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The integration of green growth in *Going for Growth 2019*

Curbing emissions and pollution is crucial in ensuring that the gains in growth and well-being are sustainable in the long term. Hence, environmental considerations are key in the setting of national and global reform priorities. *Going for Growth 2019* takes steps to integrate environmental sustainability in the reform priority selection framework. This chapter presents the details of this integration, summarises its results in terms of country-specific *Going for Growth* priorities and recommendations and outlines the future steps.

The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

In Brief

Growth has to be environmentally sustainable

The main objective of Going for Growth is to identify the top structural policy priorities to boost incomes for all. As the environment underpins the fundamentals of any economic activity and life itself, ensuring that the gains in incomes and well-being last in the longer-term requires that policy reform priorities and recommendations take into account environmental pressures and risks.

Starting from the 2019 edition, a systematic approach to integrating the environment in Going for Growth is adopted. In line with the existing framework, it relies on a combination of quantitative and qualitative analysis. As the links between the environment and growth (or well-being) are complex and often not well understood or measured, the integration requires a significant amount of expert judgement.

As a result of the integration, Going for Growth 2019 now identifies 11 countries, and the European Union, as having a green growth priority among the Top 5 reform priorities. China has a priority to reduce pollution. Australia and the European Union have priorities to address climate change in a cost-effective way. Japan and Turkey have similar, but broader priorities to reduce pollution and mitigate climate change. For Estonia and Poland, the efficiency and environmental performance of the energy sector are identified, while energy subsidy reforms are put forward for Indonesia. Addressing pollution from transport, including through public transport, are priorities in Luxembourg and Israel. India has a priority on infrastructure, combining more efficient use and quality access to electricity, clean water and sanitation. Iceland has a priority to ensure the environmental sustainability of its rapidly growing tourism sector.

Many countries that do not have a Top 5 green growth priority, have reform recommendations on other pro-growth priorities that should improve environmental sustainability. For example, tax reform priorities include recommendations to increase reliance on environmental taxes. Infrastructure priorities include recommendations to better reflect environmental externalities in project selection and in the pricing of transport use, as well as to boost low-emission modes of transport. Priorities to phase out production and trade distorting agricultural support can also help improve environmental sustainability.

There may be significant potential trade-offs between environmental sustainability and inclusiveness objectives. For example, higher environmental taxation or the removal of fossil fuel subsidies may particularly adversely impact the most vulnerable households. Easing zoning and land regulation can increase the availability of housing, but may encourage urban sprawl and related transport emissions. Such trade-offs need to be addressed with targeted policy tools.

The integration of green growth in Going for Growth is an ongoing process. As new areas and evidence emerge, they will be considered for inclusion in the future.

Introduction

Boosting productivity and employment, while ensuring that the gains from growth are broadly shared, are the main objectives of *Going for Growth*. The implicit assumption in selecting policy priorities to achieve these objectives is to ensure the longer-term sustainability of economic growth and well-being. This requires “ensuring that natural assets continue to provide the resources and environmental services on which our well-being relies”, which is the definition of Green Growth (OECD, 2011).

To lift growth sustainably and to translate stronger growth into higher well-being, starting in the 2019 edition of *Going for Growth* priorities and recommendations are formulated to address environmental sustainability. Specifically, where relevant, priorities and recommendations support efforts to reduce negative effects associated with economic activity (e.g. pollution, greenhouse gas emissions and the degradation of eco-systems), to minimise environment-related risks and to reduce reliance on (limited) natural resources.

This Chapter describes the first explicit integration of selected environmental concerns in *Going for Growth*. The following section briefly recalls the links between the environment, economic growth and well-being as well as reviews the key evidence on the links between policies and outcomes in the context of green growth. The next section presents the approach to integrate green growth in *Going for Growth*, with particular emphasis on air pollution and climate change in this first step. The final section presents the results, reviewing the 2019 *Going for Growth* priorities and recommendations in light of their contribution to environmentally-sustainable growth. The detailed priorities and recommendations are provided in the Country Notes (Chapter 4). The Annex provides details on the priority selection.

The relationship between the environment, growth and well-being

The relationship between the environment and growth is complex and multidimensional (OECD, 2018a). The environment is essential for maintaining production, incomes and well-being supporting every economic activity, and life itself. This is the key motivation for integrating green growth in *Going for Growth*: both in the selection of priorities and in the formulation of recommendations.

The depletion of natural resources and environmental degradation can have adverse impacts on growth and well-being through various channels. In empirical work, environment may not stand out as a key contributor to long-term economic growth, at least in terms of conventionally measured inputs or outputs. For example, in the case of climate change, OECD modelling suggests direct GDP costs in the case of no action of between 1.0% and 3.3% of global GDP by 2060 (OECD, 2015). Air pollution, which is the single biggest environment-related health risk across the globe (WHO, 2014), also has direct costs. Exposure to fine particulate matter (PM_{2.5}) increases the risks of heart disease, stroke, respiratory diseases and infections (WHO, 2016; Burnett et al. 2014), implying lower productivity, absenteeism and higher medical bills. With no additional policy reaction, by 2060 such costs would lower GDP by 1 % (OECD, 2016).

The estimates of the economic costs of climate change and air pollution may not appear particularly high. This does not mean that they should not warrant consideration in the formulation of pro-growth policy priorities and recommendations. This is because the estimates of economic costs are highly uncertain and conservative. In fact, the links between the environment and growth can be evaluated across several characteristics:

- *Sustainability*. Economic activity, consumption and lifestyles rely on exhaustible resources and limited capacity of the environment to provide life-sustaining services and to absorb unwanted by-products of production and consumption. While the dependence of economy on environment is often complex and its details may be poorly understood, surpassing certain levels of degradation

can lead to high, irreversible costs – in terms of physical and psychological health damages or by engaging productive resources in necessary clean-up, remediation or adaptation.

- *Risks to future growth and well-being outcomes.* Environmental degradation can increase the risks of large-scale, catastrophic events, hence increase the probability that certain gains in growth and well-being will be reversed. An example is the increasing likelihood of extreme weather events associated with climate change. Such risks are not taken into account in the modelling of the costs of climate change cited above.
- *Impacts through health and other channels:*
 - *Well-being impacts beyond those directly linked to growth.* Environmental degradation entails welfare costs well beyond the direct GDP costs through its impact on health, morbidity and premature mortality or the utility of access to environmental amenities. These costs are often difficult to quantify in monetised or GDP-equivalent terms. However, for example in the case of local air pollution, even conservative estimates suggest that such welfare costs dwarf the direct impact on GDP through employment and productivity. Outdoor air pollution-related pre-mature deaths are estimated at some 4 million per year and are expected to increase significantly by 2060 (WHO, 2018; OECD, 2016).
 - *Public goods and cross-border effects.* Environmental damages and risks do not always fall on the country responsible for generating them, for example, global externalities related to climate change or cross-border pollution. In this respect, international co-ordination is needed to address the challenges efficiently and effectively, which is beyond the scope of the *Going for Growth* focus on national policies. The constraints to domestic growth may come from such international commitments and related policy action rather than from the actual domestic damages and risks.
 - *Social inclusion and the distribution of effects.* Many environment-related developments and risks may have disproportionate impacts on some social groups (in particular vulnerable groups), the local economy and specific sectors, which may not be straightforward to capture at the national level. Moreover, economically vulnerable groups may find it harder to adapt to or avoid adverse environmental impacts due to the lack of financial resources.

Tracking progress on green growth means monitoring the various aspects listed above, in terms of pure environmental indicators and indicators combining economic and environmental dimensions of both outcomes and policies, that is, green growth indicators (OECD, 2017a). In practice, and despite recent progress, tracking green growth has proven difficult due to challenges of measuring outcomes and policies and of linking the two.

