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Centre for Economic Transition Expertise

Research and Policy at LSE

A handbook to strategic national transition planning

Supplementary guidance and examples

To accompany the report ***Taking the lead on climate action and sustainable development: Recommendations for strategic national transition planning at the centre of a whole-of-system climate response***

Mark Manning, Riona Bowhay, Megan Bowman, Peter Knaack, Lisa Sachs, Agnieszka Smolenska, Fiona Stewart, Thomas Tayler, Perrine Toledano and Harald Walkate

LSE THE LONDON SCHOOL OF ECONOMICS AND POLITICAL SCIENCE

Grantham Research Institute on Climate Change and the Environment

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About the authors

Mark Manning is a Senior Visiting Fellow at the Centre for Economic Transition Expertise.

Riona Bowhay is Senior Macro Stewardship Analyst at Aviva Investors, Sustainable Finance Centre for Excellence.

Megan Bowman is Professor of Law and Founder of the King's Centre for Climate Law and Governance, King's College London.

Peter Knaack is a Consultant at the World Bank Group.

Lisa Sachs is Director at the Columbia Center on Sustainable Investment, Columbia Law School.

Agnieszka Smolenska is a Senior Policy Fellow at the Centre for Economic Transition Expertise.

Fiona Stewart is Global Lead on Insurance and Pensions at the World Bank Group.

Thomas Tayler is Head of Climate Finance at Aviva Investors, Sustainable Finance Centre for Excellence.

Perrine Toledano is Director of Research and Policy at the Columbia Center on Sustainable Investment.

Harald Walkate is Advisor on Sustainable Finance and Financing Sustainability at Route 17 and University of Zurich – Center for Sustainable Finance and Private Wealth.

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List of abbreviations

ADB – Asian Development Bank
ADEME - Agence de l'Environnement et de la Maîtrise de l'Énergie
AE – advanced economy
AMF – French Markets Authority
ARPA-E – Advanced Research Projects Agency – Energy
ASCOR – Assessing Sovereign Climate-related Opportunities and Risks
BCBS – Basel Committee on Banking Supervision
BdP – Banco de Portugal
BIL – Bipartisan Infrastructure Law
BoE – Bank of England
BRD – Development Bank of Rwanda
BTR - Biennial Transparency Report
CAPMF – Climate Actions and Policies Measurement Framework
CBAM – carbon border adjustment mechanism
CCfD – carbon contract for difference
COP – Conference of the Parties
CO_2PL – CO_2 performance ladder
CSDDD – Corporate Sustainability Due Diligence Directive
CSIRO - Commonwealth Scientific and Industrial Research Organisation
CSRD - Corporate Sustainability Reporting Directive
DFI – development finance institution
EMDEs – emerging markets and developing economies
EMI – Emerging Market Initiative
ETF – Enhanced Transparency Framework
ETIP – Energy Transition Investment Plan (Kenya)
EWS - ElektrizitätsWerke Schönau
FCA – Financial Conduct Authority
FiT – feed-in tariff
GCF – Green Climate Fund
GDP – gross domestic product
GFANZ – Glasgow Financial Alliance for Net Zero
GGC – Green Guarantee Company
GIB – Green Investment Bank
GPP – green public procurement
GX – Japan's Pathways to Green Transformation
G20 – Group of Twenty
ICE – internal combustion engine
ICMA – International Capital Market Association
IDB – Inter-American Development Bank
IEA – International Energy Agency
IFI – international financial institution

IFRS – International Financial Reporting Standards [Foundation]
IIGCC – Institutional Investors Group on Climate Change
ILO – International Labour Organization
IMF – International Monetary Fund
IPCC – Intergovernmental Panel on Climate Change
IRA - Inflation Reduction Act [USA]
ISO – International Organization for Standardization
ISSB – International Sustainability Standards Board
JETP – Just Transition Energy Partnership
KPI - key performance indicator
LT-LEDS – long-term low-emissions development strategy
LULUCF – land use, land-use change and forestry
MDB – multilateral development bank
METI – Ministry for the Economy, Trade and Industry
MTN – medium-term note
NAP – national adaptation plan
NDB - national development bank
NDC – nationally determined contribution
NGFS – Networking for Greening the Financial System
NGO – non-governmental organisation
NTP – national transition plan
NZE – net zero emissions
OECD – Organisation for Economic Co-operation and Development
PFI – public financial institution
PPP – public-private partnership
R&D – research and development
SDG – Sustainable Development Goal
SDR – Sustainability Disclosure Requirements
SGX RegCo – Singapore Exchange Regulation
SLB – sustainability-linked bond
SMEs – small and medium-sized enterprises
SNBC - Stratégie Nationale Bas Carbone [France]
TPI – Transition Pathway Initiative
TPT – Transition Plan Taskforce [UK]
UNDP – United Nations Development Programme
UNDRIP – United Nations Declaration on the Rights of Indigenous Peoples
UNEP – United Nations Environment Programme
UNFCCC – United Nations Framework Convention on Climate Change
WBCSD – World Business Council for Sustainable Development
WEF – World Economic Forum
XG – Experimentalist Governance
ZEV – zero emission vehicle

