

# **More than words: Potential Roles for Independent Fiscal Institutions in Green Budgeting**

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Budgetary frameworks and instruments are increasingly being used to support and accelerate progress towards climate and environmental goals. This paper provides an overview of how OECD countries are implementing green budgeting and potential roles for independent fiscal institutions (IFIs) in monitoring these initiatives or in providing climate related analysis as part of their existing mandates. It concludes with some key questions for the path ahead.

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# More than words: Independent fiscal institutions and green budgeting

## 1 Introduction

The 2015 Paris Agreement committed governments to action to reduce greenhouse gas emissions and limit climate change. Governments have reiterated that commitment in pandemic recovery programmes to 'build back better' with ambitious green investments. Meeting climate change commitments and delivering on green investment promises will require rapid economic, social and technological transformations and new budget frameworks to support them.

In current budget frameworks, governments commonly impose financial constraints on themselves to limit short-run temptation in pursuit of long-run sustainability. Could the good practices in institutional design that help governments stick to fiscal rules be applied to green promises?

One such practice has been the appointment of independent monitoring bodies to check the compliance of budget plans with codified fiscal objectives (Martins and Correia, 2021<sup>[1]</sup>). Independent Fiscal Institutions (IFIs) like independent parliamentary budget offices and fiscal councils could be assigned to monitor many of the practical considerations of implementing "green budgets" that transform how governments prepare and present their fiscal plans to achieve environmental goals. On their own, or in collaboration with other independent bodies such as climate councils, the credible non-partisan analysis that IFIs provide would ensure that parliaments and the public have the information they need to evaluate climate policy options and hold governments accountable for their green commitments.

This paper provides an overview of how governments are greening their budgets in practice and the potential roles for IFIs, including case studies of IFIs already contributing to green analysis. It concludes with some key questions for the path ahead.

## 2 How budgets are going green

Just as a public debt crisis in one member country of a currency union can spill over to other members, greenhouse gas emissions are not constrained by borders. The EU has addressed the problem of externalities with a framework of internationally coordinated fiscal governance rules that governments implement domestically. Similarly, countries have committed to international climate change and

environmental coordination frameworks with the expectation that adherents will implement domestic reforms to achieve them (**Error! Reference source not found.**).

These efforts to coordinate the fight for a greener future look great on paper. And they have looked great on paper since the first meeting in 1995 of the Conference of the Parties of the United Nations Framework Convention on Climate Change. However, as with other collective action, efforts to fight climate change have been held back by a number of public choice challenges:

- **The common pool problem**, where individual countries overuse limited resources to maximise their own benefit at the expense of other countries.
- **The free rider problem**, where individual countries can take advantage of the responsible green governance of other countries in reducing global emissions to avoid hurting their own economic prosperity.
- **Intertemporal illusion**, where voters do not fully understand the trade-off between current emissions and future global warming, and do not always see the true individual costs and benefits of collective efforts to reduce emissions. Current polluters can vote for policy outcomes that benefit them today, while future generations of voters cannot vote to avoid the costs that they will bear tomorrow.
- **Competition between political agents**, which arises because election uncertainty means governments in power do not anticipate incurring the full political cost of climate change inaction and defer strict measures to successive governments.

In his influential writing on how budget rules and institutions affect fiscal outcomes, Poterba (1997<sup>[2]</sup>) suggested two mechanisms through which rules can help governments overcome these public choice challenges and stick to their targets:

- Rules provide an **objective benchmark** against which legislators, media, and the public can evaluate the government's proposals and implementation, raising the reputational and electoral costs of mismanagement.
- Rules allow policymakers to **deflect political repercussions** of corrective action, particularly under laws with automatic enforcement mechanisms.

Recognising these challenges and the potential of self-imposed constraints to overcome them, governments are committing themselves and future governments to rules-like frameworks of varying rigidity in pursuit of green objectives. For example, governments in Colombia, France, Italy and Luxembourg set up national low-carbon strategies to achieve their commitments to the Paris agreement. In the case of Italy, this took the form of a national long-term strategy to achieve "climate neutrality", requiring governments to achieve a 40% reduction in emissions by 2050 and remaining greenhouse gas emissions to be offset by carbon dioxide (CO<sub>2</sub>) sequestration, storage and repurposing.

Denmark, Mexico, Norway and Sweden have passed more formal climate laws. In the case of Denmark, its objectives were enshrined in the *Climate Act* which sets a rolling five-year target to eventually reduce Denmark's greenhouse emissions by 70 percent in 2030 compared to 1990 and to achieve climate neutrality by 2050 under UN emissions accounting rules. Some countries are operationalising their emissions targets with carbon budgets. Carbon budgets set a limit on emissions on a sectoral basis over a multi-annual period.

### Box 2.1. International coordination agreements on green reform

The international 'rules' of climate change and environmental policy are set primarily by three international instruments: (1) the Paris Agreement, (2) the Sustainable Development Goals, and (3) the Convention on Biological Diversity.

**The Paris Agreement**, adopted in 2015 by 190 countries within the United Nations Framework Convention on Climate Change, commits countries to keep the rise in global temperature below 2 degrees Celsius this century. Countries who are party to the Agreement also commit to pursuing efforts to limit the temperature increase to 1.5 degrees Celsius. The Paris Agreement has acknowledged that public spending and decision making need to address climate change impacts (United Nations, 2015).

**The United Nations Sustainable Development Goals (SDGs)**, adopted in 2015 by 193 countries, include several goals that are directly or indirectly related to climate change and environmental sustainability with accompanying targets and indicators that governments can use to measure progress toward implementation. Goal SDG 13, “Climate action” is directly related to climate change. It aims to “take urgent action to combat climate change and its impact” and focusses on the integration of climate change measures into national policies, the improvement of education, awareness-raising and institutional capacity on climate change mitigation, adaptation, impact reduction and early warnings. Other SDGs related to climate change and environmental goals include SDG 6 “Clean water and sanitation”, SDG 7 “Affordable and clean energy”, SDG 11 “Sustainable cities and communities”, SDG 12 “Responsible consumption and production”, SDG 14 “Life below water”, and SDG 15 “Life on land”.

**The Convention on Biological Diversity** was opened for signature at the Earth Summit in Rio de Janeiro on 5 June 1992 and entered into force on 29 December 1993. It has three main goals: (1) the conservation of biological diversity, (2) the sustainable use of its components, and (3) the fair and equitable sharing of benefits arising from genetic resources. Its objective is to develop national strategies for the conservation and sustainable use of biological diversity, and it is often seen as the key document regarding sustainable development. The convention has two supplementary agreements, the Cartagena Protocol and the Nagoya Protocol (European commission, IMF, OECD, 2021<sup>[3]</sup>).

**The EU Climate Law** (Regulation (EU) 2021/1119) enshrines the EU’s goal to become climate neutral by 2050. It requires EU Institutions and Member States to take measures at the EU and national level to meet the target, and creates a system for monitoring progress. The Law was most recently amended in 2021 to tighten the target 2030 from a reduction in total greenhouse gas emissions in the EU countries from 40 per cent to 55 per cent compared to levels in 1990.