Evidence on the links between policies and outcomes in the context of green growth

Formulating policy priorities and recommendations to address environmental sustainability considerations in *Going for Growth* needs to take into account four types of effects:

- *The effect of pro-growth policies on economic growth.* The OECD and many researchers have long focused on understanding the effect of structural policies on productivity and employment growth. As a result, the empirical evidence is well developed, and has been the basis of *Going for Growth* in the past (for example, see Chapter 3 in OECD, 2017b).
- *The effect of environmental policies on the environment.* In principle, the main objective of environmental policies is to protect the environment. Yet, the empirical evidence on the environmental performance of environmental policies is surprisingly shallow (Dechezlepretre et al., 2019). In fact, the environmental effectiveness of policies tends to be more often assumed than

investigated. Epidemiology literature predominantly researches the link between pollution levels on public health and is usually less concerned with the precise origins of the changes in pollution levels. Economists tend to focus on environmental policies' effects on economic outcomes such as competitiveness. Still, drawing from an increasing number of studies linking environmental policies to the environment, and relatively well studied policy examples in particular in the United States and in Europe, it is safe to assume that more stringent environmental policies decrease pollution intensity and the reliance on the environment.

- *The two “cross effects”*: the effect of pro-growth policies on the environment and the effect of environmental policies on economic growth. These effects are less studied, while still crucial for the formulation of *Going for Growth* priorities and the evaluation of trade-offs in prioritisation.

Effect of pro-growth policies on the environment

The direct effects of pro-growth policies, such as labour market and product market reforms typically recommended in *Going for Growth*, on the environment are usually difficult to assess and often not of primary concern. The effects are likely to depend on the state of other domestic policies, in particular the stringency of specific environmental policies, details of implementation, or local conditions.

Most pro-growth *Going for Growth* policy recommendations would have indirect impacts on the environment via higher growth. There is an argument that growth causes environmental damage only up to a certain point after which it may reverse (for detailed reviews of the related literature, see e.g. Dina, 2004; Stern, 2004). However, even if this is true, the reversal is attributed to preferences for a clean environment and willingness to protect it, as well as to technology and the changing structure of the economy. These factors tend to evolve with income and are usually associated with more stringent environmental policies.

Thus, other things equal, growth leads to more environmental damage (Stern, 2004). For example, increased output can lead to an increased use of natural resources or increased commuting leading to more pollution. In particular, faster growth could reduce the environment's ability to deal with various environmental pressures, implying a trade-off between short-term growth gains and their longer-term sustainability. The “other things equal” assumption in the case of the effects of pro-growth policies on the environment means holding technology and the stringency of environmental policy signals constant. However, adequate design of pro-growth reforms should take into account the cost of environmental degradation by increasing the stringency of environmental policies or providing incentives for more environmentally-friendly innovation. This makes the case for incorporating environment externalities into the assessment of pro-growth reforms in *Going for Growth*.

Effect of environmental policies on growth

The empirical policy evidence on the effects of environmental policies on growth, competitiveness and employment is fairly rich, but relatively inconclusive. Most empirical investigations have focused on the adverse impact of environmental policies on competitiveness and productivity via higher cost from more stringent regulations (Kozluk and Zipperer, 2015; Dechezleprêtre and Sato, 2017; Kozluk and Timilotis, 2016). Others looked at potential productivity gains via innovation in new environmental technologies (Porter, 1991; Porter and van der Linde, 1995).

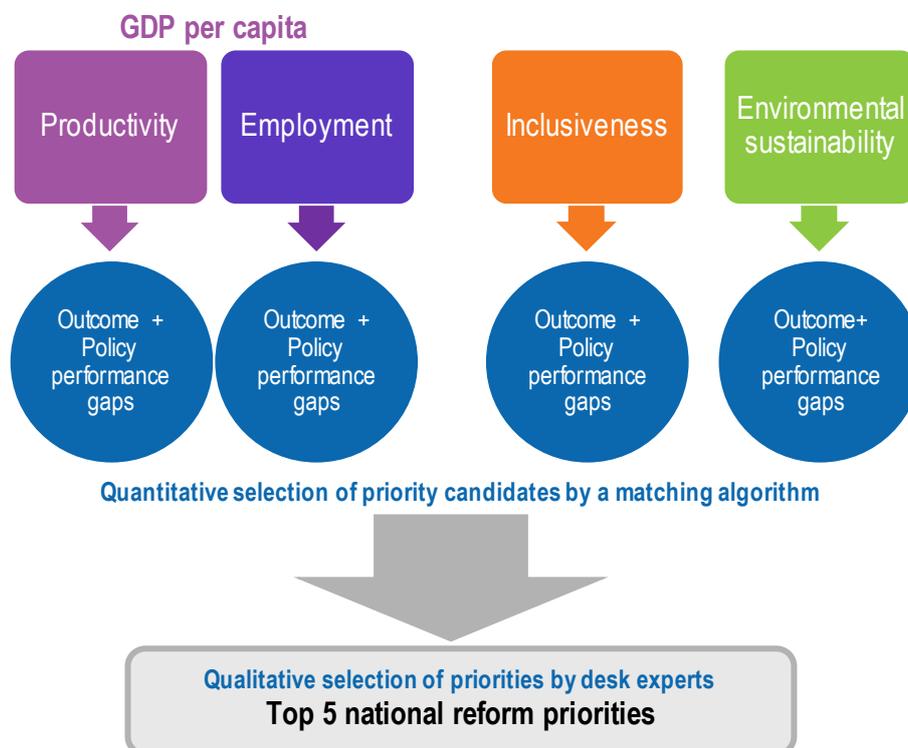
A broad interpretation of the empirical literature is that effects of more stringent environmental policies are context specific with a focus on short-term and partial equilibrium effects, which is not ideal from the point of view of *Going for Growth*. Effects of environment policies on economic outcomes tend to be negative or insignificant (though a notable amount of studies finds positive effects too) in the short to medium term. A general consensus seems to be that they are “small” relative to other changes going on in the economy and often depend on firm or industry characteristics. Moreover, most of the literature does not take into account the longer term or more general equilibrium gains from a cleaner, more sustainable natural environment.

The integration of green growth in *Going for Growth*

The integration of green growth in *Going for Growth* is a gradual and ongoing process, starting from the 2019 edition. The main steps in the selection of the Top 5 country-specific pro-growth priorities remain unchanged. Priorities are selected through a two-step process, combining quantitative insights on policy-performance gaps relative to the OECD average and qualitative OECD expertise. In the final step, tailor-made country-specific policy reform recommendations are formulated to address each of the Top 5 *Going for Growth* priorities.

Starting in 2019, the selection of priorities is based on a wider set of information including selected aspects of the environment (Figure 3.1).

