

Opportunities and challenges of Environmental Fiscal Reform in Italy

GRANT AGREEMENT SRSS/S2019/036 – SUPPORT TO EU MEMBER STATES IN THE IMPLEMENTATION OF STRUCTURAL REFORMS



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1. Introduction

1. This report is part of the Structural Reform Support Programme project (now called Technical Support Instrument) on “Enhancing environmental fiscal reform in Italy and in the European Union”, carried out by the OECD for the Italian Ministry of Environment, Land and Sea (now the Ministry for Ecological Transition) and the Ministry of Economy and Finance (MEF), funded by the European Commission and administrated by the Directorate General for Structural Reform (DG REFORM). The project aims to support the development of a national policy agenda and action plan for environmental fiscal reform (EFR) in Italy, considering options including the removal of environmentally harmful subsidies, the reform of environmentally related taxes, and a broader fiscal reform. It aims to promote a debate among experts, policy makers and key stakeholders, to promote better understanding of opportunities and barriers, and to identify concrete options for advancing EFR in Italy.

2. Considering options for better integration of environmental policy perspectives in tax policy and reform is a timely undertaking. Tax policy can contribute to the economic recovery and long-term growth, and interest is rising in its potential for supporting the achievement of national environmental objectives as well as international commitments, e.g. related to the UN Sustainable Development Goals (SDGs), the Paris Agreement on climate change, the UN Convention on Biological Diversity and the 2009 G20 commitment to “rationalize and phase out over the medium term inefficient fossil fuel subsidies that encourage wasteful consumption”. Exploring options and synergies between tax policy, recovery policies and the environment is also in line with the priorities of Next Generation EU¹ and the European Green Deal² and can contribute to achieving the objectives of Italy’s Resilience and Recovery Plan. In the context of its G20 Presidency, Italy scheduled joint discussions of tax policy and climate change.

3. This report summarises opportunities for and challenges of EFR in Italy. It is largely based on the information and viewpoints received during four stakeholder consultation workshops that the OECD team held with representatives from, respectively, the Italian government, business associations and trade unions and civil society organisations between November 2020 and March 2021. It also includes information received during the project’s kick-off meeting held at the Italian Ministry of Environment, Land and Sea in Rome in November 2019, written contributions from stakeholders, bilateral calls with stakeholders, and analysis of publicly available data and reports.

4. The report is structured as follows. Section 2 provides a brief overview of the objectives of EFR as well as basic principles and tools to put it into practice. Section 3 presents a brief overview of Italy’s environmental goals and performance. Section 4 discusses the current tax system, the use of environmental taxation and the use of environmentally friendly and environmentally harmful subsidies in Italy. Section 5 summarises the themes discussed with stakeholders and the main challenges and opportunities to EFR in Italy.

2. The rationale for environmental fiscal reform

5. EFR has two primary motivations: 1) using market-based instruments to better align prices with environmental damage in order to encourage economical (i.e., cost-efficient) efforts to improve environmental outcomes, and 2) raising revenue and deploying it in a socially productive way (OECD, 2017^[1]). The first element most notably includes the use of environmentally related taxes, but also the use of other pricing instruments (e.g., emissions trading systems) and the removal of environmentally harmful subsidies. The second element, revenue use, can take various forms: a broad tax shift away from labour

¹ https://ec.europa.eu/info/strategy/recovery-plan-europe_en.

² The European Green Deal (COM/2019/640 final), <https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1576150542719&uri=COM%3A2019%3A640%3AFIN>.

and capital towards environmental damage (“taxing bads not goods”), transfers, and targeted investment or support to specific sectors or groups. If well designed, EFR can contribute to fiscal consolidation efforts in a relatively growth-friendly way.

2.1. Improving environmental quality through better alignment of prices with environmental damage

6. Using market-based instruments helps prices to reflect part or all of the cost of environmental damage. This encourages producers and consumers to take account of these environmental costs. In many cases, market-based instruments lead to environmental improvements by causing price increases that reduce demand for environmentally harmful products. Compared to other environmental policy instruments, environmentally related taxes and tax-like pricing instruments, such as emissions trading systems, have the advantage that they can improve environmental outcomes in a cost-effective way, by providing businesses and people with the flexibility to adapt their choices to the new prices and by providing incentives to innovate (OECD, 2017^[11]).

7. One of the most commonly applied instruments to align prices with external costs are environmentally related taxes. Taxes do not require the design of complex markets (in contrast to emissions trading systems) and do not risk having to pick winners and subsidising behaviour (in contrast to tax incentives). It is noteworthy that environmentally related taxes do not always explicitly aim to internalise environmental costs as they may have other objectives.³ Taxes on road fuels, for example, which account for a large share of environmentally related taxes in the OECD, were introduced primarily with the aim of raising revenue or to finance the maintenance of road infrastructure. Environmentally related taxes are broadly used at high rates in some sectors, notably road transport, but the tax profile does not necessarily reflect external costs. If judiciously designed, however, environmentally related taxes can both contribute to raising revenue efficiently and help reflect environmental damages in prices. A close look at environmentally related taxes hence can help identify reform opportunities to improve their environmental performance.

8. The revenue from environmentally related taxes varies across EU countries. On average, environmentally related taxes accounted for 5.9% of total tax receipts in the EU-27 in 2019, with shares varying from less than 5% in some countries (e.g. Germany or Luxembourg) to more than 10% in others (e.g. Estonia or Bulgaria). In Italy, environmentally related taxes account for a relatively large share, at 7.7% of total tax receipts, in 2019 (OECD, 2021^[2]) (Eurostat, 2021^[3]).

9. On average across countries, taxes on energy use and road transport vehicles account for the vast majority of environmentally related tax revenue. In 2019, energy taxes constituted 78% of total environmentally related tax revenue in the EU and transport-related taxes (largely vehicle taxes) represented 19%. As a large proportion of energy tax revenue stems from excise taxes on transport fuels, the combined share of the transport sector in environmentally tax revenue is large. In 2019, taxes on pollution (e.g. air pollution, emissions of ozone-depleting substances, wastewater discharge, packaging or final waste disposal) or natural resources extraction raised merely 3% of total environmentally related tax revenue in the EU. In Italy, energy and transport taxes accounted for 81% and 18% of environmentally related taxes in 2019, respectively, with pollution taxes accounting for less than 1% (Eurostat, 2021^[3]).

10. In addition to aligning taxes with damages, the removal of environmentally harmful fossil fuel subsidies is a second major component of EFR. Subsidies can be useful economic instruments to support specific behaviour or transfer income under some circumstances, but in addition to imposing a burden on

³ The OECD defines environmentally related taxes as “any compulsory, unrequited payment to general government levied on tax-bases deemed to be of particular environmental relevance”. In other words, environmentally related taxes are taxes that particularly affect the environment, whether this is the policy intention or not, and whether or not tax rates align with external costs or not. Environmental taxes, by contrast, are based on the implicit understanding that they aim to improve alignment of tax rates with (marginal) external costs. Environmental taxes are therefore a subset of environmentally related taxes (OECD, 2017^[11]).

government budgets and taxpayers, they can be environmentally harmful, socially inequitable or inefficient, or a combination of those. It is therefore important to regularly assess whether the policy objective remains relevant, and if subsidies fulfil their purpose efficiently and effectively or whether the intended objectives can be reached effectively and at lower cost through alternative policy instruments (OECD, 2017^[4]).

11. Environmentally harmful subsidies can be of two types. The first includes subsidies that incentivise an activity that directly harms the environment. The second includes provisions in the tax system that have unintended negative environmental impacts. Direct support for the production or consumption of fossil fuels, non-energy minerals, or agricultural products is an example of the first type. An example for the second type of subsidy can be the preferential treatment in personal income taxes of certain employees' benefits, such as the use of a company-owned car for private purposes (i.e. where such in-kind benefits are taxed less than regular income). The OECD definition of support comprises both direct budgetary transfers and tax concessions that in some way provide a benefit or preference to environmentally harmful activities, or the production or consumption of environmentally harmful products. In 2019, support for fossil fuels reached an estimated USD 178 billion in OECD countries and G20 countries in 2019 (OECD, 2021^[5]). In OECD countries, most of this takes the form of tax concessions supporting consumers (i.e. consumption-tax concessions).

12. The removal of environmentally harmful subsidies has been on the political agenda for some time in Italy and elsewhere. One important milestone was the 2009 declaration of G20 countries "to phase out and rationalize over the medium term inefficient fossil fuel subsidies while providing targeted support for the poorest"; and the 2016 G7 meeting, which encouraged all countries to eliminate inefficient fossil fuel subsidies" by 2025. SDG target No. 12 calls for the rationalisation of inefficient fossil-fuel subsidies that encourage wasteful consumption. SDG target No. 14 calls for eliminating certain forms of fisheries subsidies that contribute to overcapacity and overfishing by 2020. There is no international agreement on the identification or the phasing-out of agricultural subsidies that may be adversely affecting the environment, or of subsidies to the extraction and consumption of non-energy minerals, water or other natural resources. However, the European Commission plans to build the post-2020 EU Common Agricultural Policy (which channels agricultural subsidies in European countries) around a more ambitious green architecture. Support for agriculture need to contribute to environmental quality and avoid causing any harm.

2.2. Raising public revenue and deploying it productively

13. With regard to second element of EFR, raising public revenue and deploying it in a socially productive way, countries have taken very different approaches.⁴ Some countries (e.g. Denmark, Norway, the United Kingdom, Germany and the Netherlands) have opted for broader tax and fiscal reforms, where the revenue from environmentally related taxes or the removal of environmentally harmful subsidies has been used to shift the burden of taxation, for example through a reduction of corporate or personal income taxes. Such a tax shift, if well designed, can boost employment and growth, as it reduces taxes on productive factors (i.e. labour and capital), thereby encouraging work effort and supporting employment. This type of tax shift might then generate a "double dividend": improving both environmental quality (e.g. cleaner air, better climate, etc.) and tax system efficiency. A double dividend, however, is not automatic, as the increase in prices caused by higher tax rates on environmentally harmful consumption also lowers real income. Realising potential efficiency gains in the overall tax system therefore requires careful design of EFRs.

⁴ Depending on goals and context, environmentally related tax rates can be set in a way that they reduce pollution, but not reduce it to zero. Reducing pollution to zero is not in all cases the ideal goal, as doing so could be excessively expensive compared to the well-being gains obtained. If emissions are not expected to be reduced to zero, environmental fiscal reform can engender persistent revenues. If the goal is instead to reduce emissions to zero, for example reducing greenhouse gas emissions to net-zero by mid-century, higher taxes will erode their base (i.e. emissions) eventually, but this is a gradual process. Marron, Toder and Austin (2015^[41]) suggest that carbon tax revenues, assuming rising rates, would eventually decline, but in a matter of decades, not years. Short- and medium-term revenues from higher carbon taxes can be significant (Marten and Van Dender, 2019^[77]).

14. Other countries have chosen a more narrow approach to EFR, in which tax rates within a sector, e.g. energy, are restructured to align more closely with environmental costs but without necessarily increasing the overall sector-level tax contribution or envisaging a tax system reform. An example for this approach is Finland's recent decision to phase-out an energy tax rebate for energy-intensive industries, which will be implemented in parallel with a general reduction of the electricity tax. The reform aims to be revenue neutral, providing incentives for industries to switch to zero- and low-carbon energy sources without increasing their total tax burden.

3. Brief overview of Italy's environmental goals and performance

15. Italy's GHG emissions peaked in 2007 and have been declining since.⁵ In 2018, emissions reached 391 MtCO₂eq, 30% below the 2007 level (OECD, 2021_[6]). Italy met its 2020 goal under the EU Effort Sharing Regulation to reduce emissions not covered under the EU Emissions Trading System (EU ETS) by 13% from 2005 levels. Italy's National Energy and Climate Plan sets a 2030 reduction target non-ETS emissions at -33%, as compared to 2005 levels. Italy aims to exceed this target, with planned measures expected to reduce emissions in non-ETS sectors by 35% in 2030 (Government of Italy, 2019_[7]). In early 2021, following the announcement of the EU's new climate goals for 2030, Italy announced plans to cut GHG emissions by 60% by 2030 (Reuters, 2021_[8]).⁶ Italy has not yet set a long-term GHG emissions target, although Italy defined an interim milestone of achieving decarbonisation of the energy sector by 2050 (Government of Italy, 2019_[7]).

16. The energy sector (i.e. transport, energy generation, heating and industrial energy use) accounts for about 80% of Italy's total emissions. Emission intensities (both per capita and per GDP) have traditionally been below the OECD average.

17. Renewable energy generation expanded rapidly from 2000 to the mid-2010s, driven by biofuels, solar and wind power. However, since the mid-2010s, the expansion of renewables has stalled, largely because of a large drop in hydroelectric energy production due to scarce rainfall. Italy met its 2020 target of achieving at least 17%-share of renewable energy in gross final energy consumption already in 2014 (in 2019, the share stood at 18.2%) (Eurostat, 2021_[9]). Energy consumption is on a declining trend; the energy intensity of the economy (total energy supply per unit of GDP) improved by 11% between 2009 and 2019 (OECD/IEA, 2021_[10]).

18. Average exposure to air pollution is well above the OECD average. More than 90% of the population are exposed to levels of fine particulate matter (PM_{2.5}) pollution that exceed World Health Organization's guideline value of an annual mean concentration of 10 µg/m³ (OECD, 2021_[6]). According to the European Environment Agency, the *Pianura Padana* is one of the Western European areas with the largest number of days exceeding the maximum limit of PM₁₀ and PM_{2.5} (of 50 µg/m³) (European Environment Agency, 2019_[11]). Mortality from outdoor particulate matter is unusually high compared with most OECD countries. According to the World Health Organization, in Italy, PM_{2.5} is responsible for 218 deaths per day (Becchetti, 2020_[12]). One of the main reasons for Italy's high levels of PM as well as nitrogen dioxide (NO₂) pollution is high level of road traffic. Also, urban sprawl fosters car dependency and traffic congestion, raising air pollution, energy consumption and CO₂ emissions (OECD, 2018_[13]).

19. Waste management has improved, with waste recovery rates (i.e. recycling and composting) increasing steadily in recent years. Italy is among the EU countries with the highest shares of material reuse (17% in 2016). Regional differences in waste management are large, however, and illegal dumping remains a serious health concern in some areas.

⁵ Referring to net GHG emissions, i.e. including emissions from land use, land-use change and forestry (LULUCF).

⁶ In December 2020, EU leaders agreed to cut their net GHG emissions by at least 55% from 1990 levels by 2030. The previous goal was to cut emissions by 40% target by 2030.