To assist the implementation of climate commitments, countries are incorporating environmental considerations into their budget planning framework in an evolving practice coined ‘green budgeting’. Green budgeting helps central government authorities understand and prioritise policy choices to achieve environmental goals. It includes practices like the following:

- **Climate-sensitive economic and fiscal forecasting.** Budget planners are increasingly trying to capture how climate initiatives like carbon pricing affect not only the public coffers, but also how climate change mitigation affects the economy and feeds back to the budget. Further, planners are incorporating the impact of unmitigated climate change on economic and fiscal baselines with greater sophistication, such as by accounting for the economic loss of coastal regions, pricing the increased maintenance costs of public assets from extreme weather, or by estimating the additional spending to support industries and households displaced by climate disasters like wildfires. These have been implemented both in medium-term strategic plans and in long-run fiscal sustainability analysis.
- **Green reporting and disclosure requirements** compel governments to provide the climate and ecological impact of policies under consideration in the budget and other policy documents and to consider climate risks in medium- and long-term projections. Increasingly, international public sector accounting bodies and standard-setting agencies are also updating their guidance to recommend that governments report on the cost of climate mitigation and adaptation initiatives that

are needed to transition to environmental sustainability goals (Chartered Institute of Public Finance and Accountancy, 2021<sup>[4]</sup>). Further, as more institutional and private investors are required to allocate portions of fixed-income portfolios to green or ESG (Environmental, Social, and Governance) bonds, governments are issuing sovereign ESG bonds to meet demand. These debt issues must disclose sufficient information to assess compliance with ESG regulations such as the EU Green Bond Standard.

- **Environmental policy appraisal and evaluation** incorporates climate and ecological considerations into existing frameworks for choosing individual policies for revenue raising, spending, and regulation. These include both *ex ante* impact assessments and *ex post* programme evaluations. Green considerations include non-market activities related to greenhouse gases and ecological destruction, particularly the depreciation of natural capital such as wildlife habitats, public green space and air quality. Appraisals vary in sophistication from comparing the positive and negative environmental externalities of a new hydroelectric dam to evaluating the wider economic impact of its construction on energy markets, jobs and growth. For example, in Denmark researchers in the Danish Research Institute for Economic Analysis and Modelling, an independent governmental institution, are developing a “GreenREFORM” model to assess the impact of policies to reduce greenhouse gas emissions according to their financial cost and impact on job numbers, GDP growth, incomes and other economic considerations (OECD, 2021<sup>[5]</sup>).
- **Green budget tagging** is an exercise to refocus fiscal planning by tagging policies as positive, negative, or neutral according to a list of environmental objectives. For example, during the preparation of France’s budget, spending programmes and tax expenditures are tagged according to their environmental impact. The information lets lawmakers in the French Parliament evaluate how measures will support France’s climate commitments prior to approval. The tagging methodology was an interdisciplinary effort by the Inspectorate General of Finance and the General Council for Ecology and Sustainable Development (France Ministry for the Economy, 2020<sup>[6]</sup>). In the EU, to assist Member States to start developing their own tagging methodologies, the European Commission has developed two preliminary lists of budgetary items classified as broadly “green” or “brown”.
- **Green tax reviews** are carried out by governments or independent commissions to assess how a country’s tax system can be adjusted to capture the price of negative environmental externalities while simultaneously improving economic efficiency (the so-called ‘double dividend’ of green tax reform). Green tax reviews have been conducted, for example, by the Green Fiscal Commission in the United Kingdom (Ekins et al., 2009<sup>[7]</sup>).

The OECD surveyed member countries on the implementation of green budget practices and summarised the results in a composite indicator, visualised in Figure 1. Fourteen out of 35 countries that responded to the survey had implemented it in some form, with five more intending to introduce green budgeting in the future (OECD, 2021<sup>[8]</sup>). Countries that scored highly on the indicator have a comprehensive approach to green budgeting across four building blocks:

- **A well-defined and strong strategic framework**, indicated by whether climate and ecological targets are enshrined in the constitution, budget law, subordinate legislation, or administrative practice and whether green budgeting efforts are specifically named in a national strategy.
- **A comprehensive range of tools that are applied within the budget process**, indicated by whether they have embedded specific green budget tools in the public financial management framework, such as environmental impact assessments, green budget tagging, and ecosystem pricing, among others.
- **Reporting processes that show the accountabilities for climate change and provide transparency to budgetary decisions**, indicated by whether countries publish a green budget

statement, whether environmental effects are disclosed in tax and expenditure reports, and whether civil society and other stakeholders are consulted on climate and ecological concerns of budget decisions. In future, this building block of the framework may take into consideration the role of oversight institutions, including independent fiscal institutions.

- **An enabling environment that supports and equips green budgeting practices**, indicated by whether performance and programme budgeting practices with green objectives have been adopted, whether the central budget authority and line departments have created training and skills development programmes on green analysis, and whether an inter-agency group has been formed to coordinate green action across government.

Figure 1. OECD countries practicing green budgeting, composite indicator score



Source: (OECD, 2021<sup>[8]</sup>)

Both governments that are on the road to green budgeting and those that have yet to depart have a long way to travel to codify practices. Although there are several areas that IFIs can support immediately, the full potential of independent monitoring cannot be realised until governments formalise rules. IFIs should prepare for governments to move quickly to do so. Suitable emissions targets have been agreed and there is broad agreement that climate and ecological inaction in the short run will be catastrophic for both the economy and public finances over the long run.

### 3 How the role of IFIs can go green

Mitigating climate change will require all public institutions to make a 'big shift' toward considering the planet in public policy, particularly in the way that public money is planned to be raised and spent. The factors that have made IFIs effective in supporting fiscal rules could also make them effective in supporting this shift to green budgeting. Further, there are many climate and ecological risks around financial planning to which IFIs would not only be justified in directing their attention, but where anything less than a comprehensive assessment could fall short of due diligence in delivering their mandate.

The OECD, in conversation with budgeting experts and IFIs currently working on green analysis, has identified the four areas in Table 3.1 where IFIs could support the green transition, either upon request from stakeholders or through their autonomy to provide self-initiated analysis. For each area, specific activities that IFIs are already completing, or which could be naturally extended from core functions in their mandates for economic and fiscal analysis, have been listed and described below.

IFIs vary widely in the breadth and depth of their mandate and in their resources, from small institutions like the Swedish Fiscal Council, with a handful of staff publishing one key report a year, to large institutions like the United States Congressional Budget Office, with around 250 staff publishing a large number of reports across a broad range of policy issues facing the Congress each year. The OECD has therefore also attempted to classify each activity according to two main levels that reflect compatibility with current mandates and intensity of staff expertise and resources needed. There are several other potential areas not covered here, which would overlap with other agencies devoted to climate research or auditing and would require significant changes to mandates, as well as special resources and atypical expertise.<sup>1</sup>

**Level 1** Analysis that IFIs should be doing as due diligence for comprehensive financial analysis. Would not require a new mandate, unless specifically prohibited under the existing mandate. Could be done by generalist analysts and may require some limited synthesising of external environmental research from the physical and social sciences. Would not require coordinating with other independent bodies but could benefit from their input where available.