Figure 3.1. The *Going for Growth* framework for identifying reform priorities

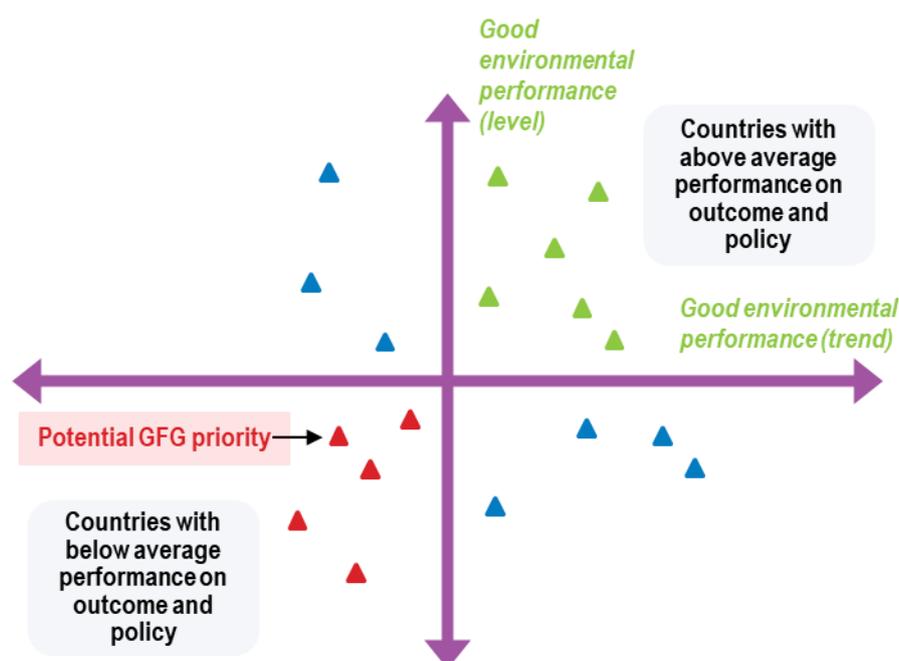


Note: The identification of environment performance gaps is based on policy-outcome pairs as well as on pure outcomes (trends and levels).

The quantitative identification of potential green growth priorities is based on an extended version of the policy-outcome matching used for the employment, productivity and inclusiveness dimensions with some key modifications:

- *The identification based on the matching of environmental policies with environmental outcomes.* This mirrors the approach for “classical” *Going for Growth* dimensions: productivity and employment, where pro-growth policies and relevant outcomes are matched. Environmental policy and outcome indicators allow for consistency across time through a matching under the assumption that policies affect outcomes with a lag. The scope of such matching remains limited due to the poor availability of environmental policy indicators.
- *Identification of environmental performance gaps.* Given the limited matching options, a second type of identification is adopted, based purely on gaps in performance on environmental outcomes. Countries with a performance gap on a specific indicator (e.g. emissions relative to GDP or per capita) would be identified if the performance was worse than the OECD average jointly for the level (e.g. above average emissions) and trend (e.g. emissions rising faster or falling slower than the average) (Figure 3.2).

Figure 3.2. An illustrative example of identifying an environmental performance gap



Note: Both the level (y axis) and change (x axis) are standardised by subtracting the OECD mean and by dividing with the standard deviation of the indicator.

The candidate priorities derived from this indicator-led exercise serve as guidance but have their limitations. Not everything can be measured in terms of available indicators, and many trade-offs cannot be quantified based on available knowledge. In particular, deciding on the relative importance of priority candidates requires country specific expertise. Hence, in the second step, a qualitative decision on the Top 5 priorities and the formulation of relevant recommendations is made together with OECD Country Desk experts, who draw on their expertise, and other OECD material, in particular Economic Surveys and OECD Environmental Performance Reviews.

Areas of green growth considered for integration in Going for Growth 2019: the dashboard

As with the integration of the inclusiveness dimension in *Going for Growth* (starting 2017), the integration of green growth is an ongoing process. Based on the stocktaking of indicators for tracking progress on green growth in the special chapter of *Going for Growth 2018* (OECD, 2018a), the initial focus is on a limited number of environmental areas. These are climate mitigation and air pollution, where the measurement and quantitative evidence on links to growth and well-being is most developed.

In the case of climate mitigation, indicators used are greenhouse gas emissions relative to GDP and per capita (excluding emissions from land use, land use change and deforestation where the measurement issues are most problematic), CO₂ emissions per capita and relative to GDP (both based on CO₂ emissions from energy) and the share of renewable energy sources in the energy mix.

For air pollution, indicators used are emissions of SO_x, NO_x and particulate matter (relative to GDP and per capita) as well as population exposure to harmful air pollutants (average and share of population exposed to fine particle levels above certain limits deemed as harmful).

On the policy side, two proxies of environmental and climate policy stringency are used, that is the OECD's Environmental Policy Stringency indicator (Botta and Kozluk, 2014) and the World Economic Forum's Executive Opinion Survey responses on stringency perceptions. These indicators are sufficiently general to be matched with both climate mitigation and air pollution outcomes. They also have a broad country coverage and time dimension. The effective carbon price could potentially be matched with climate outcomes directly, but this indicator is available only for 2012 and 2015 limiting the insights that can be drawn.

Examples of outcomes of the quantitative identification are reported in the Annex. Unsurprisingly, energy and resource intensive economies, such as Australia and Canada, stand out as performing poorest in terms of climate and air emissions. The United States, China, Russia, South Africa and Luxembourg, Korea and occasionally Japan also score poorly in terms of selected dimensions of climate mitigation performance. In terms of air pollution, large emerging-market economies tend to have high population exposures to fine particles (comparable emission data is not available) along with Korea, Japan and some European countries.

A wealth of green growth outcome and policy indicators are used as complement to the quantitative matching in the priority selection process. They are used to provide evidence of below-average performance in other areas, such as access to clean water and sanitation, land cover and land cover change, nutrient balances in agriculture and on policies, such as effective carbon rates fossil fuel subsidies and revenues from environmentally related taxation (OECD, 2017a; and 2018a). They are not included in the matching, due to a lack of sufficient country coverage or time series, a lack of relevance for a sufficient amount of countries, or a less clear or direct link to growth and well-being.

Countries with green growth *Going for Growth* priorities

Poor environmental performance or badly designed environmental policies can have adverse consequences for economic growth and well-being as well as the sustainability of improvements in them. As a result of explicitly taking these concerns into account in *Going for Growth*, 11 countries and the European Union have a 2019 *Going for Growth* priority that can be labelled as supporting more environmentally sustainable growth, that is a "green growth" priority (Table 3.1).

Table 3.1. *Going for Growth 2019* priorities directly addressing green growth challenges

Country	Green growth challenge	<i>Going for Growth</i> priority	Policy recommendations to address the green growth priority
Australia	Very high levels of GHG and other emissions	Advance on climate change mitigation policy	Stabilise and strengthen climate policy. Develop and implement coherent policy frameworks and targets. Support power sector transition with a market-based mechanism
China	Widespread pollution	Address pollution	Boost environmental ambitions and enforcement. Raise energy-related taxes
EU	High level of GHG emissions with respect to ambition, poor co-ordination between different levels governance	Strengthen the drive to fight climate change	Increase the price of greenhouse gas emissions and minimum tax rates on fossil fuel use. Improve consistency among targets and instruments. Consider including transport into the EU Emissions Trading System (ETS)
Estonia	Low energy efficiency and persistently high CO ₂ emissions	Promote efficiency in the regulation of energy markets	Reduce the share of oil shale in energy mix. Introduce a smart grid and raise incentives for increasing energy efficiency. Increase transport-related taxes
Iceland	Sustainability of large influx of tourists	Develop an economically, environmentally and socially viable tourism strategy	Remove subsidies for tourism activities. Limit the number of visitors to fragile sites and introduce user fees
India	Inefficient use of energy and water resources due to lack of infrastructure and distortive prices	Improve physical infrastructure and promote an efficient use of energy and water resources	Boost infrastructure investment. Improve pricing of energy, water and transport (e.g. road pricing and parking fees)
Indonesia	Poorly targeted energy subsidies	Continue to make energy prices more cost reflective	Continue to move away from fossil fuel subsidies. Review regulated energy tariffs and shift towards more targeted social assistance
Israel	Road congestion contributes to poor air quality	Develop public transport	Shift car taxes from ownership to use. Use road tolls to fund investments and improve the transparency of project selection
Japan	GHG emissions caused by increased dependence on fossil fuels	Promote green growth	Accelerate deployment of renewable energy sources and promote decarbonisation of the economy. Encourage green finance and investment
Luxembourg	Traffic congestion and air pollution	Increase infrastructure investment to improve environmental outcomes	Improve transport infrastructure (in particular public transport and energy), increase fuel taxes and introduce congestion charges
Poland	Regulatory instability. High share of coal in energy. Significant air pollution	Make energy infrastructure greener	Increase environmentally related taxes and enforcement of environmental rules. Reduce uncertainty and improve stability of policies
Turkey	High air pollution and tourism-induced transformations of coastal areas	Improve environmental performance	Increase scope and level of carbon pricing. Improve implementation and raise awareness of environmental challenges

In China mounting problems with high levels of various types of pollution are already having long-lasting impacts on growth and well-being and are hence among the Top 5 priorities for action. Estimates of premature deaths in China attributed to ambient air pollution reach over one million people per year (Global Burden of Disease, 2016). The government has taken a number of significant policy actions to address these issues, but they are still insufficient and enforcement is a major challenge. *Going for Growth* recommendations include raising fines for violators and advancing further on reducing pollution from energy, agriculture and wastewater.

