

An Action Plan for 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 and background

1. By ratifying the Paris Agreement and through the Nationally Determined Contribution of the European Union, Italy has committed to a net reduction of GHG emissions by 2030 of at least 55% as compared to 1990 levels and to reaching net carbon neutrality by mid-century. A decisive implementation of a solid national decarbonisation strategy, which is well integrated into the European effort, will improve lives today and in the future. Decarbonisation will make the air cleaner, primarily by avoiding the combustion of carbon-based fuels, and more moderate temperatures provide numerous benefits to individuals, companies and countries. Evidence shows that in a clean environment, people tend to be healthier, happier and more productive (Neidell, 2017^[1]) (Krekel and MacKerron, 2020^[2]).

2. Italy was hit hard by the COVID-19 pandemic, paying a high toll in human lives and suffering the worst recession in over 75 years. The resulting crisis has also intensified some of the structural weaknesses that hamper growth in Italy. The response to the crisis has been swift and has sought to minimise its economic impacts. The strong policy effort for economic recovery provides a unique opportunity to address some structural weaknesses while steering Italy towards a resilient green growth path.

3. The Government has made reforming the tax system one of the key pillars supporting Italy's National Recovery and Resilience Plan (NRRP). This commitment along with the NRRP provide a key opportunity to remove long-standing obstacles hampering growth and can support the transition towards a carbon-neutral economy. Tax reform along with the substantial resources allocated by the NRRP for the 2021-26 period to the ecological transition (nearly EUR 70 billion or about 30% of total resources) can help accelerate the shift towards a carbon-neutral economy and encourage investment to this end. Complementing the large resources the NRRP allocates to the ecological transition with policies to better harmonise carbon prices across sectors and with a plan to gradually, but steadily, increase carbon prices would generate synergies and expedite progress towards reducing emissions.

4. This action plan is part of the Technical Support Instrument on "Enhancing environmental fiscal reform in Italy and in the European Union", carried out by the OECD for the Italian Ministry for Ecological Transition (MITE) 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's aim is 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 tax and fiscal reform. The action plan builds on an initial scoping of the challenges and opportunities for EFR and options discussed with a number of stakeholders within and outside government in a series of stakeholder consultation meetings held from November 2020 to July 2021. The action plan focuses primarily on tax and subsidy instruments as set within the scope of the project. While regulatory instruments are not within the scope of the current project, the action plan highlights some regulatory steps that could be taken to support the recommended fiscal reforms.

5. 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. Interest is rising in its potential for supporting not only the achievement of national environmental objectives but also international commitments – e.g. related to the United Nations (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 Deal.²

6. One of the main proposals of this action plan is to better harmonise carbon prices across sectors and to gradually, but steadily, increase carbon prices. Integrating this policy into a comprehensive tax reform could enhance opportunities to recycle the revenues generated by carbon prices and other environmental taxes, with the aim of strengthening growth and social inclusion. For instance, such revenues could contribute to lowering the labour income tax wedge – the labour income tax wedge in Italy is one of the highest in the OECD, at almost 50% in 2017³ – and decreasing other taxes that hinder growth or to supporting those expected to face the most important challenges during the ecological transition (e.g. lower-income households facing higher energy prices). These initiatives will support efforts to ensure a more productive, competitive and inclusive economy. Finally, a gradual and steady price increase sets a long-term horizon around which consumers and producers can progressively adapt and plan.

7. In addition to a broad environmental tax shift, there is scope for addressing more specific environmental hazards with a narrower tax base, for example SO₂ and NO_x emissions from stationary sources or the use of pesticides, and for reducing air pollution in cities. Some of these interventions can be implemented locally.

8. The action plan outlines a comprehensive proposal for an environmental fiscal reform (EFR) that Italy could consider, drawing on other OECD countries’ practices and approaches and taking the specific Italian context into account. The proposed environmental fiscal reform would support economic recovery from the COVID-19 pandemic, encourage clean investments and carbon emission reductions, thus contributing to decarbonisation, and would aim at improving socio-economic and environmental outcomes more generally. Section 2 summarises the main proposals and expected outcomes. Section 3 describes the proposals in detail. Annex A discusses the importance of carbon prices for decarbonisation. Annex B presents the Italian context at the start of 2021. Annex C discusses the opportunities and challenges of EFR in Italy. Annexes B and C in particular reflect input from stakeholders during the execution of the project, which have been instrumental in shaping the action plan.

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>.

³ See the OECD *Taxing Wages* database.

2 Summary

9. An environmental fiscal reform (EFR) has two components. First, it uses market-based environmental policy to improve alignment of prices with the costs to society from environmental degradation. Second, it ensures that the use of public revenue from market-based instruments results in improved economic performance, through reducing other taxes or increasing transfers or spending as appropriate. Thus, the reforms proposed in this action plan for EFR in Italy seek to enhance the tax system's contribution to reducing Italy's greenhouse gas emissions and improve socio-economic and environmental outcomes. The primary goal is to strengthen incentives for transitioning to a carbon-neutral economy. The aim is not necessarily to improve the fiscal balance through additional tax revenues. Instead, additional tax revenues resulting from higher emission prices (through higher effective carbon rates) and from other environmental taxes can fund policies to reduce the labour income tax wedge, improve firms' competitiveness and encourage innovation, and increase cash transfers to households, while the economy and society move towards a more carbon-neutral setting. Therefore, EFR strengthens a growth-friendly, inclusive transition to a low-carbon economy through a more efficient tax system that ensures energy affordability⁴ and investment support for firms. This would in turn foster political support and innovation possibilities.

10. The design of the EFR outlined in this action plan hence consists in the following two components. The first component, aiming at using market-based environmental policy, would consist in setting a carbon price floor that rises over time, as well as reforming transport taxation, and NO_x, SO₂ and agricultural taxation. The second component, aiming at recycling the revenue thus obtained, would consist in supporting competitiveness and equity, through decreasing taxes on labour income, supporting clean investment by businesses, and increasing means-tested transfers to households. The proposed reforms are synergistic with European Union (EU) efforts.

11. A key reform to reduce emissions is the proposal to introduce a uniform carbon price floor across all energy use in Italy, rising over time. It could be set at EUR 40 per tonne of CO₂ in the first year of the reform, and increase by EUR 10 per tonne of CO₂ each year. Ensuring the appropriate timing of implementation will be key. For example, if introduced in 2022, the floor would reach EUR 60 in 2024 and EUR 120 in 2030. Additional revenues from carbon pricing could be around 1% of GDP in the medium term (2030 in this example). A gradual and steady increase in carbon prices allows revenues to initially raise and then decline as emissions go down (and the base thus shrinks), in a predictable way. Setting a clear pathway for carbon prices also allows increased investment planning reliability for firms and households.

12. Higher carbon prices, through taxes or other market-based mechanisms such as emissions trading systems, provide a strong incentive to reduce emissions. Based on data from over 40 OECD and G20 countries, Sen and Vollebergh (2018_[3]) found that an increase of carbon prices by EUR 10 per tonne of CO₂ reduced emissions on average by 7.3% over time. Thus, the effect of the carbon price

⁴ Energy affordability is commonly defined as a household's ability to pay for necessary levels of energy use within normal spending patterns. Common indicators of energy affordability relate a household's disposable income to its spending on energy, see, for example Flues and Van Dender (2017_[90]).

floor will differ across sectors but is expected to be at most moderate in the early years of the reform, with more important effects arising later. Despite limited immediate effects on energy prices, a commitment to a gradual carbon price increase strengthens incentives to invest in low-carbon options, steering the economy towards carbon-neutrality and supporting similar goals at the EU level. A gradual and steady price increase can also help generate support for the reform by setting a long-term horizon around which consumers and producers can progressively adapt and plan.

13. In road transport, the proposed design implies that the carbon price floor would not have an effect on fuel prices until at least 2030, given that fuel excise taxes are already relatively high – at EUR 240 per tonne of CO₂. It is recognised that road fuel taxes can be set with local pollution reduction in mind, in addition to cutting carbon emissions, but the already relatively higher levels of fuel taxes and the political risk associated with further increases at this stage may be reasons to prioritise other reforms over fuel tax increases.

14. Instead, a revenue-neutral modification of the vehicle-purchase and company-car tax arrangements⁵ could ensure that these policies support a shift to full-electric vehicles, if complemented by larger investment in supporting infrastructure (e.g. recharging stations) and decarbonisation of electricity supply. The current vehicle taxation system also provides support for fuel-efficient conventional and hybrid vehicles, which will need to be phased out to achieve full decarbonisation.⁶ Alternatives to car usage could support the transition to a car stock relying on decarbonised energy supply and help reduce emissions.

15. Large industrial users may not be affected strongly by a carbon price floor of EUR 40 per tonne of CO₂ as such, if expectations regarding the EU Emissions Trading System (ETS) price materialise, but would benefit from increased certainty about the evolution of the carbon price, thus simplifying investment choices.

16. The carbon price floor would increase carbon prices for many small industrial emitters and commercial users, with installations that fall below the size requirement for participating in the EU ETS, as well as commercial energy users. The increase in carbon prices that these producers would face could accelerate the adoption of lower-carbon heat technologies, which are increasingly viable. A number of measures supporting them in the transition and ensuring they remain competitive are presented as well.

17. In some industries, e.g. steel and cement, the carbon price floor may need to be complemented with carbon price contracts for difference, which guarantee a return on CO₂ abatement that exceeds the carbon price floor, to strengthen abatement incentives.

18. For domestic energy use, the impact of the proposed carbon price floor is expected to be very limited in the first four years, as effective carbon rates are already at about EUR 80 per tonne of CO₂ for most of their emissions. Some households may face moderately higher payments for natural gas. To ensure that the reform accounts for social and distributional impacts, especially in terms of energy

⁵ Such a modification could be revenue-neutral by using a “Bonus-malus” (i.e., “feebate”) type of incentives for a switch to electric vehicles.

⁶ According to the International Energy Agency (IEA) annual report (<https://www.iea.org/reports/global-ev-outlook-2021/trends-and-developments-in-electric-vehicle-markets>), the development of the electric vehicle market is following a fast-paced upward trend, especially in Europe, where new electric car registrations more than doubled, representing a sales share of 10% in 2020 – with Norway reaching a share of 65%, Sweden, 30% or the Netherlands, 25%. On 14 July 2021, the European Commission’s “Fit for 55” package called for “average emissions of new cars to come down by 55% from 2030 and 100% from 2035”, thus inducing a full shift to an EV fleet from then on. In Italy, Fiat launched its own electric car in 2020 (<https://www.fiat.com/electric-car>), and announced that 60% of the models offered by Chrysler’s Fiat brand would be electrified – either hybrid or full electric (<https://www.reuters.com/article/us-fiat-chrysler-fiat-electrification-idUSKBN28B54F>).

affordability,⁷ parts of the additional revenues could be used to increase cash-payments to low-income households via, for instance, the new *assegno unico* (family benefit) that is scheduled for full implementation in 2022. For households without children, other means-tested benefits could be increased.

19. Taxes on NO_x and SO₂ emissions could be increased to align better with damage estimates, with potential for compensation for firms affected through revenue recycling mechanisms that maintain most of the abatement incentive.

20. In agriculture, the introduction of taxes on certain pesticides could be considered, along with fines for activities that strongly contribute to air pollution, e.g. combustion of biomass, or bringing out manure in certain weather conditions.

21. The use of revenues generated through the gradual increase in the carbon tax floor to decrease the labour income tax wedge and improve Italy's competitiveness is also discussed.

⁷ The two concepts of energy affordability and distributional impacts can overlap but also cover different aspects. It is possible for a reform to be progressive while at the same time, because it increases costs of electricity and heating, induce energy affordability issues. In the context of an environmental fiscal reform, these latter issues become key in ensuring the reform is sustainable. See Flues and Van Dender (2017) for a more detailed discussion.

3 Key proposals

22. This section describes the proposal of the action plan in detail. First, it presents a proposal for gradually increasing the carbon price floor, with a large share of the revenues used to lower the labour tax burden and accompany families and businesses in the transition, thus ensuring that social and competitiveness effects are accounted for. Second, it discusses how the polluter pays principle can be strengthened for NO_x and SO₂ emissions from stationary sources. Third, it proposes ways in which the tax system can support the electrification of the vehicle fleet. Finally, it considers measures to improve the alignment of (potential) environmental taxes applying to agriculture with environmental costs.