**Level 2** Analysis that larger IFIs could consider adopting proactively under their flexibility for self-initiated work or, if given an explicit mandate for green analysis, should consider adopting and should recruit specialised staff to do so. Requires repurposing external environmental research from the physical and social sciences to the case at hand (for example, applying the results of a meta study of elasticities of greenhouse gas emissions to energy prices for a new carbon pricing programme or rebasing a climate-related scenario analysis to the IFI's own forecasts) either by hiring specialists on staff or by using external consultants. Other independent bodies may be doing similar analysis and should be notified of the IFI's work plan as a professional courtesy, consulted during the analysis, or analysis should be undertaken as a joint project.

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<sup>1</sup> These classifications are a first step to begin discussions among the OECD PBO Working Party's IFIs and Climate Working Group.



**Table 3.1. Four areas and associated activities under which IFIs could support green budgeting**

	Level	
	1	2
<b>Monitoring compliance with green budgeting</b>		
Verifying compliance with green reporting and disclosure requirements	•	
Verifying that budget plans are consistent with achieving climate, greenhouse gas and ecological targets <i>ex ante</i>		•
Assessing leakage—the ‘export’ of carbon-intensive production to other countries to achieve domestic emissions targets		•
Verifying that financial outcomes were consistent with green investment targets <i>ex post</i>	•	
<b>Economic and fiscal forecasting and scenario analysis with climate and ecosystem considerations for budget plans</b>		
Scrutinising and providing opinions on the reasonableness of domestic and global policy and emissions baselines for budget planning	•	
Scrutinising macroeconomic and fiscal planning assumptions and providing opinions on the risks that climate change and ecosystem losses pose to the outlook	•	
Providing alternative macroeconomic forecasts, scenarios and other planning assumptions that incorporate green considerations		•
Providing alternative fiscal forecasts, scenarios and other planning assumptions that incorporate green considerations		•
Providing long-term fiscal sustainability analysis that incorporates climate change and ecosystem considerations		•
<b>Costing and programme evaluation with a green perspective</b>		
Scrutinising the reasonableness and comprehensiveness of the government’s cost estimates	•	
Assessing the financial cost of green initiatives		•
Assessing environmental externalities in all cost estimates	•	
Assessing the direct distributional and social consequences of green initiatives		•
Assessing the macroeconomic impact of green initiatives		•
Providing cost-benefit analysis (net benefits and value-for-money) of green initiatives, including their cost-effectiveness		•
Modelling and monitoring carbon pricing programs such as trading schemes and carbon taxation and assessing the impact of green policies on energy markets.		•
<b>General research on climate, ecosystems and the circular green economy</b>		
Drafting briefing notes on topics related to the economic and fiscal implications of climate change and ecosystem loss	•	
Assessing the effect of climate change on the economy		•
Assessing the effect of climate change on the public finances		•
Assessing the effect of economic activity in the private and public sector on climate change		•

Source: Discussions with budget experts and IFI case studies.

## Monitoring compliance with green budgeting

One of the motivations for establishing many IFIs, particularly those in the euro area, was to monitor adherence to national fiscal rules and international fiscal coordination frameworks. Their experience in scrutinising government plans and communicating their results to parliaments and the public could be readily extended to monitoring green budget frameworks. In addition, given their experience reviewing appropriations bills and policy background documents, IFIs could be natural monitoring bodies for assessing a government’s compliance with green reporting and disclosure requirements and many could do so under current mandates and without the need for additional expertise.

For example, IFIs have served as the official arbiters of minimum reporting requirements in legislative documents. This is the case for Finland’s minimum contents laws for government budgets which prescribe a list of information that budgets must contain, such as the number of years of the forecast horizon and the categories of fiscal aggregates. The IFI Team in the National Audit Office of Finland is responsible for monitoring the budget’s compliance with the law and has, on several occasions, brought shortcomings to the attention of the public (OECD, 2021<sup>[9]</sup>).

IFIs could be given the similar task of **verifying compliance with environmental disclosures and carbon transparency requirements** in countries that are legislating similar reporting standards that require governments to disclose the climate and ecological impact of new policies and to incorporate environmental externalities into cost assessments. For example, the government of Austria is required to evaluate new programmes against performance objectives related to reducing greenhouse gas emissions and increasing renewable energy. The Austrian PBO has a special mandate to monitor performance budgeting, which includes reporting on the adequacy of the government's environmental information to Parliament. All countries that signed the Paris Agreement will similarly be required to adhere to an enhanced transparency framework beginning in 2024, which requires standardised reporting on actions and progress toward climate change mitigation and adaptation.

Most countries in the OECD require governments to publish budgets that are consistent with achieving legislated medium-term fiscal rules and objectives such as balanced budgets. Twenty-four of 35 (69%) national IFIs in the OECD PBO Working Party are responsible for monitoring the compliance of these budget plans with rules looking ahead. Governments are increasingly being required to table budgets that are also consistent with achieving medium-term emissions reduction objectives. As they have for fiscal rules, IFIs could be given the role of **verifying that budget plans are consistent with achieving climate, greenhouse gas and ecological targets ex ante**. Their regular assessment reports could be extended to include scrutiny of the compliance of budget plans with green targets. For example, the Danish Economic Councils publish an annual report that assesses whether the government is making the necessary investment to continue on its path to comply with the 2020 Climate Act to reduce net emission of greenhouse gases by 70 percent compared to 1990 (Danish Economic Councils, 2021<sub>[10]</sub>). In the report, the Councils review the path of Denmark's greenhouse gas emissions under a 'frozen policy scenario' that accounts for the suite of regulations, taxes, subsidy schemes and technical requirements adopted to the point of the report. They then assess the gap between the path under current policy with Denmark's domestic and EU targets.

Such analysis goes beyond the core financial scrutiny remit of most IFIs; however the Danish Economic Councils have an explicit mandate for environmental analysis (indeed, the Councils consist of an Economics Council and an Environmental Economics Council—see Box 3.1). The Councils also work in cooperation with other independent bodies such as the Danish Climate Council and government departments such as the Danish Energy Agency, using external greenhouse gas projections and calculations of elasticities (relationships between climate variables and economic and fiscal variables) for their analysis, albeit with some updating and adjustments of their own. Other IFIs should have clear mandate instructions before embarking on similar analysis, and should similarly rely on empirical research from outside academics and the physical scientists in other agencies and departments rather than duplicating greenhouse gas projections in-house.

Countries can achieve their climate targets without reducing emissions on a global scale by shifting emissions abroad. While this may uphold the letter of green constraints, it may not uphold the spirit. IFIs can be given the role of **assessing “leakage”—the export of carbon-intensive production to other countries, without a corresponding decrease in carbon-intensive consumption, to achieve emissions targets**. Leakage is principally an economic question that a country's IFI may be the only institution placed to answer. IFIs can combine their macroeconomic projections and scenarios of imports and exports of goods and services with research from climate councils, environmental and energy departments and international organisations to calculate the outsourced carbon imprint through trade (importing carbon-intensive goods), price effects (decreasing demand for fossil fuels domestically, which lowers prices and is offset by higher consumption elsewhere), or quota exchange (transferring its emissions quota to other countries in its place). The Danish Economic Councils have developed pioneering models to provide an assessment of leakage and make recommendations on how to cost-effectively reduce it. They have a specific mandate to provide the analysis, have been provided resources to hire the experts to implement it (primarily economists with an environmental specialisation), and make extensive

use of research from physical scientists in other climate councils, government departments, and organisations.

