from 1 st January 2017, a fund of € 5 million has been established to help ordinary statute Regions on the border with Austria and with Switzerland to reduce the diesel and gasoline excise duty in the border areas. The Economic and Financial Ministry has to establish an <i>ad hoc</i> Decree to define the ways and share of the division of the fund among the regions involved. At the same time, the previous regime, in which there is a fund linked to the Region near Austria (Veneto), is cancelled by par. 593 (starting to 2017).	EHS	-
Total EHS direct subsidies in transport				-
5	Par. 647 of Stability Law 2016	Contributions to projects aiming to improve the inter-modal chain and decongestions of network, with the realization of new maritime services for the combined transport of goods or the improvement of services on existing routes (departure and arrival in Italian ports) which link Italian or EU ports or European Economic Area. The authorized expenditure is equal to € 45.4 million in 2016, € 44.1 million in 2017 and € 48.9 million in 2018.	Uncertain	45.40
6	Par. 648 of Stability Law 2016	Contributions for intermodal railway transport services on departure and arrival from logistic and portal hubs in Italy. The authorized expenditure is equal to € 20 million for each year in the period 2016 - 2018. Also the financial resources of art. 1, par. 150 of Law n. 190 of 23 rd December 2014 could be used to cover the same scope.	Uncertain	20.00
Total direct subsidies with uncertain environmental effect in transport				65.40
Other EU, national, regional and municipal direct subsidies				to be quantified
Total direct subsidies in transport				265.40

OTHER SUBSIDIES

In this section we include subsidies that we do not classify in previous sections (agriculture, energy and transport), but that display relevant environmental effects. Therefore, we identify and partially quantify environmental subsidies attributable to:

- 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.

Tax Expenditures Direct Subsidies

N°	Law references	Description	Type of subsidy	Financial effect in 2016 (mln €)
1	Paragraph 14, Law 28 th December 2015, n. 208 (“ <i>Disposizioni per la formazione del bilancio annuale e pluriennale dello Stato</i> ”)	Letter c) provides reduced rate of TASI for buildings as commodities (“ <i>For sale buildings as long as they remain on sale and, in any case, are not located; the rate is reduced to 0.1%; municipalities can modify the rate up to 0.25% or, down to zero</i> ”).	EHS	n.a.
2	Paragraphs 98, 99 e 101, Law 28 th December 2015, n. 208 (“ <i>Disposizioni per la formazione del bilancio annuale e pluriennale dello Stato</i> ”)	A tax credit to purchase new instrumental assets as production facilities in areas located in southern regions (Campania, Puglia, Basilicata, Calabria, Sicily, Molise, Sardinia and Abruzzo) from 1 st January 2016 until 31 st December 2019. The amount of the transfer is differentiated according to the business size: 20% for small businesses, 15% for medium businesses, and 10% for large businesses (paragraph 98). In addition, the extension of the contribution exemption is planned for private employers that hire with standard contracts in 2017 as described in paragraphs 178 and 179. For agricultural activities on primary production, fisheries and aquaculture, processing and marketing of agricultural and fishery products and aquaculture the subsidy is granted to purchase new equipment, within the limits and under the conditions fixed by the European legislation.	EHS	617.00

N°	Law references	Description	Type of subsidy	Financial effect in 2016 (mln €)
2		Tax credit is recognized for investments that are part of an initial investment project related to purchase, including leasing, of machineries, plants and equipment for new or existing production facilities. The maximum limit of the tax credit for each eligible investment project is distinguished by business size: the allowance is related to the ratio of total investment cost over the depreciation deducted in the tax period relating to the same categories of goods, same production structure and excluding depreciation of the assets connected with the investment; up to a maximum of € 1.5 million for small businesses, € 5 million for medium-sized businesses and € 15 million for large businesses (For financial coverage, see paragraph 108).		
3	Article 60, Law 28 th December 2015, n. 221 (<i>“Disposizioni in materia ambientale per promuovere misure di green economy e per il contenimento dell’uso eccessivo di risorse naturali?”</i>).	The AEEGSI - in order to guarantee universal access to water- applies the Integrated Water Service Social Tariff. Domestic users that are under the poverty line have access to water in affordable terms. In order to ensure cost coverage, the Authority will define the tariff structure considering consumption level or type of use and determining criteria and modalities to grant the subsidy.	EHS	n.a.
4	Article 18, Decree Law. n. 91/2014 convert into Law n. 116/2014	15% tax credit for expenditure in new equipment that is greater than the average value of the previous five years included in the ATECO Table, section 28. Section 28 includes, for example: 28.21 - Manufacture of ovens, burners and heating systems; 28.29.2 -Manufacture of machinery and equipment for the chemical, petrochemical and oil-related industries (including parts and accessories); 28.92 - Manufacture of mining, quarrying and construction machinery; 28.96 - Manufacture of machinery for the plastics and rubber industry (including parts and accessories).	EHS	n.a.
5	1) Article 4, paragraph 1, and article 6, paragraph 1, Decree Law n. 457/1997; article 1, paragraph 172, Law n. 244/2007; article 2, paragraph 2, Law n. 203/2008 2) Article 6-bis, paragraph 1, Law 30/1998, 27.2.1998	Different measures related to fisheries: A) A credit on IRPEF (article 4, paragraph 1); Tax credit is granted proportionately to the salaries of the crews of fishing firms. B) Contributory tax breaks (article 6, paragraph 1) for fishing firms. Law 244/2007 extended all benefits of article 4 and article 6, paragraph 1 of Decree Law n. 457/1997, within the limit of 80%, to firms specialized in coastal and inland and lagoon fishing. Article. 2, paragraph 2, Law n. 203/2008 fixed these benefits originating from the 2009 tax period. Law 30/98 extended all benefits (tax credit, tax base reduction and tax break) to firms that fish beyond the straits and, within the limit of 70%, to those active in Mediterranean fishing.	EHS	83.10
Total EHS tax expenditures in “other subsidies”				700.10
6	Article 16-bis, paragraph 3, TUIR, modify by article 1, paragraph 48, Law n. 190 2014	36% deduction for entire buildings renovation and restoration for enterprises and building cooperatives that will sell the tenure.	EFS	74.20

N°	Law references	Description	Type of subsidy	Financial effect in 2016 (mln €)
7	Article 1, paragraphs 344 - 347, Law n. 296/2006 extended by article 1, paragraph 48, Law n. 220/2010, article 11, paragraph 2, Decree Law 83/2012; article 14, Decree Law n. 63/2013 converted into Law n. 90/2013 replaced by article 1, paragraph 139, letter b), Law 27 th December 2013, n. 147, modify by article 1, paragraph 47, letter a), Law n. 190 2014; Paragraph 74, Law 28 th December 2015, n. 208 (<i>“Disposizioni per la formazione del bilancio annuale e pluriennale dello Stato”</i>)	65% deduction for various energy-saving interventions for existing buildings of any cadastral category, including rural property.	EFS	972.10
8	Article 15, paragraph 1, letter c-bis), TUIR	19% deduction for veterinary expenditure.	EFS	18.10
9	Article 56, Law 28 th December 2015, n. 221 (<i>“Disposizioni in materia ambientale per promuovere misure di green economy e per il contenimento dell'uso eccessivo di risorse naturali?”</i>)	Provisions on asbestos reclamation - Tax credit is introduced for business income holders that, in 2016, carry out asbestos remediation on goods and production facilities; in the measures of 50% of incurred cost and allocated in three annual parts. The investment must not be less than € 20,000. In addition, a Fund is set up at MATIM to promote reclamation of public buildings, with a budget of € 5.536 million for 2015 and € 6.018 million for 2016 and 2017.	EFS	6.02
10	Article 36, Law 28 th December 2015, n. 221 (<i>“Disposizioni in materia ambientale per promuovere misure di green economy e per il contenimento dell'uso eccessivo di risorse naturali?”</i>)	Provisions to promote waste prevention - Support whether municipalities may provide tariff reductions and exemptions of TARI payment. In specific cases enlisted in letters a) to e) - households with one single member or devoted to seasonal use, structures and areas used for seasonal use, houses where the resident is mostly abroad, rural houses for residential use - adds, with letter e-bis, the possibility to grant reductions and exemptions in waste prevention activities, applying a tariff reduction proportionate to the amount of waste prevented.	EFS	n.a.
11	Article 37, Law 28 th December 2015, n. 221 (<i>“Disposizioni in materia ambientale per promuovere misure di green economy e per il contenimento dell'uso eccessivo di risorse naturali?”</i>)	Waste treatment by aerobic composting - Tariff reduction for urban waste management to non-domestic users that do individual aerobic composting using non-hazardous natural substances – We include aerobic composting plants in agricultural areas.	EFS	n.a.
12	Article 38, Law 28 th December 2015, n. 221 (<i>“Disposizioni in materia ambientale per promuovere misure di green economy e per il contenimento dell'uso eccessivo di risorse naturali?”</i>)	Measures to promote the diffusion of organic waste composting - Encourage (through TARI reduction) compost practices of organic waste exerted directly in-house.	EFS	n.a.
Total EFS tax expenditures in “other subsidies”				1,070.42