Introduction

This handbook accompanies the CETEx policy report *Taking the lead on climate action and sustainable development: recommendations for strategic national transition planning at the centre of a whole-of-system climate response*,[1] which calls on governments to take the lead in accelerating climate action and sustainable development. In that report we argue that meeting the goals of the Paris Agreement will require strategic planning and coordination across the economy, with governments playing a decisive role.

This Handbook provides guidance, reference material and practical, in-depth examples across five action areas of recommendations set out in the policy report. The two reports are designed to be read together.

Structure of the Handbook

- **Part 1** provides context from the policy report and a brief overview of our recommendations for national transition planning, to help readers navigate the guidance in this Handbook.
- **Part 2** provides guidance on each recommendation, including practical in-depth examples from around the world.
- **The Appendix** provides two case studies of countries that are already on the national transition planning path, mapping key elements of Chile's LT-LEDS and South Africa's Just Energy Transition Investment Plan to our recommendations. Other countries can leverage examples such as these to inform their own national transition planning.

[1] Manning et al., 2024: www.lse.ac.uk/cetex/publications/taking-the-lead-on-climate-action-and-sustainable-development

PART 1.
A framework for national transition planning: overview of recommendations

Context – key messages from the policy report

Transition planning in the private sector has exposed important dependencies on government policy. Private actors are increasingly calling for clearer signals and incentives from government to inform and support their decisions. And well targeted catalytic interventions by government can unlock innovation and investment – changing the economics of climate solutions, and accelerating behavioural change in the economy and society. At the same time, sovereign debt investors are beginning to scrutinise governments' climate policies, and litigation by civil society is increasingly targeting governments that do not demonstrate or implement credible transition pathways.

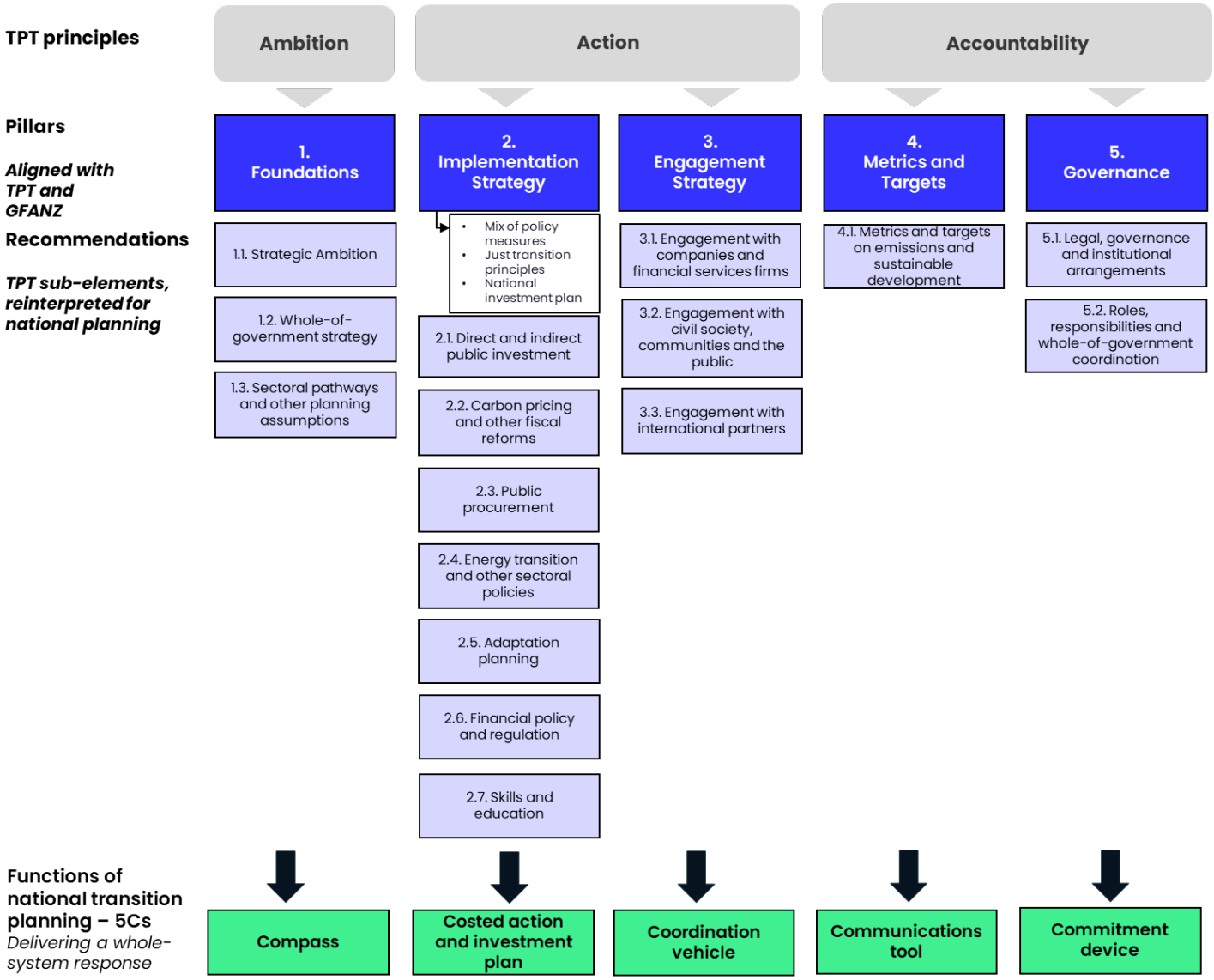
Against this backdrop, the policy report that accompanies this Handbook argues that strategic, credible and suitably ambitious national transition planning could enhance confidence and trust in countries' climate and sustainability commitments and mitigate legal challenge – steering a fair transition, while advancing climate resilience, sustainable development and energy security goals.

