The Coalition of Finance Ministers for Climate Action

Economic Analysis for Green and Resilient Transitions: Initiative overview

An initiative of the Coalition of Finance Ministers for Climate Action Helsinki Principle 4 workstream

February 2026

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Foreword

Nicolai Wammen, Minister for Finance, Denmark

Across the world, the now 100 Ministers of Finance, Economy, and Planning in the Coalition of Finance Ministers for Climate Action share a clear understanding: prosperity and sound public finances in the decades ahead depend on our ability to drive the transition toward green and resilient economies.

More frequent extreme weather events and long-term climate change impacts are no longer distant risks. They are shaping growth, investment, and fiscal choices today.

While climate ambition is under pressure in some parts of the world, the members of the Coalition remain resolved in their commitment to sustainable, low-carbon development, grounded in the conviction that effective climate action is essential for long-term economic resilience, fiscal stability, and shared prosperity.

COP30 marked a shift toward implementation. Targets and ambitions must now be translated into credible investment and policy plans and aligned with broader economic development strategies. This puts Ministries of Finance, Economy, and Planning at the center of the transition. Without strong economic analysis, governments cannot realistically assess costs, benefits, risks, or distributional impacts. And without that foundation, implementation plans will struggle to attract investment, secure public support, or stand the test of time.

The path forward is not without friction. The good news is that the cost of many green technologies has fallen dramatically, opening new economic opportunities. But at the same time, industrial policies and shifting value chains are creating new uncertainties. Green policies involve difficult trade-offs. When these trade-offs are not properly analyzed and addressed, policy risks being seen as disconnected from people's everyday realities, which will trigger public opposition and political backlash.

This is precisely why the Coalition's Economic Analysis for Green and Resilient Transition Initiative matters. It responds directly to the needs of Ministries that want to lead the transition from the center of government, providing evidence, credibility, and practical insight.

Denmark is proud to lead this work under Helsinki Principle 4 within the Coalition. I would like to thank the Coalition members in the Steering Group, the partners in the Technical Advisory Group, the Coalition and its Secretariat, and colleagues at the Grantham Research Institute on Climate Change and the Environment at the London School of Economics and Political Science for their dedication, expertise, and continued commitment. Their collective effort has turned shared ambition into practical guidance that Ministries can use.

This Overview document shows both how far we have come and how much work remains. Many countries are already applying economic analysis to climate and transition challenges, drawing on practical tools, real-world case studies, and growing communities of practice. At the same time, important gaps persist in data, tools, and institutional capacity. I believe we, as Ministers of Finance, can gain from addressing these challenges together with our partners. It is a strategic investment in better policymaking, stronger institutions, and more resilient economies.

Our aim is simple: to help Ministries of Finance strengthen their ability to steer green and resilient transitions with confidence, credibility, and clarity. I hope this document will inspire further action, deeper collaboration, and continued learning across countries. If we get the economic analysis right, we give ourselves a far better chance of getting the transition right. Never has this been more important.

Key messages—the context and urgency

- **Ministries of Finance play a critical enabling role in turning green and resilient transitions into reality.** Their influence over budgets, investment strategies, and economic policy makes them essential to making whole-of-government action work.
- **Many Ministries of Finance understand the urgency.** Delivering on their core mandates of macroeconomic stability, sustainable growth, and sound public finances now increasingly depends on their ability to account for the risks and opportunities of climate change and the green transition.
- **Good decision-making requires finding answers to complex policy questions.** Robust and credible answers require sound economic analysis that sets out the economic risks and opportunities of different policy pathways.
- **This is a new and complex frontier.** While awareness is high, most Ministries are still at an early stage in developing the tools, data, and capacities needed to guide effective green and resilient transitions.
- **Change is underway.** A growing number of Ministries are applying economic analysis to the pressing climate- and transition-related challenges they face; more than 130 real-world case studies show how this is being done in practice.
- **Ministries do not need a perfect model to get started.** They can build on existing tools and approaches—from simple models to real-world judgment—and adopt new ones, strengthening capabilities over time. In addition, ex-post analysis and case studies can provide valuable inputs to help decision-making.
- **Good analysis takes more than good tools.** It requires skilled teams, strong coordination, and governance structures that link analysis to real policy decisions.
- **The Coalition of Finance Ministers for Climate Action is stepping up to help build capacity in countries.** This initiative delivers practical guidance, tools, and a global community to help Ministries enable smarter, faster, and more effective steps to build green and resilient economies.

1. Getting the numbers right

Ministries of Finance across the world are becoming increasingly aware that climate change poses significant risks to the economy and public budgets. They understand that the transition toward greener and more resilient economies and societies requires far-reaching structural transformation and investments in all sectors, including power generation, transportation, buildings, industry, and agriculture. These changes have major implications for citizens, businesses, and public budgets. Getting the transition right can open up new economic opportunities, from growth and innovation to enhanced competitiveness and long-term cost savings.

Ministries of Finance are key players in the transition toward green, prosperous, and resilient societies. Collectively, they oversee US$30 trillion in public financing per year in the context of a US$100 trillion global economy, and are at the forefront of coordinating economic, fiscal, and financial policy. Around the world, many are already taking a leading role in assessing investment needs, policies, and funding sources for climate change mitigation and adaptation and in shaping fiscal and economic policies that can support the growth of future green industries and bolster resilience against climate shocks or transition risks.

To progress this leadership further requires facing up to some challenging policy questions regarding the direct and indirect impacts of climate change and the economic implications of the transition to a green and resilient economy. Some examples include:

- How will chronic and acute climate risks impact public budgets and debt sustainability? How can the impacts be managed?
- Which policy combinations will be most effective in reducing emissions and supporting development? Who is affected by these policies?
- How can climate policy drive economic transformation while safeguarding jobs and competitiveness?
- How much investment is needed for the green and resilient transition, and how can it be financed?

Answers to these complex questions must be grounded in sound economic analysis that sets out the economic risks and opportunities of different policy pathways. This means developing tools and strengthening analytical capacity within Ministries of Finance so that countries can respond more effectively to the challenge of climate change at the pace and scale required.

Fortunately, proactive leadership in planning, prioritization, and making tough decisions on investment is not new to Ministries of Finance—it is a core competency. They are used to conducting robust analysis for sectors that require significant public investment, from health and education to state pensions. The decisions needed for transitions toward green, prosperous, and resilient economies are not categorically different. Ministries of Finance are also used to ensuring robust analysis feeds into core processes such as the budget cycle, analysis of the economy, revenues, and expenditures, and providing periodic reports on the public finances to elected bodies.

Nonetheless, Ministries of Finance face new challenges given the scale, complexity, and uncertainties involved. The risks and opportunities of green and resilient transitions affect the ability of Ministries to deliver on their core responsibilities of macroeconomic stability, responsible public finances, and sustainable growth. Effective delivery of these traditional

objectives increasingly requires that Ministries of Finance are able to take into account the interactions between the climate system and the economy, and the impacts of the green transition. This remains a major new frontier for most Ministries that stretches beyond their traditional areas of focus and analytical practices. As a result, many Ministries of Finance are still not directly engaged in policy planning or coordination of climate-related policy issues. Most lack access to suitable analytical tools to answer many of the most challenging economic questions they face in driving green and resilient transitions and even fewer have built capabilities to use them to inform policymaking.