N°	Law references	Description	Type of subsidy	Financial effect in 2016 (mln €)
13	Article 1, Law n. 449/97; ex article 16, paragraph 1, Decree Law 4 th June 2013 n. 63, replaced by article 1, paragraph 139, letter d), n. 1, Law 27 th December 2013, n. 147 replaced by article 1, paragraph 47, letter b), Law n. 190, 2014; paragraph 74, Law 28 th December 2015, n. 208 (“ <i>Disposizioni per la formazione del bilancio annuale e pluriennale dello Stato</i> ”)	50% deduction for restoration of existing building assets (ordinary maintenance on common parts of residential buildings, extraordinary maintenance, restoration, conservation and other works provided by article 1, Law no. 449, 1997).	ENS	3,538.00
Total ENS tax expenditures in “other subsidies”				3,538.00
14	Paragraph 320, Law 28 th December 2015, n. 208 (“ <i>Disposizioni per la formazione del bilancio annuale e pluriennale dello Stato</i> ”)	Tax credit for hotel restoration is extended including when the renovation involves an increase in the total volume, provided that it is in accordance with the current regulations. The implementation of this legislation (article 10 of Decree Law n. 83/2014) is provided in the Ministerial Decree 7 th May 2015 (Provisions for assignment of tax credit to tourist-hotel accommodation facilities). Tax credit is recognized for the tax period going from the 1 st June 2014 and following two years; the support grants 30% of the costs incurred for building renovation and demolition of architectural barriers.	Uncertain	n.a.
15	Article 16, paragraph 2, Decree Law 4 th June 2013, n. 63, as modify by conversion Law 3 rd August 2013, n. 90 modify by article 7, paragraph 2-bis, Decree Law 28/03/2014, n. 47, modify by conversion Law 23/05/2014, n. 80 and, finally, by article 1, paragraph 47, letter b), L. 190 del 2014	50% deduction for the purchase furniture and large appliances, energy class not lower than A +, and A for ovens, equipment with an energy label finalized to furnishing the restructured property ex Article 16, Decree Law 63/2013.	Uncertain	201.50
16	Article 21 Decree Law 133/2014 modify by conversion Law 11 th November 2014, n. 164, as modify, finally, by article 1, paragraph 1, Law n. 164 2014	20% IRPEF deduction of the purchase price with a maximum expense of € 300.000, for property purchased for leasing purposes.	Uncertain	16.10
17	Article 7, paragraph 1, letter b), Law n. 488/99; article 2, paragraph 11, Law n. 191/09	Reduced rates to private housing repair and renovation that: (a) are characterized by high labour intensity; (b) are largely made directly for final consumers; (c) are predominantly locally located and are unlikely to generate competition distortions.	Uncertain	1,416.00
18	Paragraph 56, Law 28 th December 2015, n. 208 (“ <i>Disposizioni per la formazione del bilancio annuale e pluriennale dello Stato</i> ”)	50% IRPEF reduction of the cost incurred in paying the VAT from the gross tax related to the purchase, within the 31 st December 2016, of residential units of label energy A or B according to current legislation, issued by the building companies. The deduction is equal to 50% of the payable tax on the purchase and is divided into ten parts from the first fiscal year and the following nine tax periods.	Uncertain	n.a.

N°	Law references	Description	Type of subsidy	Financial effect in 2016 (mln €)
19	Paragraph 82, Law 28 th December 2015, n. 208 ("Disposizioni per la formazione del bilancio annuale e pluriennale dello Stato")	19% IRPEF deduction of the costs related to financial lease contract: fees and related charges, for an amount up to € 8.000 and buying purchase cost of the property at the time of exercising the purchasing final option for the lease, for an amount up to € 20.000; where the expenses are incurred by young people under 35, with a total income up to € 55.000 s at the conclusion of financial lease and non-holders of property rights on housing real estate. The deduction shall be subject to the same conditions as the interest deduction of the mortgages for the main house. Over 35 individuals, subject to the abovementioned conditions, the maximum deductible IRPEF is halved (maximum € 4.000 for the fees and € 10.000 for purchase cost).	Uncertain	n.a.
Total tax expenditures with uncertain environmental effect in "other subsidies"				1,633.60
Other EU, national, regional and municipal tax expenditures				To be quantifies
Total tax expenditures in "other subsidies"				6,942.12

n.a. = not available

Tax Expenditures

Direct Subsidies

N°	Law references	Description	Type of subsidy	Financial effect in 2016 (mln €)
1	Article 23, Law 28 th December 2015, n. 221 ("Disposizioni in materia ambientale per promuovere misure di green economy e per il contenimento dell'uso eccessivo di risorse naturali?")	Program agreements and incentives for the purchase of products derived from post-consumer materials or waste recovery and materials resulting from disassembly of complex products: a. Stipulation of specific agreements and contracts b. Incentives c. Purchase regulations d. Definition of scores and percentages	EFS	n.a.
2	Article 39, Law 28 th December 2015, n. 221 ("Disposizioni in materia ambientale per promuovere misure di green economy e per il contenimento dell'uso eccessivo di risorse naturali?")	Experimental system of the duration of 12 months to recover specific types of packaging intended for food use. Creating and promoting the vacuum system for packaging containing beer or mineral water served to the public in hotels, resorts, restaurants, bars and other consumption places. The MATTM foresee the determination of incentive forms and application modalities, as well as guarantee values for each type of packaging.	EFS	n.a.
3	Article 45, Law 28 th December 2015, n. 221 ("Disposizioni in materia ambientale per promuovere misure di green economy e per il contenimento dell'uso eccessivo di risorse naturali?")	Measures to increase separate collection and reduce the amount of non-recycled waste - Promote incentive measures for municipalities that implement waste prevention measures.	EFS	n.a.

N°	Law references	Description	Type of subsidy	Financial effect in 2016 (mln €)
4	Article 45, Law 28 th December 2015, n. 221 (“ <i>Disposizioni in materia ambientale per promuovere misure di green economy e per il contenimento dell’uso eccessivo di risorse naturali?</i> ”)	Measures to increase separate waste collection and reduce the amount of non-recycled waste - Promote incentive measures for municipalities that implement waste prevention measures.	EFS	8.10
5	Article 45, Law 28 th December 2015, n. 221 (“ <i>Disposizioni in materia ambientale per promuovere misure di green economy e per il contenimento dell’uso eccessivo di risorse naturali?</i> ”)	Measures to increase separate waste collection and reduce the amount of non-recycled waste - Promote incentive measures for municipalities that implement waste prevention measures.	EFS	n.a.
Total EFS direct subsidies in “other subsidies”				8.10
6	Article 61, Law 28 th December 2015, n. 221 (“ <i>Disposizioni in materia ambientale per promuovere misure di green economy e per il contenimento dell’uso eccessivo di risorse naturali?</i> ”)	Legal provisions concerning the Integrated Water Service - AEEGSI adopt directives for non-detachment of service for defaulted users, ensuring the minimum vital amount of water needed to meet the basic users supply needs. The Authority for Electricity, Gas and Water System defines procedures for managing the defaulting system, ensuring the tariff coverage of the related costs.	Uncertain	n.a.
Total direct subsidies with uncertain environmental effect in “other subsidies”				n.a.
Other EU, national, regional and municipal direct subsidies				To be quantified
Total direct subsidies in “other subsidies”				8.10

n.a. = not available

REDUCED VAT

An important part of EHS includes benefits from the reduced 4% and 10% VAT rates (compared to the 22% ordinary rate).

The reduced VAT, granted to specific goods and services, distorts the price effect that would encourage a more efficient consumption. The effect is environmentally harmful as much as relevant are the environmental effects related to the consumption and production of related goods and services.

On the other hand, from a regulatory point of view, VAT tax benefits, as specified in D.P.R. 633/1972, could be not considered as subsidies but they display a price effect on subsidized goods making them economically worthy of further analysis and investigation. At the international level, this hypothesis is confirmed by the attempts to reform these tax benefits, in particular when related to subsidized goods.

The reduced VAT measures listed in this Catalogue are a subset of existing VAT tax benefits and are those that potentially exert relevant environmental impacts.

Decision-makers that are willing to approach potential reforms on VAT reductions should take into account the EU Directive on VAT harmonization and the disruptive effect that it would have on such an agreement reached at the European level after tiring and difficult negotiations.

Reduced VAT 4%

Reduced VAT 10%

Table A, part II of DPR n. 633/72 (reduced VAT rate of 4%)

N°	Items	Type of subsidy	Financial effect in 2016 (mln €)
1	19) Fertilizers as Law n. 748 of 19 th October 1984: applications for both general fertilizers and organisms useful for biological agriculture	a) EHS for generic fertilizers	a) 447.84
		b) EFS for organisms useful for biological agriculture	b) 24.62
2	21-bis) Rural buildings for residential use of land owner or those who are involved in the cultivation or livestock ranching or other similar activities sold by building companies. The building can also not be finished yet, but the original use shall be unchanged according to the conditions of art 9, par 3, letters c) and e) of Decree Law n. 557 of 30 th December 1993, converted, with modifications, by Law n. 133 of 26 th February 1994.	EFS	n.a.
3	21) Building companies selling residential buildings, luxury estates excluded, even if not finished yet conditioned on being the main residential house of the buyer.	EHS	n.a.
4	39) Services linked to tender agreements relative to the construction of buildings according to art. 13 of Law 2 nd July 1949, n. 408, and modifications, referred to agents involved in building activities with selling scope, including buildings from consortia including the case where the property is undivided, or those who are in line with the requirements of number 21) or 21-bis).	EHS	n.a.