Australia, with the highest GHG per capita emissions in the OECD and poor performance in terms of decoupling both GHG and air pollution emissions from economic growth, has now a *Going for Growth* priority to strengthen climate policies to achieve Paris 2015 climate goals. Recommendations to address this priority include establishing an integrated national strategy and guiding the energy transition through an emissions reduction goal for the power sector supported by a market-based mechanism. The

European Union has a similar priority to strengthen and improve climate policies, their co-ordination and their consistency with ambitions as well as their cost-effectiveness. In particular, increasing the price of greenhouse gas emissions and the inclusion of transport under its emission trading system is recommended.

Luxembourg, with a high share of pollution emissions from transport, due to heavy commuting (though partly due to fuel tourism) has a priority to improve transport infrastructure and its environmental performance. Recommendations include improvements of rail connections, higher taxation of fuels and congestion charges.

Israel has a priority to develop public transport, in order to address problems of congestion and poor air quality. Recommendations focus on shifting car taxation towards use, using road tolls to fund public transport investment and a systematic publication of cost-benefit analysis of projects and justification of decisions.

Poland, with significant greenhouse gas emissions per capita and high population exposure to air pollution, has a priority to improve the environmental performance of the energy sector. Recommendations focus on raising environment-related taxation and reforms of tax incentives for innovation. A better alignment of climate policies with objectives is also recommended together with more stable policies and stronger enforcement of environmental rules.

Japan has a forward-looking green growth priority which is partly related to its post-Fukushima increase in reliance on fossil fuels. Carbon dioxide emissions per capita are higher than in 1990 and show no downward trend, making meeting climate goals a challenge. Recommendations include addressing barriers to renewable energy deployment, boosting green finance and investment as well as implementing the long-term climate mitigation strategy announced in mid 2019.

Estonia has a priority related to its inefficient and CO₂ intensive energy and transport sectors. *Going for Growth* recommendations include rolling out a modern, smart grid to reduce energy losses, incentives to increase efficiency in district heating coupled with incentives for household energy-saving investments, in particular for lower income households, and increased taxation of transport.

In the case of India, the infrastructure investment priority is also a green growth priority, targeting explicitly improving access to energy, water and sanitation as well as efficient use of energy and water resources. Infrastructure has been a long-standing *Going for Growth* priority for India, and the government has made progress, including with a programme to provide electricity to the last village in 2018. Yet, millions of individual households still remain without access to electricity, clean water and sanitation requiring, as recommended in *Going for Growth*, massive upgrading of infrastructure, cost-recovery price setting coupled with targeted financial support to the poorest households, more reliance on road pricing and parking fees to curb transport pollution.

Fossil fuel subsidies can increase the production and consumption of fossil fuels and related environmental externalities, while being poorly targeted to address the alleviation of poverty (IEA, OPEC, OECD and WB, 2011). In Indonesia, where the reduction of fossil fuel subsidies has been a long-standing *Going for Growth* priority, much progress has been made regarding electricity subsidies. However, other fuel subsidies have increased since the government decided to maintain domestic fuel prices fixed to shield consumers from rising oil prices as of 2018. Recognising these developments, starting in 2019 Indonesia has a *Going for Growth* priority to make energy prices more cost-reflective. The recommendations include shifting away from subsidies, reviewing the tariff regulation and continuing to shift to more targeted social assistance to address distributional concerns.

Finally, Iceland and Turkey have priorities on improving the environmental sustainability of specific aspects of their economies. In Iceland, tourism has been an important source of growth but may not continue to be so if the environment is not protected. Recommendations include limits on visitors to vulnerable sites, user fees and cutting tax subsidies for tourism activities. The Turkish priority is broader, addressing problems

with rapid urbanisation and growth being associated with high air pollution levels, CO₂ emissions, and water scarcity, which can be bottlenecks for future growth and population health. Recommendations include a more integrated approach to environmental and economic policy making, devoting more resources to enforcement and higher carbon pricing.

Countries with pro-growth priorities and green growth recommendations

Most countries do not have an explicit green growth priority among their Top 5 priority areas. However, for a large number of countries the “classic” pro-growth priorities now have recommendations that explicitly take into account environmental issues. These are described as having a green growth recommendation, but not a green growth priority per se (Table 3.2). The majority of these recommendations effectively raise the stringency of environmental policies making pollution costlier or lowering the costs of cleaner alternatives. They include introducing or increasing the use of instruments such as taxes and regulations, subsidies and other incentives or public investments, e.g. in low emission transport. Many of these recommendations were already present in the 2017 *Going for Growth*, but they are more explicitly formulated in the 2019 *Going for Growth*.

Table 3.2. *Going for Growth 2019* pro-growth priorities with green growth recommendations

Policy priority area	Policy recommendations	Relevance for green growth	Countries with a green growth recommendation
Tax structure	Make the tax structure more conducive to growth by shifting the reliance from income taxes to the taxation of property and consumption	Increasing environmental taxes de facto increases the stringency of environmental policies and can improve incentives for decreasing negative environmental externalities	AUT, CAN, CHE, DEU, ESP, FIN, HUN, JPN, KOR, LVA, RUS
Tax base	Broaden the tax base, reduce tax expenditures	Phasing out tax expenditures that may encourage polluting behaviour can help curb pollution, emissions and environmental degradation	CAN, CHE, DEU, FIN
Agriculture (subsidies)	Reduce production and trade-distorting support to agriculture	Reducing producer support to intensive and inefficient agriculture can help reduce the pressures on the environment	CHE, EU, ISL, ISR, JPN, KOR, NOR, TUR
Infrastructure and network sector access and use pricing	Introduce or extend user road pricing	Infrastructure access and use pricing is key to ensure more environmentally sustainable use and lower negative environmental impacts	GBR, IND, LUX, NZL, USA
Infrastructure and network sector investment	Increase infrastructure investment and quality; improve its demand-responsiveness and governance	Better infrastructure can ease congestion and reduce transport-related emissions, improve energy efficiency, environmental performance and quality of utility services (e.g. improved market access, better water quality, lower network losses and better waste management). However, it can also increase or geographically shift demand, resulting in higher emissions. Its construction can cause the deterioration of landscapes such as deforestation	COL, DEU, EST, GBR, IND, IDN, ISR, LUX, LVA, USA

