

GENERAL SECRETARIAT

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The Framework for Policy Coherence for Sustainable Development**Thematic Module - Green Growth**

The Framework on Policy Coherence for Sustainable Development represents a deliverable of the OECD Strategy on Development, endorsed by Ministers in 2012, and responds to the mandate to update tools and instruments to align with international agreements, in particular the Sustainable Development Goals.

The Framework consists of one generic module and three thematic modules on food security, illicit financial flows, and green growth. Each module has undergone a thorough internal review process at the OECD, and also benefited from inputs from the Informal OECD Network of Focal Points for Policy Coherence.

The Framework has been developed as part of the PCD Unit's work programme for 2015-16 and will be published in the PCD Unit's annual publication entitled Better Policies for Sustainable Development, 2016, forthcoming in July this year. An online and user-friendly version will be developed in the forthcoming months.

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INTRODUCTION

1. Long-term projections suggest that without policy changes, the continuation of “business-as-usual” economic growth and development will have serious impacts on natural resources and the ecosystem. This highlights the necessity for both developed and developing countries to move to a new growth path that is consistent with the protection of the environment and a sustainable use of scarce natural resources while still achieving sizeable gains in living standards and reducing poverty.

2. Green growth is a subset of sustainable development. It provides a practical and flexible approach for achieving concrete, measurable progress across its economic and environmental dimensions, while taking full account of the social consequences of greening the growth dynamic of economies. Specifically, the OECD defines green growth as “fostering economic growth and development, while ensuring that natural assets continue to provide the resources and environmental services on which our well-being relies” (OECD, 2011a). The Organisation’s key official documents on the topic include:

- Towards Green Growth (2011);
- Towards Green Growth: Monitoring Progress (2011);
- Tools for Delivering on Green Growth (2011);
- Towards Green Growth: A Summary for Policy Makers (2011);
- Towards Green Growth: Tracking Progress (2015); and

3. To complement OECD in-depth analysis in various policy areas such as green growth, the Framework for Policy Coherence for Sustainable Development (‘the PCSD Framework’) has been developed to support the implementation of the *2030 Agenda for Sustainable Development* (see Chapter 2) and the Sustainable Development Goals (SDGs). This module applies the PCSD Framework to green growth. It aims to help policy makers and other stakeholders to apply an integrated and whole-of-government approach to green growth. It provides high-level guidance for a generalist audience, with references throughout to more specific work by OECD and other international organisations (e.g. UNEP). The module is divided into two parts: a shorter guidance document with self-screening questions (“Toolkit”) and corresponding “Annotations” which provide more in-depth information:

4. **Part I: The “Toolkit”** is intended as a practical tool for governments to improve the coherence of their policies to achieve green growth that contributes to sustainable development outcomes. It can be used by governments to examine their current economic and environmental policies and practices for promoting green growth and for considering potential positive and negative effects. It includes a screening checklist and guidance that aim to help national (and in some cases subnational) governments to:

- Consider the contextual factors which may support or hinder green growth;
- Ensure coherence at and between different level of governance (vertical coherence);
- Identify policy interlinkages of relevance to green growth (horizontal coherence);
- Consider the various sources of finance (public, private, domestic, foreign); and
- Assess the impact of policies and monitor progress towards green growth.

5. **Part II: The “Annotations”** provide important background information to each section in the Toolkit and serves to frame the issue of green growth, including within the context of the Sustainable Development Goals (SDGs). Throughout, the *Annotations* point the reader to related OECD work. For a general overview of the OECD’s work on green growth, please visit:

<http://www.oecd.org/greengrowth/>.

TOOLKIT

Table 1. Checklist: An overview of screening questions

1. Consider the contextual factors which may hinder or support green growth
<p>Enabling environments:</p> <ul style="list-style-type: none"> ✓ Does the national government promote a regulatory environment that is conducive to green growth? ✓ What incentives do businesses and national governments have to invest and move towards green growth? This might include both generic incentives (e.g. competitive advantage for companies moving to green growth), or incentives embodied in the current institutional framework? ✓ Is the current structure of taxation and government spending aligned to green growth? For example, are there fossil fuel subsidies or energy-related taxes and tax expenditures conducive to low-carbon and green growth? <p>Systemic conditions:</p> <ul style="list-style-type: none"> ✓ Have systemic issues which negatively affect policy outcomes been identified by the national government? To what extent are they being minimised? ✓ Do appropriate governance mechanisms exist to deal with e.g. inertia in economic systems or market failures that lead to inefficient resource use?
2. Ensure coherence at and between different levels of government (vertical coherence)
<p>International level:</p> <ul style="list-style-type: none"> ✓ Which of the international agreements relevant for green-growth and sustainable development (e.g. on climate, energy, green trade and investment) is the country a party to? This might include both legally binding instruments such as conventions, or adherence to e.g. OECD guidelines. ✓ Is there a clear commitment at the highest political level to take action towards green growth and sustainable development? ✓ Is there coherence between (the national implementation of) different international frameworks and agreements, including the SDGs and the UN Framework Convention on Climate Change? ✓ What are the main environmentally related targets at the national level? For example, commitments for reducing GHGs emissions and eliminating environmentally harmful subsidies? ✓ What measures are in place (such as action plan or legal frameworks) to support domestic compliance and implementation of international commitments? ✓ Does the national government provide assistance or collaborate with other countries to support the implementation of international frameworks for green growth and sustainable development? <p>National level:</p> <ul style="list-style-type: none"> ✓ To what extent has the national government integrated green growth objectives into broader economic policy-making and national development planning? ✓ Is there a national strategy for green growth? If so, how does it link to SDG implementation and the obligations in multilateral environmental agreements such as climate change agreements? ✓ Is policy coherence an element of the strategy for implementation? Are there mechanisms for policy co-ordination at the national level? What is the role of the Centre of Government (e.g. Prime Minister's Office)? ✓ Is there involvement of the finance ministry in the formulation of the national green-growth strategy? <p>Subnational level:</p> <ul style="list-style-type: none"> ✓ How have subnational-level actors (public and private) been involved in the formulation of national green-growth strategies? ✓ Have the responsibilities been specified between the national and sub-national levels for policy implementation? ✓ Are the respective mandates of different levels of government conducive to or hindering green growth objectives?

<ul style="list-style-type: none"> ✓ Do municipalities and agencies at the local level have the capacity and skills to implement green growth measures? Is there clear guidance for implementation at the local level?
3. Identify policy interlinkages of relevance to green growth (horizontal coherence)
<p>Does the national government:</p> <ul style="list-style-type: none"> ✓ consider economic, social and environmental policy inter-linkages (synergies and trade-offs) when designing new and/or implementing existing policies? ✓ ensure consistency between objectives and implementation practices of existing sectoral policies and green growth objectives? ✓ promote institutional arrangements that facilitate integrated policy making (e.g. cross-ministerial working groups)? <p>With regard to the SDGs, does the national government consider the interactions between different goals and targets?</p> <p>If a green growth strategy exists at the national level, is there a good understanding of how it can contribute to achieve the SDGs?</p>
4. Consider the various sources of finance (public, private, domestic, foreign)
<ul style="list-style-type: none"> ✓ Has the range of potential sources for finance been identified (public, private, domestic, foreign)? ✓ Are there any policies or mechanisms in place to support coordination between international, regional and national funding instruments? ✓ When engaging in subsidy reform, does the national government also consider the coherence of subsidies with other national government objectives (e.g. on developing countries)? ✓ What are the framework conditions to ensure contributions from private sources? <p>How does the national government:</p> <ul style="list-style-type: none"> ✓ promote environmental and social disclosure? ✓ encourage the greening of sovereign wealth funds? ✓ participate in the co-ordination of development finance institutions?
5. Assess the impact of policies and monitor progress toward green growth
<ul style="list-style-type: none"> ✓ What approaches are used by the national government to appraise the effects of its policies ex ante and/or evaluate them ex post? Do these tools capture the environmental consequences of policy choices? Do these approaches capture the different dimensions of sustainable development, i.e. here and now, later, and elsewhere? ✓ Are appropriate monitoring and reporting systems in place for tracking progress towards green growth?

1. Consider the contextual factors which may support or hinder green growth

1.1 Strengthen enabling environments

6. Enabling environments (**enablers**) can be defined as the set of interrelated conditions in the political, legal, economic, and social domains that influence policy outcomes positively, such as good governance, strong institutions, and gender equality.

7. Governments that act early to establish green economy enabling conditions will not only support the transition but will also ensure they are in the best place to take advantage of green growth. Key enabling conditions for green growth include (OECD, 2012a):

- Shifting government expenditures away from activities that waste, overuse or degrade environmental assets.
- More effective enforcement of legislation, in part as a driver of green investment.
- Shifting science, research, educational and training priorities to support the transition to a green economy.

- Resource and land rights regimes that safeguard the interests of those with informal rights.
- Creating enabling conditions for psychological and behavioural change, framing green growth as a social goal.
- Facilitating for businesses to fully integrate sustainability and equity concerns.

8. An international enabling environment for green growth will also facilitate the international exchange of knowledge and best practices. Effective and comprehensive knowledge sharing platforms are particularly important for the international transfer of science, technology and innovation to developing countries. For more information, see the *Annotations*.

Questions for self-assessment:

- ✓ *Does the national government promote a regulatory environment that is conducive to green growth?*
- ✓ *What incentives do businesses and national governments have to invest and move towards green growth? This might include both generic incentives (e.g. competitive advantage for companies moving to green growth), or incentives embodied in the current institutional framework?*
- ✓ *Is the current structure of taxation and government spending aligned to green growth? For example, are there fossil fuel subsidies or energy-related taxes and tax expenditures conducive to low-carbon and green growth?*

1.2 *Limit systemic conditions*

9. Systemic conditions (**disablers**) can be defined as the social, political, economic, environmental, and institutional conditions at the national and international levels that hinder countries' capacities to achieve sustainable development objectives.