Table A, part III of DPR n. 633/72 (reduced VAT rate of 10%)

N°	Items	Type of subsidy	Financial effect in 2016 (mln €)
5	81) Water, mineral waters (ex 22.01)	EHS	880.84
6	103) Electricity for domestic use	EHS	1,782.16
7	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.	EHS	n.a.
8	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.	EHS	n.a.
9	106) Petroleum products for agricultural use and for inland fishing	EHS	233*
10	110) Plant protection products	EHS	191.23
11	113) Mineral and chemical-industrial products and additives for animal feeding	EHS	25.91
12	127-bis) Natural gas for combustion in civil uses, limited to 480 cubic meters per year; dispensing liquefied petroleum gas for domestic use as cooking food and for the production of hot water, liquefied petroleum gas containing or intended to be placed in cylinders of 10 to 20 kg at any stage of commercialization	EHS	n.a.
13	127-ter) Leases of real estate built with the aim of selling them	EHS	n.a.
14	127-undecies) Non-luxury tenures, according to the criteria set out in the DMLP 2 nd August 1969, published in Official Gazette n. 218 August 27 th , 1969, even if assigned to members of building cooperatives and their consortia, even if not finished yet, provided that the original destination stays the original one, unless the conditions referred in par 21 of the second part of the table are not met; buildings or parts of buildings, other than the aforementioned houses for residential uses, as in article 13, Law 2 nd July 1949 n. 408, and following revisions and integrations, even if not finished yet, provided that the original destination stays the original one, transferred from building companies.	EHS	n.a.
15	127-quaterdecies) Services included in relevant tendering contracts: a) housing buildings (referred to in 127- undecies) and b) to carry out recovery operations referred in article 31, Law 5 th August 1978, n. 457, except those referred in points (a) and (b) of the first subparagraph	a) EHS b) EFS	n.a.
16	127-duodevicies) Leases of houses manufactured by the building companies or by other companies that carried out the operations as referred to in article 3, paragraph 1, letters c), d) and f) of the Consolidated Law on Construction referred to DPR 6 th June 2001, n. 380, and residential buildings leases intended for social housing as defined by the DMI, April 22 nd , 2008, published in the Official Gazette n. 146, 24 th June 2008.	EFS	n.a.

* Data, referring only to agriculture, are calculated considering year 2014.

n.a. = not available

FINDINGS - SUMMARY TABLE

The following table depicts a summary of current quantified subsidies (both tax expenditures and direct subsidies) and their respective classification based on the environmental impact (EHS, EFS, ENS or uncertain) for each identified sector.

It is important to remember that, in this first version of the Catalogue, there are some environmental relevant items identified but not quantified yet as well as some areas of subsidies still to be identified, for instance subsidies included in the European, national and local spending bills.

Therefore, the amounts should be taken as partial. We are looking forward to update our Catalogue, since it will be published every year as required in Law n. 221/2015.

Estimate of total amount of subsidies by sectors and typologies (million of euro)

Type of subsidies	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
Reduced 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

Type of subsidies	EHS	EFS	ENS	Uncertain	Total (mln €)
Reduced 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	24.62	n.a.	n.a.	3,113.14
TOTAL					
Tax expenditures	15,711.26	1,185.49	3,538.00	1,633.60	22,068.35
Direct subsidies	456.19	14,493.69	n.a.	4,133.19	19,083.07
To be identified*	n.a.	n.a.	n.a.	n.a.	n.a.
Total (mln €)	16,167.45	15,679.18	3,538.00	5,766.79	41,151.42

n.a. = not available

* “to be identified” means that, currently, not all subsidies are included in this first edition, such as several subsidies in national, regional or European spending bills or other national, regional or European direct subsidies.

As per our first estimate, EHSs and EFSs amount respectively to 16.2 and 15.7 Billion Euro. In the set of EHSs, in our first estimate FFSs (Fossil Fuel Subsidies) represent 12.0 Billion Euro.

REFERENCES - BIBLIOGRAPHY

AEEGSI (2015), Indagine conoscitiva sui prezzi finali dell'energia elettrica e del gas naturale - Memoria del 21 aprile 2015 per l'audizione presso la 10a Commissione Industria, Commercio e Turismo del Senato della Repubblica

Aldy J.E. (2014), "Money for nothing: the case for eliminating US fossil fuel subsidies", RFF publishing

Amici della Terra (2006), "I costi ambientali e sociali dei trasporti. Quinto Rapporto", Ferrovie dello Stato – Direzione Centrale delle Relazioni Esterne

Amici della Terra (2008), Studio riguardante la valutazione dei costi esterni evitati dal trasporto marittimo delle merci rispetto al trasporto su strada, rapporto Amici della Terra, Roma, 30 giugno 2008

ARPA Lombardia (2008), De Martini A. e altri, *Ammoniaca in atmosfera. Misure e valutazioni modellistiche*, progetto PARFIL III annualità

Asian Development Bank (2015), Fossil Fuel Subsidies in Indonesia - Trends, Impacts, and Reforms

Aspromonte D., Molocchi A. (2014), *Ambiente chiama. Banca risponde?* Nuova Energia, bimestrale dello sviluppo sostenibile, n. 4, 2014

Assemblée Nationale (2016), "Projet de loi pour la reconquete de la biodiversité, de la nature et des paysages"

Asvis (2016), "L'Italia e gli Obiettivi di Sviluppo Sostenibile", Asvis

Atlantic Consulting (2009), *LPG's Carbon Footprint Relative to Other Fuels. A Scientific Review*

Baldassarri M. (2012), "Il mistero della finanza pubblica italiana", MEF

Barany A., Grigonyte D. (2015), "Measuring Fossil Fuel Subsidies" – Economic Analysis from European Commission's Directorate General For Economic and Financial Affairs

Bassano C. (2012), *Decarbonizzazione e desolfurazione del syngas proveniente dal processo di gassificazione per produrre idrogeno e tecnologie CTL*, tesi di dottorato in Ingegneria chimica dell'ambiente e della sicurezza

Battisti C. (2004), Frammentazione ambientale, connettività, reti ecologiche. Un contributo teorico e metodologico con particolare riferimento alla fauna selvatica. Provincia di Roma, Assessorato alle politiche ambientali, Agricoltura e Protezione civile pp

Beaton C., Christensen L. T., Lontoh L., Nugroho H. (2015), An Input to Indonesian Fuel Price System Reforms. A review of international experiences with fuel pricing systems, International Institute for Sustainable Development/Global Subsidies Initiative

Beaton C., Christensen L. T., Lontoh L. (2016), International Experiences With LPG Subsidy Reform. GSI Report. International Institute for Sustainable Development

Bianchi D., Zanchini E. (2015), "Ambiente Italia 2015 – Gli indicatori per capire l'Italia. Analisi e idee per uscire dalla crisi", Legambiente

Boer R., Gelang R. G. (2013), Low carbon development: Indonesia, Center for Climate Risk and Opportunity Management Bogor Agriculture University-Indonesia/Center for Research on Energy Policy Institut Teknologi Bandung-Indonesia

- Bottarelli S.(2014), “Tra le riforme mancate e le riforme attuate: da Vanoni alla riforma degli anni ‘70”, Quaderni n. 434, Università di Siena
- Bougette P., Charlier C. (2014), “Renewable Energy, Subsidies, and the WTO: Where Has the ‘Green’ Gone?”, Nota di Lavoro 88.2014, Milan, Italy: Fondazione Eni Enrico Mattei
- Bridel A., Lontoh L. (2014), Lessons Learned: Malaysia’s 2013 Fuel Subsidy Reform, International Institute for Sustainable Development/Global Subsidies Initiative
- CAFE (2005a), AEA Technology, *Methodology for the Cost-Benefit analysis for CAFÉ, Volume 2: Health Impact Assessment*, Service Contract for Carrying out Cost-Benefit Analysis of Air Quality Related Issues, in particular in the Clean Air for Europe (CAFE) Programme, February 2005
- CAFE (2005b), AEA Technology-EMRC-IER, *Damages per tonne emission of PM2.5, NH3, SO2, NOx and VOCs from each EU25 Member State (excluding Cyprus) and surrounding seas*, Service Contract for Carrying out Cost-Benefit Analysis of Air Quality Related Issues, in particular in the Clean Air for Europe (CAFE) Programme, March 2005
- CASES (2008a), R. Porchia (FEEM) e altri, *Development of a set of full cost estimates of the use of different energy sources and its comparative assessment in EU Countries, Part1: Review of Literature on National Estimates of Private and External Costs of Electricity generation in EU Countries*, Cost Assessment of Sustainable Energy Systems (CASES), a Project of the 6th Framework Programme, February 2008
- CASES (2008b), R. Porchia (FEEM), A. Bigano (FEEM), *Development of a set of full cost estimates of the use of different energy sources and its comparative assessment in EU countries, Part 2: Full Costs: Levelised European Estimates Results and Assessment*, Cost Assessment of Sustainable Energy Systems (CASES), a Project of the 6th Framework Programme, September 2008
- Casier L., Fraser R., Halle M., Wolfe R. (2013), Shining a Light on Fossil Fuel Subsidies at the WTO: How NGOs Can Contribute to WTO Notification and Surveillance, ENTWINED and International Institute for Sustainable Development
- Casier L, Beaton C. (2015), Fossil-fuel Subsidy Reform and Higher Fuel Prices in Indonesia: Impacts and expectations, International Institute for Sustainable Development/Global Subsidies Initiative
- CE Delft (2010), D. Bennink et al., *VME Energy Transition Strategy- External Costs and Benefits of Electricity Generation*, Report Delft, January 2010
- CESI (2004a), CESI/STA-Università degli studi di Parma, progetto GAME-VESTER *Valutazione delle esternalità degli assetti energetici - WP 1-MLS 1.1 Individuazione delle tipologie di indicatori da considerare ai fini delle valutazioni* Rapporto RSE A4-524149
- CESI (2004b), CESI/STA-Etalconsult, progetto GAME-VESTER *Valutazione delle esternalità degli assetti energetici - WP 1-MLS 1.2 Individuazione dei metodi di quantificazione degli indicatori scelti*
- CESI (2005), Girardi, Crapanzano, Brambilla, CESI/STA-Etalconsult, progetto GAME—VESTER *Valutazione delle esternalità degli assetti energetici - WP 1-MLS 1.3, Metodi per la monetizzazione degli impatti (metodologie per la monetizzazione dei danni esterni legati a scenari di teleriscaldamento)*. Rapporto RSE A5-022943
- Charap J., Ribeiro da Silva A., Rodriguez P. (2013), Energy subsidies and energy consumption—a cross-country analysis, IMF, WP 13/112
- Charnovitz S., Fischer C. (2014), “Canada – Renewable Energy: Implications for WTO Law on Green and Not-so-Green Subsidies”, Nota di Lavoro 94.2014, Milan, Italy: Fondazione Eni Enrico Mattei
- Christensen L. T. (2015), “Country Case Studies on Fossil Fuel Subsidy Reform”, International Institute for Sustainable Development, 2015 <http://ffsr.org/wp-content/uploads/2015/08/case-study-fossil-fuel-subsidy-reform3.pdf>