A tax structure that is more growth and environment friendly

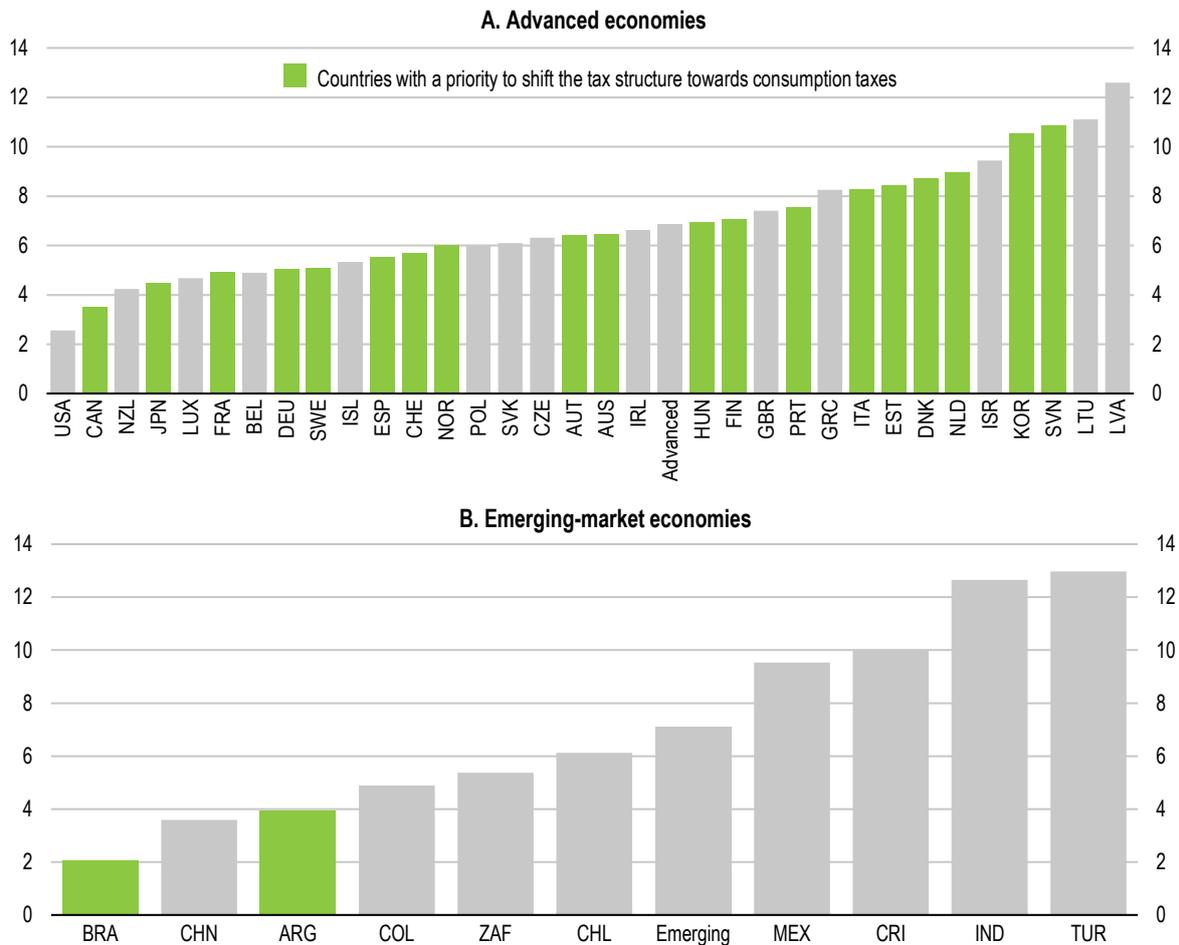
Shifting the tax burden away from direct income to consumption, immovable property and environmental externalities can have significant benefits in terms of GDP growth (OECD, 2015). Increased use of environmental taxation has the potential to improve pricing of externalities and discourage environmentally harmful behaviour. Notably, in the longer term, the scope of such a shift to other taxes may be limited. If environmental taxes actually succeed in their primary purpose to incentivise firms and households to decouple activity from the environment, the tax base should be shrinking over time.

In *Going for Growth 2019*, 23 countries - mainly advanced economies - have a priority to shift the tax burden away from income towards less growth distorting forms of taxation (Figure 3.3). In most of these cases, a general shift in taxes, for example to consumption or property taxation is recommended. However, in 11 countries, increasing environmental taxes is explicitly recommended and likely would result in incentives to decrease pollution and emissions. Countries where higher environmental taxes are recommended include Austria, Canada, Finland, Japan, Korea and Switzerland. In some cases recommendations are more specific. For example, in Germany the introduction of a NO_x tax is recommended and gradually adjusting energy tax rates to reflect carbon intensity. Increasing the taxation of fuels or energy is recommended in Hungary, Latvia and Spain, while in Russia the recommendation is to raise the taxation of profits in the extraction sector.

An additional effect of more reliance on environmental taxation and more stringent environmental policies, is the potential redirection of technological change towards more environmentally friendly innovation (Acemoglu et al., 2012). Higher environmental taxation may be particularly effective if it is combined with improved support to innovation, which is a priority in 16 economies.

Figure 3.3. Revenues from environmental taxes and priorities on shifting the tax structure

Percentage of total tax revenue, 2016¹



1. Data refer to 2015 for China, France and South Africa; 2014 for Brazil, Canada, Greece, Israel, Korea; 2011 for Colombia and India. Source: OECD, Environmental Policy Database.

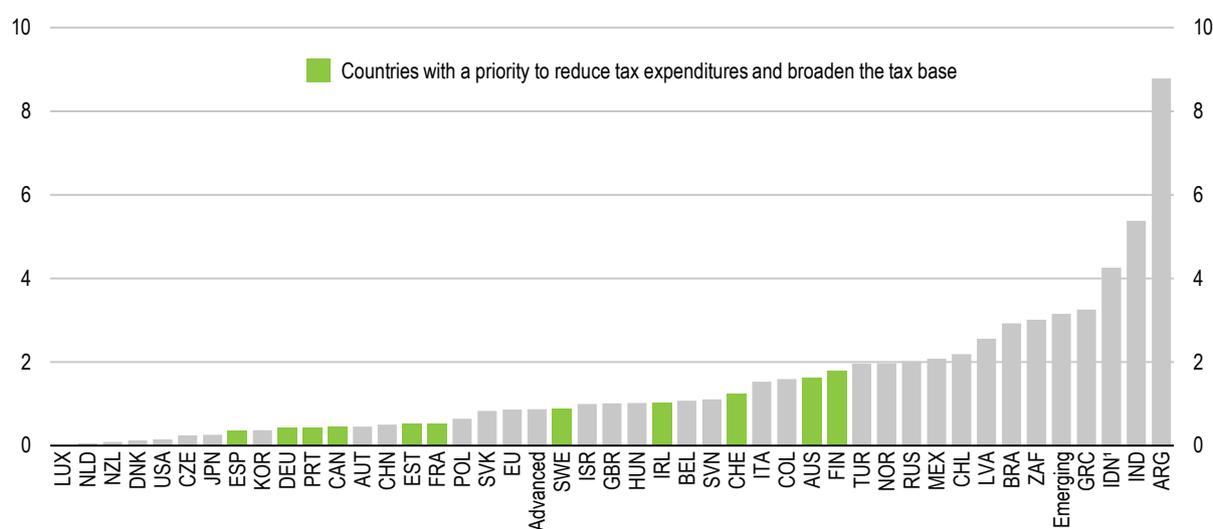
A broader and more environmentally-friendly tax base

Tax expenditures are intended to incentivise certain types of behaviours and activities. However, tax expenditures may be harmful to the environment by encouraging polluting behaviour, providing incentives for more construction, heating or driving. In particular, the consumption and production of fossil fuels are often encouraged via various types of tax expenditures.

Some 12 countries have a 2019 *Going for Growth* recommendations to broaden tax bases and reduce tax expenditures. Environmentally-harmful expenditures are only explicitly mentioned in the case of Finland, Germany and for Switzerland, where a removal of exemptions to the CO₂ levy and other environmental taxes is recommended. Still, a number of other countries with significant fossil fuel subsidies may benefit from reducing favourable tax treatment of environmentally-harmful activities and products, such as fossil fuels (Figure 3.4) or corporate cars. However, to the extent that some existing tax expenditures support more environmentally friendly solutions (e.g. commuting by public transport), scrapping them may be harmful for the environment.