A gradually increasing carbon price floor, using the revenues to lower the labour tax burden, support firms in the transition and ensure energy affordability for households

23. By pricing carbon emissions, Italy, as other countries, can effectively reduce emissions and steer its economy towards a carbon-neutral growth path. Judicious use of the revenues from carbon pricing – for example to lower the labour income tax and social security contributions and to support investments in clean technology and measures to improve energy affordability – can also help boost employment and improve competitiveness at a national scale. In short, by taxing “bads” (i.e. carbon emissions) instead of “goods” (i.e. labour effort and innovation), Italy will be better off.

24. Starting from a moderate and realistic level, e.g. EUR 40 per tonne of CO₂⁸, the carbon price floor is best increased gradually, but steadily, over time (e.g. by EUR 10 per tonne of CO₂ per year). Committing to increasing rates predictably over time clearly signals to firms and people that it pays to decarbonise and invest in ultra-low and zero-emission technologies. At the same time, gradual carbon price increases allow energy users that are still heavily dependent on carbon-intensive fuels to plan investment in a cleaner asset base while lowering the risk that their existing assets become suddenly stranded. Public investments can similarly be undertaken to increase the availability of low-carbon alternatives, such as recharging stations for electric vehicles. Finally, a price floor substantially reduces the uncertainty energy users may face regarding prices and protects investors against EU ETS allowance price volatility.

25. A gradual and steady increase in carbon prices also allows revenues to initially raise and then decline as emissions go down (and the base thus shrinks), in a predictable way. While emissions go down over time with higher effective carbon rates, in the medium term (including the mid-2030s), increases in effective carbon rates can still offset the fall in revenue from emission decreases. As decarbonisation sets in through the 2040s, revenues will, however, decline, and tax policy should anticipate on this evolution by developing alternative revenue bases.

⁸ In 2018, already 38% of emissions were priced above EUR 60 per tonne of CO₂. An initial price of EUR 40 per tonne of CO₂ in 2022 thus represents a relatively low initial floor that if raised by EUR 10 per year will enable to reach EUR 120 per tonne of CO₂ by 2030 – a central estimate of the carbon costs in 2030.

26. The revenue from higher effective carbon rates can contribute to strengthening the competitiveness of the Italian economy. First, if a large share of the revenue is used to lower effective tax rates on labour (including the labour income tax and social security contributions), incentives to work increase. At the same time, labour costs decrease, increasing the incentive to hire workers and to start new enterprises. Second, active and targeted support for investment in clean technologies can accelerate their wide deployment, improving firms' competitiveness. In addition, increased use of domestic renewable energy resources and less reliance on imported fossil fuels will improve the balance of payments. Third, these measures can provide a competitive edge to Italian firms for leading in terms of innovation towards a low-carbon economy.

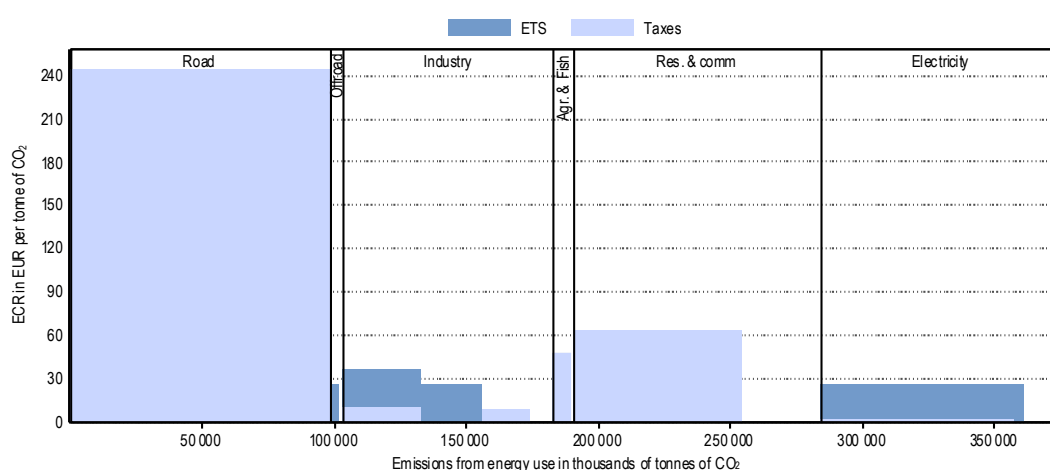
27. The revenue raised can also provide targeted support to poor households to increase energy affordability, offset potential negative distributional effects of higher carbon prices and help address social and distributional issues that might be raised by such a reform.

28. The following paragraphs first provide an overview of the current carbon prices in Italy and then discuss a reform proposal outlining how carbon prices can be increased and how the additional revenues can be used to reduce the labour tax burden, to provide additional support for clean investment by firms and to increase energy affordability for households.

Current situation in Italy

29. Figure 3.1 summarises the state of carbon pricing in Italy in 2020. Carbon prices result from excise taxes on fuels (primarily in the road transport and in the residential and commercial sectors), as well as from emission permit prices (primarily in the industry sector and in the electricity sector). Figure 3.1 considers both instruments and shows average *Effective Carbon Rates* (ECRs) for six economic sectors by carbon price component.⁹ In general, the ECR has three components (emission permit prices, excise taxes on fuels and explicit carbon taxes). In Italy, only the first two components applied in 2020.

Figure 3.1. Effective Carbon Rates in 2020



⁹ Effective Carbon Rates (ECRs) are the total carbon prices that apply to carbon dioxide emissions from energy use as a result of market-based instruments and have three components (fuel excise taxes, explicit carbon taxes and carbon emission permit prices). Irrespective of the policy objectives for their introduction, all three components of the ECR are defined over a tax base that either is CO₂-emissions or is directly proportional to them (e.g. litres of diesel, or tonnes of coal). Thus each of the components increases the price of high-carbon fuels, making low- and zero- carbon fuels more competitive.

Note: The effective carbon rates are presented for six economic sectors – road transport, off-road transport, industry, agriculture and fisheries, residential and commercial energy use and electricity generation. For additional information regarding the interpretation of this graph, see: <https://oe.cd/ECR-graph-info>. Note that this graph accounts for preferential VAT rates in the residential sector.
Source: OECD calculation.

30. In 2020, average ECRs were highest in road transport (about EUR 240 per tonne of CO₂) and lowest in the industry sector (around EUR 25, with some emissions priced higher, some emissions priced lower, and some emissions not priced at all) and for electricity generation (around EUR 25 per tonne of CO₂, except for electricity generated from biomass, for which the ECR was zero). In the residential and commercial sector, the average ECR was about EUR 60 per tonne of CO₂ for fossil fuels, while biomass and other biofuels faced no carbon price at all.

31. Uneven carbon prices across sectors (see Figure 3.1) and fuels (see Appendix B, Figure B.5) reduce the efficiency of CO₂ emission abatement. Significant shares of unpriced and low-priced carbon emissions delay the deployment of low-cost abatement technologies. For example, the effective carbon rates for petrol in road transport exceeds EUR 300 per tonne of CO₂, meaning that it pays for energy users to abate emissions up to a cost of EUR 300 per tonne of CO₂ reduced. At the same time, the effective carbon rate on natural gas for commercial users is below EUR 8 per tonne of CO₂, meaning that commercial user face hardly any incentive to reduce emissions and likely forego abatement opportunities, such as solar thermal space and process heat, heat pumps and other renewable energy sources (whose abatement costs, however, are considerably lower than EUR 300 per tonne of CO₂).

Details of a suggested reform

32. Italy would benefit from a tax reform that decreases effective tax rates on labour while gradually increasing carbon prices. In the following, some details of such a reform proposal are presented, both for the short- and long-run. The discussion starts by outlining the scope of the reform, and broadly discusses how the revenues generated could contribute to reforming the taxation of labour as well as supporting businesses and households. Next, it outlines the implementation of a gradually increasing carbon price floor and details the accompanying measures that would be needed along the way.

33. The proposed carbon pricing reform is likely to strongly encourage to plan and implement low- and zero-carbon investments. The gradually rising carbon price floor signals that it pays to invest in long-lived clean assets without immediately increasing sharply the costs of using carbon-intensive fuels. Over time, carbon-intensive assets should be scrapped and replaced by cleaner ones. In addition, energy users will every year face stronger incentives to reduce their remaining use of carbon-intensive fuels. Thereby, the gradually increasing carbon price floor will help to reduce emissions and pave the way for achieving net-zero emissions by 2050.

34. Carbon pricing is in itself often politically challenging. However, embedding it in a reform that is initially expansionary and that is revenue-neutral over the mid-term can strengthen public support, particularly when accompanied with measures to improve energy affordability, thus accounting for the social impact of such reforms, and to support firm competitiveness. Crucially, these measures and their rationale should be clearly communicated to ensure that the objectives and positive impacts of the reform are well understood.

35. Revenues generated by the rising carbon price can be significant as the price increases over time. In line with the carbon price trajectory outlined below, and assuming that the demand response in the first years is around 30% of the full long-run response (for which estimates are available), the

carbon price could generate revenues of approximately EUR 4.7 billion in 2022, EUR 10.7 billion in 2025 and EUR 22.4 billion in 2030.¹⁰

36. These revenues can be used to continue reducing the labour tax wedge. For example, the 2021 budget allocated EUR 7 billion to maintain the reduction of the labour income tax wedge through an in-work benefit system. The current fiscal bonus benefits only tax-paying individuals. It therefore amounts to zero for earnings up to EUR 8 145; EUR 100 (per month) for yearly earnings of EUR 8 145 - 28 000, EUR 80 per month for earnings of EUR 28 000 - 35 000 and goes progressively from EUR 80 to zero for earnings of EUR 35 000 - 40 000.¹¹ Part of these revenues could fund the in-work benefit in 2022 and beyond (assuming the same level of benefits). The use of revenues for this purpose over the long term would also complement and re-inforce the employment measures included in Italy's Recovery and Resilience Plan (NRRP), where three quarters of the labour market resources will be dedicated to incentives for new hires of young and female workers, and for all workers in the South. Such reforms would increase the Italian economy's competitiveness by reducing the labour tax wedge, and by targeting lower- to middle-income individuals as well as new hires, would also increase the progressivity of the tax system.

37. Accompanying these measures with others aimed at supporting business dynamism and easing firms' transition towards greener technologies would generate additional benefits. On the firm side, additional revenues could help broaden the Transition 4.0, a policy aimed at supporting firms' innovation.¹² In particular, Transition 4.0 includes among other things, fiscal incentives for innovation but is presently scheduled to last only until 2023. The overall cost of Transition 4.0 over the three years 2021-2023, is estimated at EUR 24 billion, with EUR 1 billion allocated to a National Innovation Fund (MiSE, 2020_[4]).

38. Revenues from the carbon price could fund a host of programmes to spur innovation and the deployment of new technologies (for instance, starting in 2023 while the carbon price revenues are channelled to reducing labour costs in the first year). For instance, they could contribute to the National Innovation Fund, to support upfront investments consistent with the ecological transition, to enhance the fiscal incentives for innovation and the deployment of clean technologies, targeting especially small- and medium-sized enterprises, and to strengthen the recently established Competence Centres (i.e. public-private partnerships to support the wide deployment of digital technologies across Italian firms). As the carbon price increases, these measures will help offset the increase in production costs firms will face. In addition, revenues could fund deployment of zero-carbon process heat solutions, especially in the early years of the reform, when carbon prices are likely to be too low to encourage such investment. Furthermore, the government may consider providing financial support for the deployment of clean technologies that are still at a development stage, such as zero-carbon and ultra-low carbon production of bulk chemicals, cement and steel. These measures will be of particular importance to help affected firms strengthen their ability to compete – both nationally and internationally – in a decarbonising economy, and hence enable them to get closer to the technology frontier.¹³ . Issues related landscape protection that some of these new technologies could create would be addressed with the existing policies and institutions responsible for safeguarding the cultural heritage and

¹⁰ The decrease in emissions (and therefore the decrease in the tax base) is conservatively assumed to be 0.5% in response to a EUR 1 per tonne of CO₂ price increase (Sen and Vollebergh, 2018_[3]).

¹¹ 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.

¹² Transition 4.0 was introduced in 2019 to support innovation and investment in new technologies, including those aimed at reducing environmental impacts.