- Clements B., Jung H. S., Gupta S. (2007), Real and distributive effects of petroleum price liberalization: the case of Indonesia. *The Developing Economies*, 45(2), 220-237
- Clements B., Coady D., Fabrizio M. S., Gupta S., Alleyne M. T. S. C., Sdravovich M. C. A. (2013). *Energy subsidy reform: lessons and implications*. Washington: International Monetary Fund
- Clò S., Vendramin E. (2012), Is the ETS still the best option? Why opting for a carbon tax, Istituto Bruno Leoni Special Report http://www.brunoleonimedia.it/public/Papers/IBL-Special_Report-ETS.pdf
- Coady D. P., Parry I., Sears L., Shang B. (2015a), “How Large Are Global Energy Subsidies?”, IMF WP 15/105
- Coady, D. P., Flamini, V., & Sears, L. (2015b), The Unequal Benefits of Fuel Subsidies Revisited: Evidence for Developing Countries, IMF WP 15/250
- Council of European Union (2006), Presidency Conclusions of the Brussels European Council (23/24 March 2006), www.consilium.europa.eu/ueDocs/cms_Data/docs/pressData/en/ec/89013.pdf
- Council of European Union (2012), Raccomandazione del Consiglio sul programma nazionale di riforma 2012 dell'Italia e che formula un parere del Consiglio sul programma di stabilità dell'Italia 2012-2015, COM (2012) 318 final/2, http://ec.europa.eu/europe2020/pdf/nd/csr2012_italy_it.pdf
- Council of European Union (2013), Raccomandazione del Consiglio sul programma nazionale di riforma 2013 dell'Italia e che formula un parere del Consiglio sul programma di stabilità dell'Italia 2012-2017, COM (2013) 362 final, http://ec.europa.eu/europe2020/pdf/nd/csr2013_italy_it.pdf
- Council of European Union (2014), Raccomandazione del Consiglio sul programma nazionale di riforma 2014 dell'Italia e che formula un parere del Consiglio sul programma di stabilità 2014 dell'Italia, COM(2014) 413 final, http://ec.europa.eu/europe2020/pdf/csr2014/csr2014_italy_it.pdf
- CRESME (2015), “Il recupero e la riqualificazione energetica del patrimonio edilizio: una stima dell'impatto delle misure d'incentivazione, ottobre 2015”. Terza edizione n. 83/2 – Centro ricerche economiche sociali di mercato per l'edilizia e il territorio
- CRPA (2011), Condor R., Valli A., *Emissioni nazionali di ammoniaca e scenari emissivi derivanti dalla fase di spandimento agronomico e all'uso dei fertilizzanti azotati in Italia*. Centro Ricerche Produzioni Animali, maggio 2011
- D'Appolonia (2015), Studio sull'impatto socio ambientale del trasporto marittimo in Italia: una comparazione con le altre modalità di trasporto, presentazione slide, ottobre 2015
- Danish Environmental Protection Agency (2014), *Environmental Classification of ships*, Environmental project No. 1579, 2014
- Davis L. W. (2016), “The Environmental Cost of Global Fuel Subsidies”, Energy Institute at Haas, WP 267
- DECC (2015), “Review of the Feed-in-Tariffs Scheme”, Department of Energy and Climate Change - UK, DECC publishing
- Del Granado F. J. A., Coady D., Gillingham R. (2012). The unequal benefits of fuel subsidies: A review of evidence for developing countries. *World Development*, 40(11), 2234-2248
- Direttiva 2009/28/CE del 23 aprile 2009 sulla Promozione dell'uso dell'Energia da Fonti Rinnovabili
- Direttiva 2012/27/UE del Parlamento Europeo e del Consiglio del 25 ottobre 2012 sull'Efficienza Energetica, che modifica le direttive 2009/125/CE e 2010/30/UE e abroga le direttive 2004/8/CE e 2006/32/CE
- Dobson A., Ralls K., Foster M., Soulé M.E., Simberloff D., Doak D., Estes J.A., Mills L.S., Mattson D., Dirzo R., Arita H., Ryan S., Norse E.A., Noss R.F., Johns D. (1999), *Corridors: reconnecting fragmented*

landscapes. In: Soulé M.E., Terborgh J. (eds.). *Continental Conservation. The Wildland Project*. Island press, Washington D.C.: 129-170

E-PRTR (2016), *European Pollutant Release and Transfer Register*, <http://prtr.ec.europa.eu/#/home>

Ebeke M. C., Ngouana M. C. L. (2015), *Energy Subsidies and Public Social Spending: Theory and Evidence* (No. 15-101). International Monetary Fund

Ecofys (2014), Final Report for the European Commission, "*Subsidies and Costs of EU Energy*", EC

ECFIN Economic Brief (2015), "Measuring Fossil Fuel Subsidies", European Commission

EDF (2013), *The World's Carbon Markets: A case study guide to emissions trading*. Retrieved from IETA website: <http://www.ieta.org/worldscarbonmarkets>

EEA (1996), *Environmental taxes — Implementation and environmental effectiveness*, European Environment Agency, Copenhagen <http://www.eea.europa.eu/publications/92-9167-000-6>

EEA (2000), *Environmental taxes: Recent developments in tools for integration*, European Environment Agency, Copenhagen http://www.eea.europa.eu/publications/Environmental_Issues_No_18

EEA (2004), *Energy subsidies in the European Union: a brief overview*, EEA Technical report No 1/2004, European Environment Agency, Copenhagen, http://reports.eea.eu.int/technical_report_2004_1/en

EEA (2005), *Market-based instruments for environmental policy in Europe*, EEA Technical report No. 8/2005, European Environment Agency, Copenhagen, http://www.eea.europa.eu/publications/technical_report_2005_8

EEA (2006), *Using the market for cost-effective environmental policy Market-based Instruments in Europe*, EEA Report No.1/2006, European Environment Agency, Copenhagen http://www.eea.europa.eu/publications/eea_report_2006_1

EEA (2007), *Size, structure and distribution of transport subsidies in Europe*, EEA Technical report No 3/2007, European Environment Agency, Copenhagen

EEA (2008), *Indicator EN35, External costs of electricity production*, European Environment Agency, Copenhagen, <http://www.eea.europa.eu/data-and-maps/indicators/en35-external-costs-of-electricity-production-1#toc-0>

EEA (2010a), *The European Environment: State and Outlook 2010 – A Synthesis*, European Environment Agency, Copenhagen

EEA (2010b), *Further Environmental Fiscal Reform – Illustrative Potential in Ireland*, EEA Staff Position Note 10/01, Prepared for the Environment Tax Reform Workshop (Dublin, October 28th and 29th 2013), European Environment Agency, Copenhagen

EEA (2011a), Adams M. (EEA project manager), Holland M. (EMRC), Wagner A. (AEA Technology), Davies T. (AEA technology), Spadaro J. (SERC), *Revealing the costs of air pollution from industrial facilities in Europe*, EEA Technical Report n. 15, European Environment Agency, Copenhagen

EEA (2011b), *Environmental tax reform in Europe: implications for income distribution*, EEA Technical report No 16/2011, European Environment Agency, Copenhagen

EEA (2011c), *Environmental tax reform in Europe: opportunities for eco-innovation*, EEA Technical report No 17/2011, European Environment Agency, Copenhagen

EEA (2011d), *Environmental Fiscal Reform – Illustrative Potential in Italy*, EEA Staff Position Note 11/01, Prepared for conference "Environmentally-related taxation and fiscal reform" (Roma, December 15th 2011), European Environment Agency, Copenhagen

EEA (2012), Environmental Fiscal Reform – Illustrative Potential in Spain, EEA Staff Position Note 12/01, Prepared for a seminar on Environmental Fiscal Reform (Madrid, September 13th 2012), European Environment Agency, Copenhagen

EEA (2013), Environmental Fiscal Reform – Illustrative Potential in Portugal, EEA Staff Position Note 13/01, Prepared for the conference “Green taxation: a contribution to sustainability” (Lisbon, April 30th 2013), European Environment Agency, Copenhagen