### Box 3.1. Case study: Green analysis at the Danish Economic Councils

The Danish Economic Councils are an independent economic advisory body consisting of two councils—the Economic Council, established in 1962, and the Environmental Economic Council added in 2007, each representing diverse stakeholders from unions, employers, NGOs and the public sector. The Councils are overseen by a chairmanship of university professors in economics and supported by a single secretariat consisting mostly of economists. The primary objective of the institution is to provide independent analysis and policy advice to Danish policy makers

A green perspective is incorporated into the analysis of all three of the Councils' mandated annual reports: *Danish Economy* (published since 1962), *Economy and Environment* (published since 2007) and *Productivity* (published since 2017). *Economy and Environment* is the flagship output of the Environmental Economic Council and focuses on how to achieve Denmark's climate goals and other environmental objectives at the least economic cost. It looks at a broad range of indicators on output, firm competitiveness, sectoral employment, and the distribution of the burden across economic agents. The Councils have also prioritised comprehensive analysis of global emissions, building innovative models to assess carbon leakage. Its analysis covers most of the roles identified by the OECD:

- Monitoring compliance with green budgeting initiatives
- Economic and fiscal forecasting and scenario analysis with climate and ecosystem considerations for budget plans
- Costing and programme evaluation with a green perspective
- General research on climate, ecosystems and the circular green economy

Formal monitoring of emissions targets is carried out by Denmark's Council on Climate Change that was created in 2014 to fill this role; however, there is some overlap in practice with the work of the Danish Economic Councils in providing analysis and advice on how to reach emissions targets. The Danish Economic Councils communicate with the Council on Climate Change but the two generally carry out their work independently from one another.

The Danish Economic Councils have a secretariat with 25 analysts, which work on all subject streams, rather than specialising in green analysis; however, several of the analysts have a background speciality in environmental economics. The Councils do much of their analysis using in-house models or by applying research by outside academics. They are currently expanding their tools on environmental analysis, and exploring joint model development activities with the University of Copenhagen and independent modelling consultants.

A common issue as countries recovered from the global financial crisis was that large infrastructure investment stimulus measures were optimistically announced by governments but slow to implement in practice (Parliamentary Budget Officer of Canada, 2010<sup>[11]</sup>). Many of the programmes announced for the recovery from the COVID-19 pandemic are similarly tied to climate and ecological requirements to 'build back better'. IFIs are well-placed after their work in monitoring recovery programmes following the global financial crisis to do the same for green new deals following the pandemic, **verifying that financial investment outcomes were consistent with green investment targets ex post**. This work would fall under existing mandates to monitor spending and use existing expertise working with budget plans and implementation data, and IFIs could repurpose many of the tools such as website dashboards and monthly monitoring notes that they have already developed.

### Box 3.2. Case study: Green analysis at the Federal Planning Bureau of Belgium

The Federal Planning Bureau of Belgium is an independent public agency that supplies the economic forecasts for the federal budget and serves as a general think tank for economic, social and environmental policy issues. Across all its research streams, the Bureau's mission focuses on the sustainable development vision adopted by the federal government.

The Bureau has been assigned a broad and deep mandate for environmental analysis, with roles in forecasting energy consumption and production, greenhouse gas emissions and transport demand to support the government's decision-making.

Their tasks include:

- Monitoring compliance with green budgeting
- Economic and fiscal forecasting and scenario analysis with climate and ecosystem considerations for budget plans
- Costing and programme evaluation with a green perspective
- General research on climate, ecosystems and the circular green economy, including analyses of the impact of European energy and climate policy on the Belgian energy system and economy.

To carry out its green analysis, the Bureau has developed (and is currently developing) or outsourced a suite of climate and energy models to complement its traditional macroeconomic and DSGE models. For example:

- PLANET, model developed in-house to make long-term projections of the demand for passenger and freight transport in Belgium and to carry out related policy analyses.
- Crystal Super Grid, developed by Artelys and used by the FPB for electricity sector analyses. This is a unit commitment optimal dispatch model for the electricity sector that can be used for one or up to thirty-three European countries.
- PRIMES, developed and maintained by a team at the University of Athens (NTUA) to provide long-term energy and emissions projections to 2030 at the domestic and European level.
- The Bureau is also building a new multi-sector recursive dynamic CGE model focused on climate and energy policy for Belgium and its regions. Linkage with microsimulation models is being explored, in particular with a view to analysing the distributional effects of green tax reforms on households.

Several of the Bureau's analysts are specialists in climate and energy modelling, and devoted full-time to environmental analysis; however, all analysts contribute and benefit from the environmental work streams.

## Forecasting and scenario analysis with climate and ecosystem considerations

IFIs promote the use of impartial budget assumptions in budget plans by scrutinizing the governments' economic and fiscal forecasts and providing an opinion or formal endorsement of their reasonableness. For example, the Swedish Fiscal Policy Council publishes an annual report that fulfils its legislated duty to "assess whether fiscal policy is in line with economic developments, long-term sustainable growth and long-term sustainable employment."

To prepare the reports, nearly half (41%) of IFIs have developed in-house models to produce their own independent forecasts to serve as benchmarks against which to compare official forecasts. In three countries, (Belgium, the Netherlands, and the United Kingdom), the IFI provides the official macroeconomic forecast used for the budget directly. IFIs can use their role in forecast scrutiny or production to encourage governments to account for climate change risk, mitigation and adaptation in their economic and fiscal assumptions for the coming years.

For example, a major issue reported by IFIs is the lack of an agreed-upon policy baseline for domestic and international emissions and climate action. Independent institutions would be natural arbiters of these baselines for budget purposes, **scrutinising and providing opinions on the reasonableness of domestic and global policy and emissions baselines for budget planning**. Their relationship with peers abroad would position them to be a hub for coordinating baselines through international networks such as the OECD PBO Working Party. IFIs may benefit from working closely with climate councils, but their expertise in practical budget preparation and the interactions between economic and fiscal assumptions makes them the natural body to lead on providing opinions on the appropriate baseline in their current reporting.

Six IFIs produce a report dedicated to comprehensively assessing fiscal risks. Two of these (the Fiscal Advisory Council of Austria and the United Kingdom Office for Budget Responsibility) have been given a legislated requirement to do so and are already **assessing the risks that climate change and ecosystem losses pose to the budget outlook**. Due diligence in preparing any comprehensive fiscal risk assessment should include a discussion and quantitative assessment of the government's exposure to unmitigated climate change or other uncertainty in the rollout of programmes to fight climate change. Latvia's Fiscal Discipline Council does not produce a standalone report on risks, but is formally required to provide an opinion on the adequacy of the government's assessment of risk and the Fiscal Stability Reserve set aside in the event those risks are realised. The Council has in the past commented on the reasonableness of the government's official assessments of climate change risk, calling for more analysis on the risks inherent in achieving the government's green objectives (Fiscal Discipline Council of Latvia, 2021<sup>[12]</sup>). The Council is building capacity to do its own in-house environmental risk assessments for future reports.