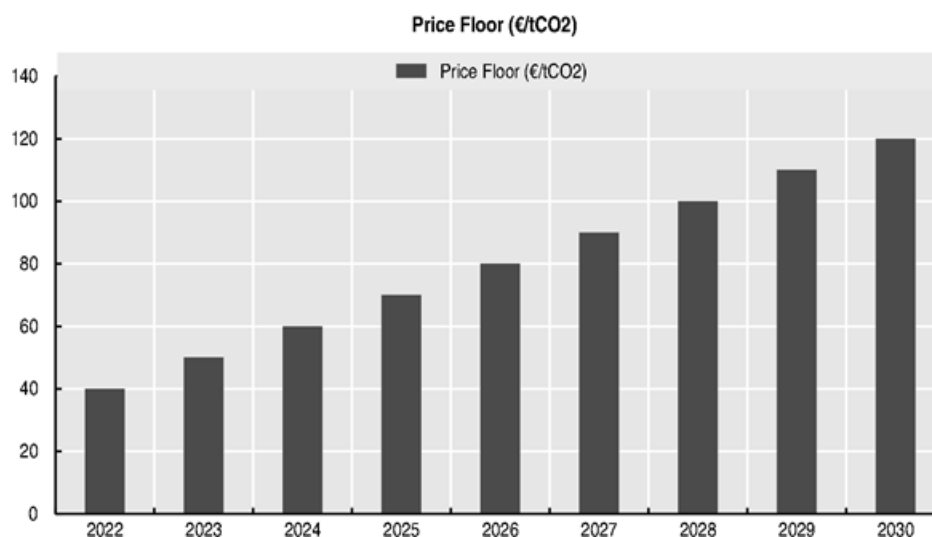
¹³ Dechezleprêtre et al. (2019_[93]) discuss the positive correlation found in the literature between economic performance and environmental performance of firms. See also <https://www.economist.com/business/billions-are-pouring-into-the-business-of-decarbonisation/21803649>.

landscape (e.g. *Soprintendenze*, which are deconcentrated entities of the Ministry of Culture responsible for safeguarding the cultural heritage and landscape at the regional level, or relevant regional authorities in the three regions with a special statute).

39. New technologies, however, may need to be adapted to their location, and might sometimes endanger landscape and nature protection. Local initiatives and natural heritage support are of great importance. They are left to local authorities that already have measures in place to address such issues.

40. The carbon price floor could be set at EUR 40 per tonne of CO₂ in the first year of the reform (e.g. 2022). Afterwards, the carbon price floor would increase by EUR 10 per tonne of CO₂ each year. This means it would reach EUR 60 after two years (e.g. 2024) and EUR 120 after 8 years (e.g. 2030). EUR 60 per tonne of CO₂ is a mid-range estimate for carbon costs in 2020 and EUR 120 per tonne of CO₂ is a central estimate for carbon costs in 2030 (High-Level Commission on Carbon Prices, 2017^[5]; Kaufman et al., 2020^[6]). Figure 3.2 illustrates the development of the price floor over time, assuming it is implemented at EUR 40 per tonne CO₂ in 2022.

Figure 3.2. Trajectory of the carbon price floor



Source: OECD.

41. The carbon price floor would apply to all carbon emitted by an energy user from energy purchased in the Italian territory. The carbon price floor will increase carbon prices for all emissions that would have been priced below the floor price. The carbon price floor will not be binding for those emissions whose carbon price already exceed the floor price (e.g. due to existing taxes on fuels or emission permit prices). As explained above (Figure 3.1), this is the case in the road transport sector, in the sense that fuel excise taxes result in effective carbon rates that are already well above the envisaged carbon price floor.

42. The proposed carbon price floor will increase the effectiveness and efficiency of carbon emission abatement choices by guaranteeing a minimum return for all of them.¹⁴ For example, a

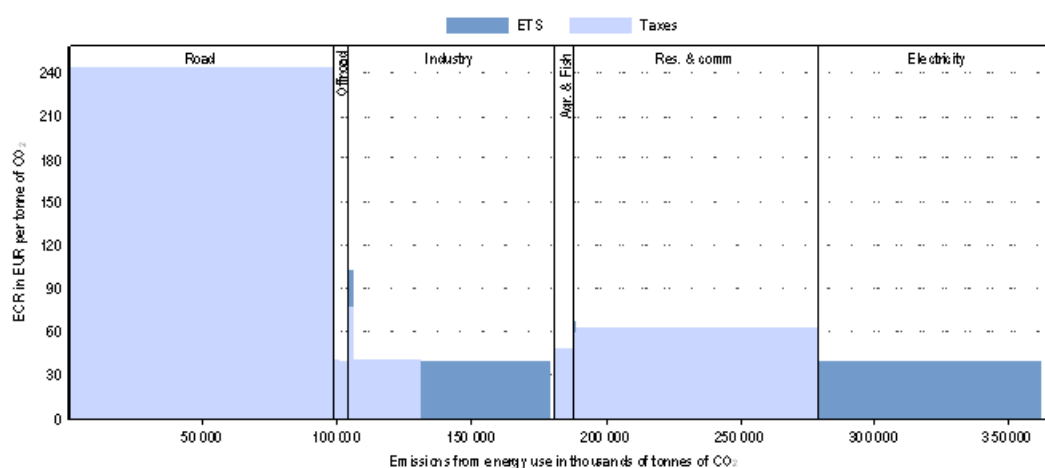
¹⁴ The notion of a carbon price floor does not imply a view that taxes on energy use should be motivated on climate grounds only, but that the climate element should be at least equal to the floor. Higher effective carbon rates can be justified for other policy objectives, e.g. local pollution, revenue raising, etc. Nevertheless, as long as the tax base is carbon emissions or a base

carbon price floor of EUR 40 per tonne CO₂ will encourage all energy users to reduce a tonne of CO₂ emissions if it costs them less than EUR 40. This is a way to incentivise firms and people to exploit low-cost abatement opportunities and hence increase the overall efficiency of carbon abatement.

43. Figure 3.3 shows average effective carbon rates by the end of the first year of the reform, assuming an initial carbon price floor of EUR 40 per tonne of CO₂. Compared to the pre-reform status, carbon rates primarily increase for some industrial emissions and for electricity sector emissions. For large industrial emitters and electricity generators, the price floor would currently not be binding as current carbon emissions permit prices (around EUR 50 in May 2021) exceed the price floor of EUR 40. However, it would provide certainty to large industrial emitters and electricity generators that any emission abatement that costs less than EUR 40 would pay off, as the overall carbon price would never fall below this level (see also the discussion in Flues and Van Dender (2020^[7])).¹⁵

Figure 3.1. Effective Carbon Rates one year after the reform

Effective Carbon Rates after the implementation of a carbon price floor at EUR 40



Note: OECD calculation.

44. In addition, a carbon price floor of EUR 40 per tonne of CO₂ would increase carbon prices for many small industrial emitters and commercial users. In particular producers of machinery, food processing companies and textile manufacturers with installations that fall below the size requirement for participating in the EU ETS, as well as commercial energy users, would be subject to the carbon price floor. These firms have in general a medium energy-intensity of production and many produce high-quality products, meaning that even if they did not respond with emission abatement to the carbon price floor, many could likely pass on moderate price increases in total production costs resulting from the carbon price floor.¹⁶ In addition, most of these activities require process heat at low to medium temperatures, but not at very high temperatures. Process heat that is currently produced from natural

proportional to them (e.g., litres of fuel), the tax is effectively a carbon price and will induce carbon abatement up to the point where carbon abatement costs equal the effective carbon price.

¹⁵ Note that permit prices in the EU ETS have fluctuated heavily in the past, with long periods of prices remaining below EUR 10 per tonne of CO₂.

¹⁶ See de Bruyn et al. (2015^[91]), Ganapati et al. (2020^[92]) for evidence on energy cost pass-through.

gas could be substituted by process heat produced from solar thermal energy, heat pumps powered by zero-carbon electricity and other zero-carbon heat sources (e.g. geothermal energy). It will be therefore important to provide adequate incentives for firms' innovation and adoption of these technologies partly using the revenues generated by the proposed carbon floor.

45. A carbon price of EUR 40 per tonne of CO₂ on its own is likely too low to encourage a switch from natural gas to solar thermal energy, heat pumps and renewable electricity for process heat generation. Thus, additional support could be provided to firms that invest in renewable process and space heating (e.g. by expanding the Transition 4.0 programme), especially in the early years of the reform, when carbon prices are still low.

46. Households' energy use of other than transport fuels (which are discussed below) would hardly be directly affected by the carbon price floor in the first year of the reform, as current effective carbon prices for residential natural gas use already exceed EUR 40 per tonne of CO₂. In addition to the introduction of the carbon price floor, the carbon pricing element of the action plan also proposes to simplify the taxation of natural gas for residential use. Currently, different national excise tax rates apply for different amounts of natural gas use for residential consumers. In addition, natural gas use up to 480m³ per year is subject to a reduced VAT of 10%, with the full VAT rate of 22% applying only to any use exceeding this threshold. The proposed simplification is to charge a single excise tax rate on natural gas equal to EUR 80 per tonne of CO₂, as well as the full VAT rate for any residential natural gas use (in the first year of the reform). This reform would not change the overall tax paid on natural gas by residential users, based on an average consumption of 1300m³ of natural gas per year, but significantly simplify the taxation of natural gas and set the stage for alignment with the carbon price floor. The reform element would be broadly revenue neutral at the time of introduction. The rate would remain at EUR 80 per tonne of CO₂ up to four years after the start of the reform. Starting from the fifth year, it would increase by EUR 10 per year in line with the carbon price floor.

47. Despite a generally limited impact of the carbon price floor on households in the first four years of the reform, some households may face moderately higher payments for natural gas if they cannot reduce their consumption. This is true for households who currently (i.e. pre-reform) use natural gas only for water heating and cooking, but not for space heating (and hence benefit from reduced VAT rates), as well as households who live in regions that currently benefit from a reduced excise tax rate on natural gas use. To ensure that the overall reform improves energy affordability, parts of the additional revenues from the carbon price floor could be used to increase cash-payments. The government may consider providing low-income households and those who used to benefit from reduced excise rates with water saving taps and shower inserts for free. This will reduce water use in general as well as the use of natural gas used for water heating. After some years, the use of water saving inserts could become mandatory. Furthermore, the government could provide low-income households with vouchers for a free energy saving assessment, which could complement the *Superbonus* programme (a generous fiscal incentive to encourage the renovation and retrofitting of buildings linked to interventions that improve isolation and save energy).

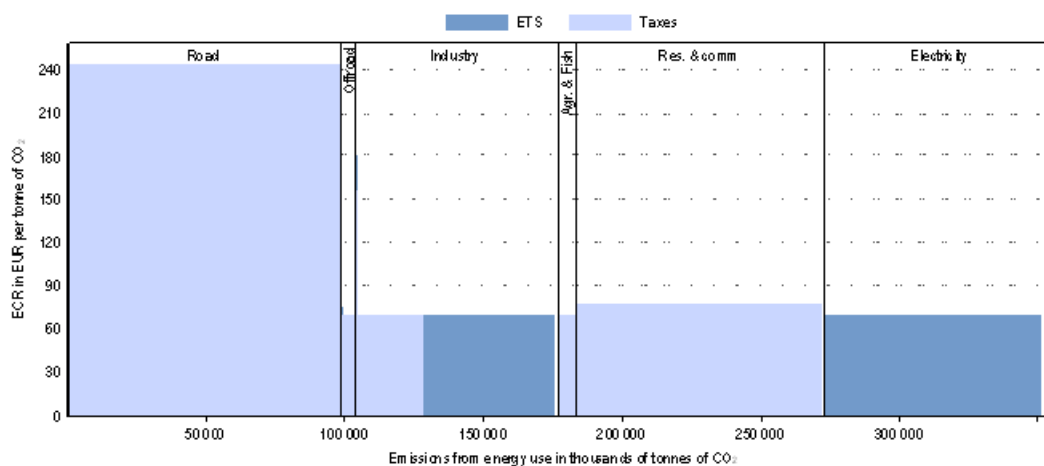
48. In addition to the impacts on firms and households described above, the carbon price floor would also increase carbon costs that result from the use of solid biomass, i.e. wood pellets. Evidence suggests that biofuels are generally not carbon-neutral from a life-cycle perspective (Searchinger et al., 2008^[8]) (Ecofys, IIASA and E4tech, 2015^[9]). In addition, producers and users of biofuels are generally different (legal) persons. Since it is plausible 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), compared to the case where only net emissions are priced, pricing carbon emissions from biomass combustion may be preferable over pricing net emissions only.