20. Water extraction, mostly in agriculture, amounts to 45% of total renewable water resources, implying a high level of water stress. The proportion of surface water bodies with good ecological status increased from 25% in the first river basin management plans (2009-15) to 42% in the second (2016-21), while those with good chemical status increased from 18% to 72%. Nitrogen and phosphorus surpluses per hectare are above the EU average. There is a need to improve infrastructure both for solid waste and wastewater treatment, especially in the southern part of the country (EC, 2019^[14]) (OECD, 2019^[15]).

4. Current fiscal policy and use of environmentally related taxes and subsidies

4.1. Overall fiscal situation and plans for comprehensive fiscal reform 2021

21. Italy was among the first OECD countries to be hit by the COVID-19 outbreak. The government of Italy put in place strict confinement measures, triggering a sharp contraction of real output in the first half of 2020. The economy picked up quickly over the summer of 2020 after the end of the first lockdown, mostly led by industrial production (Figure 1, Panels A and B). However, COVID-19 infection rates across the country rose sharply again from mid-October 2020 to early 2021. In response, the government introduced a three-tier regionally based system of restrictions based on a set of 21 epidemiological and public health indicators.

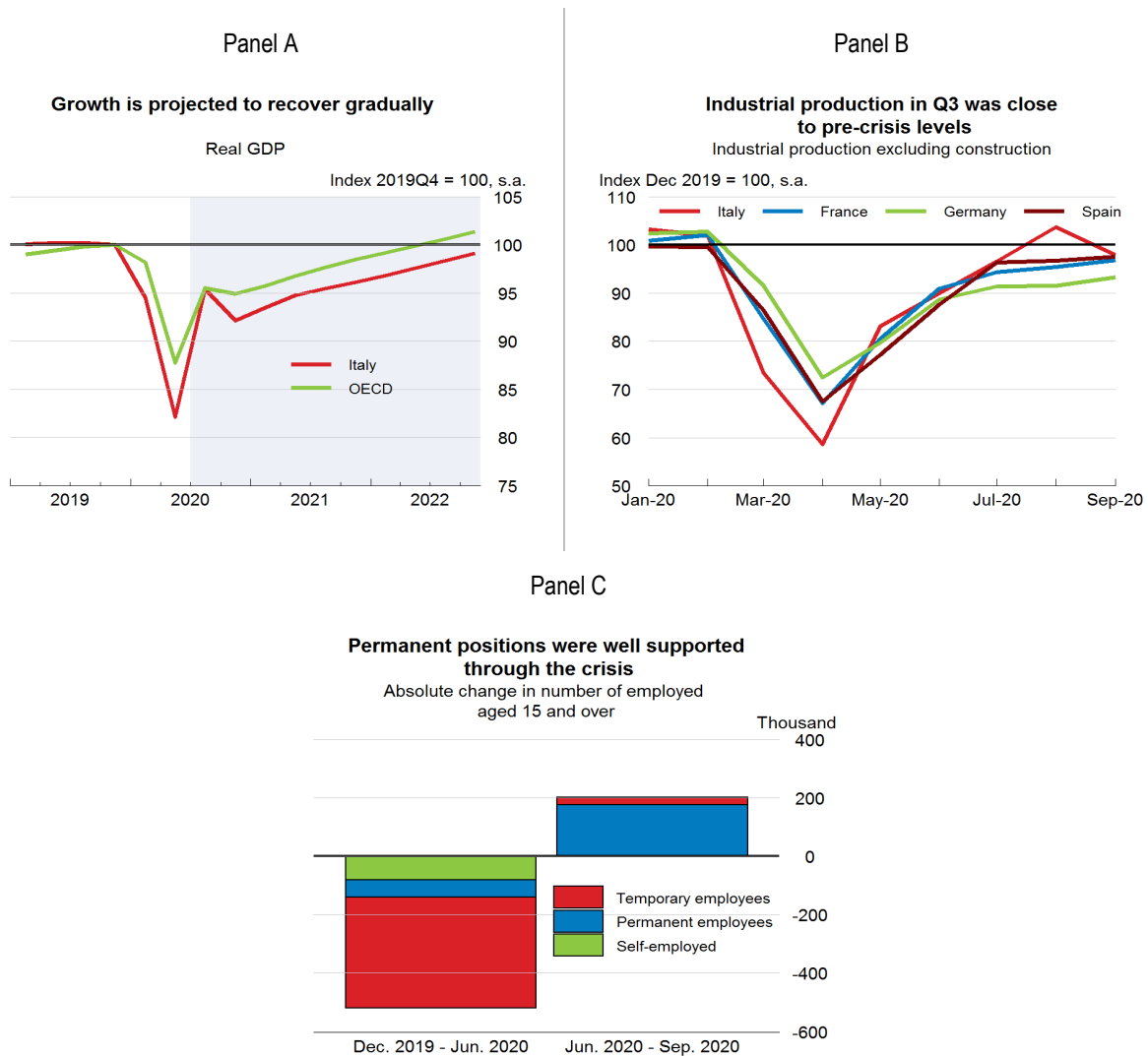
22. Current confinement measures, though less severe than those in the first half of 2020, and uncertainty are weighing heavily on activity, but government support has so far mitigated the effects on firms and households. GDP is projected to expand by 4.3% in 2021 and 3.2% in 2022 (Figure 1, Panel C) (OECD, 2020^[16]). However, the emergence of new variants of the virus and limited availability of vaccines may prolong confinement measures, raising significant downside risks in 2021.

23. The extension of the coverage of the wage supplement scheme (*Cassa integrazione guadagni*) and a dismissal ban introduced in 2020 and extended until March 2021 have so far prevented major job losses. Temporary workers have borne the brunt of the labour market adjustment, but permanent employees are unlikely to remain unscathed, once emergency policy measures expire, with a jobless rate that could reach 11%, up from 9.9% in 2019 (Figure 1, Panel C). Substantial job creation, especially for the low-skilled, women and youth, is expected to return only in 2022, once a vaccine is expected to have been deployed widely (OECD, 2020^[16]); (EC, 2020^[17]).

24. The government headline deficit is expected to sharply increase to around 10.7% of GDP in 2020, up from a historic low of 1.6% of GDP in 2019. Revenues from indirect taxes are expected to fall as a result of the drop in private consumption. The deterioration of the labour market, albeit contained by public support, implies lower revenues from direct taxes and social security contributions. The policy response to the crisis amounted to around 5.5% of GDP in 2020, mainly on the expenditure side (EC, 2020^[17]).

25. In 2021, the government deficit is expected to decline to around 6.9% of GDP (OECD, 2020^[16]). Government revenues should benefit from the rebound in economic activity while government spending is set to decline, as most support measures adopted in 2020 were temporary. The main planned measures of the 2021 budget include the extension of public support to sectors most affected by the crisis, a cut in social security contributions for firms operating in poorer regions, the introduction of a family bonus and additional resources for healthcare, education and research (EC, 2020^[17]). The government debt-to-GDP ratio is expected to increase sharply from 134.7% in 2019 to around 159.8% in 2020 before edging down to about 158% in 2022 as growth recovers (OECD, 2020^[16]).

Figure 1. The impact of the COVID-19 outbreak on Italy's growth and employment



Source: OECD Economic Outlook, Volume 2020 Issue 2, OECD Publishing, Paris, <https://doi.org/10.1787/39a88ab1-en>.

26. These projections, however, hinge on the actual recovery path, which in the current circumstances faces downside and upside risks. For example, in addition to prolonged confinement measures due to a resurgence of the epidemic, delays in public investment spending and a slower recovery in private sector investment would reduce the pace of recovery. While the banking sector has so far withstood the crisis, a wave of bankruptcies could negatively impact the balance sheet of banks, weakening their capacity to support recovery. Effective immunisation against the virus may come faster – or slower – than anticipated. Households may save less than projected and productivity and growth could rise faster than expected if firms adapt rapidly to consumers' increased use of digital technologies where Italy was lagging peer countries prior to the crisis. Increased use of digital technologies may be especially important in increasing market access for smaller companies that are the backbone of Italy's economy (OECD, 2020^[16]).

27. In this uncertain context, it is particularly important that fiscal support is complemented with structural reforms that can enhance the resiliency of the economy and society. The 2021 budget foresees a comprehensive tax reform to be rolled out between 2021 and 2023 aimed at reducing the tax burden and simplifying the tax system, making it more transparent, equitable and efficient. The simplification of the tax

system has already started through the creation of a single allowance for families with children (*assegno unico*), aims at encouraging female participation in the labour market and increasing fertility rates. As part of the reform, the government also plans to create a new fund with the extra revenues to be collected through higher tax compliance; the fund would finance reductions in the tax contribution (MEF, 2020^[18]). Specifically, the 2021 budget introduced additional measures to countering fraud on VAT and excise taxes, improving information at the disposal of the Revenue Agency and incentivising the use of electronic payments through a receipt lottery. These initiatives build on recent broad efforts to improve tax compliance, including the extension in January 2019 of electronic invoices (introduced in 2018) to most business-to-business and business-to-consumer transactions (UPB, 2019^[19]).

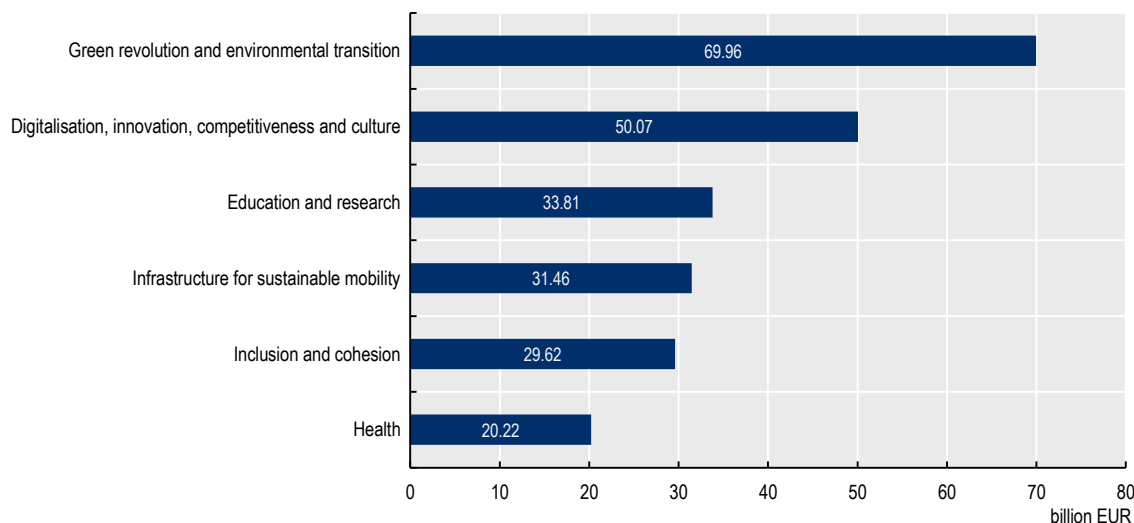
28. The government plans to outline the tax reform in a framework law (*legge delega*) to be presented to Parliament by 31 July 2021. Some elements are included in the 2021 budget. The budget allocates EUR 7 billion to maintain the fiscal bonus (i.e. an in-work benefit system reducing the labour income tax wedge for low and middle income earners), which was strengthened in 2020 and mostly benefitting employees.⁷ The budget also foresees an allocation of EUR 8 billion in 2022 and EUR 7 billion in 2023 to finance the tax reform. Additional resources are expected to come from higher tax compliance (MEF, 2020^[20]). The Recovery and Resilience Plan, *Piano Nazionale di Ripresa e Resilienza “Next Generation Italia”* (PNRR), was presented to Parliament and, following the parliamentary discussion, sent to the European Commission in April 2021 (Government of Italy, 2021^[21]). The Plan highlights that, following the further reduction in the labour income tax wedge by strengthening the “fiscal bonus” in the 2021 budget, the tax reform will focus on a comprehensive redesign of the personal income tax. The Government will set up an expert commission to identify options for the reform of the personal income tax. The stated objective is to reduce the effective tax rates on labour income, with a particular attention to low-wage earners, with the aim of increasing employment (especially among women and the youth) and reduce informality. The Plan does not make reference to the redesign of environmental taxation and environmentally harmful subsidies that was included in a draft version of the Plan (Government of Italy, 2021^[22]).

29. While there is no mention of environmental taxation or fossil fuel subsidy reform, the PNRR includes a strong focus on the green transition with an allocation of almost EUR 70 billion, accounting for 30% of total allocations financing the PNRR (Figure 2). For improving the energy efficiency of buildings, in addition to a construction and refurbishment programme for public buildings, the PNRR proposes to rely on a 110% tax credit known as the *Superbonus*, to cover works aimed at improving the energy efficiency (in addition to general renovation works) of residential buildings conducted until June 2022 (until December 2022 for social housing). Beneficiaries can either use the tax credit or pass it to the companies carrying out the works who can then trade the tax credit. The *Superbonus* was launched in 2020 and confirmed in the 2021 budget. The PNRR allocates EUR 13.8 billion to finance the tax credit (Government of Italy, 2021^[21]).

30. The fiscal reform envisaged in the 2021 budget and in the PNRR could have significant impacts on growth and welfare, addressing some of the long-lasting structural issues of the tax system and providing an overall framework for supporting the transition to a low-carbon economy. The reforms highlighted above appear to go in the right direction from a tax efficiency point of view as they lower the labour income tax wedge and address some of the complexities and distortions created by the current tax system, outlined below in Section 3.1.2 on the income tax system.

⁷ The current fiscal bonus benefit only tax paying individuals. It therefore amounts to zero for earning up to EUR 8 145; EUR 100 (per month) for yearly earnings of EUR 8 145-28 000, EUR 80 per for earnings of EUR 28 000-35 000 and goes from EUR 80 to zero euro for earnings of EUR 35 000-40 000. The current scheme replaced in July 2020 the previous less generous scheme (known as “EUR 80 fiscal bonus”), which amounted to EUR 80 (per month) for yearly earnings EUR 8 146-24 600 and declined to zero for earnings of EUR 24 600-26 600.

Figure 2. Resource allocation of Italy's Recovery and Resilience Plan



Source: Piano Nazionale di Ripresa e Resilienza #Next Generation Italia, https://www.governo.it/sites/governo.it/files/PNRR_0.pdf

4.1.1. Innovation and environmental transition

31. The 2021 budget also allocated resources for the Transition 4.0 plan introduced in 2019 to support innovation and investment in new technologies, including those aimed at reducing environmental impacts (MiSE, 2019^[23]). The plan follows the Industry 4.0 plan launched in 2017, which among other measures included hyper-depreciation of intangible assets, strengthened research and development (R&D) tax credits and incentives for investing in start-ups (OECD, 2017^[24]). The Industry 4.0 Plan has proved effective in facilitating firms' digital transition with positive effects on employment (Bratta, Romano and Acciari, 2020^[25]).