Thirteen of 35 (37%) national IFIs in the OECD PBO Working Party publish their own macroeconomic forecasts. Through their current mandates or with supplementary mandates these IFIs could **provide alternative macroeconomic forecasts, scenarios and other planning assumptions that incorporate green considerations**. These would provide stakeholders and lawmakers with new benchmarks for climate and ecological considerations or could serve as a useful second opinion against official benchmarks. For example, the Canadian PBO projected real GDP under a number of carbon pricing policy scenarios to determine the economic impact of achieving the targets of the Paris Agreement, finding a negative effect on output of between 0.5% and 0.6% in 2030, depending on whether it was a broad-based carbon levy or different structures of an output-based pricing system (Parliamentary Budget Officer of Canada, 2020<sup>[13]</sup>).

Similarly, twelve of 35 (34%) national IFIs in the OECD PBO Working Party produce their own fiscal forecasts. Through their current mandates to scrutinise or provide alternative projections, these IFIs can **provide alternative fiscal forecasts, scenarios and other planning assumptions that incorporate green considerations** to serve as a second opinion to stakeholders and lawmakers. For example, the CPB Netherlands Bureau for Economic Policy Analysis has projected the financial implications of a number of emissions target stringency assumptions to 2030 to illustrate the risks to fiscal sustainability of climate change mitigation, concluding that they are relatively small (CPB Netherlands Bureau for Economic Policy Analysis, 2019<sup>[14]</sup>). The CPB's broader green work plan is described in the case study in Box 3.3.

### Box 3.3. Case study: Green analysis at the CPB Netherlands Bureau for Economic Analysis

The CPB Netherlands Bureau for Economic Policy Analysis supports the Netherlands' green agenda by fulfilling requests from the Minister of Economic Affairs and Climate Policy, the chairman of the Climate Council, Cabinet, and for political parties during elections and coalition formation. The CPB has a long history of providing broad research on the socio-economic implications of public policy beyond the immediate financial costs of legislation, including on the environment.

Under the classification in Table 3.1, the CPB primarily provides services related to assessing the financial cost of green initiatives, assessing the economic impact of green initiatives, assessing the distributional consequences of green initiatives, and providing long-term sustainability analysis that incorporates climate change.

To do so, they receive separate funding for environmental analysis as part of their annual budget along with supplementary funding incentives from the Ministry of Climate and Environment. Of the CPB's 122 analysts, seven are devoted full time to climate analysis and green policy research. The CPB recruits staff that specialise in environmental analysis from the social sciences, including environmental economists and energy economists. It does not maintain subject-matter specialists from fields such as engineering or atmospheric science on permanent staff, but rather consults such outside experts on an ad hoc basis.

The CPB cooperates closely on climate related analysis with the PBL Netherlands Environmental Assessment Agency (PBL for PlanBureau voor de Leefomgeving in Dutch). PBL is the national institute for strategic policy analysis related to climate, the environment and its interaction with human activity. For example, the CPB takes the cost of many climate related policies and their effect on CO<sub>2</sub> emissions from the research of the PBL and translates it into the effect on the economy and social indicators. The CPB in turn contributes to the PBL's annual *Climate and Energy Outlook* report stipulated in the Dutch Climate Act. The CPB also collaborates with the International Energy Agency and engages private consultancy firms on an ad hoc basis.

The CPB's senior leadership participate in committee hearings to discuss its research, playing an influential role in policy decisions. Its election manifesto costing service is particularly important in shaping policy, as its research directly influences the choice of policies in the Coalition Agreement at the centre of government formation following elections. Recent Coalition Agreements have prominently featured climate related policy measures that were costed by the CPB.

The CPB plans to expand its in-house environmental modelling, particularly to assess how green reforms transmit to the purchasing power of households. It also plans to build a CGE model together with the PBL to better assess the economic consequences of climate change, green reform and the circular green economy.

Measuring the sustainability of public finances requires taking a long-term perspective and working out the immediate and future action that is consistent with achieving it. This is the same perspective that international agreements have implemented for climate change mitigation and adaptation and IFIs can use the same lens to **provide long-term fiscal sustainability analysis that incorporates climate change and ecosystem considerations**. In practice, the long-term fiscal sustainability assessments provided by IFIs project the public finances forward anywhere from 10 years to 50 or more. While not a forecast in the sense of a prediction, the thought exercise is to project existing policy forward to capture trends from demographics and the consequences of leaving current policy unchanged, to gauge the extent of future adjustments that will be necessary to maintain sustainability and to see if short-run adjustments would be preferable. This analysis lends itself particularly well to including different scenarios for climate change and

adjustment paths to net zero. For example, the UK Office for Budget Responsibility included assessments of the impact of climate change and policies to mitigate it on long-term fiscal sustainability in its 2021 Fiscal Risks Report. The report uses the framework of scenario analysis developed by the Central Banks Network for Greening the Financial System that decomposes risks into 'physical risks' from global warming itself and 'transition risks' inherent in implementing policies and technologies to move to a low-carbon economy (Office for Budget Responsibility, 2021<sup>[15]</sup>). The OBR's green analysis is described in the case study in Box 3.4.

### Box 3.4. Case study: Green analysis at the United Kingdom Office for Budget Responsibility

The OBR was established in 2010 to provide independent and authoritative analysis of the UK's public finances, including independent economic and fiscal forecasts.

The OBR has approached green budget analysis primarily by augmenting its existing mandated reports with climate scenarios to provide policymakers with an idea of the sensitivity of the results of their research to different paths for climate change mitigation and residual climate risks. It collates the green analysis from its mandated reports into a special section of its website devoted to climate change. Under the classification in Table 3.1, the OBR primarily provides services related to assessments of the risks that climate change losses pose to the budget outlook and providing long-term fiscal sustainability analysis that incorporates climate change considerations. It has so far focused on incorporating this analysis into its fiscal risks reports; however, as issues such as the impact of electric vehicles on tax from fuel duties become increasingly important to the near-term fiscal outlook, climate change is featuring more prominently in its flagship Economic and Fiscal Outlook that accompanies the government's budget.

The OBR has hired one analyst for green analysis, but otherwise repurposes generalists on an ad hoc basis for climate analysis. The OBR does not receive separate funding for its climate analysis and does not, at present, manage the resources as a distinct subdivision of its work programme.

The OBR has accelerated its climate change research by cooperating closely with the Bank of England and the Central Banks Network for Greening the Financial System on the appropriate design of climate-related scenarios. It has also drawn heavily on emissions mitigation scenarios prepared by the UK's Climate Change Committee in support of its advice on the UK's adoption of a net zero policy target for 2050. The OBR's climate-related fiscal scenarios in effect calculated the implications for the public finances of bringing together these two sets of economic and emissions scenarios, which it concluded were "significant but not exceptional". It also presented a stylised unmitigated global warming scenario, which it concluded would "ultimately have catastrophic economic and fiscal consequences."