2. A Coalition initiative to strengthen capabilities

Improving economic decision-making capabilities enables Ministries of Finance to better seize opportunities for growth, investment, and innovation arising from green and resilient transitions. The HP4 Economic Analysis for Green and Resilient Transitions initiative, led by Denmark's Ministry of Finance, is building an active global Community of Practice with policymakers, analysts, and institutions dedicated to applying economic analysis and modeling to climate-related policy questions. Through international forums, webinars, and ongoing engagement designed to strengthen leadership, collaboration, and human and analytical capabilities for more informed economic analysis, the initiative supports Ministries to remain at the forefront of shaping a greener, more resilient, and more prosperous future. More than 20 global Ministries of Finance are represented on the initiative's Steering Group and its Technical Advisory Group consists of experts from major international financial institutions, regional development banks, and key academic institutions, among others. The work is supported by the Grantham Research Institute on Climate Change and the Environment at the London School of Economics and Political Science.

The initiative is publishing an extensive suite of reports that provide practical guidance for Ministries of Finance to effectively address climate-related economic and fiscal policy challenges. These reports include insights from a Global Survey of nearly 60 Ministries of Finance, a summary of the online Compendium of Practice, which encompasses over 130 detailed case studies from Ministries of Finance and their partners, and an overview of the analytical tools available to Ministries to support their decision-making.

Members of the global Community of Practice in discussion at the second Forum on the Macroeconomics of Green and Resilient Transitions, Copenhagen, June 2025

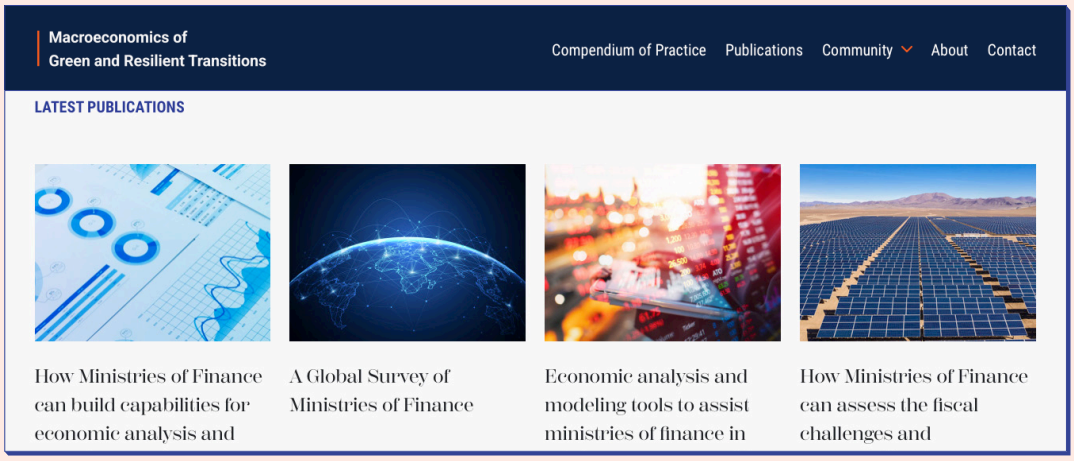
Five thematic reports address fiscal challenges and opportunities, physical climate risks and adaptation, green industrial strategies, policy packages, and macroeconomic impacts of the transition. Two further reports focus on how Ministries of Finance can build analytical capabilities and explore the steps toward evidence-based decision-making. All outputs focus on showcasing emerging good practice through real-world examples. These are hosted on a new website, Macroeconomics of Green and Resilient Transitions (see Box 1).

Box 1. The 'Macroeconomics of Green and Resilient Transitions' website

URL: greenandresilienteconomics.org

This website hosts the initiative's publications, Compendium of Practice, and background information about the initiative and the supporting Community of Practice. It will continue to evolve and serve as a site that consolidates existing efforts and knowledge from the initiative, as well as from the community supporting it.

Publications: greenandresilienteconomics.org/publications/

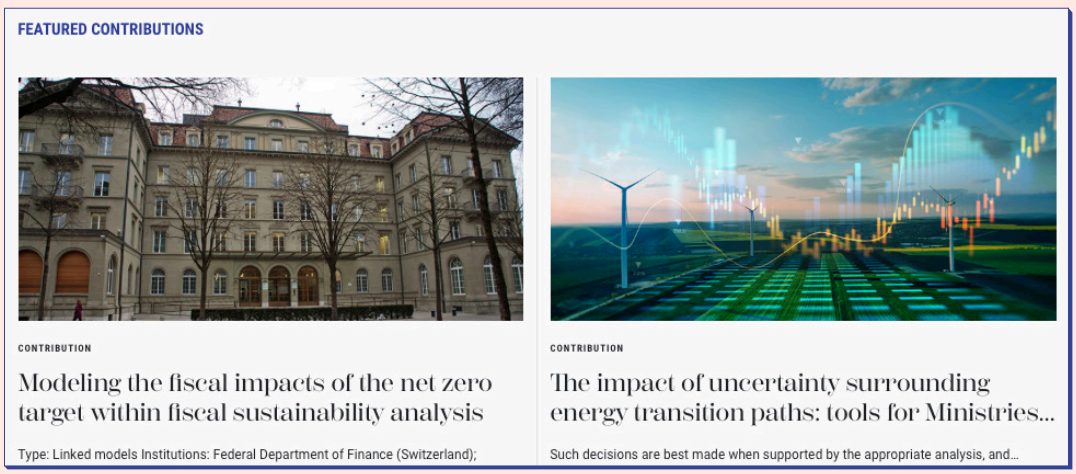


Community: greenandresilienteconomics.org/community/

These pages offer insights from the Community of Practice supporting the initiative, including details of the Forum on the Macroeconomics of Green and Resilient Transitions (see Box 8).

Compendium with over 130 case studies: greenandresilienteconomics.org/compendium-of-practice/

The Compendium of Practice lies at the heart of the initiative, representing a global, collaborative resource developed by more than 70 contributing institutions, with new contributions being added. The Compendium is searchable by title, and can be filtered by topic area, keywords, and institutions to help locate the most relevant contributions for a particular context.



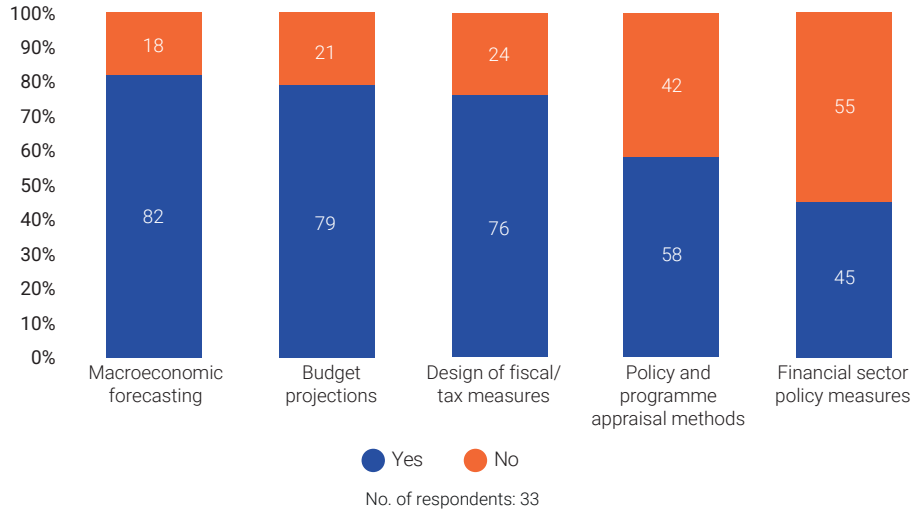
Global Survey of Ministries of Finance on climate: a clear signal—and a capacity gap

The first Global Survey of nearly 60 Ministries of Finance was carried out under the initiative in 2024 to explore how they are approaching the transition to a low-carbon and climate-resilient economy. The survey analysis provides a key foundation for the initiative—identifying strengths, challenges, gaps, and opportunities. A clear pattern is revealed: nearly 90% of the Ministries of Finance surveyed recognize that the transition to a green and resilient economy is a core economic issue. Ministries are particularly concerned about the potential impacts of physical climate change on GDP and government finances (including from acute climate-related events, such as heatwaves, and chronic factors, such as increased prevalence of drought). They also voice substantial concerns about the risks posed by the transition to a low-carbon economy. An accompanying report presents the findings from the survey and supplementary interviews.