32. The Transition 4.0 plan is based on a tax credit for firms investing in new fixed and immaterial assets between November 2020 and December 2022. The tax credit ranges between 6% and 50% according to the type of investment, the invested amount and the investment period. Fixed assets include high-tech machinery and industrial plants aimed at reducing the environmental impact of productive processes and intangible assets, such as software and digital tools. Eligible projects include investments of up to EUR 20 million. The plan also prolongs the tax incentives relating to expenditure for employee's training in Industry 4.0 technologies. The overall cost of the Transition 4.0 plan is expected to amount to approximately EUR 24 billion (MiSE, 2020^[26]).

4.1.2. Income tax system

33. Italy's tax take is high and, compared to GDP, tax revenues are among the highest across OECD countries (Figure 3, Panel A). Personal income taxes and social security contributions amounted to 24% of GDP in 2016, a high share compared to most OECD countries. Corporate income and indirect taxes generate smaller shares of overall revenues than in most OECD countries. High employer social security contributions and personal income taxes make Italy's labour income tax wedge one of the widest of any OECD country (Figure 3, Panel B), curbing labour demand especially in low productivity regions.

34. As highlighted in past OECD Economic Surveys, Italy's tax system is complex, abetting tax evasion, and many tax expenditures are poorly targeted. Despite recent progress and efforts to incentivise the use of electronic payments, tax evasion remains high and electronic payments are still used less than elsewhere. Recent estimates by the Ministry of Economy and Finance indicate that the tax gap (the

difference between the theoretical revenues the government should have collected assuming perfect compliance and the revenues actually collected) amounts to more than EUR 100 billion per year. The tax gap (as a percentage of theoretical revenues) is largest for the personal income tax of self-employed business income (nearly 70%) and VAT (26%), and is larger in lagging regions (Carfora, Pansini and Pisani, 2016^[27]).

35. Tax expenditures can be a useful tool to pursue economic and social objectives and increase welfare. However, in Italy, as in many other countries, the original economic and social objectives that justified certain tax expenditures may be no longer valid or the same objectives could potentially be achieved more efficiently and effectively in different ways, such as through spending programmes. Tax expenditures may also overlap with spending programmes.

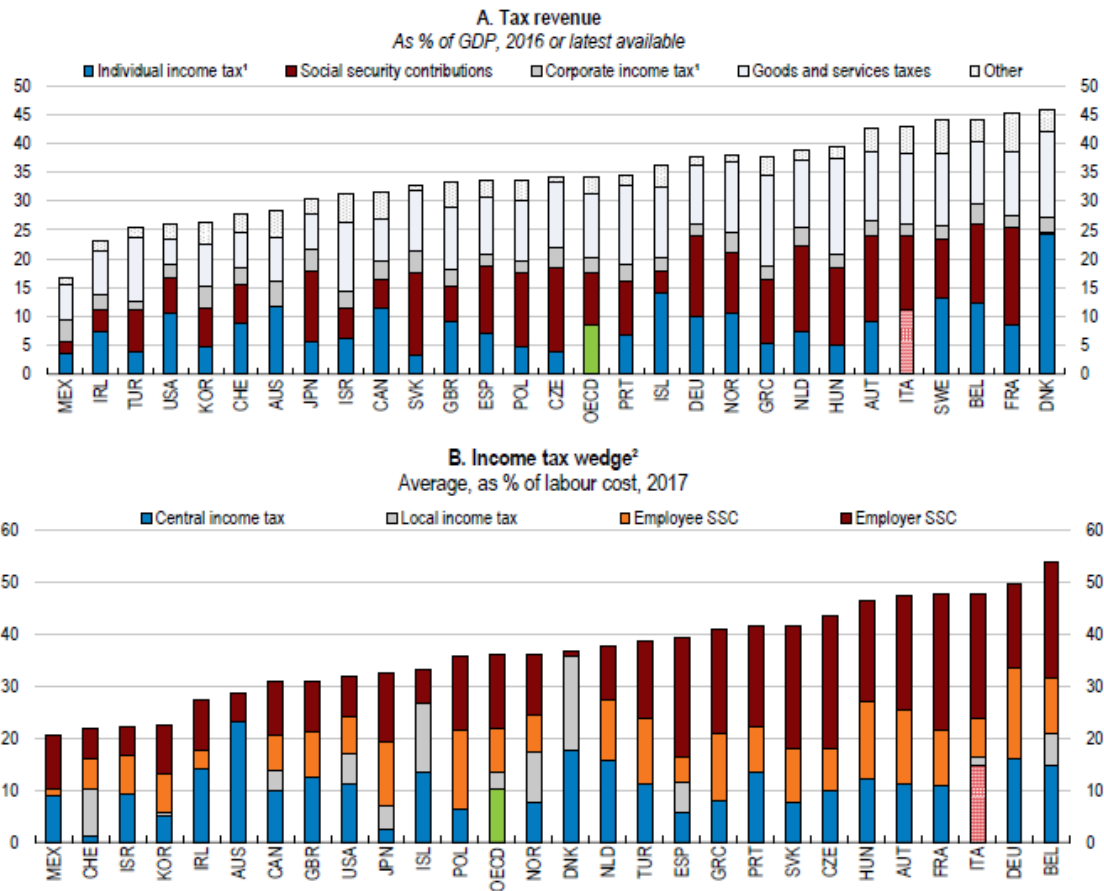
36. Since 2011 Italian governments have reviewed general tax expenditures on a regular basis. The government is required to publish an annual report on tax expenditures, which feeds into the yearly Update to the Stability Programme. The 2019 review reports that tax expenditures have increased in recent years. The review forecasts EUR 62.5 billion in foregone tax revenues for 2020, up from EUR 54 billion in 2016 and EUR 61.1 billion in 2019. An additional EUR 27.7 billion are related to tax expenditures at the local level. This also includes the most significant tax expenditures, such as the “EUR 80 fiscal bonus” for low-income employees and tax credits for building renovations (UPB, 2019^[19]). Many tax expenditures are small. Over 46% of them amount to less than EUR 100 million in foregone revenue each. The government has yet to compare, as mandated by the law, tax expenditures (more than 5 years old) with spending programmes in the same area so as to identify possible overlap. Reviews currently identify overlaps between the expenditure and revenue sides only in cases where the spending item explicitly refers to the tax relief measure, which generally occurs only in the case of tax credits (UPB, 2019^[19]).

37. With the aim of reducing environmentally harmful subsidies, the 2021 budget has created a special inter-ministerial commission for the ecological transition and the phasing-out of such subsidies. The commission is chaired by the Ministry for Ecological Transition and composed of the Ministry of Economy and Finance, the Ministry of Economic Development and the Ministry of Infrastructure and Transport. The commission is expected to build on the Catalogue of Environmentally Harmful and Friendly Subsidies that the Ministry of Environment, Land and Sea has prepared every year since 2017 (Ministero dell’Ambiente, 2021^[28]) (also see Section 3.4).

38. In line with this effort, the 2021 budget introduced a Single Use Plastic tax and a tax credit for the production of biodegradable plastics (to enter into force in January 2022). The SUP tax rate is set at EUR 0.45 per kilogram of non-biodegradable and non-recycled plastic material; a tax credit of 10% is applied to the expenses met to convert to production of biodegradable plastics (UPB, 2019^[19]).

39. The labour income tax wedge is high, although the measures introduced in 2020 and furthered in the budget for 2021 outlined above have started reducing it (at least for employees). These measures go in the right direction and are consistent with recommendations of past OECD Economic Surveys of Italy. However, their effects on job creation, especially of low-income jobs, interacts with those of the Citizen’s Income benefit programme (discussed below), which may discourage participation in the formal labour market. The reduction of high effective tax rates, especially for low-wage and second earners, is key to strengthening incentives to work in the formal sector. This is especially important in lagging regions where wages and productivity are lower, resulting in widespread informal employment. The shares of single men and women who work in Italy are similar to other European countries. However, among members of a couple, Italy’s employment rates fall below European averages, especially among women and in households with caring needs.

Figure 3. Italy's income tax take is high



Notes: 1. Includes taxes in profits and capital gains. 2. The tax wedge is personal income tax, employer and employee social security contributions and payroll taxes less benefits relative to labour costs, for a single childless worker earning 100% of average earnings. Source: OECD Revenue Statistics database; and OECD Taxing Wages database.

4.1.3. Benefit system

40. Pensions account for about half of total social protection spending, a higher share than in most OECD countries. Correspondingly, spending as a share of GDP on family benefits, active labour market, disability and housing programmes is instead lower than elsewhere. Furthermore, social transfers to the working-age population are poorly targeted as only a small share of them reach the poorer households.

41. The changes to retirement rules provided in the 2019 budget lowered the effective retirement age. Workers who are aged at least 62 and with at least 38 years of contributions are allowed to retire with a reduced pension. The changes also weaken the link between life expectancy and retirement age by discontinuing until to 2026 the link between the updates of early retirement contribution requirements and developments in life expectancy. The 2019 changes to retirement rules were expected to result in up to 300 000 additional retirees in 2019, 330 000 in 2020 and 355 000 in 2021. Intake has been lower, however, with about 150 000 additional pensions in 2019 and 50 000 for the Jan-Jun 2020 period.

42. In 2018, Italy introduced its first nationwide antipoverty programme: the Inclusive Income Scheme (*Reddito di Inclusione*, REI). In April 2019, the REI was replaced by the more generous Citizen's Income. The REI's transfers and eligibility thresholds were low relative to other countries, implying that the REI succeeded in reducing the depth of poverty – i.e., the gap between incomes and the poverty line – but not

the poverty headcount (as it failed to raise incomes above the poverty line). The REI's low eligibility thresholds and transfers meant, however, that it had minimal negative effect on employment incentives. Participation tax rate for beneficiaries moving into low-wage work were among the lowest across the OECD.

43. The Citizen's Income scheme, which replaced the REI in April 2019, provides a more generous transfer than the REI to top-up poor households' income to a minimum level. For smaller households, it is more generous than similar schemes in most other OECD countries relative to the national average income. The Citizen's Income applies to households with working-age members, while a new "Citizen's Pension" provides a safety net for very low-income households made up of only people aged 67 or above. The new benefit is conditional on participating in municipal works and employment or social inclusion "pacts".

44. The transfer is intended to ensure that beneficiaries achieve a minimum income, which is set at EUR 500 per month (around EUR 800 when considering the rental or mortgage allowance). The transfer value is calculated as the difference between this minimum income and the recipient household's existing income, allowing for some exclusions, such as a carer's allowance. Including the rental or mortgage allowance, the income transfer is above some relative and absolute poverty thresholds for smaller households and those living in low cost areas (OECD, 2019^[15]).

45. The Citizen's Income's transfer rules, however, risk aggravating the tax and benefit system's disincentives for low-income households to work in the formal sector and risk entrenching regional disparities in employment rates. In lagging regions, a larger share of the population is eligible for the Citizen's Income, but they face labour market and economic conditions that discourage gaining formal-employment income. Overall, the Social Security Institute (INPS) estimated that, prior to the COVID-19 outbreak, 45% of private sector employees in the South earned a net labour income below the Citizen's Income transfers. For example, almost one-third of jobs in the South pay wages below the Citizen's Income's income eligibility thresholds of about EUR 9 000 (considering the rental allowance) for a single person household. At the same time, in lagging regions, lower living costs boost the purchasing power of Citizen's Income benefits, in addition to there being more opportunities to supplement transfers with undeclared work. The wide variation in the efficiency of the 550 public-employment-service centres, which are managed by regional governments, compound these problems. Many of these centres, especially in lagging regions, lack the staffing and organisational capacity to fill their core employment service function (OECD, 2019^[15]).

4.2. Energy taxes and carbon emission permits

46. Energy taxes in Italy are levied within the framework of the 2003 EU Energy Taxation Directive. An excise tax on energy applies to most use of oil products, natural gas and coal and coke. The tax rate for transport fuels varies widely depending on the fuel type, whereas in the heating and process fuel category, rates are defined according to the user. In contrast to many other countries, the excise tax also applies to generation of electricity, although at substantially lower rate. Waste and renewable energy are not taxed when used to produce heat or electricity.

47. Energy taxes account for the majority of environmentally related tax revenue (see also Section 2). The highest rates apply to the use of fossil fuels in road transport.⁸ Nominal rates on natural gas and electricity use for residential consumers are also significant, but there is a reduced VAT rate (10% instead of 22%) for these two energy carriers. The tax contribution is also uneven across fuels, reducing efficiency in CO₂ emission abatement, as will be explained below. Most strikingly, fossil fuel use in industry is taxed

⁸ Road transport causes many externalities including accidents, noise, local air pollution and congestion in addition to climate costs. Thus, there are good reasons to charge higher tax rates for fuel used in road transport than on other sectors. Note, however, that many of these externalities are in principle better addressed by more specific instruments, e.g. congestion charges perform significantly better in addressing congestion costs than fuel taxes (Van Dender, 2018^[78]).