## Costing and programme evaluation with a green perspective

All IFIs that comment on the government's fiscal planning assumptions have a duty to **scrutinise the reasonableness and comprehensiveness of the government's cost estimates** that underpin plans. This would apply equally to the government's planning assumptions of the financial costs of green policy initiatives and the extent to which environmental externalities have been priced into all cost estimates. For example, the Parliamentary Budget Office of Austria released a report assessing a suite of reforms for greening the tax and benefit system ("eco-social" reforms). In it they assess the reasonableness of the government's estimate of the financial and administrative costs of a CO<sub>2</sub> tax and regional climate bonus benefit payment. They also include a discussion of the legislative transparency of the initiatives in disclosing environmental considerations and provide supplementary analysis on the distributional and

economic impact of the measures using both in-house modelling capacity and external research from the physical sciences, such as researchers with the Federal Environment Agency (Parliamentary Budget Office of Austria, 2022<sub>[16]</sub>).

Ten out of 35 (29%) national IFIs in the OECD PBO Working Party have a mandate to go beyond simply scrutinising official cost estimates and produce cost estimates of their own. A further ten IFIs do so proactively under their flexibility for self-initiated analysis for a total of 20 out of 35, or 57%. The majority of IFIs will therefore have a role in **estimating the financial costs of green policy proposals** under existing practices and in incorporating green considerations (such as pricing externalities) into all policy costings. For example, Canada's PBO fulfilled a request from a senator to cost tax provisions for fossil fuel development, including incentives for liquid natural gas capital investment and an exemption from the carbon levy for the agriculture sector (Parliamentary Budget Officer of Canada, 2021<sub>[17]</sub>).

A cornerstone of green budgeting is bringing unpriced environmental externalities into policy costings in all stages of policy development and evaluation. This includes putting a shadow price on carbon emissions, valuing biodiversity, and taking a global perspective of supply chains, among others. Each of the majority of IFIs that publish cost estimates will need to make an effort to **estimate environmental externalities in all cost estimates**. This will primarily involve applying the research of external academics and organisations and should be largely compatible with the skillset of generalist economists already on staff.

Many IFIs have tools that they use to estimate how tax and benefit policies will affect different income brackets and the liabilities and disposable incomes of households and individuals, along with other key measures of well-being. These tools can be repurposed to **assess the direct distributional and social consequences of green initiatives**. For example, the Parliamentary Budget Officer of Austria published an analysis of the impact of the government's CO<sub>2</sub> pricing reforms and relief measures across a broad spectrum of earners such as the employed, self-employed, farmers and pensioners, different household types (with and without children) and by individual and household income quintiles (Box 3.5). They did so using their own calculations with the EUROMOD microsimulation model and EU-SILC data, combined with special surveys and data from cooperating with Statistics Austria (Parliamentary Budget Office of Austria, 2022<sub>[16]</sub>).

Of the 20 IFIs in the OECD PBO Working Party that publish policy cost estimates, five calculate the impact of the measures on macroeconomic indicators such as growth, employment, household incomes and consumption. All five IFIs with the macroeconomic tools to assess these implications, along with several more that have macroeconomic models but don't publish financial cost estimates, are already **assessing the macroeconomic impact of green initiatives**. Some, such as the Danish Economic Councils are doing thorough comparisons of different options for regulation and carbon pricing and determining which option would have the lowest economic cost, examining factors such as industry competitiveness and the impact on relative input and output prices, among other considerations (Danish Economic Councils, 2021<sub>[10]</sub>). Most of these IFIs are investing resources to improve upon their capacity to do macroeconomic analysis of green policies by linking their models to new in-house modules or internationally developed models on climate change, emissions trading schemes and the energy sector.



Although traditionally produced internally by government departments before money is spent and audit agencies after money is spent, some IFIs have begun **providing cost-benefit analysis (net benefits and value-for-money) of climate action and green projects**. To capture the benefits side of the equation requires close cooperation between economists and physical scientists, for example in assigning a price to positive externalities such as cleaner air and more biodiversity. The Danish Economic Councils have used the work of outside researchers and cooperated with other organisations like the Danish Energy Agency to quantify benefits such as healthier households from lower air pollution, greater biodiversity from nitrogen reduction in coastal waters, and positive spill-overs of climate-friendly technologies to other countries (Danish Economic Councils, 2021<sup>[10]</sup>). By providing cost-benefit analysis for a range of policy options, IFIs like the Danish Economic Councils have been able to rank their cost-effectiveness to provide recommendations for achieving climate goals as quickly as possible with the fewest trade-offs.

Finally, beyond the scope of most IFIs, some larger research institutions that serve an IFI function have research programmes devoted **to assessing the impact of government policies on energy markets**. For example, the Belgium Federal Planning Bureau provides detailed projections of the Belgium energy system over the medium-term (5-10 years) and long-term (20-30 years) as a task prescribed in Belgium's electricity and gas laws. The analysis includes assessing the impact on energy prices of specific policies and general trends in renewable energy capacity, CO<sub>2</sub> emissions and costs borne by different economic agents, the availability of offshore wind in the electricity supply mix, and the de-carbonisation of the Belgium economy (Federal Planning Bureau, 2021<sup>[18]</sup>). These work programmes also include modelling carbon trading schemes like the EU Emissions Trading System, which require special tools that go beyond a typical policy costing, looking at economy-wide input-output systems, relative prices, and cross-country trading.

### Box 3.5. Case study: Green analysis at the Parliamentary Budget Office of Austria

The PBO of Austria was established by a political agreement in 2012 to provide the Budget Committee of the National Council (the lower house of the Austrian Parliament) with impartial expertise in scrutinising budget documents, assess the impact of new legislation and give advice on performance and gender budgeting.

Under a recent initiative of the National Council, the PBO's advisory activities were expanded to cover the government's performance toward carbon goals. Climate change mitigation was formalised in Austria's budget framework as performance objectives to reduce greenhouse gases and implement a sustainable energy system by increasing the use of renewable energies.

The PBO's six analysts scrutinise official assessments of the environmental impact of new government bills or estimate the impact themselves, reporting their findings to Parliament. The analysts are mainly generalist economists and contribute to all areas of the office's research; the office does not manage its green research programme separately. To perform its analysis the PBO uses a range of in-house models or uses models from international organisations such as the EUROMOD micro-simulation model maintained by the Joint Research Centre of the European Commission, applies the research of external researchers to novel scenarios, or collaborates with other government agencies and independent bodies.

The office primarily undertakes research upon request of members of the Budget Committee, covering the following tasks:

- Monitoring compliance with green budgeting initiatives, particularly the compliance of legislation with green reporting and disclosure requirements. This primarily takes the form of summary information on green goals, activities and targets from across different budget chapters.