10. The importance of constraints to green growth will vary according to level of development, socio-economic context, and existing economic and environmental policy settings (Table 3) in the *Annotations*). Similarly, the policy options to address various constraints will vary according to institutional capacity and needs associated with different levels of development (Table 4) in the *Annotations*).

The OECD identifies two broad categories of constraints to green growth (OECD, 2011b):

- *Low overall economic returns*, encapsulating factors which create inertia in economic systems and capacity constraints, or "low social returns".
- *Low appropriability of returns*, where market and government failures prevent people from capturing the full value of improved environmental outcomes and efficiency of resource use.

Other systemic conditions, which apply to virtually all policy areas, include poor governance, weak institutions, lack of transparency, and corruption etc.

Questions for self-assessment:

- ✓ *Have systemic issues which negatively affect policy outcomes been identified by the national government? To what extent are they being minimised?*
- ✓ *Do appropriate governance mechanisms exist to deal with e.g. inertia in economic systems or market failures that lead to inefficient resource use?*

2. Ensure coherence at and between different levels of governance (vertical coherence)

11. While national, sub-national and municipal governments face different challenges and opportunities in promoting green growth, their policies and actions need to be coherent and strive towards the same overall objectives. Multilevel governance – co-ordination between different levels of government, private sector and civil society – is necessary for integrating environmental and economic priorities in pursuit of green growth. At the same time, local and national strategies need to be aligned with broader international agendas.

2.1 Enhance international co-operation and frameworks for action

12. Creating a global architecture that is conducive to green growth will require enhanced international co-operation. Strengthening arrangements for managing global public goods, especially biodiversity and climate, are an important key to addressing co-ordination and incentive problems (OECD, 2012a).

13. At the international level, the Sustainable Development Goals underscore the importance of green growth strategies to the global development agenda, while the Paris Agreement at COP21 marks a decisive turning point in the global response to climate change. The 2011 OECD Green Growth Strategy, in turn, has contributed to integrate green growth considerations into core policy advice to member and partner countries. G20 leaders too, notably under the Mexican Presidency in 2012, have also recognised the role of green growth for sustainable development. Coherence between these international frameworks is imperative for progress. For more information, see the *Annotations*.

Questions for self-assessment:

- ✓ Which of the international agreements relevant for green-growth and sustainable development (e.g. on climate, energy, green trade and investment) is the country a party to? This might include both legally binding instruments such as conventions, or adherence to e.g. OECD guidelines.
- ✓ Is there a clear commitment at the highest political level to take action towards green growth and sustainable development?
- ✓ Is there coherence between (the national implementation of) different international frameworks and agreements, including the SDGs and the UN Framework Convention on Climate Change?
- ✓ What are the main environmentally related targets at the national level? For example, commitments for reducing GHGs emissions and eliminating environmentally harmful subsidies?
- ✓ What measures are in place (such as action plan or legal frameworks) to support domestic compliance and implementation of international commitments?
- ✓ Does the government provide assistance or collaborate with other countries to support the implementation of international frameworks for green growth and sustainable development?

2.2 Ensure national-level commitment and co-ordination between all actors

14. Countries' efforts to pursue green growth are most effective when guided by a national strategy, ideally designed through stakeholder engagement and championed by top national officials (OECD, 2014a). Additionally, governments need to develop institutional capacity in order to be able to integrate green growth objectives into broader economic policy-making and development planning. This is a key structural issue, which extends beyond national planning processes to public financial management (especially the budget process), and requires developing strategies for key economic sectors as well as how these feed through into sub-national development. Finance and economic ministries should take a leading role on core economic policies for green growth that engage central planning, finance and sectoral ministries as well as environment agencies in their formulation. The role and capacity of non-governmental

actors in the private sector and civil society will also be important (OECD, 2012). For more information, see the *Annotations*.

Questions for self-assessment:

- ✓ *To what extent has the national government integrated green growth objectives into broader economic policy-making and national development planning?*
- ✓ *Is there a national strategy for green growth? If so, how does it link to SDG implementation and the obligations in multilateral environmental agreements such as climate change agreements?*
- ✓ *Is policy coherence an element of the strategy for implementation? Are there mechanisms for policy co-ordination at the national level? What is the role of the Centre of Government (e.g. Prime Minister's Office)?*
- ✓ *Is there involvement of the finance ministry in the formulation of the national green-growth strategy?*

2.3 Support subnational-level action

15. Central government policy alone cannot ensure a green transition – cities, regions and communities can also be catalysts for green growth policy solutions. Experimentation and learning, as well as development and implementation of green growth policies, at the subnational level can provide essential experience and lead to bottom-up diffusion of approaches between cities and regions as well as influence national and even international levels of actions. Co-ordinating governance issues can help achieve the most cost-effective option in attaining green growth, including in the areas of green investment and innovation (OECD, 2012b). For more information, see the *Annotations*.

Questions for self-assessment:

- ✓ *How have subnational-level actors (public and private) been involved in the formulation of national green-growth strategies?*
- ✓ *Have the responsibilities been specified between the national and sub-national levels for policy implementation?*
- ✓ *Are the respective mandates of different levels of government conducive to or hindering green growth objectives?*
- ✓ *Do municipalities and agencies at the local level have the capacity and skills to implement green growth measures? Is there clear guidance for implementation at the local level?*

3. Identify policy interlinkages of relevance to green growth (horizontal coherence)

The 2030 Agenda will require policy makers need to recognise and promote synergies between some SDGs and targets, while at the same time minimising potential conflicts between others (Table 2). Specifically, green growth requires aligning economic and environmental objectives so that they are mutually reinforcing and not working at cross-purposes. To this end, policy makers need to have a shared understanding of the interactions between economic and environmental goals, their complementarities and potential policy conflicts and trade-offs. Policy coherence for sustainable development can be used to identify such linkages *ex ante*, as well as their effects *ex post*.

Table 2. An illustration of the three dimensions of sustainable development in the SDGs

		GOALS																MEANS OF IMPLEMENTATION (MOI)							
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17							
		Povert y	Hunge r	Health	Educat ion	Gende r	Water	Energy	Econo my	Industr y	Inequa lity	Cities	SCP	Climat e	Ocean s	Ecosy st.	Peace	Financ e	Tech.	Capacity	Trad e	PCSD	Partne rs.	data. etc.	
TARGETS	1													13.1											
	2												12.2											17.1 4	
	3																								
	4																								
	5																								
	6																								
	7																								
	8																								
	9																								
	10																								
	TARGETS ON MOI	a																							
b																									
c														12.c											
d																									

Three dimensions of sustainable development in the SDGs

- SYNERGIES
- TRADE-OFFS
- ENABLERS

Source: Presentation by Amb. Csaba Kőrösi, PR of Hungary to UN: "From SDGs to Post-2015 Agenda" at the OECD, 2014

16. Policy areas to consider in conjunction with the design and implementation of green growth policies include **environment and climate** (e.g. carbon pricing, emissions performance standards); **fiscal policy** (e.g. environmental taxes; green budgeting); **investment** (e.g. in infrastructure); **competition** (e.g. barriers to market entry); **labour market** (e.g. green skills and jobs); **trade** (e.g. bilateral and multilateral trade agreements, trade in environmental goods); **agriculture** (e.g. sustainable production and land use, fertiliser subsidies); **innovation** (e.g. support for R&D, green technologies); **energy** (e.g. fossil fuel subsidies, biofuel subsidies); **transport** (alternative vehicles, congestion charges); **urban planning** (e.g. land-use planning); and **development co-operation** (e.g. ODA for climate change adaptation). The *Annotations* explore each of these areas in more detail.

Questions for self-assessment:

- ✓ *Does the national government:*
- ✓ *consider economic, social and environmental policy inter-linkages (synergies and trade-offs) when designing new and/or implementing existing policies?*
- ✓ *ensure consistency between objectives and implementation practices of existing sectoral policies and green growth objectives?*
- ✓ *promote institutional arrangements that facilitate integrated policy making (e.g. cross-ministerial working groups)?*

- ✓ *With regard to the SDGs, does the national government consider the interactions between different goals and targets?*
- ✓ *If a green growth strategy exists at the national level, is there a good understanding of how it can contribute to achieve the SDGs?*

4. Consider the various sources of finance (public, private, domestic, foreign)

17. Financial flows need to act both as an engine for growth and development as well as an incentive to maintain the quality of the global commons. However, the investment needs for a transition to the green economy are great and funds will be required from both public and private sources.

18. **Public investment** will have to play a pivotal role in the promotion and implementation of green growth policies and measures. Arguably, there is no need to devise new instruments to raise the required funds; instead these could materialise as a consequence and by-product of well-designed green policies. Three areas in particular merit attention:

- *Green taxation.* Taxes related to energy and greenhouse gas emissions have by far the biggest revenue-raising potential of environmentally related taxes.
- *Subsidies abolition.* Public resource mobilisation could be further supported by gradually phasing out harmful tax incentives and subsidies.
- *Green public procurement and expenditure.* OECD countries increasingly include environmental objectives in procurement strategies.

19. Development finance institutions are also instrumental in mainstreaming microfinance and supporting the development of private industries in risky green sectors at early stages of development, but their role could be strengthened further.

20. **Private investment** is indispensable for green growth. To this end, governments will need to make every effort to unlock hitherto dormant capital flows. Importantly, promoting green investment will require both raising new funds and redirecting existing funds by building an investment environment conducive to sustainable investment. Financial instruments such as green bonds will be important for supporting this process. For more information, see the *Annotations*.