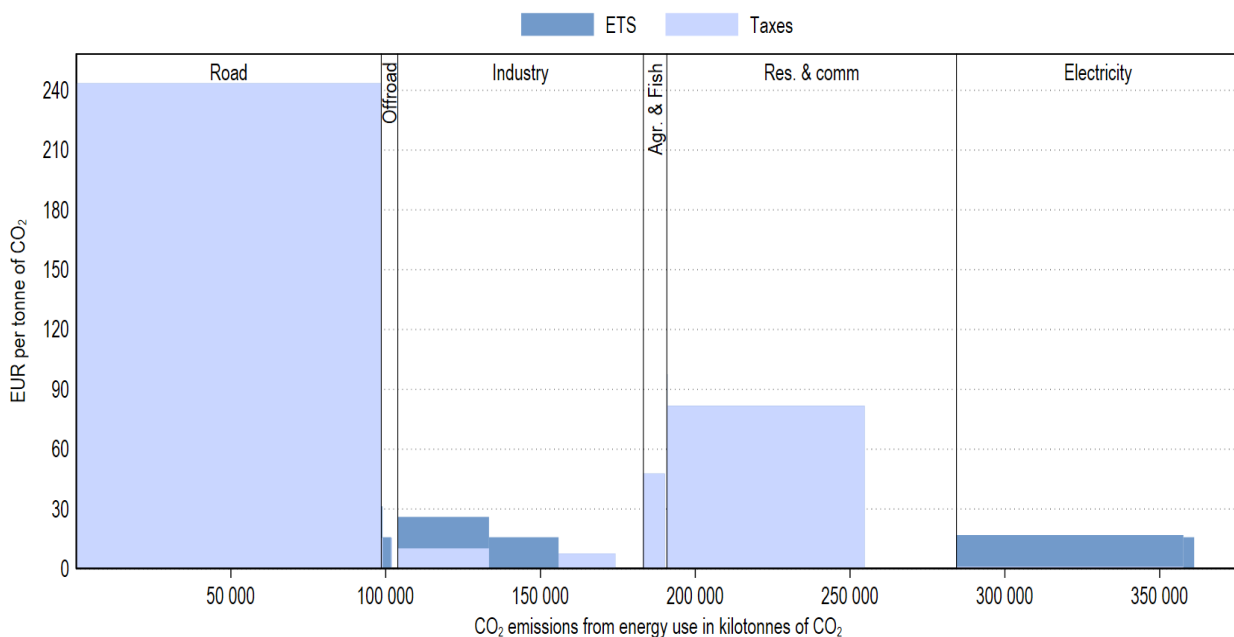
much less than in residential and commercial use (OECD, 2018^[29]) and diesel is taxed less than petrol, even though it causes more NO_x and small-particle pollution, and the combustion of a litre of diesel causes more CO₂ emissions than the combustion of a litre of petrol.

48. Figure 4 provides an overview of effective carbon rates on emissions from energy use in Italy in 2018. The effective carbon rate is the sum of taxes on fuels and emission permits that increase the price of carbon-intensive energy relative to low- and zero-carbon energy. A higher effective carbon rate encourages energy users to curtail the use of high-carbon energy and switch to low- and zero-carbon options. According to the High Level Commission on Carbon Pricing (2017^[30]), EUR 60 per tonne of CO₂ is a midpoint estimate for the social cost of carbon in 2020 and a low-end estimate for 2030.

49. Comparing progress to price all energy related carbon emissions at least at the social cost benchmark of EUR 60 per tonne of CO₂, Italy lags behind most of its neighbours. In 2018, Italy reached 51% of pricing all emissions at the social cost benchmark of EUR 60 or more, while Switzerland achieved 69%, Slovenia 57% and France 55% (OECD, 2021^[31]). Austria followed with 48%.

50. Four sectors account for the vast majority of emissions, namely the road sector, industry, the residential and commercial sector, and electricity generation (see Figure 4). As in most other OECD countries, average rates in the road sector and in the residential and commercial sector are higher than in industry and for electricity generation. The combustion of biomass for heating purposes is not taxed, which results in a significant share of emissions in the residential and commercial sector being untaxed. There is also a reduced VAT rate for natural gas (and electricity) use for households, which is not shown in Figure 4.

Figure 4. Effective Carbon Rates in Italy in 2018



Note: The figure includes emissions from the combustion of biomass.⁹

⁹ Recent evidence suggests that biofuels are generally not carbon-neutral from a life-cycle perspective. In addition, producers and users of biofuels are generally different (legal) persons. This implies that the incentives for reducing harmful emissions are stronger in the case where emissions are priced when they are combusted (by the user) and support is provided for removing emissions from the atmosphere (for the producer), than in a case where only net emissions are priced.

Source: OECD Effective Carbon Rates Database (OECD, 2021^[31]).

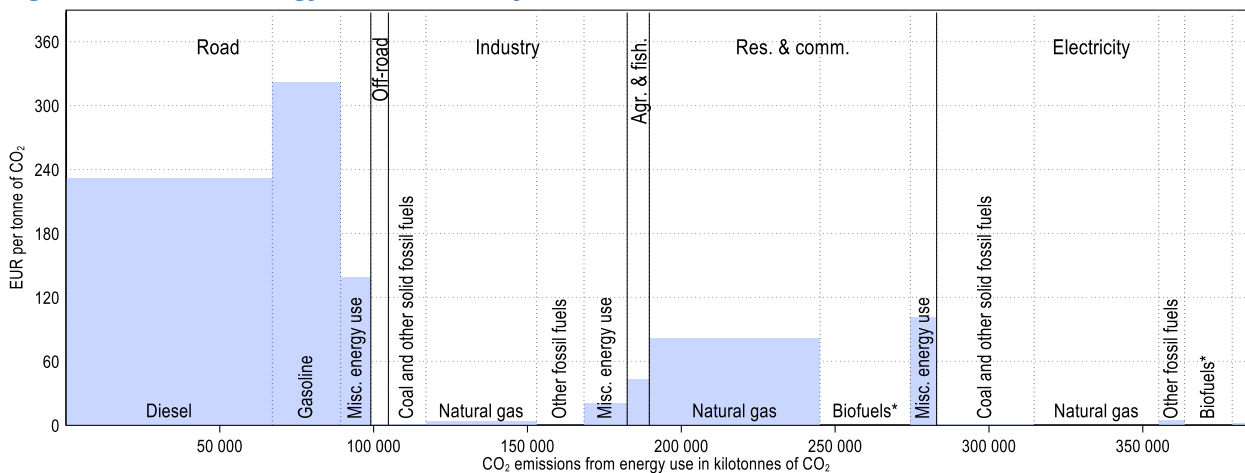
51. While effective carbon rates in the residential and commercial sector result entirely from taxes on fuels, permit prices from the European Union Emissions Trading System (EU ETS) contribute to most of the price signal in the industry sector and especially for electricity generation. While the permit price has nearly doubled since 2018 (from about EUR 16 per tonne of CO₂ to more than EUR 30 in early 2021), the overall picture does not change: emissions from electricity generation and industry are priced significantly lower than emissions from other sectors and general below EUR 60 per tonne CO₂ (Figure 4). In addition, there is no guarantee against falling permit prices (Flues and Van Dender, 2020^[32]).

52. Figure 5 provides additional detail on effective carbon rates by sector and by fuel that result from fuel taxes. In the road sector, diesel is taxed significantly below gasoline per litre of fuel, as well as on a carbon content basis.¹⁰ The third edition of the Italian Catalogue of Environmentally Friendly Subsidies and Environmentally Harmful Subsidies (Ministero dell’Ambiente, (2019^[33])) calculates a tax expenditure of EUR 5.2 billion in 2019 (Codice Sussidio EN.SI.19).¹¹ The Ministry of Economy and Finance recently estimated foregone revenue at EUR 3.6 billion in 2019. The “diesel differential” therefore has an important revenue effect.

53. In the residential and commercial sector, the effective carbon rate resulting from the excise tax on natural gas is EUR 82.2 per tonne CO₂ (OECD, 2019^[34]), but a reduced VAT rate (10% instead of 22%) applies for residential users. There is no estimate of the value of this tax expenditure (Codice Sussidio IVA.12). The reduced VAT rate lowers the price of natural gas for residential users and lowers incentives to switch to cleaner alternatives and to use gas more economically. Adjusting the excise tax rate to its VAT standard-rate equivalent lowers the carbon price signal by more than 50% to EUR 40.6 per tonne CO₂ in 2018.¹²

54. Fuel used in maritime and air transport is exempt from the fuel tax and reduced rates apply to fuels used in rail transport, taxis, ambulances, the National Armed Forces, and the agricultural sector. Trucking companies can obtain partial refunds on the amount of excise tax paid for their fuel purchases (OECD, 2020^[35]).

Figure 5. Effective energy tax rates in Italy in 2018 across sectors



Note: The figure includes emissions from the combustion of biomass.

¹⁰ The carbon content per litre of diesel is higher than per litre of gasoline. An equal tax rate per litre of fuel would still result in somewhat lower effective carbon rate for diesel than for petrol.

¹¹ The tax expenditure is calculated based on the difference of petrol and diesel tax rates per litre of fuel.

¹² The VAT reduced to standard rate differential has been calculated based on the average price for a residential consumer in Italy using data from Eurostat (2020, Item NRG_PC_202).

Source: Adapted from Taxing Energy Use 2019 (2019^[34]).

4.3. Other environmentally related taxes

55. Vehicle taxes are the other major source of environmentally related tax revenue besides energy taxes in Italy. In 2018, they accounted for 18% of total environmentally related tax revenue. They are also an important source of revenue for local authorities, as they are collected by regions and provinces.

56. Italy levies both a registration and ownership tax on vehicles. The registration tax is based on vehicle type and horsepower and includes a CO₂-based bonus-malus scheme, which has recently come into force. In this scheme, a financial penalty is levied for cars emitting over 160g of CO₂ per km, climbing in several steps from EUR 1 100 to EUR 2 500 for vehicles emitting more than 250g of CO₂ per km driven. If it is assumed that each vehicle is driven 200 000 km over its lifetime, a car emitting 220g of CO₂ per km would emit 5 tonne of CO₂ more over its lifetime than a car emitting 170g per km it is driven. The tax rate for the high-emitting car in this example would be EUR 2 000, while the tax rate for the lower-emitting car would be EUR 1 100; a tax difference of EUR 900, or EUR 180 per additional tonne of CO₂ emitted by the higher-emitting car over its lifetime.

57. The annual ownership tax (for passenger cars) is based on engine power, emission standards and fuel type (ACEA, 2020^[36]).

58. The in-kind benefit associated with personal use of a company-owned car is taxed on a flat-rate basis, as 30% of the “average cost of use” of the car, based on an annual mileage of 15 000 km. This gives an incentive for employees to travel greater distances, potentially resulting in greater emission of GHGs and local air pollutants, as well as more congestion and road accidents. Until June 2020, the “average cost of use” was set by the Italian Automobile Club, based on car model, engine power and fuel. Since 1 July 2020, percentages of the taxable fringe benefit depend on the level of CO₂ emissions (ranging from 25% for cars emitting less than 60 gCO₂/km to 60% for cars emitting more than 190 gCO₂/km). Commuting expenses are not deductible from income taxes and, if paid by the employer, they are fully taxed. This generally creates incentives for employees to live close to their work place, which encourages the use of low-carbon commuting modes (such as walking or biking).

59. Taxes on pollution (such as air pollution and waste) account for merely 1% of revenue from environmentally related taxes (Eurostat, 2021^[3]). In addition to taxes on energy products and vehicles, Italy also levies a tax on SO₂ and NO_x emissions to air from stationary sources, with tax rates equal to EUR 0.106 and 0.209 per kg emitted, respectively. In 2018, this tax raised about EUR 6 million. The tax rates applied are quite low, e.g. compared to estimates of the social costs of the emissions caused. For example, van Essen et al. (2019^[37]) prepared country-specific estimates for the European Commission of the social costs of emissions from road transport. The damages caused by such emissions from stationary sources are likely to be similar to those from road transport. For SO₂ emissions, van Essen et al. (2019^[37]) estimate that the social cost is EUR 12.7 per kg emitted, whereas for NO_x emissions in rural areas in Italy, they estimate that the social cost is EUR 15.1 per kg emitted; in urban areas, the estimate is EUR 25.4 per kg emitted.

60. Italy also applies a tax on the landfilling of waste, which raised about EUR 172 million in revenues in 2018. The National Law 549/95 defines a range for the tax rates for various types of waste going to landfills, with regional governments deciding the exact rates to apply. For municipal waste, the allowed range is between EUR 5.17 and EUR 25.82 per tonne of waste. The lower end of this range seems to be very low compared with the social damages that the landfilling can cause. In 2018, landfills treated 24% of total urban waste, the same as EU-27 average and down from more than 40% in 2010 (ISPRA, 2020^[38]). On the other hand, high tax rates for landfilling of waste could stimulate illegal dumping of waste – which could cause even larger environmental damages. Illegal dumping is a serious health concern in some

areas of the country (OECD, 2019^[15]). Stronger enforcement then needs to accompany any increase in municipal waste tax rates.

61. In relation to waste management, there is also a system of “environmental contributions” for packaging in place, with tax rates varying across different packaging materials. For example, for paper packaging, the tax rate is EUR 35 per tonne; for glass packaging, it is EUR 27 per tonne; and for aluminium packaging, it is EUR 15 per tonne. The tax rates for plastic packaging vary between EUR 150 and EUR 546 per tonne, depending, i.a., on the recyclability of the plastic material. In 2018, this system raised almost EUR 600 million in revenue. As highlighted above, the 2021 budget has introduced a Single Use Plastic tax along with a tax credit for the production of biodegradable plastics. The government has postponed the implementation of these measures first to June 2021 and then January 2022.

62. Resource taxes and charges, such as those on water abstraction and extraction of materials, are in place at regional and local levels.

4.4. Harmful and beneficial subsidies

63. The MoENV regularly publishes the Italian Catalogue of Environmentally Friendly and Environmentally Harmful Subsidies, a very comprehensive overview of the topic. It distinguishes tax expenditures (resulting from beneficial tax treatment of environmentally friendly and harmful products or activities) and direct spending policies. While Figure 4 and Figure 5 (in Section 3.2 above) show effective carbon rates for energy, the tax expenditure estimates of the Italian subsidy catalogue calculate the revenue foregone that results from applying different rates for similar fuels for different uses. For 2018, environmentally harmful subsidies amounted to EUR 19.7 billion (EUR 17.7 billion for fossil fuel support) whereas environmentally friendly subsidies amounted to EUR 15.3 billion (Ministero dell’ ambiente, 2019^[33]).

64. The largest share of environmentally harmful subsidies is related to energy (EUR 12.2 billion in 2018), and the second largest to reduced VAT rates (EUR 4 billion). As regards energy related subsidies, the lower excise tax on diesel (EUR 0.617/l) than on petrol (EUR 0.7284/l) is the largest item (EUR 5.2 billion, Item EN.SI.24 in the Italian catalogue). The second largest item is the exemption of aviation fuels (EUR 1.8 billion, EN.SI.04), and the third largest item, the partial reimbursement of excise duties for road haulage and passenger transport (EUR 1.6 billion, EN.SI.19). As regards subsidies related to reduced VAT rates for energy, the single largest item is the reduced VAT rate (10% instead of 22%) for domestic electricity use, amounting to EUR 1.3 billion in 2018 (Item IVA.07). In addition, reduced rates apply for domestic use of natural gas (IVA.13) and LPG (IVA.12), but the catalogue does not provide any tax expenditure estimate for these items.

65. At EUR 11.6 billion in 2018, energy items also account for the largest share of environmentally friendly subsidies. The largest item (EN.SD.07) is support for photovoltaics (EUR 5.9 billion) and the second largest item, support for renewable energy other than photovoltaics (EUR 5.7 billion).