Figure 3.4. Fossil fuel subsidies and priorities to broaden the tax base

Percentage of total tax revenue, 2016



1. Indonesia has a *Going for Growth* priority directly on making energy prices more cost-reflective and phasing out fossil fuel subsidies, but not on tax expenditures.

Source: OECD, Green Growth Database.

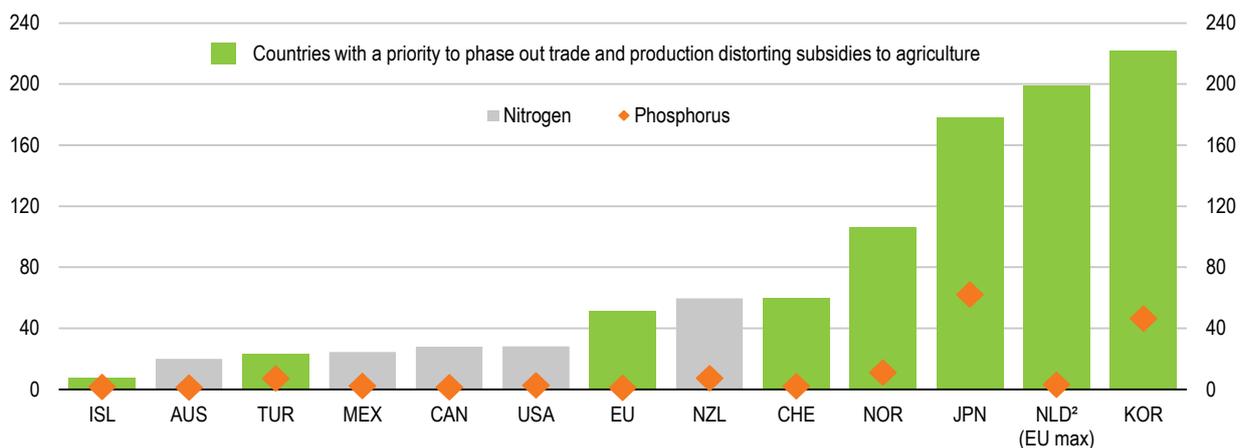
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More efficient and environmentally sustainable agriculture

Agriculture has important and broad ranging implications for the environment, in particular air and water pollution, land use and biodiversity. One of the channels is via nutrient balances, where a nutrient surplus leads to an increased risk of polluting soil, water and air. In this context, reducing producer support to intensive and inefficient agriculture, which is a *Going for Growth* priority in Japan, Korea, Norway, Switzerland and the European Union where nutrient surpluses are particularly high (Figure 3.5), can help reduce the pressures on environment and make growth more environmentally friendly. In particular, for Switzerland, the recommendations include making direct payments conditional on environmental outcomes, introducing a tax on polluting inputs (fertilisers) or outputs (methane from livestock) and scrapping the exemption of the mineral oil tax for farmers. In the case of the European Union, targeting agricultural support to better match environmental and climate mitigation objectives is recommended. Similarly, strengthening the link between environmental policy objectives and agriculture support is recommended for Norway.

Figure 3.5. Nutrient surpluses and priorities to phase out agricultural subsidies

Nutrient balance, Kilograms per hectare, 2016¹



1. Nutrient balances provide information about environmental pressures. A nutrient deficit (negative value) indicates declining soil fertility. A nutrient surplus (positive data) indicates a risk of polluting soil, water and air. The nutrient balance is defined as the difference between the nutrient inputs entering a farming system (mainly livestock manure and fertilisers) and the nutrient outputs leaving the system (the uptake of nutrients for crop and pasture production). Data refer to 2017 for Canada; 2015 for Australia, Mexico, the United States, the European Union, Japan, Korea and Switzerland.

2. The Netherlands does not have an agricultural policy priority. The priority is for the EU as a whole.

Source: OECD, Environmental performance of agriculture - nutrients balances.

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Greener infrastructure

Transport, energy, water, wastewater and waste infrastructure have potentially strong impacts on the environment. These impacts can go both ways, depending on local conditions and implementation details. Better infrastructure, its management and pricing can ease congestion and reduce transport-related emissions (e.g. through more efficient public transport). It can also improve energy efficiency, environmental performance and quality of utility services (e.g. better water quality, lower network losses and better waste management). In particular, in emerging-market economies, poor access to clean water, sanitation or electricity can be bottlenecks for growth.

Countries like the United States, Colombia, Germany, Israel, Estonia, Latvia, Luxembourg and the United Kingdom have explicit recommendations to improve mass transit and low-emission transport mode provision. Luxembourg, the United Kingdom and New Zealand have recommendations to introduce road pricing or congestion charges, which should bring about some local environmental benefits. For the United States, where emissions from transport are particularly high, the recommendations include user fees that encourage the internalisation of broader costs of transport, including carbon emissions and particulate matter. For India, increasing reliance on road pricing and parking fees are recommended to restrain car usage and reduce pollution.

The provision of new infrastructure can increase or geographically shift demand, resulting in higher emissions while its construction can cause the deterioration of landscapes and biodiversity, for example due to deforestation. In this respect, Norway has a recommendation to improve project selection. Colombia, Costa Rica, Israel and Italy have a recommendation to increase and improve the use of cost benefit analysis in the selection of viable infrastructure investment projects, which should reduce the environmental impact of newly built projects. France has a recommendation to allocate responsibilities of local infrastructure and urban planning to municipality groups to deal with environmental and other spillovers.