The survey analysis confirms that while Ministries of Finance vary across countries, they share a set of core functions where economic analysis provides key inputs to support decision-making. These core functions include managing the budget cycle, projecting revenues, analyzing debt sustainability, forecasting macroeconomic trends, overseeing procurement and public investment systems, drafting fiscal legislation, coordinating policies from other ministries with budget priorities, and evaluating programs.

Most of the Ministries of Finance that responded to the Global Survey already conduct economic analysis and use modeling approaches for general economic policy, with roughly four-fifths reporting the use of such methods for macroeconomic forecasting, budget projections, and the design of fiscal and tax measures (see Figure 1).

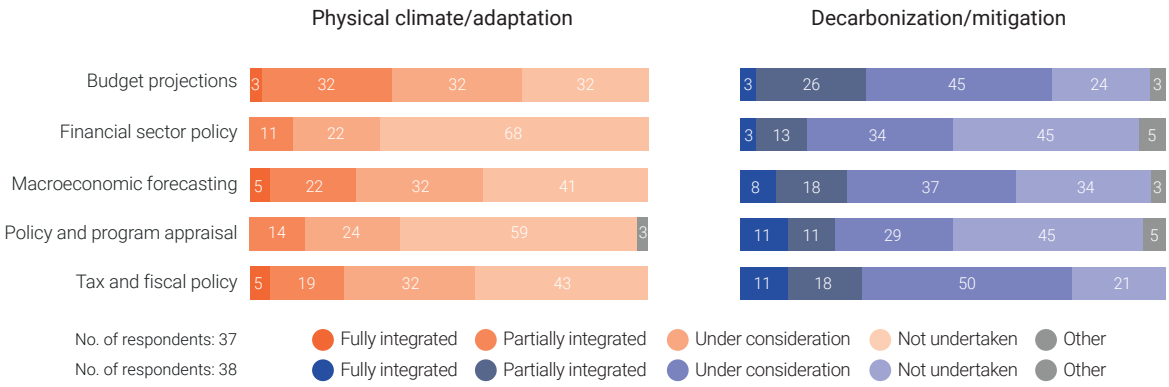
Figure 1. Does the Ministry of Finance report using economic analysis and modeling approaches for general economic policy analysis across the key analytical functions listed? (%)



Source: HP4 Survey Report

However, many Ministries have yet to analyze the economic, fiscal, or financial implications of the policies needed to drive the green transition and build resilience against climate impacts. A majority of those surveyed have not yet integrated physical climate risk or decarbonization considerations into their core analytical functions and processes, such as tax policy, forecasting, or policy appraisal (see Figure 2). Additionally, only around a quarter have assessed public spending and financing needs for adaptation, about half have done so for policies for decarbonization, and about a third have explored how to identify and design new measures for raising revenue in a low-carbon economy.

Figure 2. To what extent has the Ministry of Finance integrated climate considerations into core analytical functions? (%)



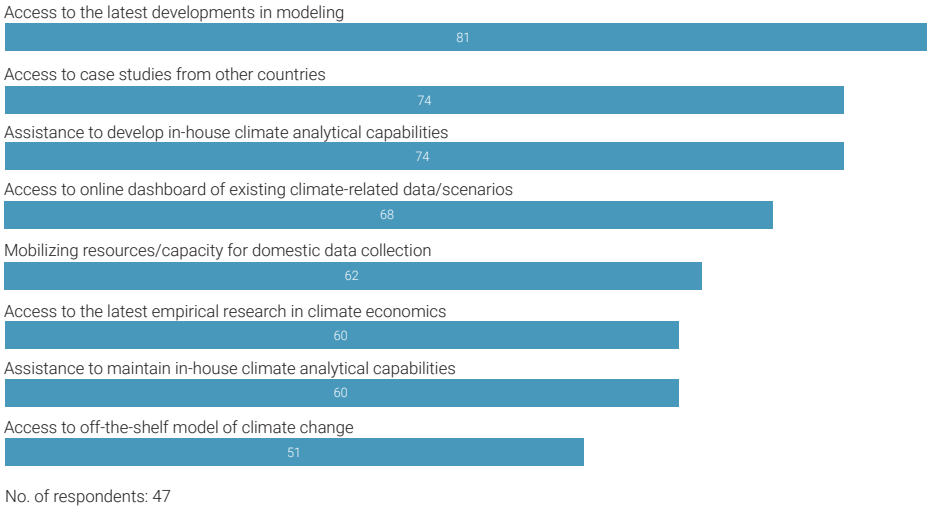
Source: HP4 Survey Report

More than half of the Ministries of Finance surveyed are not yet using specialized climate–economy models to support decisions on mitigation or adaptation. Moreover, many do not incorporate specific climate-related dynamics, such as tipping points, compound risks, or trade effects from measures such as carbon border adjustment mechanisms, into their analytical exercises. Indeed, Ministries face many barriers and challenges to scaling up analytical tools and capabilities to assess climate-related policy questions, with around four in five reporting staffing and skill constraints and data challenges, and around two-thirds reporting model development challenges. Access to the latest developments in modeling and to case studies from other countries, and assistance to develop in-house climate analytical capabilities, are the most frequently cited types of additional support that would support Ministries in enhancing their climate-related analytical capabilities (see Figure 3).

Despite these challenges, the Ministries of Finance surveyed are already taking meaningful steps. More than half are actively shaping climate and development strategies, mobilizing funding, and engaging with climate taxes, pricing mechanisms, and green fiscal subsidies (see Figure 4). At the same time, Ministries are aware of the economic opportunities tied to driving the green transition forward—from expanding renewable energy to catalyzing economic diversification and gaining competitive advantages in emerging green industries—with more than half either leading or supporting economic analyses to assess the impacts of policies aimed at creating green economic opportunities.