- Costing and programme evaluation with a green perspective, scrutinising the reasonableness and comprehensiveness of the government's cost estimates and also providing the full spectrum of in-house estimation or application of external research to determine the financial cost of green initiatives, the direct distributional social consequences of green initiatives, the macroeconomic impact of green initiatives, and assessing environmental externalities in cost estimates. The office also monitors carbon pricing programs such as trading schemes and carbon taxation.
- General research on climate, ecosystems and the circular green economy, including drafting briefing notes on the circular relationship between climate, the economy and the public finances.

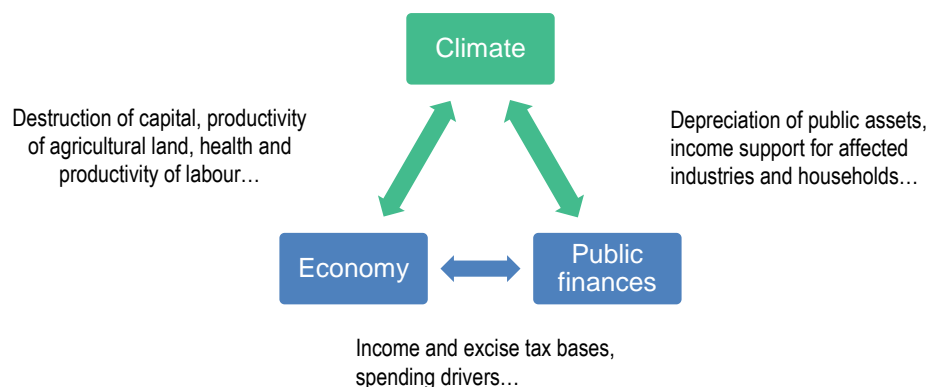
For example, the office's publication on the government's 2022 eco-social tax reforms provided detailed assessments of the transparency of legislative material, identifying several areas where the government did not provide sufficient detail to allow parliament to apply performance objectives (Parliamentary Budget Office of Austria, 2022<sup>[16]</sup>). In an attempt to address the gaps, the office supplied a wide range of its own analysis of the impact of the reforms on individual and household incomes and tax liabilities by social characteristics such as income quintile and number of children. The assessment also commented on macroeconomic effects and emissions savings using outside analysis by independent research institutes like the Austrian Institute of Economic Research (WIFO) and EcoAustria and the Federal Environmental Agency.

## General research on climate, ecosystems and the circular green economy outside of its implications for budget planning

Half of IFIs in the OECD PBO Working Party take requests from legislative committees and individual legislatures. This could include **drafting briefing notes on topics related to climate change and ecosystem loss**. Further, all IFIs in the OECD PBO Working Party have the discretion to publish self-initiated analysis that they feel would benefit stakeholders. Many have received requests related to general green topics or have used their research autonomy to publish literature reviews or summaries of external analysis on topics related to climate change and other environmental issues. For example, the United Kingdom Office for Budget Responsibility often compiles standalone notes on special topics of interest to stakeholders or compiles thematic “box sets” of research published in boxes in its past reports. It has a box set bringing together all its climate change boxes on its website, including an overview of the government's Net Zero Strategy and accompanying Net Zero Review (Office for Budget Responsibility, 2021<sup>[19]</sup>) and a summary of a report by the United States Office of Management and Budget and President Obama's Council of Economic Advisers on the fiscal risks associated with climate change (Office for Budget Responsibility, 2019<sup>[20]</sup>).

In addition to general briefing notes on green topics, IFIs also publish novel empirical research on the circular green economy—that is, the interaction between climate, the economy and the public finances (Figure 2). This research is distinct from forecasting and scenario analysis for budget planning, in that it does not project what could be, but rather investigates the causal channels through which human activity depends on the environment and vice versa, holding all else the same. The research complements the traditional empirical research of IFI's on the interactions between the economy and public finances.

**Figure 2. Assessing the circular relationship between climate, the economy and the public finances**



For example, IFIs pursuing green budget analysis may research **the effect of climate change on the economy**, such as the impact of extreme heat on crop yields and the impact of pollution on health and labour productivity. The Congressional Budget Office of the United States has been active in this area (Box 3.6). In a 2020 report, the office assessed the expected long-term harm to GDP of unmitigated climate change via changes in weather patterns and hurricane destruction, finding cumulative effects of a 1.0 percent reduction in the projected level of real GDP in 2050 compared to the climate that prevailed at the end of the 20th century (Congressional Budget Office, 2020<sup>[21]</sup>).

IFIs also research the **effect of climate change directly on the public finances**, such as the increase in the costs of maintaining public infrastructure from extreme weather or the increase in social transfers from bailing out industries and households affected by catastrophic events like floods and forest fires. The Financial Accountability Office of Ontario published a report assessing the financial impact of extreme rainfall, extreme heat and freeze-thaw cycles on the \$254 billion of public assets in Ontario, including buildings and facilities such as hospitals, schools, transit facilities, social housing, and wastewater facilities (Financial Accountability Office of Ontario, 2021<sup>[22]</sup>).

Closing the loop on the empirical research that IFIs conduct on the circular green economy, some large IFIs with specific mandates for climate analysis publish empirical research on **the effect of economic activity in the private and public sector on climate change**. This often involves surveying academic literature or working closely with environmental commissions and agencies to aggregate, average and synthesise the elasticities of atmospheric carbon and temperature to the carbon footprint of their country's production and consumption. For example, the Federal Planning Bureau of Belgium assessed the air pollution associated with household consumption by socioeconomic household characteristic, finding that total greenhouse gas emissions increase with household income but pollution intensity (grams of pollution per euro spent) decreases with income (Federal Planning Bureau, 2019<sup>[23]</sup>). They also broke out the differences in pollution by age, level of education, unemployment, and housing size and type. This research also assesses the impact of economic activity in the public sector from an aggregate national accounts perspective to assess the feedback between public finances and climate (distinguishing it from the programme-level research on the effectiveness of individual measures in mitigating climate change and ecosystem destruction in costing and policy evaluation).

### **Box 3.6. Case study: Green analysis at the Congressional Budget Office of the United States**

The CBO was established in 1974 to provide objective, insightful, clearly presented, and timely budgetary and economic information to help the budget committees of the Senate and House of

Representatives, other Congressional committees, and the leadership of the House and Senate make effective budget and economic policy.

The CBO primarily fulfils environmental analysis at the request of committees related to the channels through which climate change and environmental issues affect the economy and federal budget, in line with the CBO's mandate. Under the classification in Table 3.1, the CBO primarily provides services related to costing with a green perspective, focused on providing information on policy options that includes the financial cost and macroeconomic impact of green initiatives. It also provides general research on the circular green economy.

Examples of the CBO's climate and environmental analysis include:

- Budgetary Effects of Climate Change and of Potential Legislative Responses to It (April 27, 2021), <https://www.cbo.gov/publication/57019>.
- Researching the effect of climate change on the economy. CBO's Projection of the Effect of Climate Change on U.S. Economic Output: Working Paper 2020-06. (September 21, 2020) <https://www.cbo.gov/publication/56505>.
- Expected Costs of Damage from Hurricane Winds and Storm-Related Flooding (April 10, 2019). <https://www.cbo.gov/publication/55019>.
- How Carbon Dioxide Emissions Would Respond to a Tax or Allowance Price: An Update: Working Paper 2021-16 (December 14, 2021). <https://www.cbo.gov/publication/57580>.