The policy report also demonstrates how national transition planning would build from countries' existing plans and strategies – enhancing countries' nationally determined contributions (NDCs) and long-term low emission development strategies (LT-LEDS). National transition planning would help to make NDCs 'investible' – as investors have encouraged (IIGCC, 2024a) – and it would anchor the design of investment and implementation plans in country platforms, and other similar mechanisms for advancing climate action and sustainable development.

To advance the debate, the policy report develops a series of recommendations on the key considerations and action areas for national transition planning. These are informed by the tools developed for private sector transition planning. The authors apply the same five 'pillars' as the frameworks developed by the Transition Plan Taskforce (TPT, 2023) and Glasgow Financial Alliance for Net Zero (GFANZ, 2022), reinterpreting the content and coverage of the TPT Disclosure Framework (see Appendix 1 of the report) for the national planning context. Our detailed recommendations also draw on the framework of ASCOR - Assessing Sovereign Climate-related Opportunities and Risks, an investor-led initiative supported by the Transition Pathway Initiative Centre (TPI Centre; see Scheer et al., 2023) which identifies the key aspects of a government's climate policy and climate finance that are relevant to investors (see Appendix 2 of the policy report).

Figure 1.1 sets out the scope of our recommendations on the key considerations and action areas for national transition planning. Table 1.1 provides an overview of the recommendations, with references to relevant guidance and examples included in Part 2 of this Handbook.

Figure 1.1. Key considerations and action areas for national transition planning



Source: Authors' analysis and TPT (2023)

Table 1.1. Overview of recommendations with links to Handbook guidance and examples

Recommendation	Handbook guidance and examples
1. Foundations Establish a clear Strategic Ambition for the government's contribution to a just, global transition towards a net zero greenhouse gas emissions, climate-resilient and nature-positive economy. This should set the direction for the whole of government and the wider economy; inform pathways for all major sectors; and give companies and financial services firms the confidence to commit capital.	
Recommendation 1.1. Strategic Ambition Establish the Strategic Ambition of national transition planning, including short-, medium- and long-term targets. Informed by science and international commitments, the national Strategic Ambition will comprise the government's objectives and priorities for its contribution to a just, global transition towards a net zero-emissions, climate-resilient and nature-positive economy.	**Key planning content – further guidance** • Science-based emissions reduction pathways and targets. • Complementary objectives and priorities towards a just, equitable, climate-resilient and nature-positive economy. • Goals related to the provision of, or reliance on, international climate finance, cooperation and support. **Examples in Part 2** • Brazil's Ecological Transformation Plan; Colombia's Leadership Portfolio for Climate Action and Sociological Transition (Box 2.1).
Recommendation 1.2. Whole-of-government strategy Embed the national Strategic Ambition coherently across all layers, branches and functions of government, aligning policy and strategy at national and sub-national levels.	**Key planning content – further guidance** • Anchoring public policy in the national Strategic Ambition. • Addressing any misalignment of policy, and harnessing opportunities for greater alignment. **Examples in Part 2** • Chile's LT-LEDS, summarised in the Appendix to this Handbook, provides an example of whole-of-government