EEA (2014a), Adams M. (EEA project manager), Holland M. (EMRC), Spadaro J. (SERC), Misra A. e Pearson M. (Ricardo-AEA), Costs of air pollution from European industrial facilities 2008–2012 - an updated assessment, EEA Technical Report n. 20, 2014, European Environment Agency, Copenhagen

EEA (2014b), Resource-efficient green economy and EU policies, EEA Report No 2/2014, European Environment Agency, Copenhagen

EEA (2015a), *SOER 2015 — The European environment — state and outlook 2015*, European Environment Agency, Copenhagen (<http://www.eea.europa.eu/soer>) accessed 19 October 2015

EEA (2015b), Evaluating 15 years of transport and environmental policy integration. TERM 2015: Transport indicators tracking progress towards environmental targets in Europe, EEA Report - No 7/2015, European Environment Agency, Copenhagen

EEA (2016), Environmental taxation and EU environmental policies, EEA Report No 17/2016, European Environment Agency, Copenhagen

ENEA (2015), M.R. Viridis e M. Gaeta, Gli impatti energetici e ambientali dei combustibili nel settore residenziale

Entec UK limited (2002), “Quantification of Emissions from Ships associated with ship movements between port in the European Community”, EC Service contract, July 2002

Entec UK limited (2005), “Ship emissions: assignment, abatement and market-based instruments”, EC Service contract

Environmental Audit Committee of the House of Commons (2013), Report on Energy subsidies, Ninth Report of Session 2013–14, Volume I, 28 November 2013

EPA (2001), “Subsidies for Pollution Control”, US Environmental Protection Agency, EPA publishing

Ernst and Young (2015), Mexico’s President presents economic plan for 2016 to the lower House of Congress impacting the Energy Segment, EY Publishing

Eucar, JRC, Concawe (2007), Well to Wheel Analysis of future automotive Fuels and Powertrains in the EU context, Version 2c, March 2007

European Commission (1995), *Towards a fair and Efficient Pricing in Transport. Policy Options for Internalizing external Costs of Transport in the European Union*, Green Paper to the Commission, COM (95) 691

European Commission (2001), Comunicazione della Commissione al Consiglio, al Parlamento europeo, al Comitato economico e sociale e al Comitato delle regioni. Sesto programma di azione per l’ambiente della Comunità europea “Ambiente 2010: il nostro futuro, la nostra scelta”, [COM\(2001\) 31](#) def. - Non pubblicato nella Gazzetta ufficiale

European Commission - DG ENV (2002), *The Costs and Benefits of reduction of Volatile Organic Compounds by Paints*, DG ENV, Air and Noise Unit, 2 may 2002

European Commission (2004), Comunicazione della Commissione al Parlamento Europeo “Incentivare le tecnologie per lo sviluppo sostenibile: piano d’azione per le tecnologie ambientali nell’Unione europea”,

COM(2004) 38 definitivo

European Commission (2005), Comunicazione della Commissione Europea “Attuare il programma comunitario di Lisbona: un quadro politico per rafforzare l’industria manifatturiera dell’UE – verso un’impostazione più integrata della politica industriale”, COM (2005), 474 definitivo

European Commission (2011), Comunicazione della Commissione al Parlamento Europeo, al Consiglio, al Comitato economico e sociale europeo e al Comitato delle Regioni. Tabella di marcia verso un’Europa efficiente nell’impiego delle risorse, COM (2011), 571

European Commission Staff Working Document (2013), *Impact Assessment Accompanying the document Proposal for a Directive on the deployment of alternative fuels infrastructure*, Brussels, 24.1.2013, SWD(2013) 5 final

European Commission, Directorate-General for Regional and Urban policy (2014), Sartori D. e altri, *Guide to Cost-Benefit Analysis of Investment Projects. Economic appraisal tool for Cohesion Policy 2014-2020*, Publications Office of the European Union, December 2014

EXIOPOL (2009a), Fantke P. e Wagner S., *Report on Unit Values for Pesticides*. Integrated project funded by the 6th Framework Programme of the European Commission, Project Deliverable DII.2.c-2, University of Stuttgart - Institute of Energy Economics and the Rational Use of Energy - Department of Technology Assessment and Environment (TFU), December 2009

EXIOPOL (2009b), *Final report on externalities associated with waste types and waste management practices and technologies used in the EU and selected non-EU countries and report on disamenity impacts in the UK*, integrated project funded by the 6th Framework Programme of the European Commission, Deliverable n. D II.5-b.2, November 2009

EXIOPOL (2010), Müller W., Preiss P., Klotz V., Friedrich R., *External Cost Values for EE SUT Framework, Final report providing external cost values to be applied in an EE SUT framework*, integrated project funded by the 6th Framework Programme of the European Commission, Deliverable III.1.b-2, IER University Stuttgart, March 2010

ExternE (1995), European Commission DGXII, *Externalities of Energy* voll. 1-6, EUR 16520-16525, Bruxelles

ExternE (1997a), FEEM-IEFE-AEM, *ExternE National Implementation Italy*, Final report, FEEM, October 1997

ExternE (1997b), R. Friedrich, P. Bickel, W. Krewitt *External Costs of Transport in ExternE*, IER Report, Stuttgart, may 1997

ExternE (1998a), *Externalities of Energy, Vol 7* – M. Holland et al (eds), Methodology 1998 update, European Commission DG XII, Bruxelles 1998

ExternE (1998,b), *Externalities of Energy, Vol. 8, Global Warming Damages*, European Commission DG XII, Bruxelles, 1998

ExternE (1998,c), *Externalities of Energy, Vol. 9, Fuel Cycles for Emerging and End-Use Technologies, Transport and Waste*, European Commission DG XII, Bruxelles, 1998

ExternE (2001), R. Friedrich and P. Bickel, *Environmental Costs of Transport*, Springer-Verlag, Berlin, 2001

ExternE (2005), Bickel P, Friedrich R., *Externalities of Energy, Methodology update*

ExternE-Pol (2005), PSI-IER-VITO, *Externalities of Energy, Extension of the accounting framework and policy application, final report on new energy technologies*, 15 July 2015

Fanelli T., Artale V., Caminiti N.M., Manna C., Clarich M., Ortis A., Silvestrini G., Testa F. (2013), *Climate change/Innovare i meccanismi?, Idee per lo sviluppo sostenibile*, ENEA, Roma

- FAO (2013), *Organic Agriculture: African experiences in resilience and sustainability*, FAO publishing
- Fay M., Hallegatte S., Vogt-Schilb A., Rozenberg J., Narloch U. e Kerr T. (2015), *Decarbonizing Development: Three Steps to a Zero-Carbon Future*. Climate Change and Development. World Bank, Washington, DC
- FFSR (2015a), Friends of Fossil Fuel Subsidy Reform, “*Fossil Fuel Subsidy Reform Communiqué*”, Available from www.ffsr.org
- FFSR (2015b), Friends of Fossil Fuel Subsidy Reform, “*Governments Call for the Removal of Harmful Fossil-Fuel Subsidies?*”. Press Release
- Fischer C., Toman, M. (2000), “*Environmentally and economically damaging subsidies: concepts and illustrations*”, Climate Change Issues Brief No. 14, Resources for the Future, Washington DC
- Fischer C. (2016), “*Environmental Protection for Sale: Strategic Green Industrial Policy and Climate Finance*”, Nota di Lavoro 31.2016, Milan, Italy: Fondazione Eni Enrico Mattei
- Fontana M., Ascari S. (1998), *I costi esterni di inceneritori e discariche di rifiuti solidi urbani*, in *Economia delle fonti di energia e dell'ambiente*, n. 2, 1998
- Fontana M., Molocchi A. (2002), “*Fisco e pedaggi per ridurre i costi del trasporto*”. Bollettino Economico dei Trasporti di Federtrasporto n.12
- Fontana M. (2005), *La valutazione economica dell'ambiente*, EGEA, Milano
- Freund C., Wallich C. (1997), Public-Sector Price Reforms in Transition Economies: Who Gains? Who Loses? The Case of Household Energy Prices in Poland. *Economic development and cultural change*, 46(1), 35-59
- G20 (2015), G20 Country Progress Reports on the G20 Commitment to Rationalize and Phase Out Inefficient Fossil Fuel Subsidies September 2015 <http://www.g20.utoronto.ca/2015/Summary-of-Progress-Reports-on-the-Commitment-to-Rationalize-and-Phase-Out-IFFS.pdf>
- G20 Energy Ministers' Meeting, Istanbul, 2nd October 2015, <http://www.g20.utoronto.ca/2015/Update-on-Recent-Progress-in-Reform-of-IFFS-that-Encourage-Wasteful-Consumption.pdf>
- G20 (2016a), China's efforts to phase out and rationalise its inefficient fossil-fuel subsidies A report on the G20 peer review of inefficient fossil-fuel subsidies that encourage wasteful consumption in China, G20 China 2016
- G20 (2016b), The United States' efforts to phase out and rationalise its inefficient fossil-fuel subsidies A report on the G20 peer-review of inefficient fossil-fuel subsidies that encourage wasteful consumption in the United States, G20 China 2016
- Galeotti M., Lanza A. (2015), Tassare la CO₂, IEF E Bocconi e QualEnergia
- GIZ (2015), Climate and Biodiversity. Protection in Indonesia Activities implemented by GIZ as part of the International Climate Initiative (IKI)
- Governatori M. (2015), Intervento alla Settima conferenza nazionale dell'efficienza energetica degli Amici della Terra, AIGET
- Green Fiscal Policy Network website: www.greenfiscalspolicy.org
- GSE (2016a), La valutazione delle ricadute economiche e occupazionali dello sviluppo delle fonti energetiche rinnovabili in Italia, GSE
- GSE (2016b), Scenari di evoluzione del «contatore FER» definito dal DM 23/6/2016 Evoluzione del costo indicativo annuo e del costo indicativo annuo medio delle fonti rinnovabili non fotovoltaiche, GSE