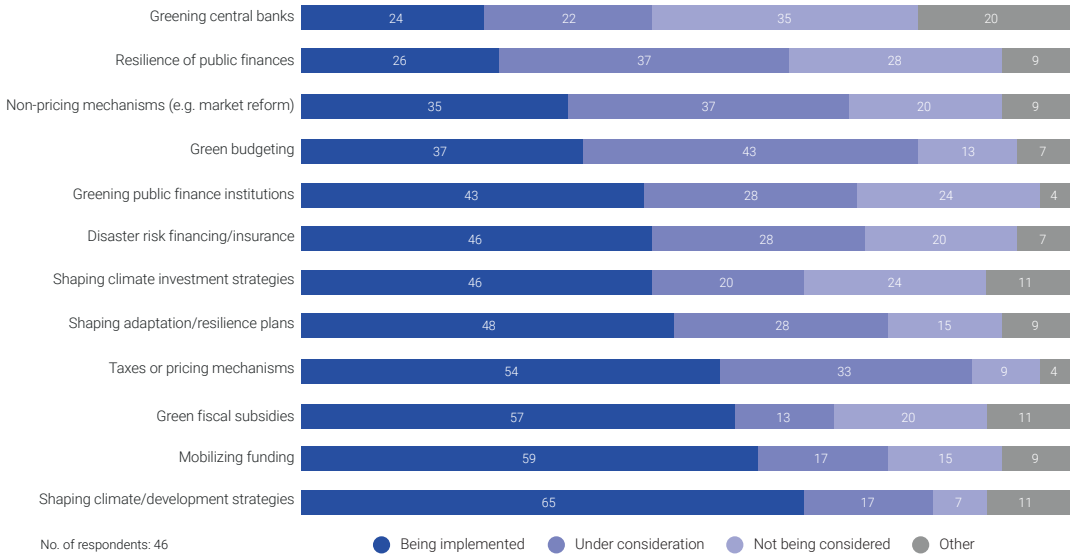
> “More than half are actively shaping climate and development strategies, mobilizing funding, and engaging with climate taxes, pricing mechanisms, and green fiscal subsidies.”

Figure 3. What types of additional support would enable the Ministry of Finance to enhance its climate-related analytical capabilities? (%)



Source: HP4 Survey Report

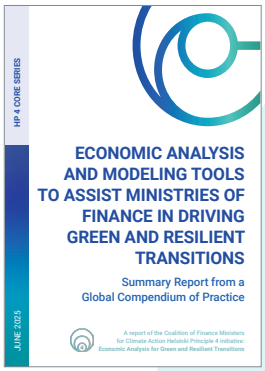
Figure 4. Which climate-related policies are Ministries of Finance engaging with? (%)



Source: HP4 Survey Report

The message from the survey is clear: Ministries of Finance are engaged, interested, and aware—but most still need the right tools, and enhanced capacity and support, to lead the transition from the center of government.

Grounded in practice: 130 real-world cases from Ministries of Finance and the institutions supporting them



Ministries of Finance around the world are beginning to step into a more active role in aligning economic policy with green and resilient development—and they are not starting from scratch. Many are already drawing on a wide range of analytical tools to guide policymaking, while others are beginning to explore what is available. Either way, the toolbox and concrete examples of countries putting analytical tools into use is expanding fast.

To support this shift, the initiative launched the Compendium of Practice, an evolving, collaborative knowledge base of more than 130 practical examples from 70-plus institutions—including almost 20 Ministries of Finance—to showcase how economic analysis is already helping to inform and drive green and resilient transitions. The result is a rich, diverse set of case studies that offers a real-world foundation for others to build on. It details an array of ways in which Ministries and their partners are tackling key climate policy challenges through applied tools, modeling approaches, and capacity-building strategies.

Examples from the Compendium are at the heart of the initiative and help drive its country engagement and substantiate its reports. They include:

- **Australia's Department of the Treasury** estimating the impact of selected physical climate risks on the Australian economy
- **The Danish Ministry of Finance and Danish Research Institute for Economic Analysis and Modelling** applying their GreenREFORM Model to ambitious green agricultural reforms (see Box 3)
- **Mexico's Ministry of Finance** assessing the fiscal risks of physical climate change and transition risks for state-owned enterprises
- **Morocco's Ministry of Economy and Finance** assessing the impacts of climate change on the national economy via the agricultural sector
- **The European Commission** assessing the distributional consequences of the transition in the EU
- **The Asian Development Bank** customizing the WITCH integrated assessment model to better represent developing Asia and analyze the necessary sectoral transformations and socioeconomic implications of the transition to net zero.

The contributions are presented in three overarching categories:

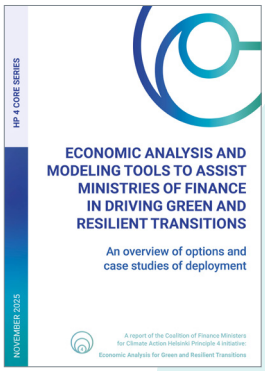
1. Case studies of addressing climate policy questions facing Ministries of Finance
2. Examples of specific analytical tools and approaches relevant to Ministries of Finance
3. Case studies and options for enhancing analytical capacity in Ministries of Finance

The repository represents a substantial sample of global efforts to enhance climate-informed decision-making and will be expanded over time.

Read the Summary Report here.

Identifying what's in the toolkit of Ministries of Finance —and what's missing

Ministries of Finance are increasingly adopting economic tools to respond to climate policy challenges—and the toolbox of available options is expanding, as the HP4 Tools Report demonstrates. The report provides a structured review of more than 20 analytical and modeling approaches now available to Ministries, offering a useful overview of what's in use, what's emerging, and where gaps remain. It can help to demystify a modeling landscape often crowded with jargon and acronyms, making it easier for newcomers to navigate and for practitioners to choose the right tool for the job.



The Tools Report describes tools across four categories:

- *Climate-enhanced macroeconomic and sectoral models:* quantitative analyses of the macroeconomic, sectoral, and distributional impacts of select elements of climate change and the transition.
- *Physical climate and disaster risk models and approaches:* assessments of the economic and fiscal impacts of climate change to inform fiscal risk management strategies and adaptation investments.
- *Decision-making frameworks and other analytical tools:* qualitative and quantitative complements to other modeling approaches, especially for decision-making under uncertainty.
- *Ex-post case studies and evaluations:* what has worked, what challenges have arisen, and how policies have influenced the economic and technological change needed for effective climate action.

Among the report's key messages are:

- To help mainstream climate considerations in decision-making, MoFs can incorporate climate change and climate policies into existing models and decision-making frameworks used for economic analysis or use dedicated climate–economy models and other analytical tools specifically designed to analyze climate impacts and policies. Both approaches can be fruitful.
- Different climate policy questions require different tools that capture the different variables and perspectives of the issues at hand. If capacity allows, multiple tools and sensitivity analyses can provide complementary insights and help assess the robustness of results across models and assumptions.
- Different tools can be linked or used in conjunction to leverage their strengths and contribute to more comprehensive analysis. This includes both modeling and non-modeling tools.
- Ex-post analysis and case studies of global efforts to build analytical capabilities and roll out climate policy help Ministries learn from real-world experience, highlighting what has worked, what has not, and offering practical insights to inform domestic analytical strategies and effective policy choices.
- Mainstreaming climate within the analysis and decision-making of MoFs is an evolving process that requires continuous learning by analytical teams. Peer learning within and across countries and institutions, and working with insights from scientists, investors, and academia, are critical parts of this.

The Tools Report draws on the Compendium of Practice to highlight particularly effective use of tools and models. Many Ministries are starting with familiar foundations such as macroeconomic modeling and cost–benefit analysis and are gradually integrating climate dimensions into existing tools (e.g., Finance Canada—see Box 2). This is helping Ministries assess long-term risks, evaluate trade-offs, and inform policy decisions with more precision.

Some are going further, introducing new tools or combining tools to develop analytical suites tailored to answer a variety of complex climate policy questions (e.g., DREAM—see Box 3).