5. Opportunities and challenges

66. The COVID crisis adds urgency to the need of reforming Italy’s tax and benefit system. Any meaningful reform should aim at one or more of the following objectives: reducing the distortions marring the current system, increasing tax compliance, strengthening work incentives, enhancing social inclusion and protecting the environment.

67. Fiscal reforms aiming at raising living standards and well-being for current and future generations will have to confront global and local environmental issues. As highlighted above, EFR can make important contributions to national efforts to achieve international commitments such as the UN SDGs, the Paris Agreement on climate change, the UN Convention on Biological Diversity and the 2009 G20 commitment

to “rationalize and phase out over the medium term inefficient fossil fuel subsidies that encourage wasteful consumption”. At the same time, as emphasised by several stakeholders, taxation is an important part of the policy mix needed to achieve these goals but needs to be complemented by effective regulatory, investment and other support policies.

68. The European Union attributes high importance to taxation as a tool to achieve a greener and more sustainable European growth. This is reflected in the ongoing discussion around the revision of the EU Emissions Trading System and of the Energy Taxation Directive, the potential expansion of EU-wide carbon pricing (through emissions trading or taxation), a carbon border adjustment, and taxation of natural resource use. The EU’s Annual Sustainable Growth Strategy 2021 also emphasises that carbon pricing and environmental taxation will be important environmental and fiscal instruments to implement the green transition.¹³ Progress at the European level on these issues would provide Italy (and other EU countries) with an opportunity to adopt an ambitious green fiscal reform and integrate national choices with Europe-wide efforts. One stakeholder emphasised that EFR should be designed in the framework of fiscal federalism, aligning incentives and providing adequate resources from the European level down to the city level.

69. Fiscal reforms can help to address local environmental problems, such as air, water and soil pollution, in addition to supporting global environmental goals, such as limiting global warming. The direct relationship between local pollution and people’s health and well-being can help build support for effective policy measures (including fiscal policy) to reduce pollution. For instance, recent studies link long-term exposure to air pollution with COVID-19 cases and deaths (Becchetti et al., 2021^[39]; Coccia, 2020^[40]), though more research is needed to establish a causal link between air pollution and vulnerability to COVID-19.

70. Stakeholders named several examples of how fiscal policy can effectively change behaviours and address local environmental challenges, including parking policies (i.e. higher fees for the use of public land for parking), the revision of property taxes, tourism taxes and other local taxes to better account for environmental externalities, and the introduction of taxes and fees on pollution from agricultural activities (e.g. a tax on non-biodegradable plastics used in plant hotbeds, or a fine for the application of manure during climatic conditions that cause high air pollution).

71. Well-designed EFR can then address environmental problems while strengthening growth and social inclusion. The additional revenue generated by higher taxes on environmentally harmful activities (including reducing or eliminating environmental harmful subsidies) can be recycled to lower other taxes (such as labour and corporate income taxes) and strengthen social programmes. The proposal of the OECD Economic Survey of Italy (OECD, 2019^[15]) consists of recalibrating the Citizen’s Income, strengthening in-work benefits for low-wage earners, and introducing a simpler system of personal income tax rates and credits. Reforms in this direction may better protect households from poverty and encourage formal sector employment, especially among second earners. This proposal draws on many countries’ approaches to addressing the same objectives.

72. The remainder of this section summarises the topics discussed at the first round of stakeholder workshops, namely the potential scope of an EFR in Italy, revenue use and ways to increase support for an EFR, as well as the design and planning of an EFR. The topic summaries include the contributions collected from stakeholders during the four workshops in November and December 2020 as well as in March 2021. The summaries also include written and oral feedback on the draft report on opportunities and challenges that was shared with all invited stakeholders in March 2021. The section is enriched by analysis of relevant reports, documents and the respective academic literature and ends with a list of the main opportunities and challenges for EFR in Italy.

¹³ Annual Sustainable Growth Strategy 2021,

<https://eur-lex.europa.eu/legal-content/en/TXT/?qid=1600708827568&uri=CELEX:52020DC0575>.

5.1. Scope of an environmental fiscal reform

73. The scope of EFRs varies. First, environmental tax reforms can be narrow, in the sense that they only reform taxes, fees and spending policies within the environmental domain, or they can be broad, in that they connect reforms of environmentally related taxes and spending with other policy areas, such as labour taxation, the social benefit system and public investment (see Box.2 for concrete examples). Second, EFRs can focus on only one topic within the environmental domain, e.g. on clean energy or on reducing the use of plastic bags, or they can connect several domains, such as clean energy, clean air, clean water, circular economy, etc.

74. Several stakeholders mentioned that a broad EFR – increasing taxes on pollution while lowering effective tax rates on labour (and potentially capital) income – would gain the support from a wide set of actors. For example, lowering labour income taxes for low- and middle-income earners (OECD, 2019^[15]), while increasing taxes on pollution, would likely gain more public support than an isolated increase in pollution taxes without any clear indication of their revenue use.¹⁴ A broad EFR also makes it more likely that a broad set of stakeholders see gains in some domains, which increases the chances that they support the overall reform package.

75. Other stakeholders mentioned that more narrowly defined reforms are simpler to implement and thus offer the potential for faster implementation. Any broad fiscal reform would require time to design. Balancing tax gains in some domains with additional tax contributions in other domains is a complex task.

76. Some stakeholders stated that broad or narrow fiscal reforms are not necessarily mutually exclusive, but that there could be possibilities to start with a narrower set of EFRs, while working on a comprehensive broad EFR. In addition, local externalities could be addressed at local level, while – at the same time – more global externalities are addressed at the national and European level. This leads to the question of how one can bring the different elements of fiscal reform together, which depends largely on the potential revenues from higher environmental taxes and on how the changes in incentives that the different elements of the reform can generate will interact.

77. Where the revenues from environmental taxes are significant and can be sustained over a longer period (e.g. a decade, two, or even longer), then the case for a broad reform deserves close consideration because the question of what to do with the revenue becomes salient. As mentioned above, there may be several options for making good use of the revenues, e.g. to reduce personal or corporate income taxes, pension contributions, or to increase public investment. Revenue use will co-determine the economic benefits from the reform and can strongly influence public support.

78. Where the revenues from the environmental tax are small or are expected to decline fast, then the case for a broad reform is weaker, even though temporary (income) tax refunds equal in total amounts to the revenue collected from the environmental tax could be implemented. Stakeholders also mentioned that a more narrow reform with revenues being used to support clean products and behaviour, could be more suitable where the revenues are small or expected to decline fast, especially when the tax is raised or differentiated at the local level.

¹⁴ An alternative could be to use revenues for decreasing pension contributions, which account for more than half of Italy's overall social spending and is expected to raise even further with an aging society (OECD, 2019^[15]).

Box 1. Sustaining revenues from an environmental fiscal reform

A common question when considering an EFR is how long the revenues from higher taxes on environmentally harmful products and activities can be sustained. In general, the answer depends on the starting level of the tax, potential tax rate increases, which emissions, activities and tax payers are covered, and the responsiveness of the tax payers (Marron, Toder and Austin, 2015^[41]).

If tax payers respond strongly to a narrowly defined environmental tax, e.g., on the use of single-use plastic bags, than revenues can decline fast. However, if the base of tax is broad (e.g., carbon emissions from energy use) and the price elasticities of demand are low, revenues can be sustained over decades.

An ex-post evaluation of Germany's ecological tax reform

Germany implemented an ecological tax reform in 1999, which is estimated to have raised more than EUR 20 billion of additional revenues annually since the early 2000s (see Table 1).^{a)} The extra revenue has been used to reduce employer and employee pension contributions as well as to stabilise the level of pension benefits. Without the ecological tax reform, the pension contribution rate would be 1.2 percentage points higher, i.e. 19.6% instead of 18.4%, and pension benefits would be 1.5% lower than they currently are, according to estimates by Bach et al. (2019^[42]).

Table 1. Revenues from the German ecological tax reform

Additional revenue (in billion EUR) from	1999	2003	2010	2019
Increased excise taxes on fuels				
Petrol	0.9	5.3	4.2	3.8
Diesel	0.8	5.1	5.8	6.8
Heating oil	0.5	0.6	0.5	0.4
Natural gas	0.5	2.1	1.7	2.1
Excise tax on electricity use	1.8	5.1	6.2	7.0
Excise tax total	4.6	19.6	18.4	20.0
VAT	0.5	1.8	2.1	2.0
<i>Excise and VAT total</i>	5.1	21.4	20.5	22.0
<i>Excise and VAT total (in % of GDP)</i>	0.23	0.92	0.79	0.63

Source: Adapted from Bach et al. (2019^[42]).

Revenue potential from aligning carbon prices with Paris Agreement commitments

Economic models can be used to estimate what carbon prices would be needed to reach countries' emission reduction pledges as included in their Nationally Determined Contributions (IMF/OECD, 2021^[43]). For the case of Italy, it is estimated that a carbon price levied in addition to existing energy taxes and carbon prices of USD 75 per tonne CO₂ would not be sufficient to reach the pledge of cutting emissions by more than 50% by 2030. It is estimated that Italy would raise around 0.8% of GDP worth of revenue from a USD 75 carbon price. Across the G20, such a price would raise ca. 1% of GDP of revenue. This carbon price is estimated to increase the price of coal by 138%, that of natural gas by 34%, of electricity by 31%, and that of petrol by 5%, over 2020 levels.

Revenue implications of the electrification of road transport – scenarios for Slovenia

Slovenia collected 14.6% of total tax revenue at the central government level from excise duties and carbon taxes on road transport fuels in 2016. Considering scenarios on the electrification of the vehicle

fleet in Slovenia, a joint OECD/ITF (2019^[44]) study found that a moderate kilometre charge on motorways, which gradually increases from 0.7 Eurocent/km in 2020 to 4.6 Eurocent/km in 2050, could cover the expected decline of fuel tax revenues.

Note a): The additional revenue results primarily from the new excise tax on electricity and the increased excise tax rates on road and heating fuels. The additional excise tax revenue is complemented by a significantly smaller amount of increased VAT revenues, considering that VAT is raised on the excise tax inclusive price of road fuel, heating fuels and electricity use.

79. An environmental tax reform in Italy that increases effective carbon prices could raise significant amounts of revenue as the examples in Box 1 illustrate. As decarbonisation sets in, in road transport, a kilometre charge (ideally aligned with remaining pollution costs) could compensate for the erosion of the fossil fuel tax base. Alternative options include the taxation of electricity use, but this may reduce the speed of electrification and in that sense may be counterproductive to the goal of decarbonising transport, industrial production and process and space heating.

80. The revenue stream from a broad environmental tax reform can be aligned with increased needs to support for long-term care and public spending on pensions in an aging society. For example, Italy's public spending for long-term care accounts for 0.5% of GDP (compared to approximately 2% of GDP in France which has lower old-age dependency ratios) (Rouzet, 2019^[45]). The old-age dependency ratio, as well as total public spending on pensions as a share of GDP in Italy are expected to peak in the 2040s (Andrle et al., 2018^[46]).

81. Some stakeholders noted that discussions on EFR tend to focus on energy use and on climate goals, while fiscal policy should equally support the achievement of other sustainable development goals, including the protection and sustainable use of biodiversity, resource efficiency and the circular economy. It was suggested that, in addition to putting a price on pollution and negative side-effects, fiscal policy can play a role in supporting low-impact products and behaviour (e.g. local transport or organic locally produced products), for example through lower tax rates or tax exemptions. Such an approach would require the establishment of a taxonomy that would define which products and activities would be classified as being environmentally friendly or having low environmental impact, which can be challenging. It was also suggested that fiscal policy could play a more active role in supporting the sharing economy, in addition to influencing consumption choices (e.g. support car rentals and car leasing in addition to, or instead of, the purchase of electric vehicles). In addition to design challenges for such policies, they risk being costly in terms of foregone tax revenue, but can have strong steering effects and could be considered when the cost of public funds is relatively low, e.g. in the context recovery policies.

Box.2. Two options for a narrow and a broader carbon pricing reform

In order to illustrate the choice of scope of an environmentally related fiscal reform, this box considers two options for a carbon pricing reform; a narrow option and a broader option. As shown in Section 4.2., effective carbon rates are low in the electricity and industry sector, especially when compared to other sectors.^{a)} Italy could thus economically reduce carbon emissions by increasing rates in these sectors, see also the Dutch example (Box 3).

Carbon rates in the electricity and industry sectors result from the price of emission permits that industrial emitters and power plants are required to hold to comply with the EU ETS. The price of permits has recently increased and electricity sector emissions have started to decline, but there is little abatement in the industry sector (Marcu et al., 2020^[47]). In addition, the remaining uncertainty over future permit prices continues to limit abatement incentives. A minimum carbon price could encourage additional abatement and protect low-carbon investment against low permit prices. Such a minimum carbon price would ensure that carbon prices would never fall below a certain level (e.g. EUR 30 per tonne CO₂ in 2021), and the minimum price could increase over time (e.g. to EUR 120 in 2030). If

permits trade above the national minimum price, emitters would only need to surrender EU ETS permits as they already do, but if permit prices fall below the minimum price, they would pay an additional charge that equals the difference between the average permit price and the minimum carbon price in the given year. Once the minimum carbon price exceeds effective carbon rates in other sectors, e.g. the residential and commercial sector, excise tax rates in these sectors would also be increased in line with the minimum price to encourage cost-effective abatement across sectors.

A narrow carbon pricing reform

While both the narrow and the broader reform option increase effective carbon rates, they differ in how the additional revenue from higher effective carbon prices would be used. In Italy, a **narrow reform** could, for example, use the additional revenue to lower the so-called ASOS component in electricity bills, a fee which finances support for renewable energy.^{b)} Households would likely hardly notice any financial impact from such a narrow reform. While higher effective carbon rates would increase wholesale electricity prices, at least in the short-term, the simultaneous decrease of the ASOS fee in their energy bills implies that overall rates would hardly change. The financial impacts for industry would be more heterogeneous. For firms that use a lot of electricity but few other carbon-containing fuels and that have few process emissions, there would hardly be any financial impact, as the lower ASOS fee would counteract higher wholesale electricity prices. Firms that rely heavily on carbon-intensive fuels (other than electricity) or have a significant share of process emissions, would see an increase in prices for these inputs, but at the same time would benefit from the reduced ASOS and lower costs for electricity. This would encourage them to economise on the use of carbon-intensive fuels, reduce process emissions and switch to cleaner alternatives and electricity.