GSE (2016c), Il contatore degli oneri delle fonti rinnovabili. Il “costo indicativo cumulato annuo degli incentivi” riconosciuti agli impianti alimentati da fonti rinnovabili diversi da quelli fotovoltaici, GSE

GSE (2016d), Rapporto Attività 2015, GSE

GSE (2016e), Bilancio consolidato e Bilancio di esercizio 2015, GSE

Gupta S., Miranda K., Parry I. (1995), Public expenditure policy and the environment: a review and synthesis. *World Development*, 23(3), 515-528

Gupta S., Clements B. J., Baldacci E., Mulas-Granados C. (2002), Expenditure composition, fiscal adjustment, and growth in low-income countries

Handrich L. (2016), Concept of a low carbon development strategy for Ukraine. Agenda for investment and economic modernization, DIW econ GmbH

HEATCO (2006), Developing Harmonised European Approaches for Transport Costing and Project Assessment (HEATCO), Deliverable n. 5: P. Bickel (et al.), *Proposal for Harmonised Guidelines*, IER, Germany, Stuttgart, 2006

Henle K., Davies K.F., Kleyer M., Margules C., Settele J. (2004), Predictors of species sensitivity to fragmentation. *Biodiversity and Conservation*, 13: 207-251

HLG (2007), Third Report of the High Level Group on Competitiveness, Energy and the Environment. Contributing to an integrated approach on Competitiveness, Energy and Environment Policies. Helping energy intensive industries adapt to the energy and climate change challenges; incentives, innovation and technology policies. February 2007

Hogg D., Elliott T., Elliott L., Ettlinger S., Chowdhury T., Bapasola A., Norstein H., Emery L., Andersen M. S., ten Brink P., Withana S., Schweitzer J.P., Illes A., Paquel K., Mutafoğlu K., Woollard J., Ventosa I. P., Sastre S., Campos L. (2016), Study on assessing the environmental fiscal reform potential for the EU-28. Final report, Eunomia, Aarhus University, IEEP, ENT for European Union, 2016

Houde S., Aldy J. E. (2014), Belt and suspenders and more: the incremental impact of energy efficiency subsidies in the presence of existing policy instruments (No. w20541). National Bureau of Economic Research

IAPH –WPCI (2015), International Association of Ports and Harbours -World Port Climate Initiative, [Environmental Ship Index Fundamentals](#), 2015

IEA (2008), “Global fossil fuels subsidies and the impacts of their removal”, Office of Chief Economist, OECD/IEA

IEA (2012), Ukraine 2012 - Energy Policies Beyond IEA Countries, OECD/IEA, 2012

IEA (2013a), “Redrawing the energy-climate map”, World Energy Outlook Special Report, IEA

IEA (2013b), World Energy Outlook 2013 – Executive Summary, IEA/OECD <https://www.iea.org/Textbase/npsum/WEO2013SUM.pdf>

IEA (2014), “World Energy Investment Outlook: Special Report”, International Energy Agency, Paris

IEA (2015), “Energy and Climate Change - World Energy Outlook Special Report 2015” <https://www.iea.org/publications/freepublications/publication/WEO2015SpecialReportonEnergyandClimateChange.pdf>

IEA, OECD, World Bank (2010), “The scope of fossil-fuel subsidies in 2009 and a roadmap for phasing out fossil-fuel subsidies. An IEA, OECD e World Bank Joint report - Prepared for the G-20 Summit, Seoul (Republic of Korea), 11-12 November 2010, <http://www.oecd.org/env/cc/46575783.pdf>

IEA, OPEC, OECD, World Bank (2010), “Analysis of the scope of energy subsidies and suggestion for the G-20 initiative” IEA, OPEC, OECD, World Bank Joint report - Prepared for submission to the G-20 Summit Meeting Toronto (Canada), 26-27 June 2010, <https://www.oecd.org/env/45575666.pdf>

IEA, OPEC, OECD, World Bank (2011), “Joint report by IEA, OPEC, OECD and World Bank on fossil-fuel and other energy subsidies: An update of the G20 Pittsburgh and Toronto Commitments” - Prepared for the G20 Meeting of Finance Ministers and Central Bank Governors (Paris, 14-15 October 2011) and the G20 Summit (Cannes, 3-4 November 2011) <https://www.oecd.org/env/49090716.pdf>

IEA, OECD (2015), “Update on recent progress in reform of inefficient fossil fuel subsidies that encourage wasteful consumption – Contribution by IEA and OECD to the G20 Energy Sustainability Working Group

IEA/UNEP (2001), “Energy subsidy reform and sustainable development: challenges for policy makers” http://www.un.org/esa/sustdev/csd/csd9_bp14.pdf

IEEP et al. (2007), Reforming environmentally harmful subsidies Final report to the European Commission’s DG Environment, March 2007

IEEP (2009), Valsecchi C., ten Brink P., Bassi S., Withana S., Lewis M., Best A., Oosterhuis F., Dias Soares C., Rogers-Ganter H., Kaphengst T., Environmentally Harmful Subsidies: Identification and Assessment, Final report for the European Commission’s DG Environment, November 2009

IIASA-Entec UK-MET.NO (2007), *Analysis of Policy Measures to Reduce Ship Emissions in the Context of the Revision of the National Emissions Ceilings Directive*, report to the European Commission-DG Environment, International Institute for Applied Systems Analysis, April 2007

IGF-IGAS-IGA (2007), Rapport sur les aides publiques aux entreprises, Mission d’audit de modernisation

IISD (2009), “The GSI’s method for quantifying irrigation subsidies”, International Institute for Sustainable Development publishing

IISD (2013a), A Guidebook to Fossil Fuel Subsidy Reform for Policymakers, International Institute for Sustainable Development; Global Subsidies Initiative

IISD (2013b), “A guidebook for fossil-fuel subsidy reform for policy-makers in South-East Asia”, International Institute for Sustainable Development, Global Subsidies Initiative (GSI)

IISD, Case Studies: Lessons Learned from Attempts to Reform Fossil-Fuel Subsidies, International Institute for Sustainable Development; Global Subsidies Initiative, <http://www.iisd.org/gsi/fossil-fuel-subsidies/case-studies-lessons-learned-attempts-reformfossil-fuel-subsidies>

IMO-MEPC (2009), “Proposal to Designate an Emission Control Area for NO_x, SO_x and PM,” submitted by USA and Canada, International Maritime Organization- Marine Environment Protection Committee, 59th Session, Agenda item 6, n. 5, 2nd April 2009

IMO (2015), Third IMO Greenhouse Gas Study 2014, International Maritime Organization, 2015

IMPACT (2008), M. Maibach, C. Schreyer, D. Sutter (INFRAS), H.P. van Essen, B.H. Boon, R. Smokers, A. Schrotten (CE Delft), C. Doll (Fraunhofer Gesellschaft – ISI), B. Pawlowska, M. Bak (University of Gdansk), *Handbook on estimation of external costs in the transport sector*. Produced for the European Commission under the IMPACT project (Internalisation Measures and Policies for All external Cost of Transport), Version 1.1, Delft, CE, 2008

Indonesia Government (2015), Intended Nationally Determined Contribution – Republic of Indonesia

India Government (2015), India’s Intended Nationally Determined Contribution: working towards climate justice

- INEA (2014), Rapporto sullo stato dell'agricoltura 2014. Collana Pubblicazioni Congiunturali e Ricerche Macroeconomiche
- INFRAS/IWW (1995), *External Effects of Transport*, Ricerca commissionata dall'Union Internationale des Chemins de Fer - UIC
- INFRAS/IWW (2000), "External Costs of Transport. Accidents, Environmental and Congestion Costs in Western Europe" final report, Zurich/Karlsruhe
- INFRAS/IWW (2004), "External Costs of Transport, Update study" final report, Zurich/Karlsruhe
- International Monetary Fund, World Bank (2011), *Market-Based Instruments for International Aviation and Shipping as a Source of Climate Finance. Background Paper for the Report to the G20 on Mobilizing Sources of Climate Finance*. Prepared by staff of the International Monetary Fund and World Bank, November 2011
- Institute for Climate Economics-I4CE (2016), "Prix interne du carbone-Une pratique montante en entreprise", I4CE Publishing.
- IPPC AR5 (2013), *Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA
- Ispra (2011), Agricoltura: emissioni nazionali in atmosfera 1990-2009, Rapporti ISPRA n. 140/2011
- Ispra (2015), *Il consumo di suolo in Italia, edizione 2015*, rapporti ISPRA n. 218/2015
- Ispra (2016), *Italian Greenhouse Gas Inventory, 1990-2014, National Inventory Report 2016*
- Istituto nazionale per il Commercio Estero (2012), Malaysia. I 5 corridoi di sviluppo economico regionale
- Jiang L., Kronbak J., Kristensen L.P. (2012), External costs of maritime shipping: A voyage-based methodology, Unit for Maritime Research, Department of Environmental and Business Economics, University of Southern Denmark
- JRC (2014), B. Kavalov, *Techno-economic analysis of Natural Gas application as an energy source for road transport in the EU*
- Kojima M., Koplow D. (2015), Fossil fuel subsidies: approaches and valuation. World Bank Policy Research Working Paper, (7220)
- Kojima M. (2016), "Fossil Fuel Subsidy and Pricing Policies: Recent Developing Country Experience". World Bank Policy Research Working Paper, (7531)
- Koplow D. (2009), "Measuring Energy Subsidies using the Price-Gap approach: what does it leave out?", IISD publishing
- Labandeira X. (2011), Nuevos entornos para la fiscalidad energética, WP 07/2011, Rede (Universidade de Vogo) y Economics for Energy, <http://www.eforenergy.org/docpublicaciones/documentos-detrabajo/PW07-2011.pdf>
- Lapcorella F., Ravazzi Douvan A. (2014) "A green tax reform in times of financial-economic crisis. The Italian attempts 2012 and 2014", presentation to Global Conference on Environmental Taxation 2014, Copenhagen, 24-26 September 2014
- Law 208/2015, Disposizioni per la formazione del bilancio annuale e pluriennale dello Stato
- Law 221/2015, Disposizioni in materia ambientale per promuovere misure di green economy e per il contenimento dell'uso eccessivo di risorse naturali
- LCE (2011), *Analisi comparativa tra gli impatti ambientali derivanti da agricoltura biologica e convenzionale*. Studio per

