

# GOVERNMENT ASSETS: RISKS AND OPPORTUNITIES IN A CHANGING CLIMATE POLICY LANDSCAPE



European Bank  
for Reconstruction and Development

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# Foreword

It is with great pleasure that the European Bank for Reconstruction and Development (EBRD) welcomes you to the workshop “Government assets: risks and opportunities in a changing climate policy landscape”, within the framework of the 21st Session of the Conference of the Parties (COP) to the United Nations Framework Convention on Climate Change (UNFCCC).

Supporting governments and business in the mitigation of and adaptation to the effects of climate change has been an important area of the EBRD’s activities since the early 1990s. Indeed, it is now responsible for around one-third of the Bank’s annual investment. Between 2006 and 2014, the EBRD’s Sustainable Energy Initiative led to €16.4 billion of investment projects, mainly with private clients, which in turn was supported by €290 million of technical assistance, including €35 million of policy dialogue and capacity building assistance. The EBRD’s recent approval of its Green Economy Transition (GET) approach will increase the ambition of the Bank in this area, and link its activities with the new international agenda, such as this COP or the Sustainable Development Goals (SDGs) approved in September 2015.

One topic that is attracting increasing attention from both policy-makers and the public is the impact – positive and negative – that climate change policies can make to governments financial capacity. Approximately 70 per cent of fossil fuel resources worldwide are owned or controlled by governments and decisions made today regarding long-lived strategic public infrastructure assets – often in

the energy or transport sectors – will influence economies’ growth model for decades. Last year’s *The New Climate Economy Report*<sup>1</sup> found out that close to 80 per cent of the adjustment needed to meet the 2°C scenario would be managed by governments, their citizens and taxpayers rather than by private investors and corporations. With these figures it is surprising that discussions around the so-called “stranded assets” have primarily focused on private sector exposure.

The objective of this workshop is to improve understanding of how climate change policies may affect public finance, encourage governments to act strategically by mainstreaming climate change considerations into their budgets and fiscal policies, and discuss how institutions such as the EBRD can support investments and help develop regulations, green fiscal regimes and market mechanisms that make economies move swiftly towards a green economy transition. We present a methodology to assess the influence of climate-related policies on national budgets, and show how this impact depends on a number of critical variables, such as ownership, regulation and contractual arrangements for the extraction and processing of fossil fuel resources, as well as public-private partnerships, usage fees and price regulation for related public infrastructure. The next step is to apply this methodology in full to a selected number of countries, which the Bank intends to do in the near future.

Target audience for this workshop would include policy-makers and government officials (think-tanks, climate change and fiscal experts) and, in the financial sector, commercial banks, pension and hedge funds, as well as international and national development banks.

Thank you for joining us at this event. It promises to be a morning of stimulating discussions and networking.

<sup>1</sup> 2014. The Global Commission on the Economy and Climate. <http://newclimateeconomy.report/>

# Introduction



The impact that strong and credible climate change policies may have on national economies and government budgets is of a similar type to the impact provoked by other forces such as technological advances, the discovery of new resources, behavioural change and shifting economic models. One advantage of the impact of climate change policies, as opposed to other forces, is that climate change policies are progressing in steps, often preceded by lengthy negotiations and international agreements. This gives governments the possibility of gradually adapting their economic and fiscal systems so that the opportunities linked to a low carbon future are fully grasped. A disadvantage is that the level of uncertainty linked to the features, timing and ambition of climate change policies may force governments to take important decisions based on expectations which, if they do not materialise, can lead to lower than expected economic returns, income and growth.

A first step towards prudent fiscal management is a good understanding of the channels through which climate change may affect public finance. At its

most basic level, climate change policies will alter the amount of income and expenditure incurred by governments, linked to carbon-intensive and to environmental goods and services. Ultimately, these may have an impact on personal income and corporate investment, on governments' ability to raise debt and on general economic growth.

This document is structured in two sections. The first section offers policy-makers and other interested parties a methodology to assess the influence of climate-related policies on national budgets over the medium and long term. The methodology has been prepared by the Climate Policy Initiative on behalf of the EBRD and focuses solely on the direct impacts. It thus excludes indirect effects on the economy, such as changes in consumer price indexes and currency fluctuations, modification in capital/wages and corporations' competitiveness. The second section puts forward some key principles which would improve the resilience of national budgets to the changes triggered by climate-related policies, and generally contribute to nations' growth.

# A methodology to analyse the impact of climate change policies on governments' budgets

## Step 1: Identify sensitive assets and cash flows; establish a base case

A methodology to analyse the impact of climate change policies on governments' budgets would comprise four main steps.