Questions for self-assessment:

- ✓ *Has the range of potential sources for finance been identified (public, private, domestic, foreign)?*
- ✓ *Are there any policies or mechanisms in place to support coordination between international, regional and national funding instruments?*
- ✓ *When engaging in subsidy reform, does the national government also consider the coherence of subsidies with other national government objectives (e.g. on developing countries)?*
- ✓ *What are the framework conditions to ensure contributions from private sources?*

How does the national government:

- ✓ *Promote environmental and social disclosure?*
- ✓ *Encourage the greening of sovereign wealth funds?*
- ✓ *Participate in the co-ordination of development finance institutions?*

5. Assess the impact of policies and monitor progress towards green growth

21. Any one policy or policy change can have impacts on three conceptual dimensions of sustainable development. These include:

- effects on wellbeing (here and now)
- transboundary effects (elsewhere)
- intergenerational effects (later).

22. Policy coherence for sustainable development can help governments anticipate such effects and inform what actions need to be taken. However, given the complexity of green growth that cuts across economic, environmental and social dimensions, progress towards policy objectives (as well as associated policy effects) cannot be easily captured by a single measure but rather by a set of markers that identify necessary conditions for green growth. To this end, the OECD Green Growth Measurement Framework (OECD, 2011b) is a powerful tool for providing a body of evidence to support the policy dialogue on whether:

- Economic growth is becoming greener.
- There is risk of future shocks to growth linked to deterioration of natural resources.
- People benefit from greener growth.
- Greening the economy is opening new sources of growth.

23. The OECD framework for monitoring progress towards green growth explores four inter-related groups of indicators (Figure 1), which are flexible enough for countries to adapt them to different national contexts. As of January 2016, 26 countries have used or started a process to use the framework to develop indicators that suit their national circumstances, fifteen of which were developing or emerging economies.

Figure 1. Indicator groups and topics covered



Source: OECD, 2011b.

24. The *Annotations* provide three examples – on hydropower generation, transportation, and environmental protection of forests – to illustrate potential policy effects in practice.

Questions for self-assessment:

- ✓ *What approaches are used by the national government to appraise the effects of its policies ex ante and/or evaluate them ex post? Do these tools capture the environmental consequences of policy choices? Do these approaches capture the different dimensions of sustainable development, i.e. here and now, later, and elsewhere?*
- ✓ *Are appropriate monitoring and reporting systems in place for tracking progress towards green growth?*

ANNOTATIONS

25. The world economy will change dramatically over the coming decades. By 2050 global economic output is projected to nearly quadruple. This expansion has the potential to raise living standards around the world. But it also poses major environmental challenges with implications for future generations. A world economy that is four times larger than today could be using up to 80% more energy predominantly from fossil fuels, thereby increasing greenhouse gas emissions and exacerbating climate change. Without shifting towards a sustainable growth path, the impact on natural resources and the ecosystem services on which human wellbeing depends will be colossal.

26. Green growth policies will be fundamental in incorporating the sustainability dimensions into economic policy making. They can unlock new and sustainable sources of growth through improvements in productivity and innovation, create new markets through changes in demand, and create greater investor confidence through a predictable government approach to green growth. In addition, the risks to growth emanating from resource bottlenecks and ecosystem imbalances can be successfully addressed (OECD, 2011a).

27. This impetus is propelled further by the 2030 Agenda for Sustainable Development, which attempts to move beyond the single-goal vision of economic expansion and incorporate a multitude of other targets into a more coherent and sustainable idea of human wellbeing. Green growth – a subset of sustainable development – will be instrumental for achieving the Sustainable Development Goals.

28. To promote green growth and achieve the SDGs, a much better understanding of the opportunities and trade-offs between environmental and economic policies is instrumental. Green growth strategies also need to pay specific attention to many of the social issues and equity concerns that can arise as a direct result of greening the economy – both at the national and international level. This is essential for successful implementation of green growth policies (OECD, 2013a). Policy coherence for sustainable development across economic, environmental and social policies can provide a tool for governments to align green growth policies with local, national and global efforts to achieve the Sustainable Development Goals, and particularly to integrate the broader social dimension of sustainable development.

Box 1. Defining Green Growth

The concept of green growth has its origins in the Asia and Pacific Region. At the Fifth Ministerial Conference on Environment and Development (MCED) held in March 2005 in Seoul, 52 governments and other stakeholders from Asia and the Pacific agreed to move beyond the sustainable development rhetoric and pursue a path of "green growth". Today, at least 13 separate definitions for green growth have been identified in recent publications, including:

- **UNESCAP:** growth that emphasizes environmentally sustainable economic progress to foster low-carbon, socially inclusive development.
- **OECD:** fostering economic growth and development, while ensuring that natural assets continue to provide the resources and environmental services on which our well-being relies.
- **World Bank:** growth that is efficient in its use of natural resources, clean in that it minimizes pollution and environmental impacts, and resilient in that it accounts for natural hazards and the role of

environmental management and natural capital in preventing physical disasters.

- **GGGI**: green growth is the new revolutionary development paradigm that sustains economic growth while at the same time ensuring climatic and environmental sustainability. It focuses on addressing the root causes of these challenges while ensuring the creation of the necessary channels for resource distribution and access to basic commodities for the impoverished.

Source: Green Growth Knowledge Platform; <https://sustainabledevelopment.un.org/index.php?menu=1447>

A.1. Consider the contextual factors which may support or hinder green growth

The policies needed to implement green growth policies will vary from country to country depending on national and contextual circumstances, such as income levels, size and sectoral composition of the economy, and the relative dependence on natural resources or fossil fuels. Table 3 illustrates some examples for country-specific challenges and commensurate policy responses.

Table 3. Examples of policy challenge by development status

Countries	Challenges	Policy options
Developed countries	<ul style="list-style-type: none"> • High greenhouse gas emission per capita • Lock-in into carbon intensive infrastructure 	<ul style="list-style-type: none"> • R&D into technological innovation • Investment into low-carbon infrastructures • Pricing externality through market-based instruments
Developing Countries	<ul style="list-style-type: none"> • Industrialisation and increased energy and material consumption • Low energy efficiency • Weak legal enforcement 	<ul style="list-style-type: none"> • Shifting away from carbon-intensive infrastructure and promoting energy and material-efficient technologies • Strengthening government capacity • Technology development, diffusion and transfer
Least developed countries	<ul style="list-style-type: none"> • High dependence on natural resources (both renewable and non-renewable) • Climate vulnerability • Lack of basic infrastructure (e.g. transport, energy and water) • Insufficient financial and technical capacity in government 	<ul style="list-style-type: none"> • Avoiding open-access regime of natural resources • Increasing productivity of net resource use • Climate risk assessment of national policy, plans and programmes • Investment in infrastructure to support access to markets

Source: OECD, 2011b.

29. Some of the contextual factors will have positive implications for green growth (**enablers**), while others will impede progress (**disablers**).

A.1.1 Strengthen enabling environments

30. Enabling environments are made up of interrelated social, economic, environmental and institutional conditions at the national and international levels that can have a positive influence on development outcomes. The OECD has identified the following six national enabling conditions for green growth (OECD, 2012a):

- *Government expenditure to shift away* from activities that waste, overuse or degrade environmental assets – because such a “disabling” environment makes green investments less competitive.

- *More effective enforcement of legislation*, in part as a driver of green investment – because weak enforcement reduces long-term investor and market confidence and gives little incentive for most businesses to improve.
- *Shifting science, research, educational and training priorities to support the transition to a green economy* – because new knowledge and skills will be needed for government decision makers, professionals and workers, down to local levels; the structural employment and institutional changes required may also warrant support for the fair transitional costs of organisations and their employees.
- *Resource and land rights regimes that safeguard the interests of those with informal rights* – because too many regimes favour powerful actors who are able to claim rights and/or emphasise technical efficiency of resource allocation, and do not support inclusion and equity for those who have a special dependence on the resource in question; this is especially critical in assuring rights to water or traditional lands.
- *Creating enabling conditions for psychological and behaviour change* – framing green growth as a social goal, narrowing choices towards greener approaches, “nudge” techniques to help people make better decisions on those choices, and tailoring information to match with stakeholder incentives and approaches to learning.
- *Facilitating businesses to fully integrate sustainability and equity concerns*, through provision of information and coordinating research on potential opportunities, especially to adopt best available technologies and meet standards, enabling technology access – through reducing trade barriers where necessary, providing finance – or Public Private Partnerships that share risk and cover upfront costs, and improving accountability – widening reporting requirements.

A.1.2 *Limit systemic conditions*

31. Systemic conditions refer to interrelated social, economic, environmental and institutional conditions at the national and international levels that can inhibit or block progress towards green growth. Table 4 provides an overview of constraints – disablers – to green growth and policy options to address them.

32. Green growth strategies need to account for how these constraints and respective policies cut across different sectors and government agencies. Policy coherence for sustainable development can support these efforts by identifying synergies and trade-offs.

Table 4. Policy options to address green growth constraints

Green growth constraints	Policy options
<ul style="list-style-type: none"> • Inadequate infrastructure 	<ul style="list-style-type: none"> • Taxes • Tariffs • Transfers • Public-private partnerships
<ul style="list-style-type: none"> • Low human and social capital and poor institutional quality 	<ul style="list-style-type: none"> • Taxes • Subsidy reform/removal
<ul style="list-style-type: none"> • Incomplete property rights, subsidies 	<ul style="list-style-type: none"> • Review and reform or remove

<ul style="list-style-type: none"> Regulatory uncertainty 	<ul style="list-style-type: none"> Set targets Create independent governance systems
<ul style="list-style-type: none"> Information externalities and split incentives 	<ul style="list-style-type: none"> Labelling Voluntary approaches Subsidies Technology and performance standards
<ul style="list-style-type: none"> Environmental externalities 	<ul style="list-style-type: none"> Taxes Tradable permits Subsidies
<ul style="list-style-type: none"> Low returns on R&D 	<ul style="list-style-type: none"> R&D subsidies and tax incentives Focus on general-purpose technologies
<ul style="list-style-type: none"> Network effects 	<ul style="list-style-type: none"> Strengthen competition in network industries Subsidies or loan guarantees for new network projects
<ul style="list-style-type: none"> Barriers to competition 	<ul style="list-style-type: none"> Reform regulation Reduce government monopoly

Source: OECD, 2011b.