CBO is currently enhancing its capability to analyse the effects of proposed climate change legislation on the economy and the federal budget. In 2021, the agency reorganized its functions and hired new staff to give greater emphasis to climate change. In 2022 and 2023, CBO plans to hire additional staff who will increase the agency's expertise and modelling capability in the areas of climate change and energy policy.

CBO's unit devoted to energy, climate, and the environment currently has seven analysts, who also contribute to the agency's other analytical priorities and are supported by other teams in turn. Most of the unit's staff members are economists with doctoral degrees in fields related to energy, the environment, public economics, and industrial organization. The agency regularly engages outside experts in academia, think tanks, and private industry to inform its analyses.

CBO's Director meets regularly with Members of Congress to explain the agency's work on environmental issues, respond to questions and obtain feedback. Furthermore, CBO's analysts regularly discuss work priorities and explain their analyses to Congressional staff—informally through meetings and phone calls, and more formally in presentations and briefings.

## 4 Observations and key questions

Green budgeting practices are in their infancy in most OECD countries and few IFIs have been formally mandated with the duty of monitoring them. Those IFIs that do have a formal role to provide climate analysis tend to be older institutions with long-established mandates for assessing environmental and energy policy. Other IFIs can learn from their head start on green analysis, but may not ultimately be mandated with as prominent a focus on climate and energy beyond the immediate fiscal consequences.

Some IFIs have taken the initiative to start green budget analysis on their own; however, these too remain in the minority. Initial research has focused on literature reviews, scoping papers and rough scenario analysis to provide an idea of the sensitivity of the public finances to general climate change action or

inaction. Many IFIs have indicated that they are starting to develop a plan for green analysis for future publications, or intend to do so in the near future.

Few IFIs have dedicated staff or resources specifically for green analysis, which governments have so far institutionalised primarily through the creation of climate councils (**Error! Reference source not found.**). No IFIs maintain physical scientists such as atmospheric scientists or engineers on staff on a permanent basis. Instead, some IFIs consult experts from the physical sciences on an ad hoc basis through other government departments or agencies, independent climate bodies, or private consultancies. This is true even among IFIs with large green programmes.

With these observations in mind, several key organisational and technical questions remain open for discussion as governments and IFIs move forward with green analysis.<sup>2</sup> For example, IFIs will need to consider how the expertise of their current staff can be directed to develop green analysis in-house and how much they should rely on external analysis. Some green analysis such as pricing externalities in cost estimates can be done with the tool kit of most generalist economists. Other analysis such as mapping the prices of a new carbon tax to potential emissions reductions may require niche skills.

#### Box 4.1. The growing role of climate councils

A majority of OECD countries have set up climate advisory bodies to advise government on climate matters and track progress on greenhouse gas emissions reductions. Their scope, mandate and degree of independence varies.

For example, in France, the High Climate Council (HCC) is responsible for evaluating the government's climate strategy, issuing independent and objective opinions and recommendations on France's climate action and providing an independent and neutral view of government policy and its socio-economic and environmental impacts. The UK Climate Change Committee is mandated to provide advice on setting specific limits on economy-wide emissions as part of the UK's system of carbon budgets set every five years.

At COP 26 in Glasgow, 21 climate advisory bodies from around the world agreed to launch the International Climate Council Network. The network's mission is to foster international collaboration between existing climate councils and to support the establishment of new climate councils.

In its inaugural letter, the network endorsed a set of key principles for effective climate councils on topics of legal mandates, transparency, appointments of experts, and the use of science-based evidence (International Climate Councils Network, 2021<sup>[24]</sup>). Importantly, the principles prescribe that climate councils should reach out to other advisories and peers to exchange expertise and jointly confront challenges.

<sup>2</sup> The OECD PBO Working Party has created an IFI and Climate Working Group to discuss these issues and provide guidance on good practices.

IFIs will also need to consider what new information they will need for green analysis. This could lead IFIs to forge new data sharing arrangements and improve upon current access to information practices. They may need to work with national statistics agencies to develop new surveys and indicators. IFIs may also need to interact with different government departments or agencies than they have previously, or with other independent bodies like climate councils. Where IFIs and climate councils are already working together, they have found mutually beneficial ways to contribute to each other's analysis. For example, the CPB Netherlands Bureau for Economic Policy Analysis works closely with the PBL Netherlands Environmental Assessment Agency. In 2019, the CPB and the PBL cooperated to evaluate the economic, fiscal and environmental implications of the draft climate agreement.

Where cooperation with public bodies is not possible, IFIs may choose to use private sector consultants to fill analytical gaps in a targeted way. For example, the FAO in Ontario worked with a construction engineering firm to assess the impact of climate change and extreme weather on public assets and for help with data on climate cost elasticities for modelling the relationships between climate hazards and infrastructure costs. Latvia has contracted a consultant to incorporate green deal expenditure into its fiscal sustainability report. The US CBO collaborated with an outside insurance risk modelling group to look at the impact of climate change and coastal development on the costs of hurricane damage that could increase federal spending.

One of the main technical challenges facing IFIs is the choice of a baseline path of climate policy action and emissions in their forecasts and scenarios. In addition to the uncertainty inherent in choosing assumptions, IFIs must decide whether to agree on common baselines across government departments and agencies and other independent bodies or central banks, or whether IFIs should provide a second opinion on the baseline. Regardless, IFIs should be able to question the assumptions used in both government and other independent bodies as part of due diligence in scrutinising official plans.

IFIs will also need to build new methods for green analysis, refine existing ones, or use the methods of others. Many popular climate and energy models are maintained by private think tanks, research institutions and international organisations. Although IFIs can make use of externally maintained models, they need to be careful to strike the right balance between the transparency that comes with in-house modelling and the potentially lower intensity of resources when outsourcing. IFIs will also need to choose whether to do their own controlled (econometrically or otherwise) studies to determine the relationship between climate and ecology outcomes and economic and fiscal choices, or to rely on the external research of others.

## The path ahead

IFIs have established a reputation for publishing impartial analysis that is an invaluable to the public debate on the economy and public finances. Green analysis is a new field and IFIs naturally have concerns about mission creep and overextending staff resources to the detriment of their core mandate. Given the diversity of IFI responsibilities and analytical capacity, some will be better equipped than others to take on green analysis in the short to medium term. In the longer term, all IFIs will almost certainly engage in green analysis given its increasingly central importance to fiscal prospects—in public investment choices, in the erosion of fossil-fuel tax bases and in the consequences of unmitigated climate change on the economy. Those that have yet to tackle the topic can learn from more experienced IFIs, and can contribute to developing guidance and good practices within the IFI community.

IFIs will need to define an appropriate scope for their green analysis grounded in current (or renewed) mandates. At the same time, as green analysis becomes more integrated into budgeting and the planning provisions of governments, IFIs will need to respond. By applying the same impartiality and quality of research as for fiscal policy, IFIs can support governments as independent monitors of strong budget frameworks to overcome the headwinds facing climate action.

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