49. Hence, households would hardly be affected by the carbon price floor up to the fourth year of the reform (i.e. 2026), except if they use wood pellets for space and water heating. The government should nevertheless already start preparing an increase in means-tested benefits for low-income households to increase energy affordability when the carbon price for residential users is expected to increase in the fifth year of the reform (e.g. 2027). Means-tested benefits to improve energy affordability are particularly effective if they depend on household size. For instance, the new *assegno unico* (family benefit) that is dependent on an index capturing the income and wealth of the household and the number of children (to be fully implemented in January 2022 to incorporate various family benefits) could be modulated to ensure that energy remains affordable for households. Other means-tested benefits could help to support households without children, as they are not eligible for *assegno unico*.

50. After three years (see Figure 3.4), i.e. in 2025 if the reform starts in 2022, the carbon price floor will, according to this proposal, have increased to EUR 70 per tonne of CO₂. This means that even in the absence of an equivalent increase in permit prices in the EU ETS, also larger industrial facilities and power generators will face higher carbon prices. This would include producers of steel, cement, chemicals as well as large producers of machinery and food processing installations that participate in the EU ETS. However, with permit prices trading around EUR 50 per tonne of CO₂ (in June 2021) and expectations of further price increases in the future, the carbon price floor would not necessarily change the carbon price to be paid by large emitters in 2025 substantially, but it would increase certainty on the future carbon price trajectory and thus on the return of low-carbon investment. Without the carbon price floor, an unexpected drop in permit prices risks making clean investments unprofitable and delaying necessary emission abatement.

Figure 3.2. Effective Carbon Rates three years after the start of the reform

Effective Carbon Rates with a carbon price floor at EUR 70



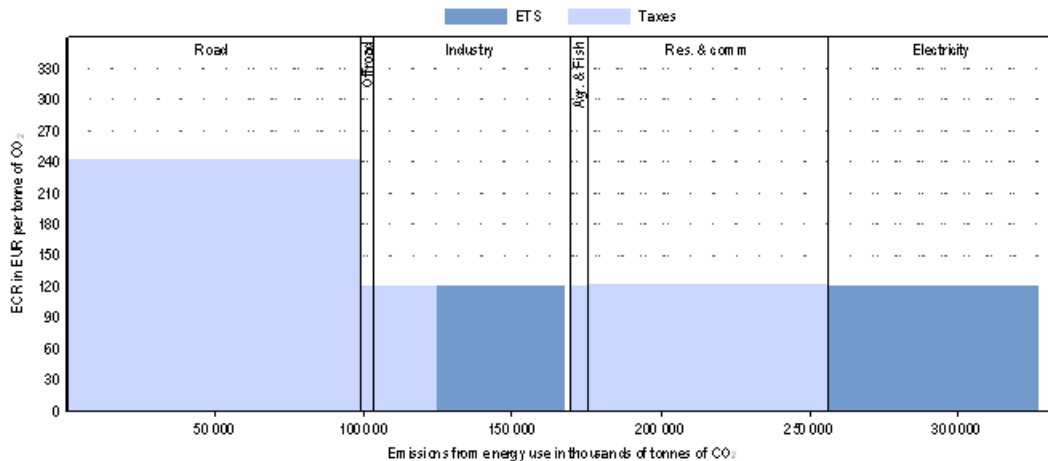
Note: OECD calculation.

51. After eight years (see Figure 3.5), e.g. in 2030 if the year of introduction is 2022, the carbon price floor would reach EUR 120 per tonne of CO₂. It would affect industry, residential users, commercial users, electricity generation, as well as off-road transport and agriculture. At this level, the carbon price is expected to provide significant incentives to reduce emissions both through switching to cleaner energy sources as well as through behavioural change (e.g. decreased usage). Support for low-income households via income-tested benefits may still be needed in order to ensure energy affordability. Moreover, additional incentives for investment in ultra-low- and zero-carbon process heat

for industry could still be granted to help the transition for industrial facilities that have not yet switched to cleaner energy sources and ensure their continued competitiveness at an international level, but a gradual phase-out of these additional incentives should be considered in order to speed up the transition in the industrial sector.

Figure 3.3. Effective Carbon Rates eight years after the start of the reform

Effective Carbon Rates with a carbon price floor at EUR 120



Note: OECD calculation.

Additional support for new clean technology

52. As mentioned previously, in some sectors, the carbon price level provided by the carbon price floor may not be sufficient to guarantee large-scale investment in new zero-carbon assets. For example, zero-carbon production methods for new primary steel and cement are still in their infancy and have not yet entered the market at large scale. The costs for such new production methods are expected to decline with increased adoption, but significant start-up costs for new zero-carbon production technologies imply that they will likely not be able to compete with existing carbon-intensive production methods at the suggested carbon price levels before 2030.

53. The government may therefore consider to offer Carbon-price-Contracts for Difference (CCfDs) for some promising ultra-low and zero-carbon production methods. CCfDs guarantee firms a fixed return for future emission reductions, independent of the market-price for carbon in a given year. For example, the government may guarantee a carbon contract price of EUR 150 per tonne of CO₂ for any emission reduction that results from the production of low-carbon cement compared to standard Portland cement. In practical terms, this means that three years after the start of the reform, a firm producing low-carbon cement would benefit from both not having to pay a carbon price of EUR 70 for any emissions it has reduced and from receiving a payment of EUR 80 for each unit per tonne of CO₂ reduced.

54. While firms benefit from CCfDs through a guaranteed return for investment in new clean production methods, CCfDs can also serve as a commitment device for governments to increase carbon prices as planned. Indeed, should a government decide to stop planned increases in the carbon price floor, existing CCfDs imply that this would come at a fiscal cost.

55. In terms of technologies, CCfDs could be particularly relevant for the economic breakthrough of a range of new clean technologies that are still far from commercialisation. These include the carbon-

neutral production of cement, steel and bulk chemicals, as well as zero-carbon heat used in different high-temperature manufacturing processes.

56. For example, steam crackers powered with renewable energy can enable low-emission production of bulk chemicals. CCfDs for low-carbon steam-cracking could support the modernisation of existing steam-cracking installations in Porto Maghera, Brindisi and Priolo.

57. CCfDs could also help create a market for low-carbon cements. Italy has rich resources of pozzolan, a carbon-neutral binder for cement production. Pozzolan cements were developed and widely used by the Romans (Vitruvius, 25 BC_[10]) (Yegul, 2021_[11]) – a notable long-lasting example is the Pantheon in Rome – but the material mix has only recently been re-discovered (Witze, 2017_[12]). Limited use and expertise in building with pozzolan cements means that they often cannot compete against their high-carbon competitors. In addition, current pozzolan cements generally require more time to harden than their high-carbon competitors, often reducing interest by builders (The Constructor, 2021_[13]). A CCfD for low-carbon cements together with Italy's rich pozzolan resources could help increase the use of existing low-carbon cements, as well as encourage research and innovation for further advancements in low-carbon cement production and building.

58. The carbon price floor can help increase the share of recycled steel in total steel production, but it is likely too low to incentivise the production of carbon-neutral primary steel. The production of primary steel also touches on wider social and environmental issues that are outside the scope of this action plan. Today, Italy has only one site for the production of primary steel in Taranto, a site known for having repeatedly caused environmental hazards and public health damages. If the production of steel were of strategic interest, the government could also consider CCfDs for *carbon-neutral* primary steel production.

59. CCfDs could help make renewable high-temperature process heat production competitive. While solutions for low- and medium-temperature heat generation already exist (including solar heating and heat pumps powered by renewable energy), solutions for high-temperature process-heat still need further development. A CCfD for the installation of high-temperature zero-carbon heat could help reduce the emissions of many industrial sectors without increasing production costs.

Box 1. Carbon Contracts for Difference

In a CCfD, a private buyer and a public entity agree on a fixed carbon price (a strike price) for a fixed period. When the market price is lower than the strike price, the public entity settles the difference to the private company. If the market price is above the strike price, the private company pays the difference to the public entity.

CO₂ prices are usually volatile, so the stabilisation of revenue streams allowed by CCfDs enables investors to secure loans and reduce financing costs. As long as carbon prices in emission trading systems are not sufficiently high, CCfDs can thus enable risk sharing between governments and private companies to help achieve the joint goal of reaching a decarbonised industry and affordability for consumers.

In 2013, the **United Kingdom** introduced Carbon Contracts for Difference in the electricity sector as part of its Electricity Market Reform. It initially consisted in a 15 year contract between a low carbon generator and the Low Carbon Contracts Company (LCCC), a limited liability company owned by the

UK government. The first allocation round was in 2015, and there is a new allocation round taking place in 2021.¹⁷ The government determines key parameters ahead of each allocation round, such as the list of eligible technologies, the budget and strike prices.

On 28 April 2021, the **German** government presented a plan to introduce CCfDs in the steel, cement, lime and ammonia industries.

Coordination with activities in the European Union

60. The European Green Deal and Next Generation EU will lead to policy reforms at the European level that to a varying extent will interact with Italy's policies. For example, if the ongoing reform of the ETS turns out to be very ambitious and if emissions trading is also extended to include buildings (i.e. the residential and commercial sector) and road transport, the main effect of an Italian carbon price floor will not necessarily be higher carbon prices, but increased certainty for planning investment and carrying-out other abatement activities. In addition, a price floor provides more certainty on revenues for the government than a fluctuating price for carbon emission permits. Anticipating a gradually rising carbon price allows the government to plan and implement accompanying support policies for firms and households, as well as a broader fiscal reform aiming at decreasing labour income taxes. For this reason, in case of prolonged and uncertain negotiations to reform the ETS, moving ahead of EU partners would have the benefit of lowering uncertainty significantly, encouraging investment in clean technologies and other abatement activities.

61. In principle, a price floor could also be implemented at the European level or within a set of several ambitious member states, but the required coordination means this would take time.¹⁸ Delaying climate action is costly, implying that Italy can benefit from acting even if other countries postpone such policies. Similar mechanisms have been implemented in other European countries, such as the Netherlands (see Box 2) and the United Kingdom (see Hirst (2018_[14]) and Box 3), and are consistent with the EU ETS.

Box 2. 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 .

¹⁷ See <https://www.cfdallocationround.uk/>.

¹⁸ In addition, a revision of the Energy Tax Directive may encourage phasing-out some of the existing tax exemptions, tax expenditures, rebates and discounts that lead to very low effective carbon rates for some users and fuels.

Table 1. 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 Figure 6 in Anderson et al. (2021_[15])

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_[7]). 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 (Anderson et al. (2021_[15])).

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_[16]) (Flues and Van Dender, 2020_[7]).

Box 3. The Carbon Price Floor in the United Kingdom

In 2013, the United Kingdom introduced a carbon price floor (CPF) for electricity sector fossil fuel emissions covered by the European Union Emissions Trading System. The CPF consisted in two elements: the EU ETS allowance price on the one hand, and a carbon price support (CPS) mechanism, which was changed on top of permit prices on the other hand. The CPS was at GBP 9 per tonne of CO₂ emissions in the electricity sector in 2013 and increased to GBP 18 in 2015. In 2018, the total effective carbon rate in that sector was about EUR 36 per tonne of CO₂. In 2017 the Treasury raised GBP 1 billion in CPF tax receipts.

Emissions in the electricity sector fell by 58% from 2012 (before the CPS was introduced) to 2016 (the first full year for which total effective carbon rates were about EUR 30). In 2018, they had fallen by 73% as compared to 2012 levels (OECD, 2018_[17]) (OECD, 2021_[18]). Coal use fell by 78% over the 2012-2016 period, which can help explain the observed decrease in emissions. Indeed, coal was partly replaced natural gas, which is about half as emission intensive as coal per unit of energy, and partly by zero-carbon renewables. Overall UK emissions from energy use fell by 27% in between

2012 and 2018, of which 24 percentage points can be attributed to cleaner electricity generation. In 2018, British greenhouse gas emissions were below the levels of 1890 (Hausfather, 2018^[19]).

The British experience suggests that carbon prices at high enough levels encourage a switch to cleaner fuels and can generate substantial emissions reductions.

62. Like the carbon price floor, the implementation of CCfDs in Italy should be coordinated with similar activities in the European Union. In several sectors, possibilities for EU-wide CCfDs may exist. If CCfDs are implemented domestically only, consistency with state aid regulations should be ensured early on.