A.2 Ensure coherence at and between different levels of governance (vertical coherence)

A.2.1 Enhance international co-ordination and frameworks for action

33. The year 2015 was marked by several international agreements that relate to green growth. Ensuring coherence between these normative and ambitious frameworks will be imperative for sustainable development. This will involve building partnerships, coherent and mutual reinforcement, linked-up mechanisms for monitoring and reporting, and a harmonised review process (UNISDR, 2014).

34. Climate change policies are a key part of green growth policies. The international political response to climate change began at the Rio Earth Summit in 1992, where the “Rio Convention” included the adoption of the *United Nations Framework Convention on Climate Change* (UNFCCC). With 196 Parties, the UNFCCC has near universal membership and is the parent treaty of the 1997 Kyoto Protocol. The Kyoto Protocol has been ratified by 192 of the UNFCCC Parties. The ultimate objective of both treaties is to stabilise greenhouse gas concentrations in the atmosphere at a level that will prevent dangerous human interference with the climate system.

35. Implementation of the UNFCCC is reviewed by the annual *Conference of the Parties* (COP). The *Paris Agreement* at COP21 marks a decisive turning point in the global response to climate change. The deal includes an ambitious target for limiting the global temperature rise, a five-year review cycle, clear rules on transparency, a global goal for resilience and reducing vulnerability and a framework for supporting developing countries. A key role of the UNFCCC will be to monitor and review country performance against commitments, not only in emissions reductions but also in climate finance. The Agreement provides mechanisms for regular reporting, review and updating to check whether national targets and pathways are consistent with our collective climate goals. During the 2016 Opening for Signature of the Paris Agreement, held at United Nations Headquarters in New York on 22 April, 175 Parties (174 countries and the European Union) signed the Agreement, and 15 States deposited instruments of ratification.

36. Building on experiences from the Millennium Development Goals, the importance of green growth strategies to the global development agenda is underscored again in the *Sustainable Development Goals* (SDGs), as it relates to water, energy, agriculture, biodiversity, climate change and more. Their

successful implementation will require policy makers to recognise and promote the synergies between some goals and targets, while at the same time minimising potential conflicts between others.

37. In 2009, OECD ministers asked the *OECD* to develop a Green Growth Strategy to help the governments of OECD countries and partner economies alike to achieve economic recovery, along with environmentally and socially sustainable growth. The 2011 Green Growth Strategy responded to this mandate: it sets out a framework for governments to foster economic growth and development, while ensuring that natural assets continue to provide the resources and environmental services vital to human well-being. Specifically, the OECD Green Growth Strategy proposes four main steps to green growth (OECD, 2011a):

- Align growth and environmental objectives.
- Implement green growth policy frameworks.
- Address the social implications of green growth.
- Monitor progress.

38. Since the adoption of the Strategy, the OECD has integrated green growth considerations into its core policy advice to countries. Today, several OECD countries and a number of partner economies have adopted, or are adapting, the Green Growth Strategy's indicator framework¹ to help evaluate and monitor progress towards national green growth objectives (OECD, 2015a).

39. At the level of the *G20*, leaders at the 2010 Seoul Summit recognised green growth as an inherent part of sustainable development which could enable countries to leapfrog old technologies in many sectors. They agreed to take steps to create enabling environments for the development of energy efficiency and clean energy technologies. In 2012, the Mexican Presidency of the G20 introduced “inclusive green growth” as a cross-cutting priority on the G20 development agenda.

40. There are many other local, national, regional and international initiatives to promote green growth. Notably, in February 2012, the World Bank along with UNEP, OECD and the Global Green Growth Institute (GGGI) launched a new international knowledge-sharing platform – the *Green Growth Knowledge Platform* (GGKP) – bringing together under the same roof the major international organisations supporting and promoting both green growth and green economy. The GGKP aims to enhance and expand efforts to identify and address major knowledge gaps in green growth theory and practice, and to help countries design and implement policies to move towards a green economy.

A.2.2 Ensure national-level commitment and co-ordination between all actors

41. The challenges of achieving green growth cut across the traditional silos of governmental institutions, and involves both bottom-up and top-down action. In order to ensure that economic and environmental goals are realigned and the impacts on the social realm are taken into account, effective co-ordination is imperative. Setting up a cogent and coherent green framework at the national level requires line ministries to engage in both multi-level and cross-agency collaboration. Ideally, a comprehensive green growth strategy should be adopted at the highest political level, co-ordinated by the Centre of Government and mainstreamed into all national policies.

1 The OECD Green Growth Strategy proposes 26 indicators to track progress – including at the international level – across four areas: (i) transition to a resource-efficient, low-carbon economy; (ii) natural asset base; (iii) environmental quality of life; and (iv) economic opportunities and effective policy.

42. Additionally, recent attempts to implement green growth policies have highlighted the importance of providing space for participation by other relevant stakeholders. Civil society organisations and think tanks can harness public support in favour of reforms and help avoiding the impression of partisan manoeuvring and vested interests. Similarly, private sector participation could not only provide useful insights into policy implementation, but also help identify best practices and “champions” for in-depth case studies and public support maintenance. Apart from that, parliamentarians, as well as media representatives, could become powerful allies in pushing for a green growth agenda (UNEP, 2014).

A.2.3 Support subnational-level action

43. While policy action to tackle climate change is mostly framed at the international and national level, local contexts deserve particular attention since climate change impacts may vary from place to place, as will the capacities to respond to it. The challenge to build a green economy concerns the complex interplay of numerous subnational-level actors and policies within the broader (national and international) framework. Local areas are comprised of distinct concentrations of industries, households and infrastructure networks and many are major greenhouse gas emitters in their own right. The agglomeration of innovative capacity, business networks and skills in localities, particularly cities, are important foundations to generate and diffuse new technologies and practices. An environment conducive to green growth requires local authorities to (OECD 2012d):

1. **Develop a framework for local sustainable economic development** tailored to the specific local circumstances, setting out a clear vision for green growth and encouraging participation from a wide range of stakeholders.
2. **Support innovation and green growth** through strengthened collaboration of local stakeholders in order to drive incremental innovation, skills development and technology diffusion.
3. **Foster local planning and sustainable infrastructure development** to respond to the local impacts of climate change and put regions on a low-carbon trajectory.
4. **Improve local governance for green growth** to achieve policy coherence, based on strong leadership, effective partnerships, and community engagement.
5. Build capacities and a skills base conducive to green growth.
6. **Spur local investment** in infrastructure, plants and equipment, technology and skills development through promoting entrepreneurial skills and business cases to attract relevant financial institutions.

44. In this context, the public sector has a pivotal role to play. By building local support networks and partnerships, it can foster collaboration of regional ministries and labour market institutions, businesses, trade unions, civil society, education institutions, economic development agencies and subnational authorities to ensure that public initiatives and programmes aimed at greening the economy are well defined, effectively implemented and tailored to the local needs. Also, the public sector is an important service provider in its own right. Hence, strengthening the institutional capacity of subnational and regional authorities is essential to ensure a better definition, coordination and implementation of priority actions in relation to the green economy.

Box 2. A model of community engagement - Sustainable Sydney 2030

The City of Sydney’s Sustainable Sydney 2030 presents a bold and compelling vision for how this centrally

located area will tackle climate change, global competition, transportation congestion, and a half dozen other major challenges over the next 20 years. The vision is continuously articulated by the Sydney Lord Mayor Clover Moore MP, and the process involves ongoing interaction, review and refinement with government, business and the community. Sustainable Sydney 2030 is driven by 10 targets that are ambitious but fulfil the principles of SMART goal-setting – they are specific, measurable, attainable, realistic and timely. The targets reinforce each other and are underpinned by “5 Big Moves” aimed at remaking the City “into one that is green, global and connected.” The strategy commits the city to reducing greenhouse gas emissions by 70 % by 2030.

A central feature of Sustainable Sydney 2030 is the model of community engagement. The importance of this model is the recognition of deepening democratic engagement and utilising the multiple talents and enterprises, households and different social groups. The vision was developed through lengthy and extensive community engagement. Some 12 000 people were consulted directly over 18 months via 30 community forums. Thousands of others attended City Talks or briefings, visited the six week Vision exhibition at the Customs House or engaged via the Vision website. This level of community engagement was critical because the policy shifts and resource allocation necessary to implement the vision require broad, deep and sustained public support.

Source : Miranda, G., et al. (2011).

A.3 Identify policy interlinkages of relevance to green growth (horizontal coherence)

Policy interlinkages are channels through which policies influence each other’s performance and objectives. The aim of policy coherence for sustainable development is to identify and promote positive synergies and to avoid or reduce negative trade-offs. This section provides an overview of twelve broad policy areas – environment and climate, fiscal, investment, competition, labour market, trade, agriculture, innovation, energy, transport, urban planning, and development co-operation – and how they link to green growth and sustainability outcomes. The purpose is to give a general understanding of the many policy areas affecting green growth, rather than an in-depth analysis of individual policy instruments.

Policies for greening growth will differ across countries, according to local environmental and economic conditions, institutional settings and stages of development. However, in all cases, various policy instruments have to be harmonised across different policy domains and line ministries in order to (OECD, 2001):

1. Integrate the natural resource base into the same dynamics and decisions that drive growth.
2. Develop ways of creating economic payoffs which more fully reflect the value of the natural resource base of the economy.
3. Focus on mutually reinforcing aspects of economic and environmental policy.

National centres of government can play an important role to this end (Box 3).