The rule of law and enforcement of policies

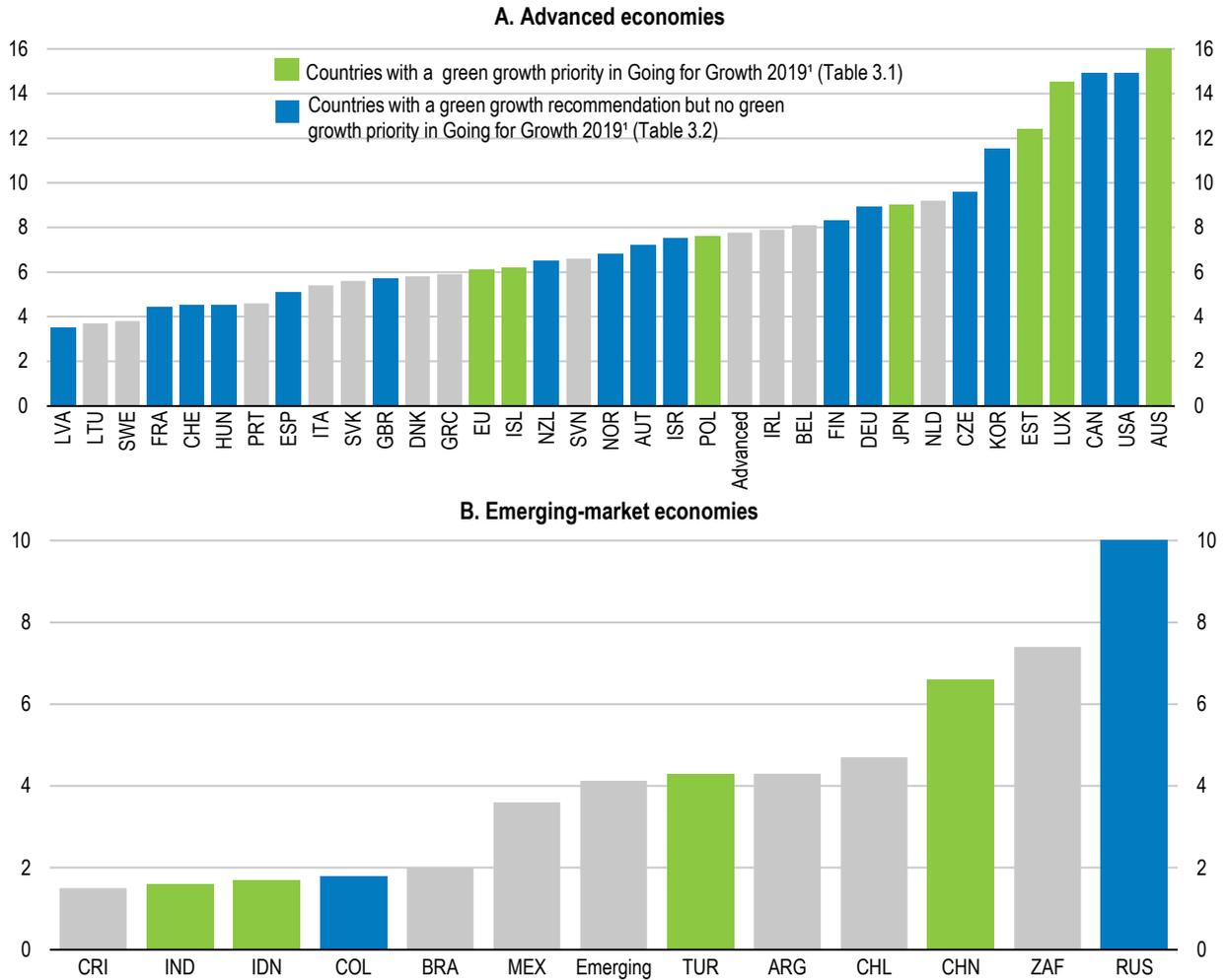
For environmental policies to be effective, they need to be enforced. Countries with poor rule of law tend to also suffer from poor enforcement of environmental policies. Examples where *Going for Growth 2019* recommendations to improve rule of law which could particularly benefit environmental performance include Greece (with an explicit mention of poor performance in waste management), Italy, Portugal, China, Indonesia and Mexico. However, given the breadth of this priority, it has not been counted as green growth per se.

Environmental performance of countries with green growth priorities and recommendations

In part reflecting the quantitative aspect of the *Going for Growth* exercise, countries with priorities and recommendations identified as supporting green growth tend to be those with relatively high CO₂ emissions per capita and population exposure per capita (Figure 3.6 and Figure 3.7). This does not mean that environmental damage or environmental sustainability are not important in countries with no green growth priorities among the Top 5, or without green growth recommendations. As measurement, data and evidence improve, the integration of green growth in *Going for Growth* can be systematically extended to cover a broader range of environmental aspects.

Figure 3.6. CO₂ emissions and green growth priorities and recommendations

CO₂ emissions, tonnes per capita, 2016



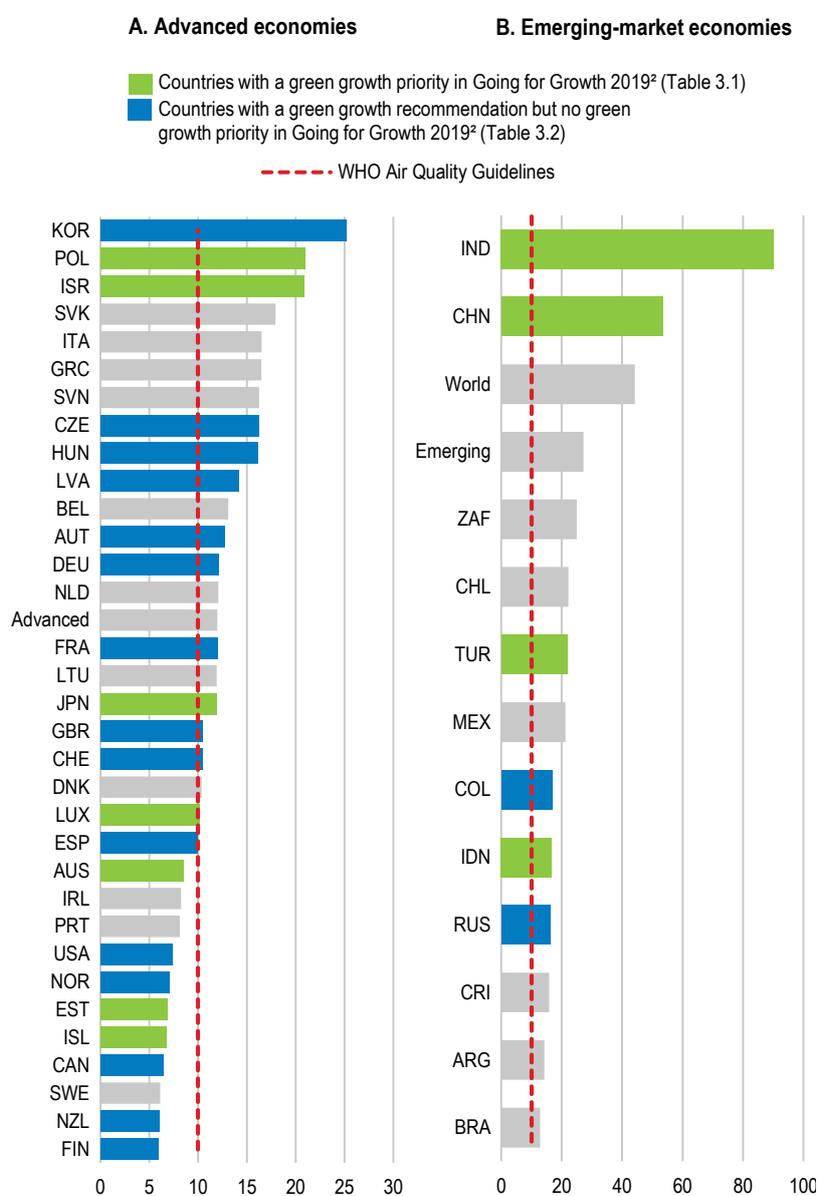
1. Countries are labelled as having a green growth priority (green colour) if among the Top 5 *Going for Growth* reform priorities at least one explicitly addresses environmental sustainability. See Table 3.1 in the text for details. Countries are labelled as having a green growth recommendation (blue colour) if they do not have an explicit green growth priority, but have policy recommendations that can also improve environmental sustainability as part of pro-growth priorities. See Table 3.2 for details.

Source: OECD, Energy Database.

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Figure 3.7. Air pollution exposure and green growth priorities and recommendations

Mean population exposure to outdoor PM_{2.5}¹ Micrograms per cubic metre, 2017



1. The estimates of chronic outdoor exposure to PM_{2.5} (from both anthropogenic and natural sources) are derived from satellite observations, chemical transport models and ground monitoring stations. They are measured in micrograms per cubic metre. Population exposure to air pollution is calculated by weighting concentrations with populations in each cell of the underlying gridded data. Data refer to 2015 for Turkey.

2. Countries are labelled as having a green growth priority (green colour) if among the Top 5 *Going for Growth* reform priorities at least one explicitly addresses environmental sustainability. See Table 3.1 in the text for details. Countries are labelled as having a green growth recommendation (blue colour) if they do not have an explicit green growth priority, but have policy recommendations that can also improve environmental sustainability as part of pro-growth priorities. See Table 3.2 for details.

Source: OECD (2017b), Green Growth Indicators 2017.