63. A proposal for an EU Carbon Border Adjustment Mechanism (CBAM) was published by the European Commission on 14 July 2021 (see Box 4 for further details on the 14 July proposals). This would initially apply to iron and steel, aluminium, cement, fertilisers and electricity imports. The CBAM will ensure that imports of these goods will be subject to a carbon price that is equal to or comparable to the price applicable under the EU ETS, thus expanding its scope and addressing concerns of potential emission leakage and reduced sectorial competitiveness associated with rising differences in carbon prices. It is envisaged that the introduction of the CBAM would be combined with the phasing-out of free permit allocations. To the extent that the introduction of a CBAM would increase support for faster carbon price increases, it can help to limit the fiscal costs associated with CCfDs. This would also alleviate concerns about reduced competitiveness of Italian firms at the EU and international level.

Box 4. Delivering the European Green Deal

On 14 July 2021, the European Commission adopted a package of proposals. These “Fit-for-55” proposals are meant to make the EU’s climate, energy, land use, transport and taxation policies compatible with a reduction of net greenhouse gas emissions by at least 55% by 2030, compared to 1990 levels. Achieving these emission reductions should help make Europe a climate-neutral continent by 2050, keep up with the requirements of the European Green Deal and reach the targets that were agreed on in the European Climate Law.¹⁹

The proposals are interconnected and complementary. They are intended to spur the necessary acceleration of greenhouse gas emission reductions in the upcoming years, as well as ensure that Europe remains fair and competitive. They include:

An application of emissions trading to new sectors and a tightening of the existing EU Emissions Trading System.

More precisely, this proposal involves:

- lowering the overall emission cap and increasing its annual rate of reduction;
- phasing out free emission allowances for aviation;

¹⁹ This Box is based on the summary of the proposals made by the European Commission on the dedicated page https://ec.europa.eu/commission/presscorner/detail/en/IP_21_3541.

- including shipping emissions for the first time in the EU ETS;
- setting up a separate new emissions trading system for fuel distribution for road transport and buildings.

All of the emissions trading revenues should be spent on climate and energy-related projects. They should set up a dedicated part of the revenues from the new system for road transport and buildings to address its potential social impact on vulnerable households, micro-enterprises and transport users.

An increased use of renewable energy.

This involves:

- setting an increased target to produce 40% of EU energy from renewable sources by 2030;
- strengthening sustainability criteria for the use of bioenergy.

Greater energy efficiency.

The Energy Efficiency Directive sets a more ambitious binding annual target for reducing energy use at EU level. It is meant to guide how national contributions are established and almost double the annual energy saving obligation for Member States. The public sector will be required to renovate 3% of its buildings each year to drive the renovation wave, create jobs and bring down energy use and costs to the taxpayer.

A faster roll-out of low emission transport modes and the infrastructure and fuels to support them.

More precisely, this involves:

- stronger CO₂ emissions standards for cars and vans by requiring average emissions of new cars to come down by 55% from 2030 and 100% from 2035 compared to 2021 levels;
- ensuring that drivers are able to charge or fuel their vehicles at a reliable network across Europe;
- requiring that aircraft and ships have access to clean electricity supply in major ports and airports;
- requiring fuel suppliers to blend increasing levels of sustainable aviation fuels in jet fuel taken on-board at EU airports, including synthetic low-carbon fuels, known as e-fuels;
- stimulating the uptake of sustainable maritime fuels and zero-emission technologies by setting a maximum limit on the greenhouse gas content of energy used by ships calling at European ports.

An alignment of taxation policies with the European Green Deal objectives.

A revision of the Energy Taxation Directive proposes to align the taxation of energy products with EU energy and climate policies, promoting clean technologies and removing exemptions and reduced rates that currently encourage the use of fossil fuels. The new rules aim at reducing the harmful effects of energy tax competition, thus helping secure revenues for Member States from green taxes, which are less detrimental to growth than taxes on labour.

Measures to prevent carbon leakage.

This involves a new Carbon Border Adjustment Mechanism that puts a carbon price on imports of a targeted selection of products to ensure that climate action in Europe does not lead to 'carbon leakage' to other countries. On the one hand, this should ensure that European emission reductions contribute to a global emissions decline, instead of pushing carbon-intensive production outside Europe. On the other hand, the aim is also to encourage industry outside the EU to take steps in the same direction.

Tools to preserve and grow European natural carbon sinks.

By 2035, the EU should aim to reach climate neutrality in the land use, forestry and agriculture

sectors, including also agricultural non-CO₂ emissions, such as those from fertiliser use and livestock. The EU Forest Strategy aims to improve the quality, quantity and resilience of EU forests. It supports foresters and the forest-based bioeconomy while keeping harvesting and biomass use sustainable, preserving biodiversity, and setting out a plan to plant three billion trees across Europe by 2030.

The Environmental Fiscal Reform outlined in this action plan is coordinated with the above-mentioned points. Moreover, the proposed Carbon Border Adjustment Mechanism would help address carbon leakage and competitiveness concerns for Italian industries.

Strengthen the polluter pays principle for NO_x- and SO₂-emissions from stationary sources

64. Stationary sources cause around 80% of all SO₂ emissions and more than a third of all NO_x emissions in Italy. Italy 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. However, the current tax rates are quite low, e.g. compared to estimates of the social costs the emissions cause. For example, a study by van Essen et al. (2019_[20]) (prepared for the European Commission) provides country-specific estimates on the social costs of emissions from road transport. Damages from stationary emission sources could be broadly similar. For SO₂ emissions, van Essen et al. estimate social costs of EUR 12.7 per kg emitted. For NO_x emissions, they estimate social costs of EUR 15.1 per kg emitted in rural areas and of EUR 25.4 per kg emitted in urban areas in Italy.

Reform options

65. One option for reform could be to make polluters pay for the damage they cause to society, by gradually increasing the current tax rates on NO_x and SO₂ emissions to levels much closer to the estimated damage costs, for example by around EUR 1 per kg of pollutant per year over a number of years. Such a tax would encourage investments in abatement technology and reduce emissions.

66. If such a tax increase were to cause significant negative economic impacts on the firms affecting the environment, an alternative would be to introduce a system similar to the tax on NO_x emissions from stationary sources in Sweden (OECD, 2013_[21]). There, a relatively high tax is applied to measured emissions from the relevant sources, but almost all the revenue collected is being returned to the firms covered, in proportion to the amount of energy each of them is generating. With such a system, the firms get an incentive at the margin to reduce their emissions, but the impact on the firms' competitiveness and balance sheets are significantly more limited. In fact, this system encourages improved efficiency, as firms with low emissions per unit of energy they generate will come out as net winners, while firms with high emissions per energy unit generated will be net tax payers, albeit to a lower extent than if no refund system were in place (for a given tax rate per unit of emissions).

Support the electrification of the vehicle fleet, while maintaining the revenue-raising function of the transport taxation system

67. The broad environment-related policy objectives in surface transport include decarbonisation, reducing air pollution, and also reducing the adverse impacts of land use from infrastructure and urban sprawl. Curbing congestion is a related objective, as may be incentivising less car-oriented mobility patterns. Tax policy can contribute significantly to reaching these objectives.

68. In practice, coordination with other policy instruments will be needed. Several of these instruments are set at the level of the European Union, including the European regulation on greenhouse gas emissions from vehicles, regulations on emissions of air pollutants, the EU Energy Tax Directive and potentially the EU ETS. These policies are currently being reviewed with the intention of increasing environmental policy-stringency, particularly in relation to carbon neutrality. The climate portion of tax policy in transport also should be coordinated with the carbon price floor proposal developed above, and the revenue-raising function of road transport taxes needs to be taken into account. Lastly, the political economy of road transport taxation is difficult, and requires setting reform priorities while matching principles for environmental taxation as closely as practically possible.

Details of a suggested reform

69. The suggested reform prioritises steering towards the electrification of the vehicle fleet through the vehicle purchase taxation system in conjunction with building charging infrastructure for electric vehicles. Second, the introduction of a carbon component in road fuel excise taxes that increases over time with the carbon price floor is considered. Third, preparing for increased use of distance-based charges is suggested. Finally, price-based solutions can decrease local congestion problems and improve local air quality. These reform features are outlined below.

70. The first objective is to steer towards electrification of the vehicle fleet through the vehicle purchase taxation system, in coordination with the EU-wide CO₂-intensity regulation, accompanied by significant investment in charging infrastructure for electric vehicles (EVs).

71. The EU CO₂-intensity regulation sets an EU-fleetwide average by manufacturer, and this limits the potential for each Member State to affect EU-wide outcomes as long as the standard is binding, which likely will continue to be the case. This, however, does not entirely omit the rationale for tax policy within a Member State, especially if it represents a large share of the new vehicle market. Manufacturers will find it easier to comply with the standard if consumers' purchase incentives are broadly consistent with it. In addition, tax policy can complement the standard by incentivising a full shift to EVs, rather than pushing further investment in better fuel-economy of internal combustion engines or hybrid solutions. In other words, tax policy can undergird the transformational nature of the policy objective, which is to shift from carbon-based energy to electricity as the dominant energy carrier in road transport.²⁰ Given the revenue that is expected to be raised through the carbon price floor, this can be achieved in a broadly revenue-neutral way, at least initially.

²⁰ Other forms of energy carrier could be viable in principle, e.g. hydrogen, but hydrogen based fuel cell technologies are still uncompetitive in terms of price and energy-efficiency. This, and path-dependency, favours large scale electrification in the coming years.

Potential concerns regarding electric vehicles include their "well-to-wheel" greenhouse gas emissions as compared to internal combustion engine vehicles, the sustainability of their batteries and their effect on the labour force, especially in countries such as Italy where employment in the automotive sector is important. Nevertheless, according to recent work of the International Energy Agency (IEA, 2021^[94]), mass adoption of electric vehicles could cut emissions by more than one-third by 2030 under the existing 'stated' green policies. Concerns about greenhouse gas emissions when accounting for the full lifecycle of electric vehicles are increasingly being mitigated. According to the 2020 report of the IEA on electric vehicles, their benefits include "better efficiency than internal combustion engine vehicles and large potential for greenhouse gas emissions reductions when coupled with a low-carbon electricity sector". Moreover, research is advancing at a fast pace to avoid using the more environmentally and politically harmful rare-earth elements in the conception of batteries (see "Electric cars and batteries: how will the world produce enough?" (<https://www.nature.com/articles/d41586-021-02222-1>) or "Tesla's Shift To Cobalt-Free Batteries Is Its Most Important Move Yet" (<https://www.forbes.com/sites/jamesmorris/2020/07/11/teslas-shift-to-cobalt-free-batteries-is-its-most-important-move-yet>)). Finally, in 2019 the Italian automotive supply chain employed about 216 thousand workers (according to the Labour Force Survey

72. Vehicle taxation in Italy may require further reform in order to better align with the goals of the EU CO₂-intensity regulation. Currently, vehicle taxation in Italy follows a bonus-malus system (also referred to as a system of *feebates* in other countries or regions) that penalises CO₂-intensive vehicles and subsidises cars emitting 60 grams of CO₂ or less per kilometre. The subsidy is significantly higher if emissions are below 20 grams of CO₂ per kilometre. Plug-in hybrid vehicles may well qualify for such favourable treatment, even if their CO₂-emissions in practice may be above the ratings used for the regulation. The inclusion of plug-in hybrids may delay a shift towards full electrification of road transport. As it may, however, be useful as a short-term solution, it probably should not be eliminated immediately but rather progressively phased-out as the EV market and infrastructure become larger.

73. In addition, the preferential treatment of company car use should be reconsidered. This results from a low estimation of company cars' personal use to be included in the personal income tax base. Reform options in this area include phasing-out this preferential treatment or introducing incentives for the electrification of company vehicles – a reform that was for example implemented in Belgium in May 2021, to take on full effect by 2026.

74. A second reform component could be to define a carbon component in road fuel excise taxes and increase it over time in line with the carbon price floor.

75. Determining the carbon component of the current fuel excise tax is arbitrary to a degree, as estimates of external pollution costs are uncertain and vary across time and place of emission. Current excise rates significantly exceed the levels of the carbon price floor proposed in this action plan,²¹ so that a rising carbon component does not necessarily translate into higher fuel taxes in the short to medium term. However, as the carbon component is a price per unit of CO₂-emission from fuel combustion, it will be slightly higher for a litre of diesel than for a litre of petrol, given the higher carbon content per litre of diesel. Political economy considerations may suggest an approach that delays fuel excise increases for at least five years from the time of implementation of the carbon component, so as to provide drivers with ample time to adapt to fuel price increases. The delayed start would also give sufficient time to develop an information campaign and behaviourally informed actions that would further facilitate the adaptation by drivers.