Box 3. Government co-ordination: Insights from OECD's Centres of Government

A principal issue for governments with respect to aligning policies to promote the transition to a low-carbon economy is how co-ordinated policies can be implemented in practice given the complexity of the topic, the mixed track record of most governments in working horizontally, and the need to include an unprecedented range of public and private actors. The perspective of senior officials working at the centre of OECD governments, whose role is to provide strategic vision, policy co-ordination and monitoring for complex, cross-disciplinary policies, is that the low-carbon transition is indeed a unique challenge in terms of scale and time frame. As such, it requires new approaches to policy making across line ministries. Governments have developed numerous solutions to establish more strategic co-ordination and better mainstreaming of climate policy objectives. These include super ministries, policy “tsars”, inter-ministerial committees, independent policy units.

On the policy front, options include legislations mandating national climate change targets (e.g. the United Kingdom's Climate Change Act) or impact assessments including guidance on how to include GHG emissions in these assessments. These can provide insights into the challenges and some of the solutions on which successful implementation will depend.

An ambitious effort to align policies requires several elements: a clear vision with measurable targets; an action plan with clear responsibilities and tasks for the different stakeholders; a system for monitoring progress; a process that has convening power, spans electoral cycles and engages opposition parties, and draws on coordination and substantive expertise.

To get to this degree of climate policy mainstreaming will require an investment in reflection on governance innovations best suited to this cross-portfolio issue. Overall, this requires the engagement of the head of government.

Source: Adapted from OECD (2014b).

A.3.1 Environment and climate policies [see also OECD work on climate change]

45. In the aftermath of the financial crisis, some governments have raised concerns that stringent environmental and climate policies might undermine productivity growth. However, OECD research shows that efforts to improve growth and achieve ambitious environmental goals can go together, and should be stepped up. The choice and implementation of environmental policy instruments is crucial. Policy makers should bear in mind three key principles when designing environmental policies (OECD, 2014c):

1. Ensure strong signals come from stringent environmental policies, both to make pollution and climate change more costly and clean and green approaches more attractive.
2. To the extent possible, use flexible policy instruments and leave it to the firms themselves to choose the most efficient way to innovate, adjust and “go green”.
3. Ensure environmental policy settings do not inhibit market entry or competition, give established firms advantages over new entrants in the market, or drive up administrative costs unnecessarily.

46. Recent OECD analysis shows that aligning policies for a low-carbon economy can contribute to a broader reform agenda for greener more resilient and inclusive growth. In particular, action to drive decarbonisation rests on three pillars (OECD, 2015b):

- *A robust price on GHG emissions* with long-term credibility provides incentives for immediate emissions reductions where possible, as well as investment and innovation in low-GHG technologies. However, as carbon pricing can have distributional consequences, governments will need to find the right level of arbitrage between the economic efficiency and the political and social sustainability of climate policies.
- *Regulations* may be particularly appropriate where a price signal is less effective due to market barriers or transaction costs – in particular in the household sector. These include emissions performance standards or measures to encourage energy efficiency,
- *Targeted technology support* can help to develop, and lower the cost of, risky but potentially promising sustainable low-GHG technologies, reducing the competitive gap with GHG-intensive technologies.

47. To be effective, and thereby contributing to policy coherence and green growth, these core climate policies must be backed by a clear long-term commitment by governments to support continuous and systematic efforts to support the transition to a green economy, giving private sector and civil society stakeholders the confidence they need to take long-term decisions. Conversely, incoherent and poorly designed climate policies will incur economic, environmental and social costs to society.

A.3.2 *Fiscal policies [see also OECD work on environmentally related taxes]*

48. Fiscal instruments, such as environmental taxes, pollution charges, subsidies for green technologies, and tax incentives can play a crucial role in promoting a green economy by creating needed fiscal space while limiting environmental externalities (Table 5). In addition, they can also generate revenue to help finance education, health care, infrastructure development or poverty alleviation. The key to successful implementation and political acceptance of fiscal instruments hinges on effective complementary measures, in particular, addressing distributional impacts. Importantly, fiscal policy needs to be considered within the wider context of sustainable development and, if possible, introduced in a comprehensive policy package crafted with key ministries and stakeholders (GGKP, 2015).

49. *Taxation* can directly address the failure of markets to take environmental impacts into account by incorporating these impacts into prices. However, the broad structure of most tax systems emerged at a time when scarcity of natural capital and environmental and health damage were low on the political agenda. For example, a number of tax exemptions, deductions or credits encourage the economy to produce or consume more fossil fuels than it would in the absence of such measures. The trade-off here is between energy independence on the one hand and climate change mitigation on the other.

Table 5. Examples of fiscal policy instruments to address environmental concerns

Policy instruments	Examples / Common applications
Cap-and-trade permit systems	GHG emission reductions (EU-ETS) Air pollution (SO ₂ , NO _x , VOC) Fishing quotas and nutrient and water trading
Baseline-and-credit permit systems	Clean Development Mechanism Lead content of gasoline Biodiversity offsets/banking (e.g. REDD)
Taxes or charges on pollution or resource use	Water effluents Water abstraction or consumption
Taxes or charges on a proxy (input or output)	Fuels and coal Motor vehicles Fertilisers Waste fees and levies
Subsidies / Tax incentives	Forest management and conservation Purchase of environmental-friendly energy equipment
Deposit-refund systems	Beverage and chemical containers Lead acid batteries
Performance standards	Limits on CO ₂ emissions of a passenger vehicle Energy efficiency standards for various manufactured goods.
Technology standards	Minimum percentage of a low-carbon source in the overall fuel mix of passenger vehicle Specific housing building codes for energy-saving purposes

Active technology support policies	Feed-in tariffs for electricity generated by renewable sources Renewable energy portfolio standard (green certificate) Targeted public procurement Loan guarantees and tax credits
Voluntary approaches	Negotiated agreements to encourage energy efficiency in energy-intensive industries Publicly-available inventories of various pollutants Labelling schemes Local municipal land use planning

Source: OECD, 2011.

A.3.3 Investment policies [see also OECD work on investment for green growth]

50. Greening investment at scale is a precondition for achieving sustainable growth. Beyond the known infrastructure investment barriers and constraints, the challenge will be to enable an unprecedented shift in long-term investment from conventional to green alternatives to avoid locking in less efficient, emissions-intensive technologies for decades to come (WEF, 2012).

51. However, investment today is not moving significantly away from carbon-intensive technologies infrastructure and policy makers need to address policy misalignments in the overall investment framework that collectively favour investment in fossil fuel intensive activities. These include conflicting competition, trade, tax, and innovation policies, as well as inappropriate institutional settings (Table 6).

Table 6. Examples of policy misalignments that undermine low-carbon investment

Business environment	Fiscal policies	Insufficient carbon pricing and incentives for low-carbon technologies Environmentally harmful subsidies and incentives (e.g. fossil fuels) Tax policies that unintendedly favour carbon-intensive behaviour (e.g. company cars)
	Climate policies	Lack of ambitious international and national reduction targets or binding objectives Lack of climate policy stability; retroactive changes in climate legislation
	Investment policies	Regulatory barriers to international investment in low-carbon projects (e.g. limits on foreign ownership, restricted access to land, local content requirements) Lack of transparency, insufficient investor protection and intellectual property rights protection in low-carbon technologies, weak contract enforcement
	Competition policies	Lack of open and competitive infrastructure markets (e.g. in the electricity sector) Market designs and regulatory rigidities that favour carbon-intensive infrastructure investment in the energy sector Lack of a level playing field in the power sector for existing fossil-fuel producing state-owned enterprises and independent producers of clean energy
	Trade policies	Trade barriers for low-carbon goods and services
	Public governance	Lack of long-term goals for low-carbon infrastructure planning and procurement Contradictory signals between national and sub-national climate objectives Lack of stakeholder consultation in policy design
Fiscal system	Financial market policies	Potential unintended consequences of financial regulations on long-term financing Financial incentives across the financial system favouring short-termism (remuneration practices, fiscal measures, performance appraisal) Barriers to the deployment of innovative financial instruments for new types of investors (e.g. institutional investors)

	Business conduct	Corporate reporting that does not reflect the climate risk (e.g. stranded assets) Lack of a responsible investment code Lack of clarity on fiduciary duty and stewardship with respect to environmental, social and governance issues
	Public finance and investment	Ongoing support to carbon-intensive investments, nationally and internationally Continued support of carbon-intensive investments in development finance Lack of capacity

Source: OECD, 2015b.

A.3.4 Competition policies [see also OECD work on competition]

52. Market-based environmental policy considerations often have competitive implications and vice versa, suggesting that competition authorities should have an expanded role in the development of market-based environmental policies. Notably, effective competition can support environmental policy by allowing price signals that reflect environmental externalities to be effectively transmitted. Competition also reinforces environmental policy in that competition-induced innovation efforts and efficiency improvements may be considered important elements in a successful environmental policy (OECD, 2010). However, at the same time, environmental policy may harm competition by for instance increasing barriers to market entry. Environmental regulatory agencies can reduce such policy conflicts by routinely undertaking competition impact assessments with regard to their environmental policies.

A.3.5 Labour market policies [see also OECD work on greening jobs and skills]

53. The relationship between sustainable development, green growth and good labour market performance can be mutually reinforcing, but this is not automatic. Inevitably, the transition to a greener economy will create both opportunities and challenges for workers and their families – targeted policies will be needed to maximise potential synergies while minimising adjustment costs and ensuring that they are shared in an equitable manner. In a report to the G20, the ILO and the OECD identifies four areas in which policy action may be particularly important (OECD/ILO, 2012):

- Meeting the emerging job-skill requirements of a greening economy.
- Helping workers to move from declining firms and sectors to growing firms and sectors, while providing income security.
- Assuring worker rights in growing green sectors, while seizing opportunities to promote social inclusion.
- Strengthening labour market information systems and social dialogue so as to promote a deeper shared understanding of how best to green the labour market.