	planning, including the allocation of roles and responsibilities across ministries and mechanisms for inter-ministerial coordination.

Recommendation 1.3. Sectoral pathways and other planning assumptions
 	
Determine sectoral pathways aligned with the national Strategic Ambition, in the context of the specific constraints and opportunities of the country, and identify other key planning assumptions.
	Key planning content – further guidance
	
	• Sectoral transition pathways:
	  ○ Use of sectoral pathways, including to inform policy and act as a reference point for private actors
	  ○ Developing sectoral pathways: grounding in science; engagement with industry participants; consistency with internationally developed pathways and scenarios; tailoring for country-specific circumstances.
	• Other planning assumptions: international policy developments; macroeconomic conditions; access to international climate finance and cooperation.
	
	Examples in Part 2
	
	• IIGCC has articulated the usefulness of sectoral pathways in scaling up investment for the transition (Box 2.2).
	• The French Environmental Agency has set out decarbonisation trajectories for the nine principal energy-intensive industrial sectors, informed by consultation with industry participants (Box 2.3).
	• Japan's Ministry for the Economy, Trade and Industry has set up a taskforce to develop sector-specific roadmaps to underpin transition finance. Roadmaps have been developed for 22 industrial sectors (Box 2.4).

2. Implementation strategy

Drawing from a menu of financial and facilitative policy tools, detail concrete actions designed to provide incentives, finance and support for a whole-of-economy transition in line with the national Strategic Ambition and the sectoral pathways that flow from it; embed just transition principles and other sustainability objectives across all measures; and track the financing needs to implement these actions by way of a costed national investment plan.

Integrated regulatory and policy approach, just transition principles, and national investment plan: an effective Implementation Strategy will be grounded in an integrated regulatory and policy approach, which draws from a menu of financial and facilitative measures to arrive at a package of complementary interventions. It will also embed just transition principles and other sustainability objectives across all measures; and be supported by a national investment plan, which costs the government's action plan and helps direct public funding, incentives and other policy instruments to where they are most needed. Careful tracking of financing needs to deliver on the Strategic Ambition, and identification of gaps can help to ensure well-targeted public investment and sound macroeconomics, while crowding in private finance. Specificity and quantification will be important to ensure the strategy is useful in decision-making processes, both within government and for private sector actors.

Key examples

- Resources considering an integrated regulatory and policy approach, and implementing principles for a just transition: Bowman (2023); Nachtigall et al. (2022); IMF (2023b); ILO (2016); Macquarie et al. (2023).
- Resources considering national investment plan: NDC Partnership (Box 2.5).
- Example of national investment plan: Kenya's Energy Transition Investment Plan (Box 2.6).

Recommendation 2.1. Direct and indirect public investment

Invest public funds in activities aligned with the national Strategic Ambition, either directly or indirectly (e.g. via public financial institutions/development finance institutions).

Key planning content – further guidance

- Examples of direct and indirect public investment, including:
  - Public financial institutions' (PFIs') and DFIs' activities
  - De-risking investments, including public-private financing.
- Sovereign sustainable debt issuance.

Examples in Part 2

- Government-led innovation and the DARPA model (Box 2.7).
- PFI/DFI activities:

	○ UK Green Investment Bank investment in wind energy (Box 2.8) ○ Multilateral and national development bank cooperation – World Bank-Development Bank of Rwanda (Box 2.9). • De-risking: ○ Green Guarantee Company (Box 2.10). • Sovereign sustainable debt issuance: ○ Uruguay Ministry of Economy and Finance, 2022; Japan Climate Transition Bond (Box 2.11).
Recommendation 2.2. Carbon pricing and other fiscal reforms Influence private actors' economic decisions through fiscal measures, including by setting incentives (and disincentives) that accelerate private investment in projects and activities that align with the national Strategic Ambition.	**Key planning content – further guidance** • Influencing private actors' economic decisions through fiscal measures, including through: ○ Carbon pricing ○ Fiscal programmes ○ Economic clusters. **Example in Part 2** • Fiscal programmes – US Inflation Reduction Act, which has the potential to unlock nearly $400 billion in federal funding for clean energy (Box 2.12).
Recommendation 2.3. Public procurement Align public procurement with the national Strategic Ambition.	**Key planning content – further guidance** • Shifting demand and upscaling new technologies. • Features of effective green public procurement. • Purposeful public procurement.