The starting point for analysis is the identification of the natural resources, infrastructure assets, revenues and costs which would be directly affected by climate change policies. To keep the exercise within reasonable limits, some simplification should be sought. Numerous studies highlight that approximately 96 per cent of the greenhouse gas emission reduction required to meet the UNFCCC's limit of 2°C would come from either land use or fossil fuel use, with 65 per cent derived from reducing fossil fuel consumption in power generation, industry, buildings and transport. The budgetary impact of reducing deforestation is highly concentrated in a

few countries, dependent in turn upon their specific forest and agricultural issues. Specific assets and cash flows will vary from country to country, but in most cases the impact of land use on the budget will be small compared with fossil fuels and infrastructure.

The baseline scenario involves estimating future production of the identified assets, and future levels of revenue and expenditure, assuming that there are not significant alterations in climate change or related policies. This will be based on the likely evolution of a certain number of non-policy factors which are discussed in Step 2. At this stage it is also useful to sort assets and related cash flows into those relevant for exports and those related to domestic consumption.

Table 1: Main natural resources and infrastructure asset classes likely to be affected by climate change policies

Natural resources	Infrastructure
<ul style="list-style-type: none"><li>• Coal and metal mining</li><li>• Oil exploration and production</li><li>• Gas exploration and production</li><li>• Agriculture and forestry</li></ul>	<ul style="list-style-type: none"><li>• Power generation</li><li>• Electricity transmission</li><li>• Gas pipelines</li><li>• Transport (including roads, rail, aviation, ports)</li><li>• Water and sanitation</li><li>• Industrial manufacturing (including cement and steel/iron)</li></ul>



## Step 2: Develop alternative scenarios for climate policy and sensitivities

Scenarios will set out alternative paths consistent with the goal of limiting the amount of greenhouse gas emissions. For the purposes of evaluating the effects of climate change into governments' budgets, it is helpful to categorise relevant factors either as "climate-related policies" or as "non-policy factors"; the second including variables such as technology improvements, demographics, timing or economic growth. A certain level of simplicity should be sought to avoid an excessive number of scenarios, according to the practice established by governments in other fiscal exercises (for example, two possible rates of population and economic growth). Feedback loops between climate-related policies and non-policy factors are important, but they complicate the overall analysis and have been excluded from this methodology.

The effects of climate change policies will be incorporated by estimating changes in assets demand, costs and prices derived from a defined set of climate change-related policies (for example, an international carbon tax on all or some energy products, green fiscal systems), or by setting a future level of demand for resources and infrastructure that is compatible with a target (for example, the 2°C scenario) which implicitly assumes that a package of climate change policies and non-policy changes have occurred. The first approach is more complex, since there is a very wide range of policies – or combined policies – which could be applied, and this is why most experts prefer the first approach. However, in the context of this exercise, a government may be interested in exploring the impact of a particular range of policy options which are believed to be more likely or desirable to happen.

Table 2: Alternative methods to establish the alternative scenarios

Bottom-up approach	Top-down approach
Define a set of climate change policy options that are deemed likely or desirable to governments (e.g. international carbon market on power sector)	Define a level of demand for resources, which is compatible with a GHG target (e.g. 2°C scenario), without excessive details on what climate change policy changes would be needed

## Step 3: Estimate changes in future revenues and costs, and assets value due to climate-related policies

After a common time period has been established for both the baseline and the alternative scenarios – 20 to 30 years is deemed appropriate to fully incorporate impacts of climate change policies – the fiscal models will be able to work out changes in demand, costs and prices of the key assets and cash flows identified in Step 1. For existing assets, the analysis should focus on incremental costs/revenues, rather than on those already sunk in the investment.

A straightforward microeconomic supply and demand analysis will be applicable to those products (mainly commodities) that are traded on international markets or whose price is determined by international market forces. For privately-owned assets, governments' accounts will not be impacted by such movements, except where they are the final consumers of such commodities (for example, energy consumption for governments' buildings). However, a number of products/sectors that are fully or in part isolated from international competition

may experience different behaviours, with an impact on governments' accounts. This may happen, for instance, due to high transport costs (in the case of natural gas) or due to the existence of subsidies/taxes (such as fossil fuel subsidies), which make the local price of certain commodities different from the real price that they have in free markets. Also in many services, especially in the infrastructure space, there is no effective world market price and it is the government or the regulator who decides how much it will charge customers for its use. In cases where governments decide to charge consumers the full cost of a good or service, the impact of climate change policies on national budgets will be nil. Where governments decide to offer consumers the good or service for free, impacts on the budget will only happen if the cost and/or volume are modified as a consequence of climate change policies. In intermediate cases, a nuanced assessment will be needed.