A.3.6 Trade policies [see also OECD work on environment and trade]

54. Increasing volumes of trade have put an additional stress on natural resources, but – with appropriately designed policies – trade can instead facilitate the transition towards a green economy. It can foster the exchange of environmentally friendly goods and services, increase resource efficiency and generate economic opportunities and employment. Conversely, the transition to a green economy has the potential to create enhanced trade opportunities by opening new export markets for environmental goods and services, by increasing trade in products certified for sustainability and promoting certification-related services, and by greening international supply chains (UNEP, 2013). In particular, UNEP identifies five

enabling conditions required for greater coherence between green economy policies and trade opportunities:

- *Investment and spending:* Public investments in key economic infrastructure, technical assistance and targeted education programmes and access to sustainable resources, are crucial for increasing the success rate of developing country suppliers in accessing greener international markets.
- *Market-based instruments:* The gradual elimination of harmful subsidies and the introduction of pricing policies that take fully into account environmental and social costs of production and consumption are essential pre-conditions for enabling sustainable trade.
- *National regulatory frameworks:* Policies and actions to support the greening of industries need to be incorporated into national sustainable development strategies and overarching legal frameworks.
- *International frameworks:* The rules-based multilateral trading system provides transparency and predictability for promoting the trade-related aspects of a green economy.
- *Dialogue and capacity building:* Regulatory co-operation and capacity building are amongst the most important means to overcome challenges in a proactive manner. Scaling up support for developing countries to harness green export opportunities requires coherent support from international governmental organisations, as well as the private sector and non-governmental organisations.

A.3.7 Agriculture policies [see also OECD work on sustainable agriculture]

55. Green growth in the area of agriculture implies ensuring that enough food is provided in an efficient and sustainable manner for a growing population. This means increasing output while managing scarce natural resources; reducing the carbon intensity and adverse environmental impacts throughout the food chain; enhancing the provision of environmental services such as carbon sequestration, flood and drought control; and conserving biodiversity. However, the relationship between agriculture and green growth is complex. The food and agricultural sectors can generate both environmental harm and conserve environmental services (OECD, 2012d).

56. Moving towards greener growth in the food and agriculture sectors needs to be built on a strong scientific, evidence-based foundation. It will involve both synergies and trade-offs which will change over time, both within and across the different dimensions of sustainable development: economic, environmental and social (Table 7).

Table 7. Synergies (+) and trade-offs (-) between agriculture and green growth (GG)

	Economic contribution of agriculture to green growth	Environmental contribution of agriculture to green growth	Social contribution of agriculture to green growth
Economic contribution of green growth to agriculture	Agriculture as a driver of economic development while GG can improve agricultural performance (+)	Green labels and payments for eco-services can contribute to economic returns in agriculture (+)	Higher skilled jobs and activities can diversify and contribute to rural development (+)
Environmental contribution of agriculture to green growth	Environmental measures may slow agricultural growth in the short term (-)	GG will yield environmental co-benefits in agriculture through	Reform of support to relieve environmental stress and payments for

)	resource conservation and sustainable use (+)	environmental services can enhance farm incomes in rural areas (+)
Social contribution of green growth to agriculture	GG may detract from efforts to improve food security in the short term (-)	GG will necessitate structural adjustment measures in transition periods (-)	Food security, poverty reduction, and rural development will be enhanced in the long run through GG (+)

Source: OECD, 2012d.

To help improve measurement of the environmental performance of agriculture, OECD has established a set of agri-environmental indicators, developed in co-operation with Eurostat and FAO.

A.3.8 Innovation policies [see also OECD work on consumption, innovation and the environment]

57. Innovation can help to decouple growth from natural capital depletion. This requires establishing incentives and institutions that lead to significant green innovations and their widespread adoption and diffusion. Innovation will also lead to new ideas, new entrepreneurs and new business models, thus contributing to the establishment of new markets and eventually to the creation of new jobs (www.innovationpolicyplatform.org).

58. The OECD Green Growth Strategy calls on countries to take a coherent, co-ordinated policy approach to green growth based on a sound overall framework for innovation policies. This includes both supply- and demand-side innovation policies and a range of policy tools to create, diffuse and apply knowledge. A key challenge is to align the goals of different line ministries, research funding agencies, higher education institutions and social and market-based institutions so that they focus on green growth in all its dimensions. Strategic policy intelligence can help to enhance policy learning and to avoid government failures (OECD, 2012c).

Table 8. Challenges to green innovation

Challenges to Green Innovation	Possible Policy Responses
Insufficient demand for green innovation	Demand-side policies, such as public procurement, standards and regulations, in specific markets and circumstances Market-based instruments to price externalities and enhance incentives
Lack of innovation capability	Broad-based policies to strengthen innovation
Technological roadblocks and lack of radical innovation	Investment in relevant R&D, including thematic and mission-oriented research International cooperation
Research and investment bias to incumbent technology	R&D support, tax incentives Adoption incentives/subsidies Technology prizes
Lack of finance	Co-investment funds Market development
Regulatory barriers to new firms	Regulatory reform Competition policy Front-runner approaches

Lack of capabilities in SMEs to adopt green innovation	Access to finance Skills development Linking SMEs to knowledge networks Improving information supply Reducing regulatory burdens
Non-technological innovation	City and transport planning Regulatory reform
International technology transfer	Development of capabilities Trade and investment policies IPR protection and enforcement Voluntary patent pools and collaborative mechanisms

Source: OECD, 2011.

59. In developing countries, policies to foster green innovation need to be adjusted to national circumstances. Governments should provide predictable policy signals to minimise unnecessary investments. They should also focus national R&D efforts on local needs, such as water scarcity and soil loss, and improve the markets for green products. For more information, see the summary report from the 2015 OECD Green Growth and Sustainable Development Forum.

A.3.9 Energy policies [see also OECD work on greening energy]

60. The energy sector poses a particular challenge in the context of green growth due to its size, complexity, path dependency and reliance on long-lived assets. A major transformation is needed in the way we produce, deliver and consume energy, calling for large investments. A range of mutually reinforcing measures is required to address market failures and barriers and create the enabling conditions for large-scale private-sector investment. These include (OECD/IEA, 2011):

- Rationalising and phasing-out inefficient fossil fuel subsidies that encourage wasteful consumption, while adequately addressing the needs of low-income households through effectively targeted social policies.
- Setting a price signal to value externalities and provide robust signals for longer-term structural changes.
- Establishing sound market and regulatory frameworks that remove barriers to green investments and facilitate the move away from existing systems and patterns of fossil fuel energy use.
- Radically improving energy efficiency will reduce the need for investment in energy infrastructure, cut fuel costs, increase competitiveness, lessen exposure to fuel price volatility, increase energy affordability for low-income households and cut local and global pollutants, thus improving consumer welfare,
- Fostering innovation by creating the enabling environment and regulatory frameworks to foster breakthroughs and overcome the inertia incumbent in today's energy systems, whether institutional or economic.

A.3.10 Transport policies [see also OECD work on greening transport]

61. Transport figures prominently on the green growth agenda for two main reasons. First, transport has major environmental impacts in terms of greenhouse gas emissions, local air emissions and noise.

Managing congestion more effectively is also part of the broader agenda for more sustainable development and better use of resources invested in infrastructure. Second, a large part of public expenditure to stimulate green growth has been directed at transport sector industries. This concerns most notably alternative vehicles, and particularly electric cars, a key part of strategies to decarbonise transport (OECD/ITF, 2011).

62. UNEP (2011) identifies a three-component strategy – avoid, shift and improve – for making a decisive shift to green transport:

- *Avoiding or reducing the number of journeys taken:* This can be achieved by integrating land use and transport planning; designing denser, more compact settlements; harnessing telecommunication technologies; and localising production and consumption.
- *Shifting to more environmentally efficient forms of transport:* This involves promoting public transport as well as walking and cycling, which usually requires substantial investment in infrastructure. Railways and waterways are generally greener methods of transporting freight and also frees up road space.
- *Improving vehicle and fuel technology to reduce adverse environmental effects:* This component calls for enhancing the fuel economy of conventional engines; reducing the weight of vehicles and developing alternatives (e.g. electric and hybrid vehicles); and increasing the use of biofuels and hydrogen fuel technologies.

Additionally, these three elements must take context-specific factors into account, recognising that countries have different priorities and needs. This is illustrated in Table 9.

Table 9. Contextualising avoid-shift-improve strategies

Strategy	Developed countries	Developing countries
Avoid	Reduce vehicle kilometres (VKM) through Transport Demand Management (TDM), land use planning, localised production, and shorter supply chains.	Avoid unnecessary generation of VKM through land use and transport planning.
Shift	Shift from private vehicles to Non-Motorised Transport (NMT) and Public Transport (PT) and from aviation to rail/PT. Transfer freight from road to rail and water transport.	Enable conditions for the lowest-emitting modes (both freight and passenger). Prevent shift from NMT and PT to private vehicles by ensuring that attractive alternatives to private vehicles exist.
Improve	Improve existing vehicles. Down-scale vehicle engine size. Increase penetration of electric vehicles and carbon-neutral liquid fuels. Electrify rail (for both freight and passengers).	Ensure future vehicles/fuels are cleaner, encouraging small efficient cars. Design innovations for traditional NMT such as cycle rickshaws.

Source: UNEP (2011), after Dalkmann (2009).

A.3.11 Urban planning [see also OECD work on greening cities, regions and communities]

63. Urban areas are not only major drivers of economic activity and growth, but also disproportionately large sources of waste and waste water, energy consumption, GHG emissions and air

pollution. Heightened by ongoing urban migration and population growth, these interlinked phenomena are turning cities into key focal points for green growth strategies.