Support available to Ministries of Finance is growing too. Institutions including the IMF, World Bank, OECD, UNEP, and Network for Greening the Financial System (NGFS) have made a wide range of models, data sets, and user guides publicly available. Additionally, the academic community is rapidly improving models to better reflect innovation, technological change, deep uncertainty, and extreme risk, and further developing tools such as economic complexity analysis and systems mapping to support decision-making under uncertainty and finding new sources of comparative advantage.

Box 2. Finance Canada's approach to climate–economy modeling

Finance Canada has expanded its modeling toolkit to better analyze climate change mitigation policies. Alongside its core suite of macroeconomic models, it has developed an in-house climate variant of its multi-country, multi-region CGE [computable general equilibrium] model—a sector-based model that simulates the entire economy in market equilibrium. This was driven by three key factors: the magnitude of potential economic and fiscal impacts, the recurring need for mitigation policy analysis, and the absence of key variables—such as greenhouse gas emissions—in existing models. Importantly, Finance Canada's experience shows that building a model with emissions-tracking is within the capacity of a small team of experienced economic modelers.

The model offers valuable insights into mitigation policies but is not suited to every climate-related question. For Ministries of Finance not leading on environmental policy, integrating climate in an existing framework, calibrated to external data can strike a practical balance between analytical needs and limited modeling resources. A more comprehensive climate–energy–economy model would require additional expertise in climate science, engineering, and energy systems.

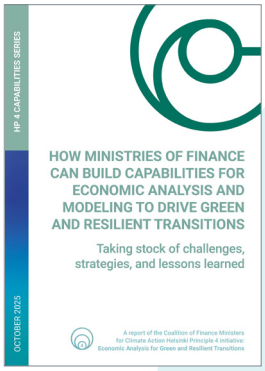
Read the full Compendium contribution here

Box 3. DREAM's GreenREFORM model

Denmark's Ministry of Finance funded a dedicated team at the Danish Research Institute for Economic Analysis and Modelling (DREAM) to build GreenREFORM—a model for evaluating the combined effects of economic and environmental policy. Top-down support and close collaboration between the model team, university researchers, sector experts, and end-users in various ministries have been key to its success. The focus is now on implementation and capacity-building in the Ministry of Finance and various government agencies, and on knowledge-sharing via an EU-backed program to develop a "workhorse" version of GreenREFORM in four other EU countries.

Read the full Compendium contribution here

No team, no traction: good tools depend on a capable team to make them matter



The HP4 Capabilities Report provides an overview of strategies, options, and recommendations for how Ministries of Finance can practically enhance their analytical capabilities to drive green and resilient transitions. They can build or improve their capabilities over time to meet their needs. This typically requires sustained investment in building a wide range of skills and expertise, prioritizing improving collaboration within and beyond the government, and building strong governance processes that can ensure analytical tools inform decision-making. Analytical tools must be fit for purpose and practical, taking into account existing capabilities.

Drawing on existing literature and case studies, the Capabilities Report focuses on three aspects of capabilities: leadership and governance; coordination and collaboration; and skills and expertise. It also discusses the role of technical assistance providers and the wider ecosystem of actors supporting Ministries of Finance.

Among the report's key messages are:

- Capability is about more than having access to suitable tools and models. It is about being able to identify, use, and maintain suitable tools to answer relevant policy questions, communicating results (and limitations), and ensuring integration into decision-making processes.
- Ministries of Finance have vastly different levels of analytical capabilities. These have a substantial impact on the type of analysis that could be most suitable and worth investing in, and the priorities and next steps for strengthening local capabilities. Approaches for building capabilities should be pragmatic and consider building on existing capabilities. It is better to 'start simple' than wait for more expertise to arrive.
- Ministries of Finance cannot address their capability gaps alone. They may require support from a broader analytical ecosystem, including line ministries and government agencies willing to share models, data, and experience; universities and research institutes with climate expertise; and technical assistance providers and the wider international community, which can help build expertise and improve access to tools and data.

Fortunately, as the Compendium reveals, there are several examples of Ministries of Finance that are systematically building their analytical capabilities, including:

- *Improving skills and expertise:* the **Australian Treasury** is re-establishing its Climate Modelling Capability (see Compendium); **Rwanda's Ministry of Finance** is building climate modeling capacity to inform the National Development Plan and Nationally Determined Contribution (NDC) (see Box 4).
- *Collaboration:* **Uruguay's Ministry of Economy and Finance** is partnering with the University of Montevideo to mainstream climate considerations in economic analysis (see Box 5); in **Chile, the Ministry of Finance** is working locally and internationally to protect, restore, and enhance the country's natural capital by integrating the implications into decision-making.
- *Leadership and governance:* **Finland's Ministry of Finance** and the **Prime Minister's Office** are working to better incorporate the impacts of nature and ecosystem services into assessments of the economic consequences of climate risks (see Box 6); see also the example of the **Danish Ministry of Finance** described in Box 3.

Box 4. The use of climate–economy models in Rwanda's Ministry of Finance and public institutions

Rwanda's Ministry of Finance and Economic Planning and the Central Bank of Rwanda are beginning to integrate climate change into their economic modeling, risk assessments, and forecasting. This effort currently relies heavily on external tools and assistance. A key challenge to deepening this integration is the limited number of staff and the associated skills gap. The current strategy involves adopting new models with built-in climate modules, such as the IMF's Q-CRAFT and the World Bank's MANAGE. While the optimal approach is uncertain, moving forward it is likely to be important for the Ministry to explore retrofitting existing models as this would require less adaptation to unfamiliar methodologies.

Read the full Compendium contribution here

Applying analytical tools to address priority policy issues

Thematic Reports are being produced for the initiative to support Ministries of Finance in navigating the complex landscape of green and resilient transitions by taking a closer look at topics of strategic relevance. Each report takes stock of the insights from the Compendium of Practice, the Tools Report, and wider literature to focus on a single topic, identifying core policy questions and exploring the tools available to help address them. Drawing on emerging good practice and real-world examples, the series offers actionable insights to help Ministries navigate specific areas of concern and make the most of potential opportunities.

The first two Thematic Reports to be published cover fiscal challenges and opportunities, and physical risk and adaptation—see below. Further reports in the series will explore policy packages for climate change mitigation, green industrial and innovation strategies, and macro-critical risks of the transition.

Key messages from the Fiscal Challenges and Opportunities report include:

- Climate-related developments are increasingly influencing economic and fiscal variables feeding into core Ministry of Finance processes such as forecasting and budgeting, regardless of the action Ministries take, as climate-related disasters generate fiscal costs and climate-focused policies take effect. Ministries cannot ignore this.
- The fiscal implications of climate change—including from the adaptation need—and climate action are becoming increasingly important, such that Ministries of Finance need to take an active role in climate-related issues.
- Ministries of Finance are taking steps to mainstream climate-related issues into their fiscal planning by improving data, tools, and approaches to assess the fiscal implications of climate change and climate action. Although substantial information gaps remain, there is sufficient information for all Ministries of Finance to get started.

Key messages from the Physical Climate Risks and Adaptation report include:

- Prompt policy decisions regarding the management of physical climate risks through adaptation are crucial. Ministries of Finance can play a role by identifying and assessing climate risks and their impacts on the macroeconomy and public finances, identifying and evaluating potential adaptation solutions and their costs and benefits, and determining financing mechanisms for adaptation.