Recommendation 2.4. Energy transition and other sectoral policies Determine the national strategy for clean energy upscaling and deployment, while also establishing the optimal policy mix for other key sectors, informed by sectoral pathways aligned with the national Strategic Ambition.	**Key planning content – further guidance** • Fossil fuel phaseout and other activity restrictions. • The upscaling and deployment of clean energy alternatives. • Sectoral policies informed by sectoral pathways. • Industry standards and practices (e.g. ISO Standards). **Examples in Part 2** • Upscaling and deployment of clean energy alternatives. Resource: IEA Renewable Energy Policy Recommendations. • Sectoral policies informed by sectoral pathways. Scale and magnitude of the transition: multiple transitions – multiple solutions (Box 2.13).
Recommendation 2.5. Adaptation planning Integrate identification and assessment of physical climate risks, hazards and vulnerabilities into national transition planning, and develop policies and strategies to address them, in line with the national Strategic Ambition.	**Key planning content – further guidance** • Principles for effective adaptation and resilience strategies. • Mobilising adaptation finance. **Examples in Part 2** • Resources: Least Developed Countries Expert Group (2012); World Bank (2020); UN Environment Programme (2023a), (2023b); Climate Policy Initiative (2023). • Lessons learned from UNEP adaptation projects (Box 2.14).
Recommendation 2.6. Financial policy and regulation Set out an approach to financial policy, regulation and supervision that can support private climate and sustainable finance in line with the national Strategic Ambition, and remove any	**Key planning content – further guidance** • Market conduct rules:

barriers, including by supporting trust and transparency and financial stability as the economy transitions.	○ Transparency rules on sustainability-related risks, opportunities and impacts ○ Transparency rules on corporate transition plans ○ Classification schemes for sustainable activities ○ Standards for labelled financial instruments and products ○ Trust in the wider capital markets ecosystem. • Macro- and micro-prudential regulation and supervision: ○ Lead by example ○ Refine the prudential framework ○ Develop climate stress testing and climate scenario analysis. • Market development efforts. **Examples in Part 2** • EU's Sustainable Finance Strategy (Box 2.15). • Central bank transition plans (Box 2.16).
Recommendation 2.7. Skills and education Determine how the government plans to introduce or adapt educational, skills-building or reskilling programmes across the economy to support a just transition and help achieve the national Strategic Ambition.	**Key planning content – further guidance** • Skills and education. **Example in Part 2** • Resources: International Labour Organization just transition guidelines, which include guidelines for skills development policies.

3. Engagement strategy

Develop plans to coordinate and connect at every level: companies and financial services firms; civil society, communities and the public; and international trading, policy and development partners – in order to inform national transition planning activities and advance the national Strategic Ambition.

Recommendation 3.1. Engagement with companies and financial services firms

Determine how the government plans to engage with companies and financial services firms across the economy in support of the national Strategic Ambition.

Key planning content – further guidance

- Mechanisms for engagement, coordination and collaboration with companies and financial services firms:
  - Collaborating on policy development
  - Identifying and addressing implementation barriers
  - Partnering to upscale solutions.

Examples in Part 2

- The Danish Government's Climate Partnerships (Box 2.17).
- Zero Emission Vehicle Emerging Market Initiative (WBCSD, 2023) (Box 2.18).

Recommendation 3.2. Engagement with civil society, communities and the public

Determine how the government plans to engage with civil society, communities and the public in support of the national Strategic Ambition.

Key planning content – further guidance

- Mechanisms for engagement, coordination and collaboration with civil society, communities and the public – different options for government engagement with society, e.g.:
  - Large-scale public communication and buy-in
  - Formal deliberation processes
  - Place-based community-owned, community-led initiatives.
- Nudging public behaviour.

	Examples in Part 2 • Examples of public engagement approaches (Box 2.19).