76. Fuel excise taxes can in principle also reflect local pollution costs, but may not be the best solution to address such problems, and can come at a high political cost. Local emissions are to a significant degree determined by EURO standards for new motor vehicles (despite known problems), meaning that fuel excise taxes have only some impact on local pollution levels. In addition, damages from emissions vary strongly with the time and place of emissions, so they cannot be addressed by a uniform excise tax. In addition, the political cost of raising fuel taxes – in particular diesel taxes – is high. All these considerations imply that seeking accurate pollution-pricing through fuel taxes may be elusive and is not suggested as a priority here.

77. While this action plan does not focus on fuel tax increases in the near future as an environmental policy instrument, the environmental and fiscal case for reconsidering preferential fuel tax rates, e.g. related to taxis and to diesel used in freight and passenger transport services remains solid (Ministero dell' ambiente, 2019_[22]), but the political economy difficult.

database). A 2021 report by the ifo Institute (Falck, 2021_[95]) calls for retraining and further training current employees to ensure a smooth transition to a full electrification of the vehicle fleet.

²¹ Tax rates on fuels used in road transport are generally higher than energy tax rates in other sectors, for which there can be good reasons. Road use gives rise to a range of external costs, including congestion, noise, accidents and local air pollution, in addition to the damage caused by carbon emissions (Van Dender, 2019_[23]).

78. A third reform component could be to prepare for distance-based charges as an alternative to taxing transport energy, also to address the negative externalities created by traffic.

79. As electrification of road transport sets in, the revenues from fuel taxes – currently by far the dominant source of environmentally related tax revenues – will decline. Public finance principles suggest that transport-related tax revenues are attractive because the demand for road transport is not very responsive to prices. In fact, the demand for driving is less elastic than the demand for fossil fuels (where consumers can react by saving more on fuel or switching to alternative fuels, in addition to driving less). Transport-related tax revenues represent an important share of environmentally related tax revenue in Italy (18% in 2019) as in many other European countries (19% on average in 2019).²² Distance-based charges are a good substitute for fuel taxes in that respect, and superior to vehicle taxes or taxes on electricity use as they are borne by road-infrastructure users in proportion of the actual use and additionally can help to address the negative externalities (see Van Dender (2019_[23])).

80. Distance-based charges can take the simple form of odometer-based charges, in which case they would be almost entirely a revenue-raising instrument. Alternatively, they can be combined with traffic demand management objectives, e.g. that of reducing congestion. The suggestion in this action plan is to focus on revenue-raising through simple distance-based charges, but with a differentiation according to vehicles' pollution profile, and to opt for local solutions to manage congestion. Given the long lead times associated with the introduction of new charging mechanisms, it is advisable to begin exploring options soon, considering the options available, the impacts on different population groups, the distributional consequences, how best to design the charging system reflecting the population's preferences and needs (OECD, 2019_[24]), even if large-scale electrification may take a while to materialise.²³

81. The reforms suggested above seek to support the electrification of road passenger transport and to maintain its revenue-raising function, with modulation to account for pollution profiles, but not increasing fuel taxes in the near to mid-term. These reforms can be complemented with price-based solutions for local congestion and pollution problems. Congestion and local air pollution are particularly pronounced in urbanised areas, and can be mitigated by congestion charges or parking charges, or a combination thereof. In fact, the recent example of Milan²⁴ showcases the ability of pricing solutions to reduce both pollution and congestion. Congestion charges perform significantly better in addressing congestion costs than fuel taxes (Van Dender, 2019_[23]). Such systems are best designed and administered at the local level, with the revenues also accruing at the local level and put to use to fund public transport or any other clearly identified local need (but preferably not as general revenue, as this is not conducive to garnering local support).

Better alignment of environmental taxes applying to agriculture with environmental costs

82. Land is used intensively in many areas of Italy, especially in the *Pianura Padana*. Agriculture contributes to air, water and soil pollution. 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_[25]). While road

²² (Eurostat, 2021_[56]).

²³ Increasing public transportation networks and reach could be an important intermediate step.

²⁴ <https://www.weforum.org/agenda/2020/04/milan-covid-19-coronavirus-lockdown-reducing-car-use/>

transport is often considered to be the most important contributor to local air pollution, agricultural activities are also responsible for a significant share (ISPRA, 2016_[26]).

Reform options

83. Italy could introduce a tax on pesticides, with tax rates set according to the risks to human health and the environment that the different pesticides represent – similarly to what is applied in for instance Denmark and Norway. All pesticides on the European market are already risk assessed by the European Chemicals Agency, so grouping them into different taxation classes is relatively straightforward.

84. Italy could also consider to levy fines for activities from agriculture that contribute to local air pollution, such a burning biomass on open land or bringing out manure on days that are prone to air pollution. A tax could be levied on non-biodegradable plastics used for plant hotbeds in order to decrease plastic particle pollution.

Annex A. Why carbon prices are an essential element of any decarbonisation strategy

This Annex summarises several reasons why broad carbon pricing should be an important element of any decarbonisation strategy. It is based on the discussion in (IMF/OECD, 2021^[27]). Carbon pricing is important because:

1. It provides across-the-board incentives for firms and households to reduce carbon-intensive energy use and shift to cleaner fuels: this occurs as carbon pricing increases the price of carbon-intensive fuels, electricity, and consumer goods produced with fuels and electricity.
2. It provides the essential price signal for mobilising private investment in clean technologies: Carbon pricing levels the playing field for emissions-saving technologies and helps to avoid lock-in of fossil fuel intensive investments (like coal generation plants), contributing to cost-effective abatement.
3. It is more flexible than regulatory approaches: Unlike energy efficiency standards and other regulations, prices leave households and businesses a wide range of choices on how to cut emissions. This greater flexibility reduces costs because the government is generally less well informed about the options available to emitters, particularly where different emitters would prefer different responses.
4. It provides ongoing mitigation incentives: In the case of some policy tools, such as standards, the pressure to reduce emissions disappears once compliance with a standard is reached, whereas prices continue to induce mitigation effort as long as emissions are positive.
5. It counteracts rebound effects: Some policy instruments, such as energy efficiency standards, lead to increased energy usage. For example, improving the energy efficiency of an air-conditioning unit makes it cheaper to run and may therefore result in it being used more often, undoing some of the energy savings from the efficiency improvement, unless the price of energy use or of the emissions from energy use increase simultaneously.
6. It mobilises government revenue: Unlike most other mitigation instruments, carbon pricing raises government revenues, and administrative costs of revenue collection are much lower than for broader fiscal instruments.
7. It generates domestic environmental co-benefits like reductions in local air pollution mortality: Pricing carbon, like other mitigation instruments, results in cleaner air which is a tangible and immediate benefit of reduced combustion of coal and motor fuels, especially in metropolitan areas.

Annex B. Fiscal policy and use of environmentally related taxes and subsidies in Italy at the start of 2021

B.1. Brief overview of Italy's environmental goals and performance

85. Italy's GHG emissions peaked in 2007 and have been declining since.²⁵ In 2018, emissions amounted to 391 MtCO₂eq, 30% below the 2007 level (OECD, 2021_[28]). 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 current National Energy and Climate Plan sets a 2030 reduction target for non-ETS emissions at -33% compared to 2005 levels. Italy now aims to exceed this target, with planned measures expected to reduce emissions in non-ETS sectors by 35% in 2030 (Government of Italy, 2019_[29]). 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_[30]).²⁶ Italy has not yet set a long-term GHG emissions target, although it defined an interim milestone of achieving decarbonisation of the energy sector by 2050 (Government of Italy, 2019_[29]).

86. Energy use in transport, energy generation, heating and industry accounts for about 80% of Italy's total greenhouse gas emissions²⁷ Emission intensities (both per capita and per GDP) have traditionally been below the OECD average.

87. 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 a share of at least 17% of renewable energy in gross final energy consumption in 2014 already (in 2019, the share stood at 18.2%) (Eurostat, 2021_[31]). Energy consumption is on a declining trend; the energy intensity of the economy (total energy supply per unit of GDP) declined by 11percentage points between 2009 and 2019 (OECD/IEA, 2021_[32]).

88. 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 the World Health Organization's guideline value of an annual mean concentration of 10 µg/m³ (OECD, 2021_[28]). 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_[33]). Mortality from outdoor particulate matter is unusually high compared with

²⁵ Referring to net GHG emissions, i.e. including emissions from land use, land-use change and forestry (LULUCF).

²⁶ 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.

²⁷ See <https://www.eea.europa.eu/data-and-maps/data/data-viewers/greenhouse-gases-viewer>.

most OECD countries. According to the World Health Organization, in Italy, PM_{2.5} is responsible for 218 deaths per day (Becchetti, 2020_[34]). One of the main reasons for Italy's high levels of PM as well as nitrogen dioxide (NO₂) pollution is the high level of road traffic. Also, urban sprawl fosters car dependency and traffic congestion, raising air pollution, energy consumption and CO₂ emissions (OECD, 2018_[35]).²⁸

89. 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.

90. 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_[36]) (OECD, 2019_[37]).

B.2. Current fiscal policy and use of environmentally related taxes and subsidies

Overall fiscal situation and plans for comprehensive fiscal reform at the start of 2021

91. 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 B.4, 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.

92. 2020 and 2021 confinement measures and uncertainty weighed heavily on activity, but government support managed – at least in the short run – to mitigate the effects on firms and households. In 2020, GDP was projected to expand by 4.3% in 2021 and 3.2% in 2022 (Figure B.4, Panel C) (OECD, 2020_[38]). However, the emergence of new variants of the virus may induce new confinement measures, raising significant downside risks in 2021 and 2022.

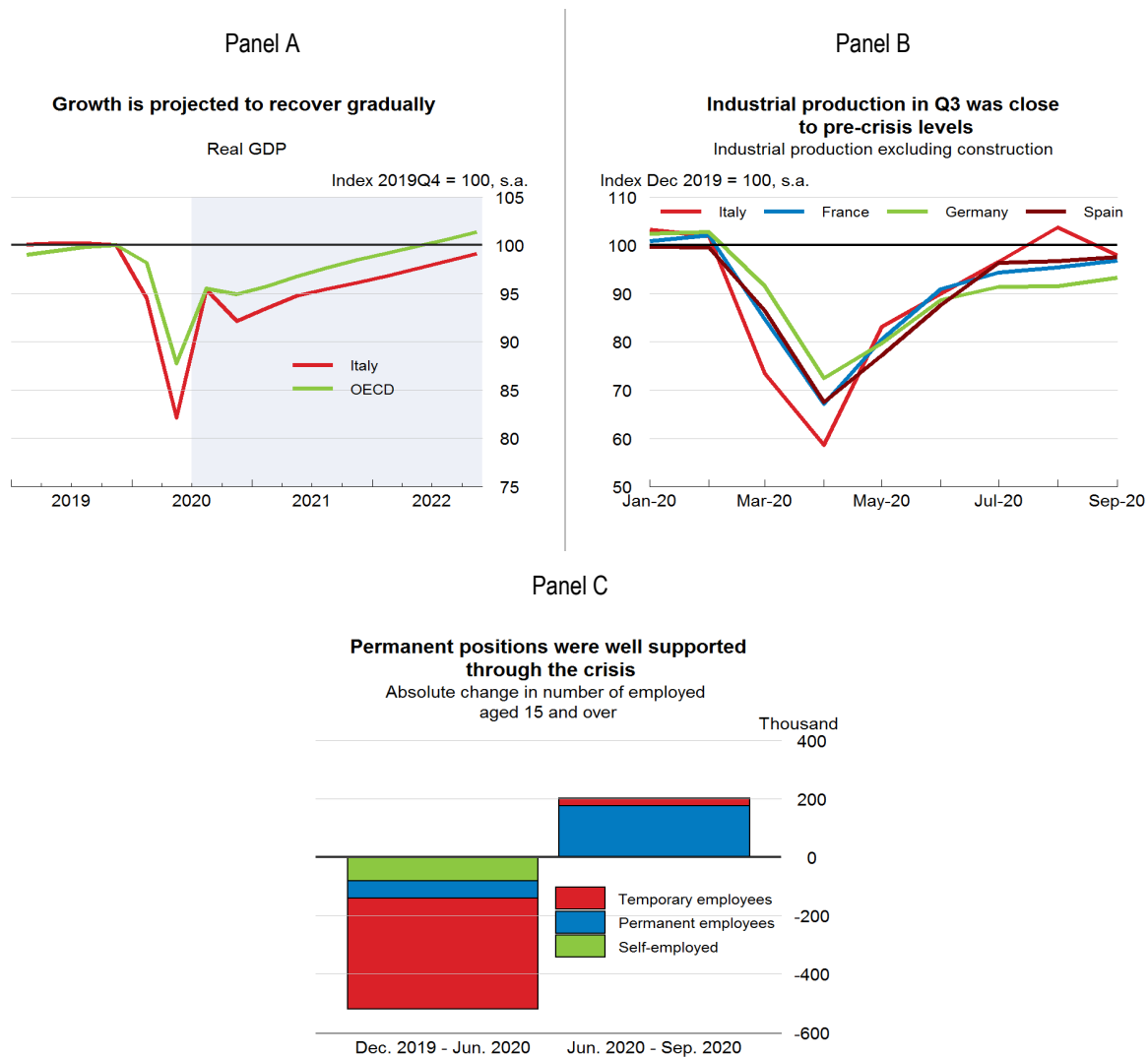
93. The extension of the coverage of the wage supplement scheme (*Cassa integrazione guadagni*) and a dismissal ban introduced in 2020 and extended until October 2021 have so far prevented major job losses. Temporary workers have borne the brunt of the labour market adjustment, but permanent employees 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 B.4, Panel C). Substantial job creation, especially for the low-skilled, women and youth, is not expected to return before 2022, if vaccine takeup is widespread enough and is efficient against potential future variants (OECD, 2020_[38]) (EC, 2020_[39]).