#### Step 4: Assess the impact in terms of changes in economic value between consumers, investors and government

The difference between revenue and cost profiles under different scenarios represents the anticipated annual change in economic value derived from the assets and cash flows, but crucially not yet the budget impact. A first distinction, outlined in Step 3, needs to be made between changes in the economic value that are absorbed by consumers and those that are absorbed by investors, either private or public. Impacts totally absorbed by consumers via price adjustment will not have a direct impact on public finance. The same applies to assets and cash flow purely in the hands of private investors.

For commodities and infrastructure alike, when governments are the sole asset owner, any change in the economic value of that asset will directly affect the national budget; in all other ownership arrangements, the way in which the private sector is involved will mark the likelihood and extent of the impact, as shown in Table 3.

For instance, coal resources have been largely privatised in many countries and this implies that potentially stranded assets will sometimes be in the hands of investors rather than governments. The share of oil and gas owned or controlled by governments stands at around 80 per cent. Nationally owned companies will logically bear all the adjustment costs, but even when production sharing agreements (PSAs) are in place (25 per cent of global oil and gas production) the nature of the arrangements can imply that public accounts take most of the risk (also a potential upside) of changes in price and/or quantity. Impacts would be mainly felt from 2020 onwards – the first decade up to 2030 appears as critical in terms of the decline in natural resources required – and will be larger in oil and coal than in gas, whose short- and medium-term demand would in fact remain healthy and even grow as a transition fuel replacing oil and coal.



Table 3: Public-private asset ownership and budgetary impact

Structures used to split economic value	Private role	Public role	Budgetary exposure to asset value
<b>Infrastructure</b>			
<b>Service/Operations and Maintenance (O&amp;M) contracts</b>	Takes on O&M risk in short term (2-5 years). Receives fixed fee to cover staffing and expenses. Often included in other contracts.	Takes ownership of all project-related risk except management for term. Remains employer of personnel.	Highest
<b>Lease contracts</b>	Receives fixed lease fee from the state, and takes on collection risk and O&M risk. Medium-term length (8-15 years).	Takes ownership risk and financing risk. Gives assurances that tariff levels will rise over term (political risk). Transfers employees to lease operator.	Higher
<b>Design Build Operate (DBO) projects</b>	Takes on construction risk and O&M risk. Obtains revenue through a fee from the state rather than consumers.	Takes on ownership and financing risk.	High
<b>Build Operate Transfer (BOT) projects</b>	Takes on construction risk, O&M risk, and financing risk. Usually for a discrete, new asset, not a system. Raises revenue from state fees, not user tariffs.	Post-contract the asset is transferred to the state – for long-lived assets the state bears valuation changes.	Low
<b>Concessions</b>	Takes on construction risk, O&M risk and financing risk for extended term (20-30 years). Covers an entire infrastructure system. Obtains revenue directly from consumer tariffs to (often) cover regulated rate of return.	Maintains ownership of assets and is typically responsible for replacing large assets.	Lower
<b>Full divestiture/ privatisation</b>	All, or most, of the interests in a utility asset or a sector are transferred. Private purchaser may be unwilling to accept all liabilities, which are absorbed by the state.	Sells assets directly or through shares of an operating company. Assumes regulatory role; retains indirect control.	Lowest/Nil
<b>Commodities</b>			
<b>Production Sharing Agreements (PSAs)</b>	Costs of exploration and production are covered but profit sharing strongly favours the host government.	Takes most of the upside from production gains and price increases (on top of royalties) through contract terms.	Higher
<b>Royalties regime only (production taxes)</b>	Takes production risk but retains asset upside by only paying the state royalties on production.	All project-related risk is with producer, but will still realise lower tax revenues as commodity prices fluctuate.	Lower

# Recommendations to optimise the fiscal impact of climate change policies

Governments need to be proactive in counteracting any potentially negative impacts from climate-related policies and in grasping the substantial opportunities that arise from a low carbon growth path. As much as 70 per cent of fossil-fuel reserves and related assets worldwide are owned or controlled by governments, and so any adjustment would directly impact the financial plans of key exporters. On the other hand, national budgets will benefit from a larger exposure to rapidly growing activities, to improved market signals which include environmental effects, and to innovation, openness and enhanced competitiveness, all of which can be found in green economy sectors.

In this way, a number of recommendations could be made, which are developed in the following subsections.