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Green and inclusive growth in *Going for Growth*

In the context of *Going for Growth*, policy reforms to boost growth and those to improve the environment may also interact with the inclusiveness dimension (see Box 3.1). A detailed analysis of such interactions goes beyond the current scope of *Going for Growth*, but some potential trade-offs and unintended consequences should be recognised:

- *The removal of fossil fuel subsidies* is likely to reduce domestic emissions, in particular in some emerging-market economies, where subsidies tend to be the highest. However, many consumer subsidies are aiming at targeting energy poverty and accessibility of remote locations (to markets, schools) and as such their removal may particularly impact vulnerable parts of the society. A wealth of evidence has shown that fossil fuel subsidies are rather inefficient at addressing poverty, primarily due to poor targeting (IEA, OPEC, OECD and WB, 2010). Nevertheless, in countries with poorly developed institutions and social safety nets, their removal poses challenges that need to be addressed with well enforced compensatory and targeted measures.
- *Higher reliance on environmental taxation* can have adverse distributional consequences if poorer households rely relatively more than higher income households on goods that will be taxed more (Flues and Thomas, 2015).
- *Road pricing* can improve the emission performance of transport by reducing congestion. However, high prices of access to urban areas may be particularly harmful for poorer commuters, especially if the public transport quality and accessibility are deficient.
- *Easing zoning and land regulation* can in principle increase the availability of housing, but may encourage urban sprawl and through increasing commuting distances contribute to higher emissions from transport or their displacement, increasing pollution elsewhere.

Such potential trade-offs are a concern for policy-makers and tools are available to deal with many of them. For example, a tax reform that increases environmental taxation or reduces environmentally harmful subsidies may provide revenues that can mitigate their undesirable effects on consumption and income inequality (Flues and Van Dender, 2017). Similarly, road pricing may provide revenues to invest in infrastructure, in particular public transport.

Box 3.1. Selected evidence on the links between the environment and inclusiveness

Most of the attempts to look at the link between environmental policies and inclusiveness can be classified in two broad inter-related categories – income and consumption focused. Income-focused studies tend to look at the losers and winners from structural changes to the economy induced by green growth, such as job losses and gains in certain industries or regions; or the beneficiaries of revenues generated from (environmental) taxes (e.g. Flues and Van Dender, 2017). A related literature looks at the losers and winners on the consumption side, that is from the price effects of environmental taxes (e.g. Flues and Thomas, 2015) and less commonly, though potentially as importantly, of regulations (Fullerton and Muehlegger, 2017 and Levinson, 2016).

The outcomes of empirical analyses are very context-specific and rely largely on the overall tax and transfer system design and national safety nets. They are also better geared to capture short-term transition and partial equilibrium effects. Notably, there is also a scarce but emerging literature on the distributional effects of environmental damages and consequently of the benefits of environmental protection. The results are still far from established (Hsiang et al., 2017 for a review).

Going for Growth is a high-level summary of country specific reform priorities and the interactions among the key dimensions: productivity, employment, inclusiveness and the environment are not explicitly addressed. Yet, they are a key consideration in the qualitative part of priority selection. First, the top 5 *Going for Growth* priorities cover a mix of the dimensions which need to be addressed in a coherent manner to achieve strong, inclusive and sustainable growth. Second, in the actual reform recommendations, where there is room for more details, Country Desks attempt to combine dimensions, including dealing with potentially undesirable side-effects (see Country Notes). Finally, *Going for Growth* is a summary of OECD policy advice for countries. The details on how exactly such recommendations should be implemented, how they can be fine-tuned or accompanied with supplementary measures as well as on the surrounding political economy considerations can be found in OECD Country Surveys, dedicated thematic OECD publications and Environmental Performance Reviews.

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Annex 3.A.

Annex Table 3.A.1. Environmental performance gap identification – climate and air pollution

Environmental domain	Indicators	Countries with performance below OECD average on both the level (4 most recent years) and change over time (~20 years)
Climate	GHG per capita	AUS, EST, ISL, KOR, LUX, NZL, RUS
	GHG to GDP	AUS, BRA, CAN, GRC, ISL, ISR, KOR, MEX, NZL, USA
	Energy based CO ₂ per capita	AUS, CAN, EST, ISR, JPN, KOR, LUX, RUS, ZAF
	Energy based CO ₂ to GDP	ARG, AUS, CAN, CHN, CHL, DEU, GRC, IND, ISR, JPN, KOR, LUX, MEX, NLD, NZL, TUR, USA, ZAF
	Share of renewables in the energy mix	ARG, AUS, BEL, CAN, CHN, FRA, ISR, JPN, KOR, LUX, MEX, NLD, POL, RUS, TUR, USA, ZAF
Air pollution	Mean exposure to PM _{2.5} (population weighted)	AUT, CHE, CHL, CHN, CZE, GRC, IND, ISR, ITA, JPN, KOR, LTU, POL, RUS, SVK, SVN, TUR, ZAF
	PM _{2.5} exposure: Population above 25 µg/m ³ threshold	CHL, CHN, IND, ITA, KOR, TUR, ZAF
	PM _x emissions per capita ¹	CAN, LVA, SVN, TUR, USA
	PM _x emissions to GDP ¹	CAN, SVK, SVN, TUR, USA
	NO _x emissions per capita ¹	AUS, EST, ISL, NOR, NZL
	NO _x emissions to GDP ¹	AUS, CAN, GRC, ISL, NZL, TUR
	SO _x emissions per capita ¹	AUS, ISL, TUR
	SO _x emissions to GDP ¹	AUS, ISL, TUR

1. Indicates sample that covers a subset of OECD countries only.

Annex Table 3.A.2. Environmental performance and policy gap identification – climate and air pollution

Environmental domain	Indicators	Countries with performance below OECD average on both the level of environmental outcome (4 most recent years) and environmental policy stringency (level)	Countries with performance below OECD average on both the change over time in environmental outcome (~20 years) and environmental policy stringency (level)
Climate	GHG per capita	RUS, USA, IRL, CZE, KOR	BRA, RUS, TUR, KOR, PRT, POL
	GHG to GDP	RUS, BRA, GRC, CZE, POL, SVN, USA, KOR	BRA, TUR, PRT, GRC, ESP, KOR, USA
	Energy based CO ₂ per capita	ZAF, RUS, USA, CZE, KOR, BEL	CHN, BRA, IND, ZAF, RUS, TUR, KOR, POL
	Energy based CO ₂ to GDP	ZAF, RUS, IND, CHN, TUR, GRC, CZE, SVN, POL, KOR, USA, BEL	BRA, ZAF, IND, TUR, GRC, PRT, CHN, ESP, KOR, USA
	Share of renewables in the energy mix	ZAF, RUS, TUR, IRL, CHN, GRC, ESP, SVN, CZE, BEL, KOR, POL, USA, HUN	BRA, IND, ZAF, RUS, CHN, TUR, KOR, USA, BEL, POL
Air pollution	Mean exposure to PM _{2.5} (population weighted)	IND, CHN, ZAF, RUS, KOR, TUR, GRC, POL, CZE, SVN, HUN, BEL	ZAF, RUS, IND, TUR, CHN, SVN, GRC, PRT, ESP, KOR, CZE, POL, HUN
	PM _{2.5} exposure: Population above 25 µg/m ³ threshold	IND, CHN, ZAF, KOR, TUR, POL	ZAF, RUS, IND, TUR, CHN, GRC, KOR, USA
	PM _x emissions per capita ¹	TUR, SVN, USA	HUN, ESP, SVN
	PM _x emissions to GDP ¹	TUR, SVN, USA	HUN, ESP, TUR, PRT, SVN, USA
	NO _x emissions per capita ¹	USA	TUR, KOR, PRT, POL
	NO _x emissions to GDP ¹	TUR, GRC, SVN, CZE, POL, USA	GRC, TUR, PRT, ESP, KOR
	SO _x emissions per capita ¹	TUR, POL	TUR, KOR
	SO _x emissions to GDP ¹	TUR, GRC, POL	TUR, KOR

1. Indicates sample that covers a subset of OECD countries only.