- Analyzing the economics of adaptation requires a collaborative approach, combining engineering studies to assess the effectiveness of adaptation types with economic evaluations of costs and benefits.
- While users in Ministries of Finance should acknowledge the limitations of analytical tools and assess their effectiveness, uncertainty should not prevent action. Detailed analytics should be balanced with practical, policy-focused analysis, given the high costs of inaction.

3. Key lessons from the initiative in how to get started

Ask the right questions first

A Ministry of Finance can start by identifying the most pressing climate-related policy issues it faces—whether that's setting policy objectives, raising revenue, designing targeted green incentives, or protecting vulnerable communities. Then, it can clarify the analytical questions it will need to answer in order to provide sound, well-informed policy advice to decision-makers. While some questions need sophisticated models, in many cases rough estimates may be enough to drive better decisions.

Don't wait for the perfect model before getting started

Ministries of Finance do not need a complex model or cutting-edge tools to start making smart decisions. Many countries have already made strategic, informed choices using a mix of simple models, practical judgment, and real-world experience. Early action—even through pilot projects—can help build momentum, develop in-house skills, and gain high-level support for deeper analysis.

Box 5. How Uruguay's Ministry of Economy and Finance has been mainstreaming climate into economic analysis

In 2020, Uruguay mandated that national climate goals be integrated into economic policy and public financial planning. The Ministry of Economy and Finance (MEF) collaborated with other ministries to assess the macroeconomic impact and cost-effectiveness of measures in Uruguay's first and proposed second Nationally Determined Contribution (NDC). To inform the second NDC, the MEF coordinated the development of a DSGE [Dynamic Stochastic General Equilibrium] model, financially supported by the World Bank and led by the University of Montevideo. Operational and capital costs were estimated in collaboration with other ministries and experts from Chile who were involved in a similar exercise to develop their Long-Term Climate Strategy. The model was used to evaluate 12 climate change mitigation measures across baseline, low-investment, and high-investment scenarios. While GDP initially declined relative to the baseline in both investment scenarios, by 2030, it was projected to be 0.57% and 0.52% higher under the low- and high-investment scenarios, respectively.

Read the full contribution here

Start with what is there and build from that

Ministries of Finance with limited capacity to analyze green and resilient transitions can take a pragmatic approach: build on the tools, data, and expertise they already have. Teams that use spreadsheets should start with those. Where strengths lie in cost–benefit analysis or program evaluation, those methods can be adapted. Where core models for macroeconomic analysis already exist, they can be repurposed (see example in Box 2). Perfection is not the objective—progress is.

Match the tools to the team

Teams should map the skills they already have, then decide on where to focus—which may be in economic modeling, sectoral expertise, communication, or stakeholder engagement. Good analysis only works when it is connected to real decision-making. Building governance structures that link analysts, modelers, and policymakers, and making sure responsibilities are clear, is important. If a Ministry's priority is answering a very specific set of high-priority policy questions, it might build a dedicated analytical unit. If it is mainstreaming climate across the Ministry, allocating analytical staff in key departments might be a better or complementary approach.

Work with data providers to strengthen the foundations for economic analysis

Good analysis starts with good data. Ministries of Finance can engage early with national statistical offices, sectoral ministries, and other key data providers to identify and improve the availability, quality, and relevance of data for climate-related economic analysis. This kind of collaboration can help align efforts to develop datasets on emissions, physical climate risks, climate-related spending, and technology costs, ensuring they are timely, accessible, usable for policy design and modeling, and capture relevant local and sector-specific conditions with sufficient granularity. Building these data partnerships can also surface opportunities to fill critical gaps and support more informed, evidence-based decisions.

Don't go it alone—collaborate

Partnering with other ministries, local universities, or international institutions can fast-track access to tools, models, and know-how. Embedded advisors or technical experts, supported by development partners, can help Ministries of Finance get started quickly. Country platforms can also help coordinate and align support across multiple partners.

Box 6. Finland's experience in improving the inclusion of nature and ecosystem service impacts in assessments of the economic impacts of climate risk

Finland has analyzed some of the potential ecosystem-related economic risks the country faces by integrating forest and agricultural models into a macroeconomic model. However, data gaps and challenges in quantifying ecosystem services remain, prompting exploration of simpler, more inclusive methods. The Finnish Prime Minister's Office conducts annual societal sustainability assessments to identify research findings and knowledge gaps related to ecosystem-related risks and broader sustainability challenges, using participatory approaches and qualitative systems mapping. In parallel, Finland's EU-Funded Priodiversity LIFE project is developing more effective strategies to address biodiversity loss, improve policy coherence, and evaluate the biodiversity impacts of national policies, under strategic leadership of the Prime Minister's Office and a broad coalition including the Ministry of Finance and research partners. These efforts align with calls from Finland's high-level Working Group on Financing the Green Transition to develop a framework for assessing the economic and fiscal impacts of climate and biodiversity loss, increase research investment, and foster cooperation across disciplines.

Read the full contribution here

4. What gaps exist in access to tools and in the capabilities of Ministries of Finance to use them?

Ministries of Finance want to do more to develop solid analytical foundations that can help address climate-related policy challenges, but significant barriers continue to stand in the way. From tools and data to staffing and institutional support, the challenges are real—but not insurmountable.

Many Ministries still lack access to the right analytical tools to answer the specific policy questions they face. Many rely on a narrow set of general-purpose models that are not designed for today's complex climate and economic challenges or for understanding the growing risks of inaction and the economic opportunities from green and resilient transitions. Others depend heavily on external tools they cannot easily adapt or fully understand, limiting their ability to generate context-specific, policy-relevant insights.

Existing tools need to be improved and expanded to reflect today's climate and economic realities. Ministries need a suite of tools that can assess policy packages across sectors, estimate economy-wide investment needs, track the latest performance of green technologies, assess physical climate risk impacts and uncertainties, evaluate competitiveness, measure social and economic implications, identify transition risks in financial systems, and understand the distributional impacts of different pathways.

Skills shortages are another major issue. More than 80% of Ministries of Finance that replied to the initiative's Global Survey indicated constraints in staffing and expertise related to climate–economy analytics. Two-thirds said they face challenges in developing models. Half pointed to a lack of financial resources to build these capabilities. Without dedicated investment in people, training, and internal systems, progress is difficult.

International support is available but often falls short on building lasting institutional capacity. Many Ministries report that technical assistance projects rarely leave behind the local skills, systems, or knowledge needed to embed climate–economic analysis into everyday policymaking. Real-world examples showing how to build effective analytical capacity that fits within existing government structures are also thin on the ground.

Data gaps remain a key barrier. Nearly 80% of Ministries of Finance responding to the survey cited data challenges, which can range from missing or unreliable data to a lack of disaggregated, long-term projections. Ministries often struggle to answer critical questions about policies and investments, particularly when costs and benefits need to be broken down by sector, region, or income group.

Some of the tools that do exist are simply not fit for purpose. Models are often too complex, too opaque, or too theoretical to guide real policy decisions. Many focus on stylized policy scenarios rather than the realities Ministries deal with every day. Where tools are too difficult to use or maintain, Ministries are left without practical options. Experience from countries like Rwanda (see Box 4) and Sierra Leone (see Box 7) illustrates just how difficult it can be to find the right balance between analytical sophistication and real-world usability.