Federbio-COOP, 2011

Legislative Decree 16th March 1999, n. 79, “Attuazione della direttiva 96/92/CE recante norme comuni per il mercato interno dell’energia elettrica”

Legislative Decree 3rd March 2011, n. 28. Decreto di attuazione della direttiva 2009/28/CE sulla promozione dell’uso dell’Energia da Fonti Rinnovabili, recante modifica e successiva abrogazione delle direttive 2001/77/CE e 2003/30/CE

Legislative Decree 4th July 2014, n. 102: Attuazione della direttiva 2012/27/UE sull’efficienza energetica, che modifica le direttive 2009/125/CE e 2010/30/UE e abroga le direttive 2004/8/CE e 2006/32/CE

Lombard P.L., Molocchi A.(2000), *Produzione, esercizio e smaltimento dei mezzi di trasporto: i costi ambientali e sociali*, FrancoAngeli Milano, 2000

Lombard P.L., Molocchi A. (2001), *Navigazione e ambiente. Un confronto con i costi esterni delle altre modalità di trasporto*, Franco Angeli Milano, 2001

Maffii S., Chiffi C., Molocchi A. (2007), “*External costs of Maritime Transport*” a TRT study for the European Parliament (Committee for Transport and Tourism and E.P. Policy Department Structural and Cohesion Policies), May 2007

Marchal, V., Dellink, R., Van Vuuren, D., Clapp, C., Chateau, J., Magné, B., & van Vliet, J. (2011), “OECD environmental outlook to 2050”, OECD

Marrakech Agreement Establishing the World Trade Organization, (1994), *The Results of the Uruguay Round of Multilateral Trade Negotiations: The Legal Texts*

Merrill L., Bassi A. M., Bridle R, Christensen L.T. (2015), *Tackling Fossil Fuel Subsidies and Climate Change: Levelling the energy playing field*, Nordic Council of Ministers

Methodex (2007), AEA Technology Environment, *Methods and data on environmental and health externalities: harmonising and sharing of operational estimates*. Publishable Executive Summary. Methodex is project for European Commission DG Research, February 2007

Ministero italiano dell’Economia e delle Finanze (2015), “Note integrative-LB 2015-2017”, MEF-RGS

Ministero italiano dell’Ambiente e della Tutela del Territorio e del Mare (2012), *Documenti Tecnici del Gruppo di lavoro per l’individuazione delle misure di riduzione dell’inquinamento atmosferico*, Decreto 756 del 28/12/2011, MATTM - DG Valutazioni Ambientali (DVA), a cura di Ivo Allegrini e Fabio Romeo

Ministerial Decree 23rd June 2016 “Incentivazione dell’energia prodotta da fonti rinnovabili diverse dal fotovoltaico”

Ministerial Decree 5th July 2012 (or “Quinto Conto Energia”), Ministerial Decree 5th May 2011 (or “Quarto Conto Energia”), Ministerial Decree 6th August 2010 (or “Terzo Conto Energia”), Ministerial Decree 19th February 2007 (or “Secondo Conto Energia”), Ministerial Decree 6th February 2006 and 28th July 2005 (or “Primo Conto Energia”)

Ministerial Decree 6th July 2012 “Incentivi per energia da Fonti Rinnovabili elettriche non fotovoltaiche”

Ministerial Decree 5th September 2011 “Regime di sostegno per la Cogenerazione ad Alto Rendimento”

Ministry of National Development Planning/National Development Planning Agency (BAPPENAS) Republic of Indonesia (2012), *National Action Plan for Climate Change Adaptation (RAN-API)*

Molocchi A., Aspromonte D. (2013a), *Ecco il peso delle esternalità nell’economia italiana. Il contributo dell’analisi costi-benefici in chiave ambientale per migliorare il PIL*. Nuova Energia, bimestrale dello sviluppo sostenibile, n. 5, 2013

Molocchi A., Aspromonte D. (2013b), *Il peso delle esternalità nell'economia italiana: l'industria manifatturiera*. Nuova Energia, bimestrale dello sviluppo sostenibile, n. 6, 2013

Molocchi A., Aspromonte D. (2014), *Così può cambiare la fiscalità ambientale. Verso un sistema più equo, trasparente e orientato a uno sviluppo sostenibile*. Nuova Energia, bimestrale dello sviluppo sostenibile, n. 2, 2014

Montanino G. (2013), “Lo sviluppo delle fonti rinnovabili”, presentato in occasione della presentazione del Rapporto di Legambiente "Comuni Rinnovabili 2013", GSE

Muthukumara M., Zhang F. (2015), Office of the Chief Economist, South Asia Region, “From Carbon Subsidy to Carbon Tax: India’s Green Actions”, World Bank

Nachmany M., Fankhauser S., Townshend T., Collins M., Landesman T., Matthews A., Pavese C., Rietig K., Schleifer P., Setzer J. (2014), “The GLOBE Climate Legislation Study: A Review of Climate Change Legislation in 66 Countries. Fourth Edition” London: GLOBE International and the Grantham Research Institute, London School of Economics

Nachmany M., Fankhauser S., Davidová J., Kingsmill N., Landesman T., Roppongi H., Schleifer P., Setzer J., Sharman A., Singleton C.S., Sundaesan J., Townshend T. (2015), Climate Change Legislation in Indonesia. An Excerpt from the 2015 Global Climate Legislation Study. A Review of Climate Change Legislation in 99 Countries, Grantham Research Institute on Climate Change and the Environment

National Economic Advisory Council (2009), New Economic Model for Malaysia. Part I: Strategic Policy Directions

NEEDS (2008), Preiss P., Friedrich R., Klotz V., Deliverable n. 1.1 - RS 3a “Report on the procedure and data to generate averaged/aggregated data”, NEEDS- New Energy Externalities Developments for Sustainability, 6th Framework Research Programme Integrated Project

Nordic Council of Ministers (2011), “Reforming environmentally harmful subsidies – How to counteract distributional impacts” http://www.oecd-ilibrary.org/environment/reforming-environmentally-harmful-subsidies_tn2011-551

OECD (1993), “OECD core set of indicators for environmental performance reviews: A synthesis report by the Group on the State of the Environment”, Environment Monographs, n° 83

OECD (1998), “Improving the environment through reducing subsidies”, OECD, Paris

OECD (2003), “Environmentally Harmful Subsidies – Policy Issues and Challenges”, OECD publishing

OECD (2005), “Environmentally Harmful Subsidies: Challenges for Reform”, OECD, Paris

OECD (2006), “Subsidy Reform and Sustainable Development – Economic, environmental and social aspects”, OECD Publishing

OECD (2007), “Subsidy Reform and sustainable development – Political economy aspects”, OECD Publishing

OECD (2010), “OECD’s producer support estimate and related indicators of agricultural support”, OECD Publishing

OECD (2011a), “Inventory of Estimated Budgetary Support and Tax Expenditures for Fossil Fuels”, Paris, OECD Publishing, www.oecd.org/g20/fossilfuelsubsidies

OECD (2011b), “ ‘Fossil-fuel Support’ OECD Secretariat background report to support the report on ‘Mobilizing Climate Finance’”, OECD Publishing