In terms of emissions, the higher effective carbon rates for electricity and industry would encourage the use of cleaner fuels and more efficient processes. For example, in electricity generation, there is a strong incentive to switch from generating electricity with coal to natural gas at a carbon price of EUR 30 per tonne CO₂ and above. At higher rates, it also pays to generate electricity with renewables instead of gas without any additional support. In industry, higher effective carbon rates would encourage electrification (powered by renewables) as well as lower carbon processes, e.g. producing steel using the more carbon-efficient electric arch route instead of blast furnace production and low-carbon products, such as pozzolanic cements.

To sum up, a narrow reform would reduce emissions by increasing the price of carbon-intensive relative to low-carbon energy, but make only small changes for energy users in terms of the overall energy bill, as the additional revenue is used to lower the renewable contribution.

A broad carbon pricing reform

The **broader reform** option could increase effective carbon rates in the same way as its narrow version, but it would use the additional revenue to lower personal or corporate income tax and social security contributions, or increased transfers. Households would see their energy bills increase, but at the same time would generally have higher disposable income because of lower income tax contributions or adapted transfers. This would encourage them to economise on energy use, and lower income taxes would increase the incentive to work.

For firms, energy costs, especially for carbon-intensive energy, would increase, encouraging them to economise on energy use and switch to cleaner sources. Depending on the use of revenues to lower personal income taxation (PIT), corporate income taxation (CIT), or social security contributions, or to increase transfers, some firms (especially profitable and labour intensive firms) may see their overall tax contribution decrease, while less profitable firms and firms with carbon-intensive assets and products will see their overall tax contribution increase, in line with some of the industrial policies recently introduced by Italy. More generally, low-carbon production will gain, while high-carbon

production will pay more. In addition, as labour becomes cheaper relative to energy, especially when revenues are used to lower personal income tax rates or social security contributions, firms may economise on energy while hiring workers.⁹⁾ Some highly carbon-intensive firms may find it difficult to compete internationally, if they are constrained in options to switch to cleaner production methods at sufficiently low cost. In these cases, there could be a role for additional support for low-carbon investment, be it through public funding for R&D directed towards the development and deployment of low-carbon technologies, low-interest loans, or carbon contracts for difference that increase and stabilise the returns on low carbon investment.

Overall, a broader reform would in addition to cutting emissions increase incentives to work and to employ. However, the distributional effects of a broad reform may be more challenging to manage given the increase in energy prices. Distributional impacts depend on a variety of socio-demographic characteristics, not just on income. Addressing them requires detailed information and involves many actors, resulting in a design challenge.

Note a): Several stakeholders advocated an increased harmonisation of effective carbon rates across sectors within a broad fiscal reform that includes environmental goals. One stakeholder also endorsed a harmonisation of effective carbon rates on petrol and diesel (within a narrow environmental fiscal reform) as long as overall tax contributions from both fuels would not increase.

b): The ASOS component in electricity bills finances support for renewable electricity. Traditionally, support for renewable electricity is charged to electricity users to ensure that they pay for the full cost of electricity. Recently, two arguments have emerged why some support for renewable electricity could also be financed from the general budget, or a fee that applies to all (carbon-containing) energy. First, many renewable electricity technologies are still fairly new and their costs of electricity production fall with installed capacity, due to continuous product innovations and learning. Support for research, development and deployment is generally financed from the general budget, so there is a reason to finance (some of) the support for renewable energy through the general budget. Second, zero-carbon electricity from renewable sources is increasingly a means to decarbonise the entire energy sector. From a perspective of charging all energy users for the full cost of generation, support for renewable electricity could thus be financed from the revenues of a tax (or fee) that applies to all energy sources in proportion to their carbon content.

c): Note that firms may also substitute energy for capital, e.g. when investing in low-carbon capital stock. The new capital stock can in principle require more or less labour than the old one. Dussaux (2020^[48]) finds that carbon taxes generate employment reallocation between firms and industries in the French manufacturing sector, but do not affect total manufacturing employment. The author calls for complementary labour policies that ease the transitions for workers that need to switch jobs.

82. Several stakeholders mentioned that in order to better align prices with environmental damage, action is needed both at the national (and European) as well as on the local level. For instance, global damages such as climate change are best addressed by strengthening carbon pricing at the Italian (and European) level, while local damages, such as air pollution or congestion can be better addressed by more local fiscal instruments. In addition, revenues from carbon pricing, which can be expected to be significant over longer time horizons, could help implement a broad fiscal reform, while more limited revenues from more local environmental fiscal instruments (e.g. taxes on air pollution or increased parking fees) could directly support behavioural change (e.g. by supporting practises to reduce air pollution from agriculture, improving local transport, etc.). Furthermore, existing fiscal instruments, such as the property tax and the tourist tax, could be reformed to better reflect environmental impacts.

83. An EFR in Italy should be aligned with current environmental (fiscal) reforms at the EU level, including reforms of the EU ETS and the Energy Taxation directives and the planned introduction of a carbon border adjustment, according to many stakeholders. While the exact content of the reforms at EU level is still under discussion, this should not prevent Italy from considering and planning its own reforms. Some flexibility on the exact use of instruments could be helpful in this perspective. For example, a national carbon price floor could be implemented through an expanded ETS with a minimum auction price reserve, or through increased excise taxes on fuels (possibly also mandated by an Energy Taxation Directive reform). Either way this would increase certainty on the revenues from carbon pricing in order to support a broad EFR. In addition, EU legislation should not be seen as a one-way street from the European to the national level, as member states significantly shape European legislation.

5.2. Revenue use and support for an environmental tax reform

84. Higher environmentally related taxes generate additional revenue. Using this revenue judiciously can increase support for EFR, but overall support depends on a wider set of factors. One stakeholder mentioned that support for environmentally related taxes varies with income and education levels. Relatedly, Alberini et al. (2018^[49]) find that support for a carbon tax increases with knowledge about climate change and education levels. More generally, to increase support for an EFR, the objectives of the reform (e.g. reduce pollution, increase employment, and improve long-term competitiveness) need to be well explained and communicated to the public in an easily understandable way.

85. At the national level, a broad EFR would increase the likelihood that all stakeholders see gains in some domains from the reform. Clearly communicating these gains can help to gather support for a broad EFR. A too narrow EFR would increase the risk that stakeholders that do not see any direct benefits from the reform would oppose it. At the local level, however, it may be easier to earmark revenue to certain areas, sectors or stakeholders. For example, revenue from higher parking fees could be used to build new cycling infrastructure in the neighbourhood, or to subsidise local public transport.

5.2.1. Creating jobs

86. A number of stakeholders mentioned that job creation would be an important ingredient of EFR. An EFR that uses additional revenue to lower the labour tax wedge would increase incentives to work as well as to hire new staff. Lowering the labour income tax wedge could also potentially increase firms' competitiveness. One way to increase support would thus be to use (part of) the revenue to lower income tax rates or social security contribution rates in order to increase employment.

5.2.2. Improving progressivity of the overall tax system and energy affordability

87. Stakeholders also stated the importance of taking the distributional effects of an EFR into account. In addition, an EFR would also need to ensure that energy remains affordable. An overall progressive reform could be achieved by using the revenue to lower income tax and social security contributions especially for lower income households, increasing the overall progressiveness of the Italian tax system. In addition, revenue could be used to strengthen social benefits. A simulation by the OECD (Flues and van Dender, 2017^[50]) suggests that redistributing a third of the additional revenue generated by increasing effective carbon rates to lower the heating fuel and electricity bills of lower-income households would be sufficient to increase energy affordability. Cashbacks could also be used to support green purchases.

5.2.3. Supporting green technologies and products

88. The availability of clean alternatives for pollution-intensive products would also be important for support of EFR according to stakeholders. Households and firms would find it easier to understand and thus support a reform where clean alternatives already exist. Additional support for clean products may still be required to increase the visibility of clean solutions, to make clean products competitive in cases where products are still in a phase of early adoption (and are expected to be still more expensive than dirtier products after the reform for some time), and to push entirely new technologies and products into the market. Public investment in clean alternatives, e.g. through infrastructure, can help too.

89. Incentives to support the development of green technologies and products would be in line with the Industry 4.0 plan and the successor Transition 4.0 plan. They could be linked to the current tax credits to facilitate R&D and transition to new environmentally friendly technologies, with the potential for instance of using some of the extra revenues to increase investment in R&D (which currently accounts only for EUR 2 billion out of the overall EUR 24 billion of the Transition 4.0 plan). Higher public funding for R&D directed towards the development and deployment of low-carbon technologies could have substantial

economic benefits, because innovation could be applied across a broad range of sectors and tends to have substantial knowledge spill-overs for domestic firms (Dechezleprêtre, Martin and Bassi, 2016^[51]).

90. Spending on green technologies and biodiversity conservation can also be an effective economic recovery policy. Batini et al. (2021^[52]) find that fiscal multipliers associated with green spending are about 2 to 7 times larger than those associated with non-eco-friendly expenditure. On average, one USD spent on renewable energy generates USD 1.1-1.5 of additional economic activity.

5.2.4. *Maintaining and improving the competitiveness of Italian firms*

91. In general, a fiscal reform that would lower taxes on labour income and increase effective tax rates on CO₂ emissions and other pollutants would lower the labour costs of Italian firms, supporting their international competitiveness through fiscal devaluation (see below). In addition, higher effective carbon rates induce firms to reduce emissions, improve resource efficiency, take advantage of clean energy, and encourage investment in cleaner technology (OECD, 2018^[53]). More generally, in a net-zero carbon economy, which the Paris Agreement requires by mid-century, only firms producing and using (net) zero-carbon technologies will be able to compete. Within the European Union, the European Green Deal implies that also Italy's neighbours are expected to adopt cleaner production processes.

92. Well-designed fiscal reforms can support international competitiveness when currency devaluation is not an option. In a currency union, fiscal devaluation can mimic the effect of a nominal exchange rate devaluation by shifting the tax burden. In its simplest form, this would require raising consumption taxes and cutting payroll taxes (e.g. social security contributions). Some countries have adopted this approach, such as France in 2012 and Germany in 2006 (Farhi, Gopinath and Itskhoki, 2014^[54]). EFRs can be designed to have similar effects. Simulations for Portugal conducted in the context of the Commission for Green Tax Reform established in 2014 show that increasing emission taxes and reducing employers' social security contributions would have improved the country's competitiveness (Rodríguez, Robaina and Teotónio, 2019^[55]).

93. Several stakeholders mentioned that any EFR should also not damage the competitiveness of Italian firms in specific sectors. For example, the energy sector perceives to pay already high taxes and sees little scope for further increasing its contribution to public revenues. Some stakeholders would prefer an EFR to be co-ordinated at the EU-level, rather than introducing it unilaterally at the domestic level.

94. Also, a carbon border adjustment mechanism agreed at the EU level could ease the implementation of ambitious EFRs in Italy and other EU countries. The European Commission plans to propose an EU carbon border adjustment mechanism, which would extend carbon prices that apply for the production of carbon-intensive goods in the EU to imported goods. This would encourage emission reductions across industrial value chains, both domestically and abroad, and protect more effectively against potential emission leakage than existing instruments. The carbon border adjustment shall be compliant with the rules of the World Trade Organisation. Several stakeholders noted that green public procurement would also help firms to compete in the green transition and help facilitate an ambitious environmental reform, especially in the absence of a border carbon adjustment.

95. Looking more closely at the effects of an EFR, firms producing with clean technologies can become more competitive and those that wait to adopt cleaner production processes will likely see their competitive position deteriorate. The longer firms hold on to high-carbon assets and production processes, the more they become exposed to market and technological risks (TFCD, 2016^[56]; OECD, 2018^[53]), meaning that they will face reduced demand for high-carbon products, while foregoing the opportunities that come along with an increased demand for zero- and low-carbon products and services. In addition, the increasing demand for more sustainable products means that firms that do not adapt to a net-zero future expose themselves to greater reputational risks. Furthermore, polluting firms may face litigation in the future due to the evolving product and producer responsibility requirements at international, national and state levels (TFCD, 2016^[56]; OECD, 2018^[53]).

96. Claims that higher effective carbon prices would be anti-competitive across the board in the short-run fail empirical tests (Arlinghaus, 2015^[57]; Martin, Muûls and Wagner, 2016^[58]; Verde, 2020^[59]; High-Level Commission on Carbon Pricing and Competitiveness, 2019^[60]). Reviewing the empirical literature on the EU ETS, Joltreau and Sommerfeld (2019^[61]) find that cost pass-through combined with free allocation partly generated windfall profits for ETS regulated firms. In addition, the share of energy costs in total manufacturing output is low on average (4.6%), as for the vast majority of all firms. Naegele and Zaklan (2019^[62]) show that for 95% of European manufacturing, carbon costs induced by the EU ETS are below 0.65% of total material costs. The literature has also found small but significant positive effects on innovation (Joltreau and Sommerfeld, 2019^[61]). In Germany, the EU ETS increased productivity and efficiency for some firms, while most firms' productivity and efficiency is hardly affected by the EU ETS at all (Löschel, Lutz and Managi, 2018^[63]; Lutz, 2016^[64]). In France, the Netherlands, Norway and the United Kingdom, the EU ETS increases revenue and assets for regulated firms (Dechezleprêtre, Nachtigall and Venmans, 2018^[65]).

97. On average, firms participating in the EU ETS increase their asset base at home and do not show any signs of relocation, but some subgroups of firms with low capital-intensities or high trade-intensities show a stronger increase in outward foreign direct investment (FDI) than comparable firms that do not participate in the EU ETS. Analysing all firms participating in the EU ETS, Aus dem Moore et al. (2019^[66]) observe that multinational firms with production facilities regulated under the EU ETS in Europe and unregulated facilities in other parts of the world have on average increased their total asset base more strongly in countries regulated under the EU ETS than outside. Koch and Basse-Mama (2019^[67]) arrive at similar findings with regard to outward FDI when looking at all German firms participating in the EU ETS, but observe significantly stronger outward FDI for a subset of footloose firms with low capital intensity in the EU ETS. Borghesi et al. (2020^[68]) find that trade-intensive Italian firms participating in the EU ETS increased their sales from foreign affiliates significantly more strongly than firms not participating in the EU ETS. Both, Koch and Basse-Mama (2019^[67]) and Borghesi et al. (2020^[68]) did not analyse to which extent EU ETS regulated firms have potentially grown more strongly in general, i.e. in how far they may have increased total investment or total sales more strongly than non-regulated firms.