64. As city governments are important providers of public services, integrated policy interventions in the areas of land-use, buildings, energy and energy efficiency, waste and water can be used to spur economic development while enhancing sustainability and environmental quality. Inclusive urban transport planning – the topic of the International Transport Forum’s 2016 Annual Summit – is another important element for greener and more equitable growth. Thereby, cities can simultaneously pursue multiple objectives, such as job growth, increasing the attractiveness of the metro-region, supporting the local production of green goods and the provision of green services, improving local environmental quality, as well as increasing the value of urban land while reducing pressure on global environmental goods (climate, etc.).

65. Green growth in cities is a challenge of PCSD in its own right because it requires successful multilevel governance across different agencies and ministries as well as between different levels of governance (local, provincial, national, international).

Box 4. Energy efficiency retrofits in Berlin

A significant number of Berlin’s public and private buildings have been retrofitted with the help of low-interest credit and energy service companies. In 1994 Berlin’s Senate set CO₂ emission reduction goals of 25% by 2010 and 40% by 2020 (compared to 1990 levels). Since 1995, the Berliner Energie Agentur (BEA) has co-ordinated energy saving partnerships between the City of Berlin, utility companies, and the public investment bank Kreditanstalt für Wiederaufbau (KfW). Focusing on large public buildings, the BEA prepares public tendering and implements energy performance contracts (EPCs). By 2011, the BEA had engaged 1 400 public buildings in energy saving partnerships, which account for annual savings of EUR 2.9 million in energy for the City of Berlin and 67 900 tons of CO₂ emission reductions (City of Berlin, 2011; BEA, 2011). New programmes – EPC plus, EPC light, and EPC green –are currently being introduced to expand and optimise early retrofits and to tackle buildings with suboptimal conditions for energy savings.

Private building owners, tenants and housing corporations can access KfW loans via the energy efficiency retrofit programme (Energie-Effizienz Sanierung), as well as from local banks, such as the Investitionsbank Berlin. Rent increases of up to 11% annually help landlords to refinance loans. The higher rents should be compensated through lower energy bills. Since the early 1990s, over EUR 4 billion have been invested in retrofits in Berlin. This has resulted in the renovation of around one-third of the city’s residential buildings, including 273 000 prefabricated slab apartments, energy savings of up to 50%, and 631 000 tons of avoided CO₂ emissions every year (City of Berlin, 2011).

Source: BEA (Berliner Energieagentur) (2011), *Energy Saving Partnership, Better Practice Exchange 2011*, Berliner Energieagentur, Berlin; City of Berlin (2011); *Climate Protection in Berlin*, Senatsverwaltung für Gesundheit, Umwelt und Verbraucherschutz, Berlin

A.3.12 Development co-operation policies [see also OECD work on green growth and development]

66. Developing countries are even more exposed to environmental degradation than are advanced economies. They are the most vulnerable to climate change and tend to be more dependent on natural resources for economic growth. For these countries, green growth could be a successful strategy to respond to the twin challenges of spurring economic growth while protecting the natural asset base. In this context, official development assistance (ODA) remains essential in creating an enabling global environment for green growth while supporting specific measures in developing countries.

67. Apart from shaping a global environment conducive to green growth, development co-operation can also respond to the specific challenges of developing countries and the short-term costs of the green transition. This could be achieved through action along three lines (OECD 2013a):

1. Strengthening green finance and investment, including through better targeting of official development assistance (ODA) and other types of official development finance, and promoting private investment;
2. Promoting green technology innovation through co-operation and building capacity for endogenous green innovation and adoption, as well as through protection of intellectual property rights and enabling conditions for successful technology transfer; and
3. Facilitating trade in green goods and services through fostering international markets, removing tariff and non-tariff trade barriers, and building capacity in developing countries to allow more producers and consumers to participate and benefit from growing international markets.

68. It can help target areas where incentives for private investment are limited, including infrastructure and capacity building, and finance projects in renewable energy, climate-smart agriculture and low-carbon transportation networks. Official development co-operation that aims to foster green growth should also ensure that climate proofing and disaster risk reduction approaches are mainstreamed into aid-funded public investment (OECD, 2012a).

A.4 Consider the various sources of finance (public, private, domestic, foreign)

69. Different scenarios have tried to estimate the amount of future investment required for green transition. Most recently, the OECD/IEA (2015) estimated that in order to remain within the 2 degrees scenario, additional investment of around USD 40 trillion would be required from 2016-2050, about half of which (USD 19 trillion) should be channelled to the transportation sector. In total, this accounts for about 1% of projected global GDP over the same time. Crucially, the IEA estimates, 54% of these additional investments should be dedicated to non-OECD countries, reflecting the need for profound and rapid change in these countries. This raises the question of how governments could mobilise these resources in order to drive this transformation.

70. Long-term investment also requires governments to adopt a comprehensive, bold strategy for green growth and reaffirm their determination to achieve a green economy. By enhancing accountability and transparency, they could reduce the risk associated with green investment attributable to political uncertainty, and convince even more risk-averse investors to contribute to the green transformation. In the area of climate change, the Global Climate Fund plays an important role in fulfilling developed countries commitment to jointly raise USD 100 billion per year by 2020 to help developing countries cope with climate change.

71. Public investment will have to play a pivotal role in the promotion and implementation of green growth policies and measures. Arguably, there is no need to devise new instruments to raise the required funds; instead these could materialise as a consequence and by-product of well-designed green policies. Three different areas that merit particular attention can be identified: *(i)* green taxation; *(ii)* subsidies abolition; and *(iii)* green public procurement and expenditure. Other policy interventions that aim to overcome the unfavourable long-term risk/reward equation of green investments include the enhancement of environmental and social disclosure, the greening of sovereign wealth funds, and the co-ordination of development finance institutions. Last but not least, a key role for governments is to act as a catalyst and unlock private capital flows.

A.4.1 Green taxation

72. Taxes related to energy and greenhouse gas emissions have by far the biggest revenue-raising potential of environmentally related taxes. Model simulations indicate that at a price of USD 50 per tonne

of CO₂-equivalent greenhouse gas emissions (well below the level that many modelling exercises suggest might eventually be needed), revenues equalling 1-3% of GDP could be raised in 2020, depending on the circumstances in each country (OECD, 2011a).

A.4.2 Subsidies abolition

73. Public resource mobilisation could be further supported by gradually phasing out harmful tax incentives and subsidies. Support for both consumption and production in OECD countries varied between USD 55-90 billion from 2005 to 2011 (OECD, 2015a). However, recent efforts to implement green taxation or cut back on subsidies have often run into stiff public opposition. For green policies to be effective, issues of public participation, transparency and resource utilisation have to take centre stage. Box 5 illustrates this with an example from Sweden.

Box 5. Congestion charges in Stockholm, Sweden

In 2007, the municipality of Stockholm, Sweden, introduced a congestion charge to limit private transportation. While reducing traffic in the city centre by an average 20% (EPR Sweden 2014), thereby reducing GHG emissions and noise and air pollution, the funds raised were redirected to finance the expansion of public transportation services. As a result, the share of commuting to central Stockholm via public transport is at 60%, and the share of public transport in Stockholm City during peak travel hours goes up to 79% (Green Growth Stockholm 2013). Transparent resource utilisation has helped Sweden to sustain high levels of public support for its green policies, and public participation and engagement feature prominently on the political agenda.

Source: OECD, 2014d.

A.4.3 Green public procurement and expenditure

74. Realigning ongoing public expenditures with low-carbon and other environmental and social targets could also be an effective tool to ‘green the administration’. Roughly 13% of GDP in OECD countries stem from public procurement, which accounts for almost a third of overall government expenditures. If combined with a systematic lifecycle analysis, it can form a powerful tool to navigate the economy towards more sustainable business practices, strengthen infant markets, and support nascent industries. The OECD has developed a compendium of green procurement good practices, which aims at helping countries implement green public procurement (GPP) across six areas (OECD, 2015c):

- GPP legal and policy framework.
- Planning GPP, assessing life-cycle costs and understanding market solutions and capacity.
- Environmental standards in the design, selection and award of projects and contract performance.
- Professionalisation; multidisciplinary procurement teams and GPP training.
- Raising awareness of buyers, the market and citizens of GPP solutions and benefits.
- Mechanisms to monitor the impact of green procurement.

A.4.4 Enhancing environmental and social disclosure

75. Recent years have seen growing awareness of climate risk in financial markets. Climate change, as well as global climate change adaptation, could entail large financial losses, for example through stranded

assets. Strong climate action might limit the returns from fossil energy reserves, and even invalidate resource-intensive business models. Currently, these risks and liabilities are not adequately disclosed in investors' portfolios, nor are they priced in. The same holds true for other social and environmental considerations. Strengthening environmental, social and governance (ESG) disclosure could propel the adequate incorporation of social and environmental issues into market prices and investment practices, and channel funds to well-performing actors.

Box 6. Corporate reporting legislation in the European Union

The EU Emissions Trading System (ETS) covers companies in energy-intensive sectors, including more than 11 000 power stations and manufacturing plants in the 28 EU member states and other European Economic Area countries. In total, around 45% of total EU emissions are covered by the EU ETS. Installations are required to measure direct emissions each year, and provide emissions reports verified by an accredited verifier.

In addition, the EU Directive on financial reporting was amended in 2014 to require large public interest entities with more than 500 employees to also report on non-financial information. Reporting requirements include disclosure on policies, outcomes and risks, and relevant non-financial key performance indicators concerning environmental and social matters, human rights, anti-corruption and bribery issues, and diversity of directors. The Directive will apply to approximately 6 000 EU entities (up from 2 500 companies currently reporting). The amendment came into force in 2014; national governments have two years to incorporate it into national law. The first corporate reports under the scheme will relate to the financial year 2017

Source: OECD, 2015b.

A.4.5 Greening sovereign wealth funds

76. According to estimates, sovereign wealth funds administered about USD 6.31 trillion of assets in 2015 (Preqin, 2015). Since they usually allocate their funds in accordance with long-term expectations, many of them already take into account environmental and social considerations in their investments. In addition, they are normally subject to some form of public control, so governments could strengthen the efforts of these funds to become a driving force of green growth. This in turn could send a strong signal about expected future developments to private market participants and compel them to reconsider their portfolios and investment practices.