²⁸ A full electrification of the vehicle fleet will not be enough to address these issues in the short run. Hence, some options to address traffic-related issues are discussed in Section 3 of the final action plan.

94. The government headline deficit sharply increased to 9.5% in 2020, up from a historic low of 1.6% of GDP in 2019, and is expected to increase to 11.8% in 2021. 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_[39]).

95. In 2021, the government deficit was expected to decline to around 6.9% of GDP (OECD, 2020_[38]). 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_[39]). 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_[38]).

Figure B.4. 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>.

96. The actual recovery path may differ from projections, however, in particular in the current circumstances with significant 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_[38]).

97. In order to contain uncertainty as much as possible, 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*), which seeks to encourage female participation in the labour market and increase 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_[40]). Specifically, the 2021 budget introduced additional measures to counter fraud on VAT and excise taxes, improve information at the disposal of the Revenue Agency and incentivise the use of electronic payments through a receipt lottery. These initiatives built on past years' 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_[41]).

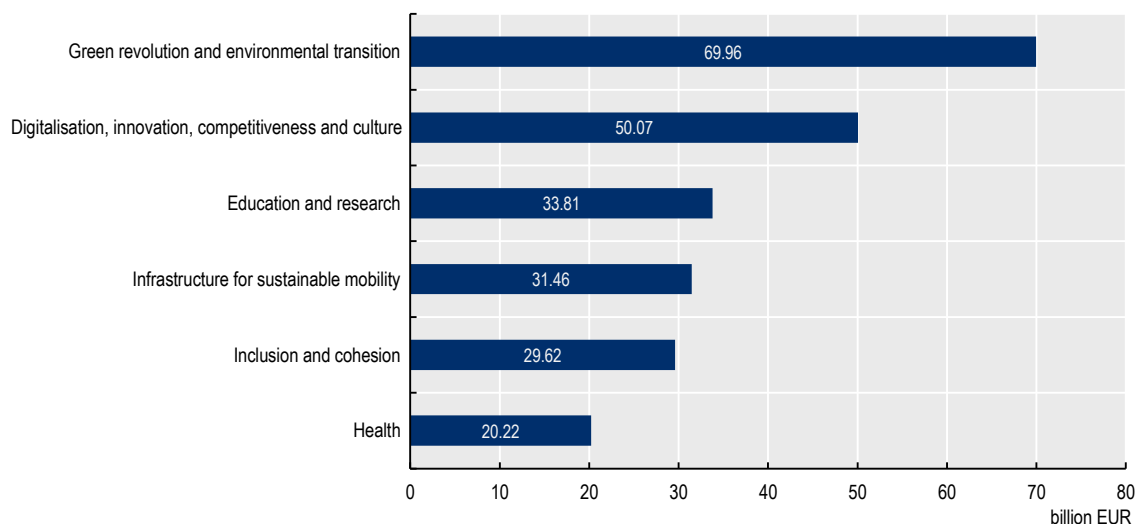
98. The government plans to outline the tax reform in a framework law (*legge delega*) to be presented to Parliament by the end of 2021. Some elements are included in the 2021 budget. The budget allocates EUR 7 billion to maintain the fiscal bonus (an in-work benefit system reducing the labour income tax wedge for low and middle income earners), which was strengthened in 2020 and which mostly benefits employees.²⁹ 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_[42]). 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_[43]). 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, and with the aim of increasing employment (especially among women and youth) and reducing informality. The Plan does not make reference to the redesign of environmental taxation or environmentally harmful subsidies, even though this was included in a draft version of the Plan (Government of Italy, 2021_[44]).

²⁹ The current fiscal bonus benefits only tax paying individuals. It therefore amounts to zero for earnings up to EUR 8 145; EUR 100 (per month) for yearly earnings between EUR 8 145-28 000, EUR 80 for earnings between EUR 28 000-35 000 and goes from EUR 80 to zero euro for earnings between 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 between EUR 8 146-24 600 and declined to zero for earnings between EUR 24 600-26 600.

99. 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 B.5). 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_[43]).

100. 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-standing 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 the subsection on the income tax system.

Figure B.5. 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

Innovation and environmental transition

101. The 2021 budget 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_[45]). 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_[46]). The Industry 4.0 Plan has proved effective in facilitating firms' digital transition with positive effects on employment (Bratta, Romano and Acciari, 2020_[47]).

102. 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 that have the aim of 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 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_[4]).

Income tax system

103. Italy's tax take is high and, compared to GDP, tax revenues are among the highest across OECD countries (Figure B.6, 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 B.6, Panel B), curbing labour demand especially in low productivity regions. These figures have remained similar in the latest years (see the latest OECD Revenue Statistics and OECD Taxing Wages publications).

104. 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_[48]).

105. 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 economic and social objectives that initially motivated certain tax expenditures may no longer be 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.

106. 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 2020 Budgetary Policy Report finds that tax expenditures have increased in recent years. The review forecasts EUR 64.3 billion in foregone tax revenues for 2021 and EUR 63.1 billion for 2022, up from EUR 54.5 billion estimated for 2016 and EUR 62.5 billion for 2020. In the past years, an additional EUR 27.7 billion were related to tax expenditures at the local level. These tax expenditures also include the most significant ones, such as the "EUR 80 fiscal bonus" for low-income employees and tax credits for building renovations (UPB, 2019_[41]). 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_[41]).

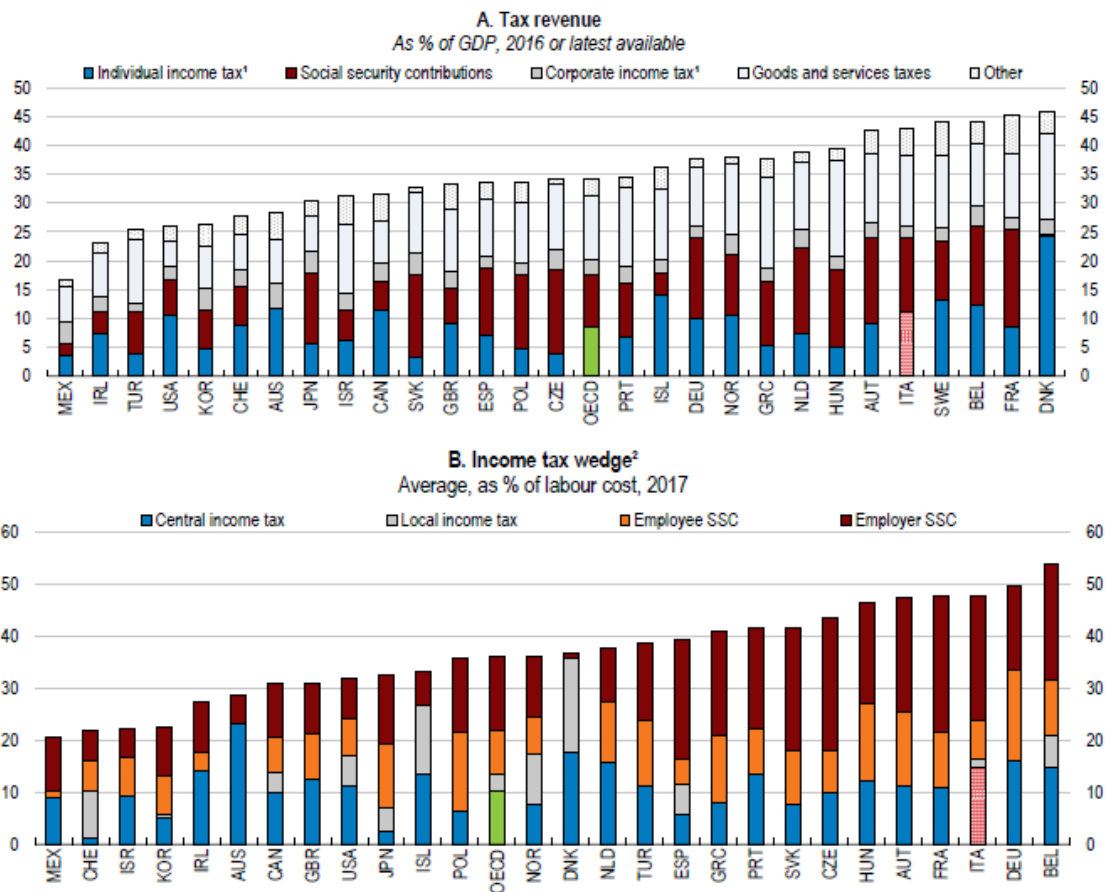
107. With the aim of reducing environmentally harmful subsidies, the 2021 budget has created a special inter-ministerial commission for the ecological transition and the phasing-out of such subsidies. The commission is chaired by the Ministry for Ecological Transition and composed of the Ministry of 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_[49]).

108. In line with this effort, the 2021 budget introduced a Single Use Plastic (SUP) 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_[41]).

109. 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 are consistent with recommendations of past OECD Economic Surveys of Italy. However, their effects on job creation, especially of low-income jobs, interact 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 B.6. 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.

Benefit system

110. 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.

111. The changes to retirement rules provided in the 2019 budget lowered the effective retirement age. Workers who are 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 (OECD, 2019_[37]). Intake was actually lower, however, with about 150 000 additional pensions in 2019 and 50 000 for the Jan-Jun 2020 period.

112. 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 effects on employment incentives. Participation tax rates for beneficiaries moving into low-wage work were among the lowest across the OECD.

113. 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".

114. 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_[37]).

115. The Citizen's Income's transfer rules 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 paid 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_[37]).

Energy taxes and carbon emission permits

116. 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 a substantially lower rate. Waste and renewable energy are not taxed when used to produce heat or electricity.

117. Energy taxes account for most of environmentally related tax revenue. The highest rates apply to the use of fossil fuels in road transport.³⁰ 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 much less than in residential and commercial use (OECD, 2018_[50]) and diesel is taxed less than petrol, even though it usually 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.