98. The short-term competitiveness neutrality of emissions trading systems and carbon prices more generally has sometimes been linked to emission trading systems frequently allocating large amounts of permits to manufacturing firms for free (Joltreau and Sommerfeld, 2019^[61]; High-Level Commission on Carbon Pricing and Competitiveness, 2019^[60]). However, even if firms pay more for all of their emissions, as it is generally the case with taxes and the removal of subsidies, similar findings emerge. Increased fossil fuel prices was found to improve productivity for firms located close to the productivity frontier in Indonesia (Rentschler and Bazilian, 2016^[69]). Cali et al. (2018^[70]) find that increases in fuel prices improve the productivity of manufacturing firms in Indonesia and Mexico. Studying electricity prices, Gerster (2017^[71]) shows that manufacturing firms subject to the full surcharge for renewable electricity in Germany did not perform different in terms of output and employment than firms subject to a reduced surcharge only. However, firms subject to the full surcharge substantially reduced electricity use, while firms facing the reduced surcharge did not. Flues and Lutz (2015^[72]) find similar performance in terms of turnover, exports, value added, investment and employment for German firms paying the full electricity tax rate compared to firms paying the reduced electricity tax rate only. Dussaux (2020^[48]) finds that carbon taxes generate employment reallocation between firms and industries in the French manufacturing sector, but do not affect total manufacturing employment.

Box 3. The Dutch carbon levy implements a carbon price floor for industrial emissions

As part of their 2020 Climate Agreement, the Netherlands introduced a new carbon levy for industry that became effective on 1 January 2021. The intention of the levy is to achieve additional emission

reductions in industry, where abatement costs are relatively low when compared to other sectors of the economy.

The new carbon levy complements the carbon price that results from the EU Emissions Trading System (ETS) and implements a domestic floor price for Dutch industrial emissions. The price floor increases over time from EUR 30 per tonne CO₂ in 2020 to EUR 125 per tonne CO₂ in 2030, see Table 2.

Table 2. The Dutch carbon price floor for industrial emissions

Year	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Floor price (in EUR per tonne CO ₂)	30	40.56	51.12	61.68	72.24	82.80	93.36	103.92	114.48	125.04

Source: adapted from OECD (2021, forthcoming^[73]).

This domestic price floor consists of a floating contribution added on top of the price for emission allowances in the EU ETS. If the price of emissions allowances exceeds the floor price, the floating contribution becomes zero.

The commitment to a gradual carbon price increase in the future can create strong incentives to invest in clean, long-lived assets and infrastructure (Flues and Van Dender, 2020^[32]). It also allows for adjustment in sectors where abatement costs are still high, but expected to fall over time with the arrival of new technology and increased experience in the deployment of low-carbon technologies (OECD, 2021, forthcoming^[73]).

Industrial facilities initially receive tax allowances based on EU ETS emissions benchmarks that are phased-out over time. While the tax allowances further ease the adjustment for emission intensive facilities, they also lower the incentives to invest in clean assets.

The revenue from the carbon levy is earmarked to support low-carbon investment by industry, such as renewable energy, hydrogen, carbon capture and storage, as well as the increased use of residual heat.

Any additional emission cuts in the Netherlands that result from the carbon levy for industry will likely trigger an automatic downward adjustment of the emission cap of the EU ETS via its Market Stability Reserve Due to MSR (Perino, Ritz and van Benthem, 2019^[74]; Flues and Van Dender, 2020^[32]).

Source: OECD (2021, forthcoming^[73]).

5.3. Design and planning

99. The political challenges related to EFR remain significant, demanding careful design and planning as well as good communication and understanding of how, for example, social norms affect citizens' preferences. Some stakeholders pointed to Italy's past experiences on green fiscal reform, including the attempt to establish a carbon tax in the early 2000s, which was repeatedly postponed and eventually abandoned.

100. One issue of discussion was the timetable or sequencing of reform. As mentioned in Section 4.1, some stakeholders suggested that a narrower set of EFRs could be implemented in the short term, while a comprehensive reform is being designed (which takes time). One stakeholder also suggested that new taxes (such as tax on CO₂ emissions) would need to be implemented gradually (e.g. with initially low tax rates) in order to secure public support. In addition, EFR efforts addressing different externalities at the local and national level could take place in parallel.

101. Generally, many stakeholders were of the view that the current political and economic context is favourable to a comprehensive EFR, given the need to raise tax revenue and stabilise and eventually reduce government debt, upcoming investment through the Next Generation EU, and the new sustainability ambitions established in the European Green Deal. Low oil prices were mentioned as an opportunity to revise energy taxation (but oil prices were at pre-pandemic levels at the time of writing).

102. The feasibility of reform options will also depend on on-going initiatives and efforts. One on-going effort of a “narrow” tax reform has been brought forward by the MoENV in 2020. Responding to the Budget Law 2020 (Law No. 160 of 2019), which tasked the MoENV with studying options for environmentally harmful subsidy removal, the MoENV presented for public consultation eight legislative proposals to remove harmful subsidies in mid-2020. The proposed measures include the revision of the energy excise duty (including a gradual phase-out of the lower tax rate for transport diesel vis-à-vis petrol), a consumption tax on lubricating oils and an excise duty on natural gas and liquefied petroleum gas (LPG) for industrial uses. Options were also presented to revise vehicle taxation in order to compensate for the rise in the exercise tax on diesel used in road transport and to provide new tax credits for investments in specific sectors (Ministero dell’ ambiente, 2020^[75]). The introduction of these measures has, however, been postponed to 2023, which demonstrates the political and social challenges associated with fossil fuel subsidy reform.

103. At the same time, as outlined in Section 4.1, the government plans to roll out a comprehensive tax reform from 2021 to 2023. This provides an opportunity to embark on a broad EFR in which reforms of environmentally related taxes would be connected to tax and spending reforms broadly. The government could therefore consider integrating the MoENV’s reform proposals of 2020 into the tax reform envisioned for 2021-23, while identifying and assessing additional reform options (e.g. the removal of more environmentally harmful subsidies, the revision of existing environmentally related taxes, increasing incentives for R&D for environmentally friendly technologies, supporting infrastructure for green mobility, lowering social security contributions and the labour income tax wedge) in close collaboration with relevant ministries.

104. Should this opportunity for a broad EFR be missed, it is unlikely that another opportunity would arise in the near future. In this case, the option of “narrow” reforms that are carried out within certain sectors appears to be the most realistic option.

105. Communication and dialogue were identified as another important dimension of reform design. Good communication of the objectives, benefits (both environmental and socio-economic) and risks of EFR, both before and after implementation, were considered essential to gain and maintain public support. One stakeholder suggested that public opinion may be less of a barrier in Italy than in other countries, given that the public is generally attentive to environmental problems. On the other hand, several stakeholders expressed doubts about the level of political support for an EFR, which in turn points to the importance of providing support to the green transition as part of the reform package.

106. A stakeholder also mentioned the opportunity afforded by “nudging” and behaviourally informed approaches to better understand citizens’ preferences and facilitate behavioural change. In this area, there have been experiments showing that in certain contexts, if the objective of a tax or price increase is clearly and effectively communicated, citizens are willing to pay for a positive change that contributes to welfare. For instance, preferences tested in Scotland showed a willingness of users to frontload payments for ensuring the quality and sustainability of the water infrastructure over the long-term (Belton, Lavin and Lunn, 2020^[76]).

107. Finally, some stakeholders highlighted the importance of integrating national reform efforts into the policy developments in the European Union, in order to maintain a level playing field. Several stakeholders stressed the importance of an EU carbon border adjustment mechanism; some considered that green public procurement could be an alternative to help businesses to compete in the green transition. Some participants also cautioned that some green fiscal instruments require the prior establishment of a green

taxonomy, e.g. for instruments that aim to promote environmentally friendly products and behaviour, such as tax incentives for clean technologies, as foreseen in Italy's recovery package. The government has started to work on the development of a classification system for sustainable economic activities, based on the EU taxonomy for sustainable activities.

5.4. A summary of the main opportunities and challenges to environmental fiscal reform in Italy

108. Based on the stakeholder consultations held in late 2020 and early 2021, feedback on the draft report on opportunities and challenges of EFR in Italy, analysis of the current state of play and fiscal situation and discussion at the kick-off meeting in late 2019, the OECD project team developed a list of the main opportunities and challenges to EFR in Italy.

Main opportunities and challenges to environmental fiscal reform in Italy

Opportunities

- There is merit in integrating the broad tax and spending reforms that Italy is planning with efforts to pursue environmental goals. A broad tax reform, including environmental goals, could help address some of the challenges of the current tax system (including enhancing coherence, simplifying and focusing benefits and subsidies, and strengthening work incentives).
- There is merit in establishing a sequence between expansionary fiscal policy in the context of a green recovery and increased usage of environmental taxation as the recovery becomes solid.
- A broad environmental fiscal reform (EFR) could create an opportunity to reform the tax and benefit system in a progressive way.
- A broad EFR could finance a cut in the labour income tax wedge, for instance by decreasing social security contributions.
- A broad EFR that helps reduce labour income taxes (or strengthen in-work benefits) could increase work incentives and realise a fiscal devaluation to improve international competitiveness.
- EFR would allow to harmonise effective carbon rates, encouraging firms and household to harvest low-hanging abatement fruits.
- EFR would steer Italy on a low-carbon growth path while allowing to increase employment and restoring public finances.

Challenges

- Finding the right scope of the reform – a balance between comprehensive and speedy action needs to be found.
- The energy sector perceives its tax contributions to be high already, seeing little manoeuvre for a further increase.
- The progressivity of fiscal measures to accelerate the ecological transition is crucial to gaining broad political support. Managing perceptions, preferences and expectations, and creating transparency about revenue use, is equally important. Many stakeholders prefer green subsidies over green taxes; but this implies higher income tax contributions, all else equal.

- The reform should also allow firms develop business models that help them compete in the transition to a low-carbon economy in the short and medium term and remain competitive in a net-zero carbon economy.
- Domestic efforts should best be co-ordinated with efforts at the EU-level (e.g. the revision of the Energy Taxation Directive, the Emissions Trading Scheme and the potential creation of a European carbon border adjustment mechanisms) as well as the international level more broadly.

References

- ACEA (2020), *Tax Guide*, European Automobile Manufacturers Association, Brussels, [36]
https://acea.be/uploads/news_documents/ACEA_Tax_Guide_2020.pdf (accessed on 3 February 2021).
- Alberini, A., M. Ščasný and A. Bigano (2018), “Policy- v. individual heterogeneity in the benefits of climate change mitigation: Evidence from a stated-preference survey”, *Energy Policy*, Vol. 121, pp. 565-575, <http://dx.doi.org/10.1016/j.enpol.2018.07.008>. [49]
- Andrle, M. et al. (2018), “Italy: Toward a Growth-Friendly Fiscal Reform”, *IMF Working Papers*, No. 18/59, IMF, Washington, DC, [46]
<https://www.imf.org/en/Publications/WP/Issues/2018/03/16/Italy-Toward-a-Growth-Friendly-Fiscal-Reform-45737> (accessed on 22 April 2021).
- Arlinghaus, J. (2015), “Impacts of Carbon Prices on Indicators of Competitiveness: A Review of Empirical Findings”, *OECD Environment Working Papers*, No. 87, OECD Publishing, Paris, [57]
<https://dx.doi.org/10.1787/5js37p21grzq-en>.
- aus dem Moore, N., P. Großkurth and M. Themann (2019), “Multinational corporations and the EU Emissions Trading System: The specter of asset erosion and creeping deindustrialization”, *Journal of Environmental Economics and Management*, Vol. 94, pp. 1-26, [66]
<http://dx.doi.org/10.1016/J.JEEM.2018.11.003>.
- Bach, S. et al. (2019), “Ökosteuer-Einnahmen sorgen noch heute für niedrigere Rentenbeiträge und höhere Renten”, *DIW Wochenbericht*, Vol. 13, pp. 223-230, [42]
https://www.diw.de/documents/publikationen/73/diw_01.c.617678.de/19-13-2.pdf (accessed on 22 April 2021).
- Batini, N. et al. (2021), “Building Back Better: How big are green spending multipliers”, *IMF Working paper*, Vol. 2021/87. [52]
- Becchetti, L. (2020), *Abbattere le polveri sottili, una sfida da affrontare*, [12]
<https://www.lavoce.info/archives/71311/abbattere-le-polveri-sottili-una-sfida-da-affrontare/> (accessed on 11 February 2021).
- Becchetti, L. et al. (2021), “Air quality and COVID-19 adverse outcomes: Divergent views and experimental findings”, *Environmental Research*, Vol. 193, [39]
<http://dx.doi.org/10.1016/j.envres.2020.110556>.
- Belton, C., C. Lavin and P. Lunn (2020), “Eliciting trade-offs between water charges and service benefits in Scotland”, *ESRI Working Paper 655*, <https://www.esri.ie/pubs/WP655.pdf>. [76]

- Borghesi, S., C. Franco and G. Marin (2020), "Outward Foreign Direct Investment Patterns of Italian Firms in the EU ETS", *The Scandinavian Journal of Economics*, Vol. 122/1, pp. 219-256. [68]
- Bratta, B., L. Romano and P. Acciari (2020), "The Impact of Digitalization Policies. Evidence from Italy's Hyper-depreciation of Industry 4.0 Investments", *MEF Dipartimento delle Finanze Working Paper 6*, https://www.finanze.gov.it/export/sites/finanze/.galleries/Documenti/Varie/dfwp6-1_ultimo.pdf. [25]
- Cali, M. et al. (2018), "Too Much Energy: The Perverse Effect of Low Fuel Prices", *Paper presented at the Annual Meeting of the American Economic Association 2019, Atlanta*. [70]
- Carfora, A., R. Pansini and S. Pisani (2016), "Spatial Dynamics in Tax Gap Determinants", *Agenzia Entrate Discussion Topics*, Vol. 01, <http://www.agenziaentrate.gov.it/wps/content/Nsilib/Nsi/Documentazione/Rivista/Argomenti+di+discussione> (accessed on 4 December 2018). [27]
- Coccia, M. (2020), "How (Un)sustainable Environments Are Related to the Diffusion of COVID-19: The Relation between Coronavirus Disease 2019, Air Pollution, Wind Resource and Energy", *Sustainability*, Vol. 12/22, p. 9709, <http://dx.doi.org/10.3390/su12229709>. [40]
- Dechezleprêtre, A., R. Martin and S. Bassi (2016), *Climate Change Policy, Innovation and Growth*, Grantham Research Institute on Climate Change and the Environment, London, <http://www.lse.ac.uk/grantham/> (accessed on 8 January 2019). [51]
- Dechezleprêtre, A., D. Nachtigall and F. Venmans (2018), "The joint impact of the European Union emissions trading system on carbon emissions and economic performance", *OECD Economics Department Working Papers*, No. 1515, OECD Publishing, Paris, <https://dx.doi.org/10.1787/4819b016-en>. [65]
- Dussaux, D. (2020), "The joint effects of energy prices and carbon taxes on environmental and economic performance: Evidence from the French manufacturing sector.", *OECD Environment Working Papers*, No. 154, OECD, Paris. [48]
- EC (2020), *European Economic Forecast. Autumn 2020. Institutional Paper 136, November 2020. Luxembourg: Publications Office of the European Union*, https://ec.europa.eu/info/sites/info/files/economy-finance/ip136_en_2.pdf. [17]
- EC (2019), *The Environmental Implementation Review 2019: Country Report Italy*, European Commission, Brussels, https://ec.europa.eu/environment/eir/pdf/report_it_en.pdf (accessed on 20 April 2021). [14]
- European Environment Agency (2019), *Air quality in Europe 2019*, <https://www.eea.europa.eu/publications/air-quality-in-europe-2019> (accessed on 17 January 2021). [11]
- Eurostat (2021), *Environmental tax statistics*, Eurostat, https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Environmental_tax_statistics#Environmental_taxes_in_the_EU (accessed on 19 April 2021). [3]
- Eurostat (2021), *Share of renewable energy in gross final energy consumption*, https://ec.europa.eu/eurostat/databrowser/view/t2020_31/default/table?lang=en (accessed on 20 April 2021). [9]
- Farhi, E., G. Gopinath and O. Itzhoki (2014), "Fiscal Devaluations", *The Review of Economic* [54]