Box 7. Sierra Leone's first climate–economy model

Sierra Leone's first macrostructural model to incorporate climate change variables marks an important step forward. However, as the Ministry of Finance was not involved in its development and training time for Ministry staff was limited, there is currently insufficient understanding of its assumptions and structure, which poses challenges for adjusting the model in the future. To strengthen national capacity and ensure relevance to Sierra Leone's specific context, the Ministry has expressed interest in developing a locally tailored model through collaboration between international experts, local consultants, and staff.

Read the full contribution here

5. Recommendations for action: what can be done to address the gaps?

The Coalition of Finance Ministers for Climate Action's Helsinki Principle 4 initiative has identified 12 transformative recommendations for action that, if embraced, would transform the capabilities of Ministries of Finance to address their most pressing climate-related policy issues.

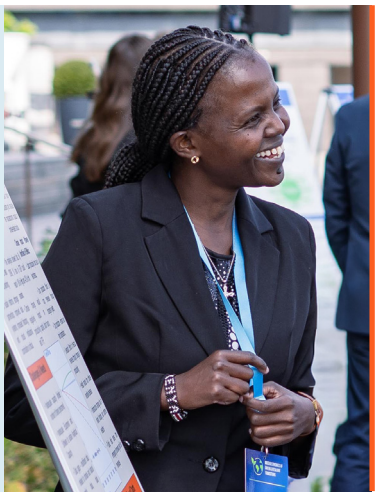
1. Ministries of Finance can boost their analytical capabilities

Recommendations for Ministries of Finance—boost analytical capabilities

1.1. Define key analytical needs and draw on a broad mix of analytical approaches—from enhanced macroeconomic modeling tools to real-world case studies—to address the challenges and opportunities of green and resilient transitions and integrate this into fiscal management and analytical frameworks.

1.2. Prioritize enhancing internal skills and expertise to develop, use, maintain, and adapt analytical tools.

1.3. Get the governance of analytical teams right and invest in strategic collaborations inside and outside government to ensure robust and fit-for-purpose analysis informs decision-making, increases policy coherence, and delivers impact.



The first step for Ministries of Finance is to start with the questions—clearly setting out policy challenges and analytical needs. Strengthening capacity to address these can be achieved by drawing on a broad mix of analytical approaches, from modeling tools and structured decision-making frameworks to lessons learned from real-world case studies in other countries. Some Ministries may choose to start with familiar foundations and gradually integrate climate dimensions into existing tools, fiscal management practices, and analytical frameworks. Some may decide to go further, introducing new tools or combining tools into

tailored suites to answer complex climate policy questions. The goal is not perfection but practicality: building systems that can support better policy decisions while strengthening institutions over time.

Building this capacity requires both technical expertise and institutional alignment. Ministries can enhance their effectiveness by investing in internal skills, fostering teams with expertise in economic modeling, climate science, and sector-specific analysis, and strengthening engagement with key stakeholders such as national statistics offices and line ministries. Strategic partnerships with external experts, including academics, data scientists, and development partners, can further expand capacity, improve data quality, and embed climate analysis into Ministries' core functions. To be impactful, analytical tools must not only support long-term scenario planning but also deliver clear, timely, and credible insights for pressing policy needs. This demands flexible and accessible systems, underpinned by strong governance and continuous collaboration between modelers and decision-makers.

2. International organizations, development finance institutions, philanthropic foundations, and other actors providing or funding capacity-building can take steps to scale up support

Recommendations for funders and providers of technical assistance and capacity-building

2.1. Help countries build long-lasting analytical capacity based on their needs, by providing or funding capacity-building and supporting national and regional institutions and ecosystems of universities, research institutions, national statistical offices, and other government actors to sustain capacity over time.

2.2. Scale up the availability of well-documented and transparent open-source tools and data sources to improve access to robust and fit-for-purpose analytics that can provide timely responses to decision-maker needs, especially for developing countries.

2.3. Collaborate and coordinate to clarify offers of available support, ensure continuity, reduce transaction costs, and promote cohesive assistance to countries as they build their national capacities over time.

These actors play a critical role in helping Ministries of Finance build lasting capabilities for climate–economy analysis. Effective support goes beyond delivering tools; it focuses on developing long-term institutional knowledge, skills, and systems within Ministries and across national ecosystems. Figure 3 above shows the types of support that Ministries consider particularly useful.

Technical assistance providers and other actors supporting or funding capacity-building can help Ministries develop and maintain their own internal capabilities, and also support the national, sub-national, regional, and international ecosystems of universities, research institutions, and partners across government that support Ministries' analytical needs. This means providing sustained training, co-developing models, and embedding experts where needed, all with the goal of enabling Ministries and their partners to adapt and evolve models to provide better analysis given their unique national contexts and policy challenges.

Building structured learning modules and providing long-term programmatic support to foster local communities of practice is essential. Many Ministries have called for more platforms for knowledge exchange to learn directly from peers' experience. Creating spaces where professionals can regularly engage with peers to exchange knowledge and learn from practical experience not only strengthens capacity within Ministries themselves but also empowers national think tanks, research institutions, and local consultants. In so doing, it helps expand the broader ecosystem of expertise and builds stronger domestic ownership and support for climate-informed policymaking.

Improving access to the latest developments in modeling and analysis, alongside practical case studies from countries facing similar challenges, is crucial. Ministries benefit most from a diverse and pragmatic suite of tools that match the specific issues they face. This includes analytical frameworks and open-access dashboards capable of delivering timely, policy-relevant insights when Ministers or senior officials need quick answers by striking the right balance between detail and useability. Support should be flexible and encourage a mix of approaches—avoiding over-reliance on a single model or methodology that may not fit the national context or be suited to assessing the relevant policy options. A critical part of this is making tools open-access and data more widely available to reduce barriers to entry.

Better availability of tools should go hand in hand with improving transparency. Ministries need clearer guidance on the strengths and limitations of different tools, including the potential risks of overusing certain model types. Accompanying materials—such as user guides, assumption summaries, and scenario comparisons—can clarify what a tool can and cannot do and help analysts make more informed decisions.

Strengthening access and availability of data is critical and many Ministries have called for better resources for data collection, analysis, and visualization. High-quality global scenario resources, such as the International Energy Agency's *World Energy Outlook*, could provide key data for emerging and developing countries, while investing in central repositories for trusted climate and economic data and national-level scenarios can streamline workflows, reduce costs, and save Ministries time and resources. Additionally, the development of local statistics and datasets on climate-related factors such as greenhouse gas emissions, physical climate risks, climate-related spending, and technology costs can enable Ministries to generate more actionable, localized analysis.

Finally, the community of actors providing or funding capacity-building can take steps to coordinate to ensure continuity, reduce transaction costs, and promote cohesive assistance to countries as they build their national capacities over time. Organizations can also collaborate by playing to their individual strengths and combining their support, for instance by one providing access to data and tools while another provides training. Taking these steps would help reduce the fragmentation in the landscape of institutions and actors that offer support to Ministries of Finance.

“Support should be flexible and encourage a mix of approaches—avoiding over-reliance on a single model or methodology that may not fit the national context or be suited to assessing the relevant policy options.”

3. The academic and research community can take steps to invest in the next generation of tools

Recommendations for the academic and research community—investing in the new tools

3.1. Refocus research to meet the needs of Ministries of Finance and other economic stakeholders, including addressing the largest gaps in expertise and harnessing new innovations in analytics.