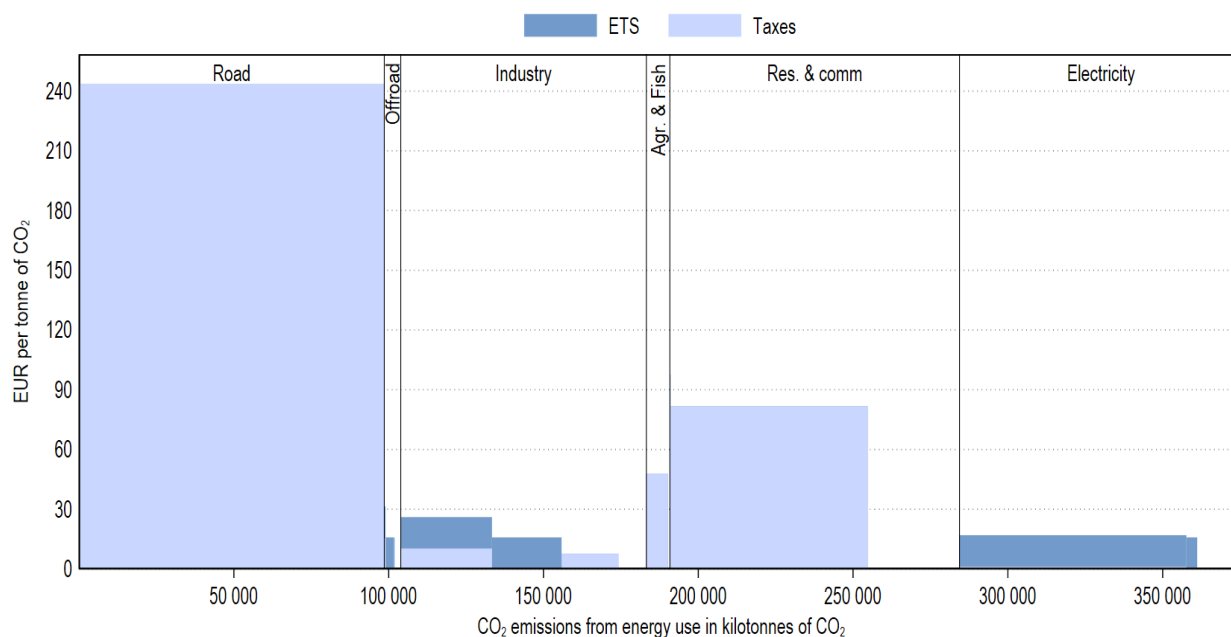
118. Figure B.7 provides an overview of effective carbon rates on emissions from energy use in Italy in 2018. The effective carbon rate is the sum of taxes on fuels and emission permits that increase the price of carbon-intensive energy relative to low- and zero-carbon energy. A higher effective carbon 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_[51]), 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.

119. 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_[52]). Austria followed with 48%.

120. Four sectors account for the vast majority of emissions, namely the road sector, industry, the residential and commercial sector, and electricity generation (see Figure B.7). 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 from combustion 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 B.7.

³⁰ 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, 2019_[23]).

Figure B.7. Effective Carbon Rates in Italy in 2018



Note: The figure includes emissions from the combustion of biomass.³¹

Source: OECD Effective Carbon Rates Database (OECD, 2021_[52]).

121. 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) are the main component of the price signal in the industry sector and especially in 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 in general below EUR 60 per tonne of CO₂ (Figure B.7). In addition, there is no guarantee against falling permit prices (Flues and Van Dender, 2020_[7]).

122. Figure B.8 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.³² The third edition of the Italian Catalogue of Environmentally Friendly Subsidies and Environmentally Harmful Subsidies (Ministero dell'Ambiente, (2019_[22])) calculated a tax expenditure as a result of this difference of EUR 5.2 billion in 2019 (Codice Sussidio EN.SI.19).³³ 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.

123. 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_[53]), 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

³¹ 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.

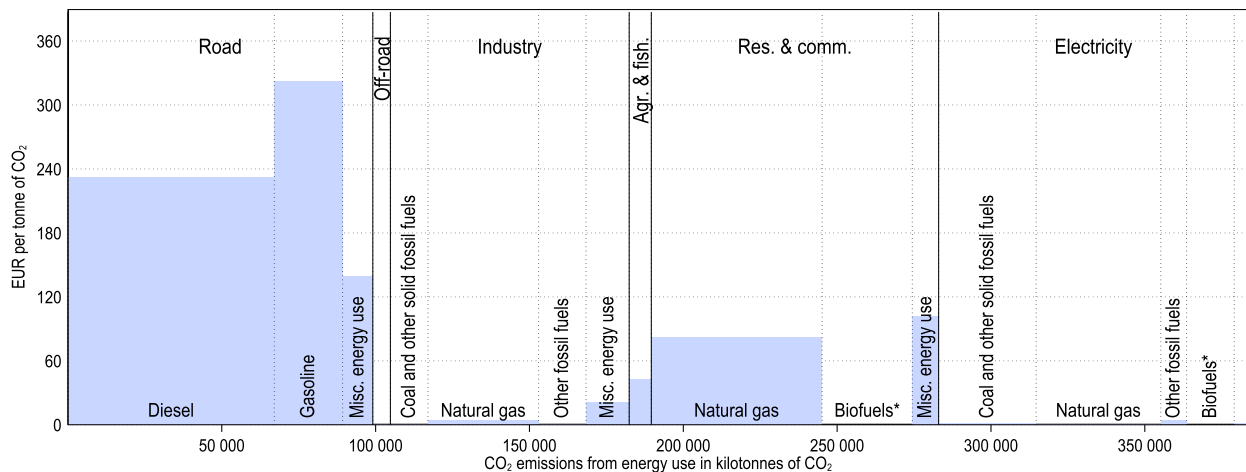
³² The carbon content per litre of diesel is higher than per litre of gasoline. An equal tax rate per litre of fuel would still result in somewhat lower effective carbon rate for diesel than for petrol.

³³ The tax expenditure is calculated based on the difference of petrol and diesel tax rates per litre of fuel.

Sussidio IVA.12). The reduced VAT rate lowers the price of natural gas for residential users and weakens incentives to switch to cleaner alternatives and to use gas more economically. Adjusting the excise tax rate to its VAT standard-rate equivalent, i.e. calculating the excise tax that would result in the same total tax rate in the assumption that the standard VAT rate would apply instead of the reduced one, lowers the carbon price signal by more than 50% to EUR 40.6 per tonne CO₂ in 2018.³⁴

124. 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^[54]).

Figure B.8. Effective energy tax rates in Italy in 2018 across sectors



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

Source: Adapted from Taxing Energy Use 2019 (2019^[53]).

Other environmentally related taxes

125. Vehicle taxes are the second 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 an important source of revenue for local authorities, as they are collected by regions and provinces.

126. 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.

127. The annual ownership tax for passenger cars is based on engine power, emission standards and fuel type (ACEA, 2020^[55]).

³⁴ 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).

128. 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).

129. Taxes on pollution (such as air pollution and waste) account for merely 1% of revenue from environmentally related taxes (Eurostat, 2021^[56]). 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^[20]) 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^[20]) 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.

130. 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^[57]). 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^[37]). Stronger enforcement then needs to accompany any increase in municipal waste tax rates.

131. 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.

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

Harmful and beneficial subsidies

133. The MoENV regularly publishes the Italian Catalogue of Environmentally Friendly and Environmentally Harmful Subsidies, a 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 B.7 and Figure B.8 (in the above section) 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) – of which 8.5% were from direct spending and the rest from tax expenditures – whereas environmentally friendly subsidies amounted to EUR 15.3 billion (Ministero dell' ambiente, 2019^[22]).

134. 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.

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

Annex C. Opportunities and challenges of an Environmental Fiscal Reform in Italy

This Annex presents the outcomes of the discussions held in the stakeholder meetings, and presents the opportunities and challenges of an EFR in Italy that were brought forward during these meetings, formal and informal discussions. The proposed final action plan presents a broad-scoped reform, but in this Annex, the possibility for a narrow-based reform is also discussed.

In the following are 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 discussions are 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.

C.1. Scope of an environmental fiscal reform

136. The scope of EFRs varies. 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. Also, 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 cover several domains, such as clean energy, clean air, clean water, circular economy, etc.

137. Several stakeholders mentioned that a broad EFR – increasing taxes on pollution while lowering effective tax rates on labour (and potentially capital) income – would be more amenable to gaining the support from a wide set of actors than a narrow one. For example, lowering labour income taxes for low- and middle-income earners (OECD, 2019_[37]), 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.³⁵ 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.

138. 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.

³⁵ 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_[37]).

Balancing tax gains in some domains with additional tax contributions in other domains is a complex task.

139. 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.

140. Where the revenues from environmental taxes are significant and can be sustained over a longer period (e.g. one or two decades, 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.

141. 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.

Box C.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^[58]).

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 C.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^[59]).

Table C.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^[59]).

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^[27]). 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_[60]) 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.

142. An environmental tax reform in Italy that increases effective carbon prices could raise significant amounts of revenue as the examples in Box C.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.

143. 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_[61]). 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_[62]).

144. 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.

Concrete examples for a narrow and a broader carbon pricing reform

145. In order to illustrate the choice of scope of an environmentally related fiscal reform, the following paragraphs consider two options for a carbon pricing reform; a narrow option and a broader option. As shown in Appendix B, effective carbon rates are low in the electricity and industry sector, especially when compared to other sectors.³⁶ Italy could thus economically reduce carbon emissions by increasing rates in these sectors, see also the Dutch example (Box in the proposed action plan).

146. 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

³⁶ 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.

has recently increased and electricity sector emissions have started to decline, but there is little abatement in the industry sector (Marcu et al., 2020_[63]). 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

147. 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.³⁷ 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.

148. 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.

149. 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.

³⁷ 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.

A broad carbon pricing reform

150. 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.

151. 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.³⁸ 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.

152. 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.

153. 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.

154. 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.

³⁸ 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^[87]) 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.

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.

C.2. Revenue use and support for an environmental tax reform

155. 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^[64]) 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.

156. 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.

Creating jobs

157. 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) of the revenue to lower income tax rates or social security contribution rates in order to increase employment.

Improving progressivity of the overall tax system and energy affordability

158. Stakeholders also stated the importance of taking the distributional and affordability effects of an EFR into account. 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^[65]) 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.

Supporting green technologies and products

159. 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.

160. 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^[66]).

161. Spending on green technologies and biodiversity conservation can also be an effective economic recovery policy. Batini et al. (2021^[67]) 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.

Maintaining and improving the competitiveness of Italian firms

162. 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^[17]). 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.

163. 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 Itzhoki, 2014^[68]). 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^[69]).

164. Several stakeholders mentioned that any EFR should not damage the competitiveness of Italian firms in specific sectors. For example, the energy sector perceives to pay already high taxes or emission permit prices 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.

165. It was also suggested that 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 some 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, including free allocation of emission permits. Any carbon border adjustment would need to 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 to facilitate an ambitious environmental reform, especially in the absence of a border carbon adjustment.

166. 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_[70]; OECD, 2018_[17]), 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_[70]; OECD, 2018_[17]).

167. Claims that higher effective carbon prices would be anti-competitive across the board in the short-run fail empirical tests (Arlinghaus, 2015_[71]; Martin, Muûls and Wagner, 2016_[72]; Verde, 2020_[73]; High-Level Commission on Carbon Pricing and Competitiveness, 2019_[74]). Reviewing the empirical literature on the EU ETS, Joltreau and Sommerfeld (2019_[75]) 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_[76]) 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_[75]). 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_[77]; Lutz, 2016_[78]). In France, the Netherlands, Norway and the United Kingdom, the EU ETS increases revenue and assets for regulated firms (Dechezleprêtre, Nachtigall and Venmans, 2018_[79]).

168. 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_[80]) 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_[81]) 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_[82]) 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_[81]) and Borghesi et al. (2020_[82]) 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.

169. 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_[75]; High-Level Commission on Carbon Pricing and Competitiveness, 2019_[74]). 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_[83]). Cali et al. (2018_[84]) find that increases in fuel prices improve the productivity of manufacturing firms in Indonesia and Mexico. Studying electricity prices, Gerster (2017_[85]) 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_[86]) 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_[87]) finds that carbon taxes generate employment reallocation between firms and industries in the French manufacturing sector, but do not affect total manufacturing employment.

170. Finally, the accompanying labour cost reduction (through lower taxes on labour income) that is proposed in this plan provides a fiscal devaluation argument: by implementing such a reform earlier than other economies, Italian firms would thus gain a competitiveness edge through a fiscally-induced reduction in their costs.

C.3. Design and planning

171. 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.

172. One issue of discussion was the timetable or sequencing of reform. 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.

173. 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).

174. 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_[88]). The introduction of these measures has, however, been postponed to 2023, which demonstrates the political and social challenges associated with fossil fuel subsidy reform.

175. At the same time, as outlined in Annex B, 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.

176. 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.

177. 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.

178. 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^[89]).

179. 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.

C.4. Summary of the main opportunities and challenges to environmental fiscal reform in Italy

180. 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.

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.

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