## Improve fiscal data collection and analysis

One factor hindering the adoption of a more strategic analysis of climate change-related impacts on the part of governments is simply the lack of data on asset value, revenue and expenditure streams in their budgets which would be affected by climate change policies. This problem has been partially tackled by the International Monetary Fund (IMF) in papers such as the 2014 *Template to Collect Data on Government Revenues from Natural Resources*, which shows fiscal statistics include government revenues that are generated from natural resources, but that often cannot be identified separately from other government revenues. In the case of climate change-related assets and infrastructure, further statistical work would be needed to quickly identify

– ideally in an agreed international methodology – potential sources of income, expenditure, as well as the assets themselves. The analysis would comprise the different government levels – national, federal, local – that are likely to be affected. As a complement, certain definitions such as that of fossil fuel subsidies (see next sub-section) should be made homogeneous.

## Undertake fossil fuel subsidy reform and carbon pricing

Long-term, lower energy demand in comparison with the business as usual scenario offers a fantastic opportunity for many countries to reduce the burden that fossil fuel subsidies pose on their national budgets. This burden has been estimated by the IMF and the International Energy Agency (IEA) at over US\$ 500 billion a year, which makes up 5 per cent of the Gross Domestic Product (GDP) of the 40 countries that are included in the IEA analysis. By improving tariff structure and eliminating subsidies and tax breaks, public authorities create a fiscal space that is critical to cover a number of growth needs, such as physical and knowledge infrastructure, as well as leading to a more efficient allocation of resources and reducing the impact of climate change. The majority of subsidies to fossil fuels are concentrated in developing countries, with those in the Middle East and North Africa accounting for 48 per cent of this total, and those in Central and eastern Europe and the Commonwealth of Independent States accounting for an additional 15 per cent.

Similarly, the internalisation of carbon and other environmental costs through appropriate taxation<sup>2</sup>

<sup>2</sup> So called Pigouvian tax, or the equivalent cap-and-trade system with emissions allowances.



would significantly expand fiscal revenues. A distinguishable feature is that budget opportunities linked to carbon taxes are higher in developed nations, since they depend on consumption levels which in turn are correlated with GDP. Governments need to think about the fiscal benefits that internalising carbon externalities will bring over the 20-30 year period in which they will conduct the analysis and be prepared to adjust the system (tax or cap-and-trade) to reflect changes in the marginal environmental damage over time. Careful planning where recycled incomes are used to decrease the incidence of other taxes – on labour, capital or consumption/savings – would help the overall economic system move closer to market efficiency.

### Avoid the lock-in effect of infrastructure and long-lived government-owned assets

Many decisions that governments make today, that have an effect on their national budgets, will have lasting consequences and thus need to be carefully assessed. Most infrastructure will remain in use for decades; their value and related cash flows ought to be carefully forecast using appropriate assumptions on projected use, costs and incomes. The impact of climate change policies is one of the variables that needs to enter into the analysis, together with predictions on population and GDP growth, modal shifts, and so on. A range of appropriate CO<sub>2</sub> prices, as offered by the literature, should be used to work out the economic rate of return of the investments. Infrastructure investments should also be tested against climate change vulnerability risks and they should be consistent with long term climate policy commitments.

### Set full cost recovery prices and appropriate ownership structures

Equally important in relation to infrastructure and publicly-owned assets is a careful planning of the pricing policy and of the mechanisms for private sector participation, as both decisions entail very different outcomes in terms of budget exposure and risk.

Regarding prices/tariffs, in so far as they are set at levels below their full cost recovery, they will involve a burden on national accounts which may change over time depending on the nature and intensity of climate change policies. In many developing countries, low tariff collection rates also translate into poor



quality and the availability of the goods and services offered, indirectly affecting economic growth and fiscal capacity. Budgetary constraints may need to be tested against other social objectives, although most economic studies suggest that vulnerable groups are best protected through targeted policies, such as direct cash transfers.

The participation of private sector agents in the financing and maintenance of critical infrastructure is considered unavoidable and desirable. Some US\$ 90 trillion of infrastructure spending (in land use and energy systems) is projected to be needed in 2015-2030, two-thirds of which will be in developing countries. A move away from operation and maintenance contracts towards more concessions and partial/total privatisation will reduce public accounts exposure. Generally, there is a trade-off between capturing potential gains from production/price increases and budget risk.

### Diversify the economic base: make it competitive

There is ample evidence that diversified and competitive economies perform best and are more resilient to external shocks. Achieving this involves promoting innovation, market competition and openness, reliable and accountable institutions, effective price signals and the correction of market failures. The beneficial spillovers also reach public finance and the ability of governments to sustain their budgets under changing environments.







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