3.2. Develop a range of tools that can be used by Ministries at different levels of capacity and analytical maturity that are simple to use, transparent, grounded in real-world policy needs, and useful for guiding policy decisions.

3.3. Encourage more inter-model comparison and assessment of model performance to ensure approaches provide robust evidence for effective decision-making.

To better serve the needs of Ministries of Finance, researchers should focus not only on developing technically sophisticated models but also on designing tools that are accessible, adaptable, and directly relevant to policy decisions. To date, much of the modeling on climate and energy transitions has been designed primarily to inform Energy and Environment Ministries or to contribute to global assessments like those of the Intergovernmental Panel on Climate Change. In contrast, macroeconomic models have largely lagged behind in integrating climate-related risks and transition dynamics.

There is a clear need for the academic and research community to develop and adapt models, metrics, and methods that address the fiscal, macroeconomic, and policy assessment questions Ministries of Finance face. That means creating modular, flexible frameworks that are simple to use, transparent, and can be scaled up over time rather than relying on models that require highly specialized expertise or extensive data inputs to function. Encouraging inter-model comparisons can help identify where approaches converge or differ, guiding more informed choices for real-world policy application, while regional collaboration can foster the co-creation of tools, practical support, and knowledge exchange.

Equally important is engaging directly with Ministry analysts and policymakers throughout the development process. Early involvement through co-design, testing, and training ensures tools are relevant, usable, and sustainable, while also transferring skills and strengthening institutional capacity. Research should also target major gaps in expertise, including assessing physical climate risks for the macroeconomy, green transition opportunities, technology cost trends, structural transformation, investment needs, and behavioral non-linearities. Finally, harnessing innovations in analytics such as AI and machine learning alongside traditional models can support more adaptive and predictive tools, enabling Ministries to respond more effectively to emerging policy challenges.

4. Strength in numbers: why a global community matters

Recommendations for the Coalition of Finance Ministers for Climate Action and the global Community of Practice—connecting people, experience, and knowledge

4.1. Ensure closer collaboration and synergies between Ministries of Finance and the growing network of international technical assistance and capacity-building programs.

4.2. Create shared spaces where Ministries of Finance and other analytical professionals can regularly engage with peers, exchange knowledge, and learn from practical experience.

4.3. Develop more targeted, practical guidance for Ministries of Finance to address the questions they face, including supporting Ministries to address new questions for which no ready-made tools exist.

Building a thriving global community of practice around economic analysis is essential to help Ministries of Finance advance faster, learn from one another, and avoid reinventing the wheel: connecting people, experience, and knowledge in a way that supports real-world decision-making rather than only creating more or better tools.

Closer collaboration between Ministries of Finance and the growing network of international technical assistance and capacity-building programs can help avoid duplication, align efforts, and fast-track learning. Structured knowledge exchange and joint workshops can turn isolated efforts into shared momentum. One important example is the flagship Forum on the Macroeconomics of Green and Resilient Transitions (see Box 8).

There is also a growing demand for more targeted, practical guidance—especially for Ministries that are just getting started. This could include clear step-by-step pathways, examples of common mistakes to avoid, and a well-curated repository of tools, case studies, and resources that Ministries can confidently use without needing to customize everything from scratch.

Finally, Ministries often face questions that cannot be answered with any ready-made tools—or on which existing tools fall short, such as modeling behavioral responses or producing highly granular data for local adaptation planning. In these cases, international organizations and technical experts can help fill the gap by developing guidance on how to move forward when perfect tools do not exist, including how to make sound decisions using simplified or proxy approaches.

> “More targeted, practical guidance could include clear step-by-step pathways, examples of common mistakes to avoid, and a well-curated repository of tools, case studies, and resources.”

Box 8. Forum on the Macroeconomics of Green and Resilient Transitions

This Forum convenes representatives from Ministries of Finance and other economic institutions, development banks, universities, and think tanks who are working to strengthen the information and evidence base for green and resilient economic transitions. The Forum is designed as a collaborative and participatory platform, where decision-makers can present their policy challenges and priorities, and the analytical community can showcase tools, data, and methods that help address these needs. Through plenary exchanges, deep-dive sessions, and interactive discussions, the Forum fosters peer learning, the sharing of experience, and co-creation of practical insights.

The second Forum took place from June 16–18, 2025, in Copenhagen, Denmark. It was co-hosted by the Coalition of Finance Ministers for Climate Action, the Danish Ministry of Finance, and the Bezos Earth Fund, with support from the Grantham Research Institute on Climate Change and the Environment at LSE. Building on the success of the first event, the 2025 Forum brought together diverse voices from around the world to strengthen collaboration between economic decision-makers and the analytical community, supporting the HP4 initiative's objective of advancing evidence-based policy for a green and resilient global economy.

Delegates at the second Forum on the Macroeconomics of Green and Resilient Transitions, Copenhagen, June 2025

> "The Forum is designed as a collaborative and participatory platform, where decision-makers can present their policy challenges and priorities, and the analytical community can showcase tools, data, and methods that help address these needs."

Looking forward: our focus for 2026

In 2026 the HP4 initiative will continue to strengthen the international Community of Practice it is building by further supporting peer exchange, generating learning opportunities, and addressing knowledge gaps. It will expand the Compendium of Practice with new case studies, produce reports on priority topics identified by Ministries of Finance, and continue to foster the Forum as a platform for direct engagement between modelers, economists, other experts, and decision-makers from Ministries of Finance, international organizations, and the wider academic and research community.

The initiative will encourage the development of the next generation of tools and methods, working with the academic and research community to ensure future work is better aligned with the practical needs of Ministries of Finance and other economic decision-makers.

The initiative will also focus on helping Ministries of Finance build lasting internal capabilities and foster national analytical ecosystems that enable sound decision-making for a green and resilient transition. This will involve working with the institutions involved in the Community of Practice to encourage targeted support and technical assistance that responds directly to the practical needs and priorities of Ministries: in recognition that sound economic analysis of the risks and opportunities of policy options enables Ministries to clearly judge the trade-offs and explain their choices in a way that stands up to scrutiny. When Ministries understand the issues and bring solid analysis to the table, they are better placed to support and strengthen government policy decisions that move the transition forward. To achieve this, Ministries must strengthen their in-house analytical capabilities. Here, support from a broader national ecosystem of expertise is crucial—including data providers, research institutions, and line ministries—to generate and share the inputs required for robust climate-informed fiscal and economic planning. Without such ecosystems to anchor and sustain capacity development, progress risks being piecemeal and fragile.

Finally, the initiative will place greater emphasis on integrating climate–economy analysis into the core processes that already shape fiscal and economic policy. While Ministries of Finance are different from one another, they share many core processes, from the budget cycle to regular analysis of debt sustainability to ensuring that cross-government policy is consistent with institutional structure and budget priorities.

The Global Survey confirms that Ministries of Finance already conduct economic analysis for general economic policy across several functions. Typically, these processes already have established approaches for decision-making, with analytical tools playing a crucial role. By embedding climate considerations with established decision-making structures, Ministries of Finance can ensure that green and resilient transitions are treated as integral to how economies are managed and shaped for the future.

Closing session at the second Forum on the Macroeconomics of Green and Resilient Transitions, Copenhagen, June 2025

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Satellite imagery from Shutterstock. All other photos by Hanna Photography & Film Studio, taken at the second Forum on the Macroeconomics of Green and Resilient Transitions, Copenhagen in June 2025. © Hanna Photography & Film Studio.

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