OECD (2013), Reviewing Environmental Performance: Italy 2013, OECD Publishing

- OECD (2015a), “OECD Companion to the inventory of support measures for fossil fuels 2015”, OECD Publishing
- OECD (2015b), “Support to fossil fuels remains high and the time is ripe for change” www.oecd.org/environment/support-to-fossil-fuels-remains-high-and-the-time-is-ripe-for-change.htm
- OECD Eurasia (2015), OECD, Sector Competitiveness Strategy for Ukraine – Phase III. Review of Agricultural Investment Policies of Ukraine, Competitiveness Programme
- Parry I. W., Heine M. D., Lis E., Li S. (2014), *Getting Energy Prices Right. From Principle to Practice*, International Monetary Fund, Washington DC, 2014
- Piera A. (2015), *Why taxes are not an option in addressing international civil aviation’s carbon footprint Chicago Convention*, <http://www.greenaironline.com>, 26 March 2015
- Porter G. (2003), “Fisheries subsidies and overfishing: towards a structured discussion”, (Vol. 1). UNEP/Earthprint
- Pearce D., (2002) “OECD workshop on environmentally harmful subsidies”, OECD
- Pieters J (1997), Subsidies and the Environment: on How Subsidies and Tax Incentives May Affect Production Decisions and the Environment. Paper for the UN Fourth Expert Group, Meeting on Financial Issues of Agenda 21, January 8-10 1997, Santiago, Chile
- President of the Republic of Indonesia (2011), Presidential Regulation of the Republic of Indonesia No. 61 Year 2011 on the National Action Plan for Greenhouse Gas Emissions Reduction
- Rabl A., Spadaro J.V., McGavran P.D. (1998), “Health Risks of Air Pollution from Incinerators: a Prospective”, in *Waste Management & Research*, Denmark
- Raitzer D. A., Bosello F., Tavoni M., Orecchia C., Marangoni G., Samson J.N.G. (2015), South East Asia and the economics of global climate stabilization, Asian Development Bank
- Rapporto Ceriani (2011), Ministero italiano dell’Economia e delle Finanze (2011), “Gruppo di lavoro sull’erosione fiscale - relazione finale”, MEF
- Rapporto Giavazzi (2012), D’Alberti M., Giavazzi F., Moliterni A., Polo A., Schivardi F., “Analisi e raccomandazioni sul tema di Contributi Pubblici alle Imprese”, Camera dei Deputati
- Rapporto Sainteny (2012), Premier Ministre, “Les aides publiques dommageables à la biodiversité”, La documentation française, vol.43, Rapports et documents
- Ravazzi Douvan A., Cordiè C. (2009), “Environmental Fiscal Reform in Italy: Something in the Way...”, in “Critical Issues in Environmental Taxation”, Vol. VI, Oxford University Press
- Ravazzi Douvan A. (2013), “Riforma fiscale ecologica in tempi di crisi economico-finanziaria”, Società italiana degli economisti, 54th ANNUAL CONFERENCE, 24-26 October 2013, Bologna
- RECORDIT (Real Cost Reduction of Door to Door Intermodal Transport) (2001), Friedrich, Schmidt e Bickel - IER, “External Costs Calculations for Selected Corridors”
- REF-E E WWF ITALIA (2012), “OBIETTIVO 2050: PER UNA ROADMAP ENERGETICA AL 2050 - RINNOVABILI, EFFICIENZA, DECARBONIZZAZIONE”, WWF
- Ricardo - AEA (2014), Update of the Handbook on External Costs of Transport, Report for the European Commission-DG MOVE, 8th January 2014
- RSE (2014), RSEview – Riflessioni sull’Energia, “Energia Elettrica, Anatomia dei Costi”, 2014. Ricerca sul Sistema Elettrico, RSE
- Schader C., Muller A., El-Hage Scialabba N., Hecht J., Stolze M. (2014), Comparing global and product-

based LCA perspectives on environmental impacts of low-concentrate ruminant production. In *Proc. 9th Int. Conf. on Life Cycle Assessment in the Agri-Food Sector, San Francisco, CA, 8* (pp. 1203-1209), October 2014

Statistiska centralbyrån (2010), “Miljörelaterade skatter, subventioner och utsläppsrätter” 2010 http://www.scb.se/sv_/Hitta-statistik/Publiceringskalender/Visa-detaljerad-information/?publobjid=15909+#

Stern N. (2006), “The Economics of Climate Change - The Stern Review”, HM Treasury, London

Stern N., Adams J. (2009), “The Global Deal: Climate Change and the Creation of a New Era of Progress and Prosperity”, Library Edition

Sukhodolia O. (2015), Critical Infrastructure Protection: the challenges connected to working out the Green Paper on CIP in Ukraine, presented to workshop “Hybrid threats: overcoming ambiguity, building resilience” (Vilnius, September 10-11, 2015)

Swanson D., Bhadwal S. (2009), “Creating adaptive policies: A guide for policymaking in an uncertain world”, IDRC

Tamiotti L., Teh R., Kulaçoğlu V., Olhoff A, Simmons B., Abaza H. (2009), Trade and Climate Change: A Report by the United Nations Environment Programme and the World Trade Organization. UNEP/Earthprint

TEEB (2009), “The Economics of Ecosystems and Biodiversity for National and International Policy Makers – Summary: Responding to the Value of Nature.”, TEEB publishing

TEEB (2013), McVittie A., Hussain S. S., The Economics of Ecosystems and Biodiversity - Valuation Database Manual

The Economic Planning Unit – Prime Minister’s Department (2010), Tenth Malaysia Plan 2011-2015

Thöne M. (2006), Priorities for reform, HGL on energy, competitiveness and the environmental, ad hoc group on EHS, 7 December 2006

Tumiran (2014), New paradigm of National energy policy towards energy security and independence, Directorate General of electricity (21st March 2014)

UNEP (2008), “Reforming Energy Subsidies-Opportunities to Contribute to the Climate Change Agenda”, UNEP

UNEP (2015), “Fiscal Policy and Climate Change”, Green Fiscal Policy Network, Issue 4

Unisfera (2003), “The Economic and Environmental Impacts of Agricultural Subsidies: An Assessment of the 2002 US Farm Bill and Doha Round”, Unisfera

UNITE (2000), DIW-INFRAS-ITS, “The Account Approach”, deliverable n.2 di UNITE

UNITE Conventions (2001), J. Nellthorp, T. Sansom, P. Nickel, C. Doll, G. Lindberg, “Valuation Conventions for UNITE”, Deliverable n. 5, Annex 3 di UNITE, April 2001

UNITE Italy (2003), ISIS-DIW-IER, “UNITE, The Pilot Accounts for Italy”, Deliverable 12, Annex 5 di UNITE

Ukrainian Government (2015), Intended Nationally-Determined Contribution (INDC) of Ukraine to a New Global Climate Agreement, UNFCCC Secretariat

Ukrainian Government (2015), “Energy Strategy of Ukraine through 2035”. White book of Ukrainian Energy policy “Security and Competitiveness”(Draft)

Uphoff N. (2003), Higher yields with fewer external inputs? The system of rice intensification and potential contributions to agricultural sustainability. *International journal of agricultural sustainability*, 1(1), 38-50

- Usubiaga A., Schepelmann P., Bahn-Walkowiak B., Altmann M., Landgrebe R., Piotrowski R. (2011), “EU subsidies for polluting and unsustainable practices”, Directorate General for Internal Policy, Policy Department, Economic and Scientific Policy
- Virgiyanti T. D. (2013), Indonesia National Action Plan on Climate Change Adaptation (RAN-API), Ministry of National Development Planning/National Development Planning Agency (BAPPENAS) presented in Twenty-second Asia-Pacific Seminar on Climate Change (Hanoi, 28 June 2013)
- Vivid Economics (2012), Carbon taxation and fiscal consolidation: the potential of carbon pricing to reduce Europe’s fiscal deficits, report prepared for the European Climate Foundation and Green Budget Europe, London, May 2012
- Yahaya e altri (2014), Yahaya Khan M., Karim Z. A. A., Hagos F. Y., Rashid A., Aziz A. e Tan I. M., *Current Trends in Water-in-Diesel Emulsion as a Fuel*, *The Scientific World Journal*, Volume 2014, Article ID 527472, 15 pages
- Yang C., Jackson R. (2013), China’s Synthetic Gas Revolution, *Nature Climate Change*, vol. 3, October 2013
- Whitley S., van der Burg L. (2015), Fossil Fuel Subsidy Reform: From Rhetoric to Reality. New Climate Economy, London and Washington, DC. <http://newclimateeconomy.report/misc/working-papers>
- Wilcove D.S., McLellan C.H., Dobson A.P. (1986), Habitat fragmentation in the temperate zones. In: Soulé M.E. (ed.). *Conservation Biology*. Sinauer Associates Inc.. Sunderland, Massachusetts: 237-256
- Wilson E.O. (1993), *La diversità della vita*. Rizzoli, Milano
- Withana S., ten Brink P., Franckx L., Hirschnitz-Garbers M., Mayeres I., Oosterhuis F., Porsch L. (2012), Study supporting the phasing out of environmentally harmful subsidies. A report by the Institute for European Environmental Policy (IEEP), Institute for Environmental Studies – Vrije Universiteit (IVM), Ecologic Institute and Vision on Technology (VITO) for the European Commission – DG Environment. Final Report. Brussels, 2012
- World Bank (2014a), Transitional policies to assist the poor while phasing out inefficient fossil fuel subsidies that encourage wasteful consumption. Contribution by the World Bank to G20 Finance Ministers and Central Bank Governors, September 2014
- World Bank (2014b), State and Trends of Carbon Pricing 2014, World Bank, Washington DC
- World Bank and Ecofys (2015), Carbon pricing watch 2015, Advance brief from the state and trends of carbon pricing 2015 report, World Bank Group and Ecofys. <https://openknowledge.worldbank.org/bitstream/handle/10986/22630/9781464807251.pdf?sequence=5>
- WRI (2007), “Agricultural subsidies, poverty and the environment: supporting a domestic reform agenda in developing countries”, World Resource Institute – USA, WRI publishing
- WRI (2008), “Plants at the pump: Reviewing biofuels’ impacts and policy recommendations”, World Resource Institute – USA, WRI publishing
- WTO (2011), “Harnessing trade for sustainable development and a green economy”, WTO Publishing
- Zhang Z., (2014), “Energy Prices, Subsidies and Resource Tax Reform in China”, *Nota di Lavoro 72.2014*, Milan, Italy: Fondazione Eni Enrico Mattei

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