- Studies*, Vol. 81/2, pp. 725-760, <http://dx.doi.org/10.1093/restud/rdt036>.
- Flues, F. and B. Lutz (2015), “Competitiveness Impacts of the German Electricity Tax”, *OECD Environment Working Papers*, No. 88, OECD Publishing, Paris, <https://dx.doi.org/10.1787/5js0752mkzmv-en>. [72]
- Flues, F. and K. Van Dender (2020), “Carbon pricing design: Effectiveness, efficiency and feasibility: An investment perspective”, *OECD Taxation Working Paper Series*, No. 48, OECD Publishing, Paris. [32]
- Flues, F. and K. van Dender (2017), “The impact of energy taxes on the affordability of domestic energy”, *OECD Taxation Working Papers*, No. 30, OECD Publishing, Paris, <https://dx.doi.org/10.1787/08705547-en>. [50]
- Gerster, A. (2017), “Do Electricity Prices Matter? Plant-Level Evidence from German Manufacturing”, *Ruhr Economic Papers*, No. 672, Ruhr Graduate School in Economics, http://en.rwi-essen.de/media/content/pages/publikationen/ruhr-economic-papers/rep_17_672.pdf. [71]
- Government of Italy (2021), *Piano Nazionale di Ripresa e Resilienza #Next Generation Italia*, https://www.governo.it/sites/governo.it/files/PNRR_0.pdf. [21]
- Government of Italy (2021), *Piano Nazionale di Ripresa e Resilienza. #Next Generation Italia. Bozza aggiornata al 12 gennaio 2021*. [22]
- Government of Italy (2019), *Integrated National Energy and Climate Plan*. [7]
- High-Level Commission on Carbon Prices (2017), *Report of the High-Level Commission on Carbon Prices I*, World Bank, Washington, D.C., https://static1.squarespace.com/static/54ff9c5ce4b0a53decccfb4c/t/59b7f2409f8dce5316811916/1505227332748/CarbonPricing_FullReport.pdf (accessed on 9 February 2021). [30]
- High-Level Commission on Carbon Pricing and Competitiveness (2019), *Report of the High-Level Commission on Carbon Pricing and Competitiveness.*, World Bank, Washington, DC, <https://openknowledge.worldbank.org/bitstream/handle/10986/32419/141917.pdf?sequence=4&isAllowed=y> (accessed on 10 February 2021). [60]
- IMF/OECD (2021), *Tax Policy and Climate Change: IMF/OECD report for the G20 Finance Ministers and Central Bank Governors*, <https://www.oecd.org/tax/tax-policy/imf-oecd-g20-report-tax-policy-and-climate-change.htm>. [43]
- ISPRA (2020), *Rapport Rifiuti Urbani*, <https://www.catasto-rifiuti.isprambiente.it/index.php?pg=>. [38]
- Joltreau, E. and K. Sommerfeld (2019), “Why does emissions trading under the EU Emissions Trading System (ETS) not affect firms’ competitiveness? Empirical findings from the literature”, *Climate Policy*, Vol. 19/4, <http://dx.doi.org/10.1080/14693062.2018.1502145>. [61]
- Koch, N. and H. Basse Mama (2019), “Does the Eu Emissions Tradingy System induce investment leakage? Evidence from German multinational firms”, *Energy Economics*, Vol. 81, pp. 479-492. [67]
- Löschel, A., B. Lutz and S. Managi (2018), “The impacts of the EU ETS on efficiency and economic performance – An empirical analyses for German manufacturing firms”, *Resource and Energy Economics*, <http://dx.doi.org/10.1016/J.RESENEECO.2018.03.001>. [63]

- Lutz, B. (2016), "Emissions Trading and Productivity: Firm-level Evidence from German Manufacturing", *ZEW Discussion Paper*, No. 16-067, Centre for European Economic Research, <http://ftp.zew.de/pub/zew-docs/dp/dp16067.pdf> (accessed on 23 January 2019). [64]
- Marcu, A. et al. (2020), *2020 State of the EU ETS Report*, ERCST, Wegener Center, BloombergNEF and Ecoact. [47]
- Marron, D., E. Toder and L. Austin (2015), "Taxing Carbon: What, Why, and How", Tax Policy Center of the Urban Institute and the Brookings Institution, <https://www.taxpolicycenter.org/publications/taxing-carbon-what-why-and-how/full> (accessed on 9 May 2019). [41]
- Marten, M. and K. Van Dender (2019), "The use of revenues from carbon pricing", *OECD Taxation Working Papers*, No. 43, OECD Publishing, Paris, <https://dx.doi.org/10.1787/3cb265e4-en>. [77]
- Martin, R., M. Muûls and U. Wagner (2016), "The Impact of the European Union Emissions Trading Scheme on Regulated Firms: What Is the Evidence after Ten Years?", *Review of Environmental Economics and Policy*, Vol. 10/1, pp. 129-148, <http://dx.doi.org/10.1093/reep/rev016>. [58]
- MEF (2020), "Documento di Economia e Finanza 2020. Nota di Aggiornamento, deliberata dal Consiglio dei Ministri il 5 ottobre 2020", http://www.dt.mef.gov.it/modules/documenti_it/analisi_progammazione/documenti_pr. [18]
- MEF (2020), *Legge di Bilancio 2021, 31 dicembre 2020*, <https://www.mef.gov.it/focus/Legge-di-Bilancio-2021/#:~:text=La%20Legge%20di%20Bilancio%202021,dell'Irpef%2C%20e%20un%20programma>. [20]
- Ministero dell' ambiente (2020), *Consultazione on line sulle proposte normative per la rimodulazione dei Sussidi Ambientalmente Dannosi (Online consultation on regulatory proposals for the remodeling of Environmentally Harmful Subsidies)*, Ministero dell' ambiente, <https://www.minambiente.it/pagina/consultazione-line-sulle-proposte-normative-la-rimodulazione-dei-sussidi-ambientali-dannosi> (accessed on 3 February 2021). [75]
- Ministero dell' ambiente (2019), *Catalogo dei sussidi ambientalmente dannosi e dei sussidi ambientalmente favorevoli 2018*, Ministero dell' ambiente, Rome. [33]
- Ministero dell'Ambiente (2021), *Catalogo dei Sussidi Ambientalmente Dannosi e dei Sussidi Ambientalmente Favorevoli*, <https://www.minambiente.it/pagina/catalogo-dei-sussidi-ambientalmente-dannosi-e-dei-sussidi-ambientalmente-favorevoli>. [28]
- MiSE (2020), *Ministero dello Sviluppo Economico: Nuovo Piano Nazionale Transizione 4.0*, <https://www.mise.gov.it/index.php/it/transizione40>. [26]
- MiSE (2019), *Ministero dello Sviluppo Economico: Transizione 4.0*, <https://www.mise.gov.it/index.php/it/incentivi/impresa/transizione-4-0/transizione-4-0-2019-2020>. [23]
- Naegele, H. and A. Zaklan (2019), "Does the EU ETS cause carbon leakage in European manufacturing?", *Journal of Environmental Economics and Management*, Vol. 93, pp. 125-147, <http://dx.doi.org/10.1016/J.JEEM.2018.11.004>. [62]
- OECD (2021), *Effective Carbon Rates 2021: Pricing Carbon Emissions through Taxes and* [31]

- Emissions Trading*, OECD Publishing, Paris, <https://dx.doi.org/10.1787/0e8e24f5-en>.
- OECD (2021), *Environmental policy: Environmental policy instruments*, OECD Environment Statistics (database), <https://doi.org/10.1787/data-00696-en> (accessed on 25 February 2021). [2]
- OECD (2021), *OECD Environment Statistics*, OECD Publishing, <https://doi.org/10.1787/env-data-en> (accessed on 20 April 2021). [6]
- OECD (2021), *OECD Work on Fossil Fuel Support and Other Analysis*, website, <http://www.oecd.org/fossil-fuels/> (accessed on 3 February 2021). [5]
- OECD (2020), *OECD Economic Outlook, Volume 2020 Issue 2*, OECD Publishing, Paris, <https://doi.org/10.1787/39a88ab1-en>. [16]
- OECD (2020), *OECD Inventory of Support Measures for Fossil Fuels: Italy (Edition 2019)*, OECD Environment Statistics (database), <https://doi.org/10.1787/d59b809f-en> (accessed on 3 February 2021). [35]
- OECD (2019), *OECD Economic Surveys: Italy 2019*, OECD Publishing, Paris, <https://dx.doi.org/10.1787/369ec0f2-en>. [15]
- OECD (2019), *Taxing Energy Use 2019: Using Taxes for Climate Action*, OECD Publishing, Paris, <https://dx.doi.org/10.1787/058ca239-en>. [34]
- OECD (2018), *Effective Carbon Rates 2018. Pricing Carbon Emissions Through Taxes and Emissions Trading*, OECD Publishing, Paris, <https://doi.org/10.1787/9789264305304-en>. [53]
- OECD (2018), *Rethinking Urban Sprawl: Moving Towards Sustainable Cities*, OECD Publishing, Paris, <https://dx.doi.org/10.1787/9789264189881-en>. [13]
- OECD (2018), *Taxing Energy Use 2018: Companion to the Taxing Energy Use Database*, OECD Publishing, Paris, <https://dx.doi.org/10.1787/9789264289635-en>. [29]
- OECD (2017), *Environmental Fiscal Reform. Progress, Prospects and Pitfalls. OECD report for the G7 Environment Ministries*, OECD Publishing, Paris, <https://www.oecd.org/tax/tax-policy/environmental-fiscal-reform-g7-environment-ministerial-meeting-june-2017.pdf> (accessed on 3 February 2021). [1]
- OECD (2017), *OECD Economic Surveys: Italy 2017*, OECD Publishing, Paris, https://dx.doi.org/10.1787/eco_surveys-ita-2017-en. [24]
- OECD (2017), *Towards a G7 target to phase out environmentally harmful subsidies*, OECD Publishing, Paris, https://www.minambiente.it/sites/default/files/archivio/allegati/sviluppo_sostenibile/background_paper_4_G7_env_OECD_Towards_G7_target_to_phase_out_EHSs.pdf (accessed on 3 February 2021). [4]
- OECD (2021, forthcoming), *Sustainable transition of the Dutch industry*. [73]
- OECD/IEA (2021), *IEA World Energy Statistics and Balances*, OECD Publishing, <https://doi.org/10.1787/enestats-data-en> (accessed on 20 April 2021). [10]
- OECD/ITF (2019), *Tax Revenue Implications of Decarbonising Road Transport: Scenarios for Slovenia*, OECD Publishing, Paris, <https://dx.doi.org/10.1787/87b39a2f-en>. [44]

- Perino, G., R. Ritz and A. van Benthem (2019), “Understanding Overlapping Policies: Internal Carbon Leakage and the Punctured Waterbed”, *NBER Working Paper Series*, No. 25643, NBER, Cambridge, <http://www.nber.org/papers/w25643.ack> (accessed on 11 April 2019). [74]
- Rentschler, J. and M. Bazilian (2016), “Reforming fossil fuel subsidies: drivers, barriers and the state of progress”, *Climate Policy*, Vol. 17/7, <http://dx.doi.org/10.1080/14693062.2016.1169393>. [69]
- Reuters (2021), “Italy says it plans to cut carbon emissions by 60% by 2030”, <https://www.reuters.com/article/us-italy-climate-minister-idUSKBN2B31ML> (accessed on 6 May 2021). [8]
- Rodríguez, M., M. Robaina and C. Teotónio (2019), “Sectoral effects of a Green Tax Reform in Portugal”, *Renewable and Sustainable Energy Reviews*, Vol. 104, pp. 408-418, <http://dx.doi.org/10.1016/j.rser.2019.01.016>. [55]
- Rouzet, D. (2019), “Fiscal challenges and inclusive growth in ageing societies”, *OECD Economic Policy Papers*, No. 27, *OECD Publishing, Paris*, <https://doi.org/10.1787/c553d8d2-en>. [45]
- TCFD (2016), *The Use of Scenario Analysis in Disclosure of Climate-Related Risks and Opportunities*, Task Force on Climate-Related Financial Disclosures, <https://www.fsb-tcfd.org/wp-content/uploads/2016/11/TCFD-Technical-Supplement-A4-14-Dec-2016.pdf> (accessed on 21 March 2019). [56]
- UPB (2019), *Ufficio Parlamentare di Bilancio: 2020 Budgetary Policy Report. December 2019*, <https://en.upbilancio.it/2020-budgetary-policy-report/>. [19]
- Van Dender, K. (2018), “Taxing vehicles, fuel, and road use: what mix for road transport?”, *forthcoming in: OECD Taxation Working Papers*, *OECD Publishing, Paris*. [78]
- van Essen, H. (2019), *Handbook on the external costs of transport: Version 2019*, <http://dx.doi.org/10.2832/27212> (accessed on 3 February 2021). [37]
- Verde, S. (2020), “The impact of the EU ETS on competitiveness and carbon leakage”, *Journal of Economic Surveys*, Vol. 34/2, pp. 320-343, <http://dx.doi.org/10.1111/joes.12356>. [59]