Box 7. The Norwegian Sovereign Wealth Fund

The Norwegian Sovereign Wealth Fund is one of the largest institutional investors in the world, with a portfolio of NOK 6.9 trillion (about USD 850 billion) invested across 8 400 companies (UNEP, 2011). In recent years the fund has gradually stepped up its climate policies, expecting the companies under their control to develop sound climate policies and adaptation strategies. In 2015, after mounting public and political pressure, the Norwegian parliament issued the order to withdraw all investments from companies with more than 30% of coal-related business activity or revenue by 1 January 2016. Even though no official numbers exist to date, it was estimated that the decision would entail divesting a total of about USD 85 billion from more than 114 companies.

Sources:

<https://www.stortinget.no/en/In-English/About-the-Storting/News-archive/Front-page-news/2014-2015/hj9/>; and https://www.urgewald.org/sites/default/files/typ_download/still_dirty.final_compressed.pdf

A.4.6 Co-ordination of development finance institutions

77. Public finance institutions were often created with the aim of correcting market failures or other imperfections that inhibited private investment flows, often facilitating access to long-term financing at

affordable rates. As such, they are uniquely placed to leverage their resources for the green transition (OECD, 2015b). Indeed, a growing number of these publicly administered institutions already play a key role in building a green economy via macroeconomic policies, sectoral policies, major infrastructure projects, and private sector development. They fund major sectors such as water, renewable energy, forestry, and agriculture.

78. Development finance institutions have been instrumental in mainstreaming microfinance and supporting the development of private industries in risky green sectors at early stages of development. But their role could be strengthened further, taking advantage of the prominent position they occupy in the funding of domestic investment programmes. Steps in this direction would include better identification of green economy aspects in their strategic targets, greater share of their activities devoted to these aspects, better measurement and reporting methodologies, improved co-operation among themselves, and sharing of best practices. Governments are in a position to officially task these institutions to support green growth, backed by concrete goals and targets (UNEP, 2011).

A.4.7 Unlocking private investment

79. Apart from public funds, which will have to take on a catalysing function, private investment is indispensable. To this end, governments will need to make every effort to unlock hitherto dormant capital flows. Importantly, promoting green investment may not as much depend on raising new funds as on redirecting existing funds by building an investment environment conducive to sustainable investment.

80. There is no shortage of capital in the economy. The estimates for total assets held by financial institutions – banks, institutional investors, central banks and public financial institutions – have been steadily increasing over the past ten years, amounting to around USD 305 trillion (OECD, 2015b). However, not all of these funds are available for low-carbon infrastructure investments; for example, central banks have specific mandates and purposes. The allocation of even a small fraction of these assets to low-carbon infrastructure would go a long way towards achieving the necessary low-carbon transition.

81. Institutional investors (such as insurance and pension funds), whose size and influence is expected to increase as a consequence of the ageing populations in OECD countries, are considered the natural candidates to finance a long-term transition. With USD 92 trillion of assets under management in OECD countries in 2013, they would be natural candidates to build broad portfolios of low-carbon investments, as they are looking for long-term, illiquid assets. Institutional investors have traditionally provided long-term capital with investment portfolios built around the two main asset classes (bonds and equities) and an investment horizon tied to the often long-term nature of their liabilities. Yet, their contributions to a low-carbon economy have been negligible – their entire infrastructure investment accounts for only 1% of their entire portfolio, only a small fraction of which is green (OECD, 2015b).

A.5 Assess the impact of policies and monitor progress toward green growth

82. In order to devise a framework capable of aligning economic and environmental goals while mediating its social repercussions requires policy makers to take into account *ex ante* the entire array of possible policy consequences. The section on horizontal coherence outlined the most relevant policy areas with respect to green growth. However, identifying, on a general level, the practical consequences of such a varied spectrum of reforms and policies is beyond the scope of this paper. Instead, we use here three specific examples (cases A, B and C) to illustrate the effects on sustainable development and well-being (here and now, elsewhere and later). Each of the examples shows that a policy coherence lens will be required for mapping the real-world impacts of policies under consideration. In order to ensure that the largest possible number of potential consequences is taken notice of, policy makers should allow for and rely on participation from a broad range of stakeholders.

A.5.1. Anticipate the impact of policies on green growth

Case A: Hydropower generation from large dams

83. In order to reduce GHG emissions, governments have to overhaul their country's energy sector. To many, hydropower seems an effective and comparatively stable supplier of non-fossil energy. Especially in developing countries, large dam projects have been and still are undertaken to unlock the potential of hydropower. Enhancing electricity availability could spur economic and entrepreneurial activities, speed up technology dissemination, and open up new roads of social progress. In addition to electricity generation, water dams can also help improve and stabilise water supply, and enhance agricultural output, benefiting the wider society.

84. However, while planning and constructing these dams, policy makers have to be aware of the numerous side effects generated by projects of this magnitude. First, damming up a river on a large scale will necessarily entail land losses. This could create devastating environmental damages and necessitate the displacement of local inhabitants. In addition, dam projects with large open surfaces have had negative effects on public health in tropical areas because they contribute to the spread of malaria and other diseases (WCD, 2000).

85. In addition, damming up a river will result in downstream water shortages, which could have potential adverse effects on ecosystems, agriculture, and sanitation. If a river is shared by two or more legislations (be it provinces or states), constructing a dam could cause political conflict over the adequate distribution of water, and it could be exploited for political ends by the institution controlling the dam.

86. Ultimately, if large dams got damaged (by means of explosives, earthquakes, etc.), this could spell disaster for the surrounding areas, and could even lead to a grid collapse. Balancing the need for renewable energy with social, environmental, and political concerns is therefore essential in achieving truly sustainable solutions.

Case B: Transportation

87. In most countries, transportation accounts for a substantial share of GHG emissions, and contributes significantly to air and noise pollution in cities. Furthermore, it can have adverse effects on social and community life within city districts. In spite of the enormous social and environmental externalities, private transportation has been a consequence and driving force of excessive city sprawl, and geographical fragmentation of cities. The exhaust gases and noise emissions are not only hazardous to human health and urban vegetation, but also damage buildings and other urban infrastructure.

88. In recent years, city administrations have initiated steps to make their transportation systems more sustainable. This involves a large range of policy intervention, from expanding and improving public transportation services, to dis-incentivising the use of private cars by means of congestion charges, higher fuel taxes, green public infrastructure and the like.

89. However, initiating a shift from private to public transportation and encouraging the use of eco-friendly modes of transport (bicycle) by means of various policies will not only abate the externalities and problems mentioned before, but it will also generate new challenges which have to be taken on by a comprehensive urban development strategy that moves well beyond transportation: Limiting the use of private cars will disproportionately affect commuters and people living in the suburbs, unless adequate and affordable public transportation possibilities are provided. The question of accessibility is essential in avoiding the exclusion of specific vulnerable groups, such as the poor and the elderly.

90. In general, reducing car utilisation will put additional pressure on housing markets in central city districts, which might further exacerbate gentrification and social inequality if not countered by bold social policies (social housing, etc.). The same counts for halting city sprawl: in order to reduce commuting duration and frequency, population density has to be increased across the city. This requires further changes regarding urban planning and the fabric of the city: Instead of concentrating specific social functions (work, consumption, leisure, education, etc.) in certain districts, they should be disseminated across the city in an integrated, decentralized manner, enabling local inhabitants to avail all these services without having to rely on their car.

91. In the medium run, green transportation could contribute to cities becoming cleaner and safer, improving the health and general quality of life of their citizens. In addition, reducing dependence on private traffic could free urban spaces for new projects, such as pedestrians' zones, parks and other recreational areas, etc. Ultimately, a successful urban transformation could spur green innovation and investment, foster nascent green industries, and make a city a more attractive place to live in.

Case C: Environmental protection of forests

92. Well-managed and protected forests are the cornerstone of a green infrastructure. They form a sink for GHGs and provide other valuable ecosystem services, such as biodiversity and water conservation as well as innovation potentials. Therefore, governments (should and do) look for ways to protect forests and improve their ecological quality both at home and abroad.

93. However, in doing so, they are likely to encounter various challenges: in OECD countries, forest cover has been expanding largely due to afforestation of unused agricultural land. Since food security issues have recently regained political salience, competing land claims for different purposes (agriculture, infrastructure, urban or industrial development) have to be navigated.

94. Shifting towards the sustainable management of forest might therefore result in negative economic effects in the short run, in particular in regions with structural dependence on timber. In addition, an expanding forest cover might attract wildlife species hitherto driven out, such as wolves and bears. This in turn could have adverse consequences for farming activities. Moreover, if forest cover is to be further expanded for commercial purposes (e.g. due to more stringent protection of older areas), land rents might be driven up, with potentially adverse effects on food production and food security.

95. However, in the long run, both direct economic as well as environmental effects are projected to far outweigh the costs of forest protection: Apart from serving a growing demand for sustainably produced timber, well-maintained forests could attract substantial eco-tourism and recreational activities. Providing essential climate services as well as other public goods to surrounding inhabitants and the wider society will come at much lower cost compared to a business-as-usual scenario.

96. Many governments also push for forest protection in other countries, particularly in tropical regions. Schemes such as REDD+ aim at mobilising substantial resources to reimburse forest owners for ensuring sustainable forest management. Even though this could provide alternative livelihoods to locals, the important economic function of forest especially to poor people in the global south must not be underestimated: They rely on woodland for food, firewood, fodder, and a range of other services. Not adjusting the conditions of the programme to the needs of the local communities might further impair their already imperilled livelihoods, especially because land rights are fragmented or not documented. Funds provided for forest protection might consequently drive up rents for land, potentially entailing displacement and exacerbating poverty.

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