Recommendation 3.3. Engagement with international partners
Determine how the government plans to engage with other international partners to influence policy, systemic oversight, and development outcomes in support of the national Strategic Ambition.
	Key planning content – further guidance
	• Mechanisms for cooperation, influence and engagement with:
	  ○ UN processes
	  ○ DFIs and international financial institutions (IFIs)
	  ○ Regulatory bodies across the international financial architecture.
	• Bilateral and regional collaboration and engagement.
	Examples in Part 2
	• Resources: Bridgetown Initiative; Coalition of Finance Ministers for Climate Action

4. Metrics and targets Communicate key actions and outcomes clearly and accessibly across all recommendations, with regular reporting on progress against metrics and targets that build from obligations under the Enhanced Transparency Framework of the Paris Agreement and reflect the national Strategic Ambition. The aim should be to provide accountability and inform the economic decisions of private actors and international stakeholders.	
Recommendation 4.1. Metrics and targets on emissions and sustainable development Determine the metrics and targets that the government plans to use to drive and monitor progress towards the national Strategic Ambition, and report against these metrics and targets on at least an annual basis as part of wider communication of key national transition planning outcomes and implementation actions. Relevant metrics and targets may, *inter alia*, include those related to: • Greenhouse gas emissions and removals	**Key planning content – further guidance** • Greenhouse gas emissions and removals: ○ *Baseline*: monitoring and reporting in accordance with the Enhanced Transparency Framework of the Paris Agreement (ETF)

• Non-greenhouse gas emission goals • Policy measures • Mobilisation of public and private finance • Engagement activity • International climate finance and support. Metrics and targets may be monitored and reported, both on a whole-of-government basis and at a sub-national level.	○ Other emissions-related metrics and targets (e.g. at a sectoral level). • Non-greenhouse gas emissions goals: ○ Metrics and targets related to other climate-related, environmental, social or sustainable development objectives and priorities. • Policy measures to support the national Strategic Ambition: ○ *Baseline*: monitoring and reporting of mitigation and adaptation actions and impacts in accordance with the ETF established under the Paris Agreement ○ Metrics and targets related to other sectoral and cross-sectoral policies set out in 2. Implementation Strategy. • Mobilisation of public and private finance: ○ Metrics and targets related to the mobilisation of public and private finance – e.g. in accordance with the national investment plan. • Engagement activity: ○ Metrics and targets related to whole-of-economy and international engagement activity. • The provision and/or receipt of international climate finance and other support: ○ *Baseline*: monitoring and reporting of support in accordance with the ETF

	○ Other metrics and targets related to the provision and/or receipt of international climate finance and support. **Examples in Part 2** • Baseline: Article 13 of the Paris Agreement establishes an ETF, which sets out, *inter alia,* the information that each Party to the Agreement is expected to report in a Biennial Transparency Report (BTR). • Other metrics and targets: in considering which metrics are likely to be decision-useful to providers of capital, a government may wish to consult ASCOR (see Scheer et al., 2023, summarised in Appendix 2 of the policy report; Box 2.20). • Example: Sectoral targets in Chile's LT-LEDS (Box 2.21).
5. Governance Establish effective legal, governance, accountability and whole-of-government coordination mechanisms to support the design and development of action plans aligned with the national Strategic Ambition, along with regular review, scrutiny and oversight of implementation.	
Recommendation 5.1. Legal, governance and institutional arrangements Establish effective legal, governance and institutional arrangements to support the design and development of action plans in line with the national Strategic Ambition, as well as regular review, scrutiny and oversight of implementation.	**Key planning content – further guidance** • Legal framework and regulatory requirements: ○ An integrated regulatory and policy approach ○ Design-in regular reviews. • Architectural mapping as a preliminary step. • Engaging expert advice and feedback.

	Examples in Part 2 • National transition planning as a strategy to mitigate climate litigation (Box 2.22). • Transition plans and the political economy of climate reforms (Box 2.23). • Architectural mapping: examples of capacity-building support from multilateral organisations (Box 2.24).
Recommendation 5.2. Roles, responsibilities and whole-of-government coordination Determine executive and decision-making roles and control processes, and whole-of-government coordination mechanisms, to support the delivery, governance, monitoring, management, oversight and implementation of action plans in line with the national Strategic Ambition. As part of this, the government may clarify how national transition planning is embedded within its wider control, review, and accountability mechanisms.	**Key planning content – further guidance** • Legislating institutional coherence. • Mainstreaming transition priorities throughout government. • Assigning responsibilities and facilitating coordination. **Examples in Part 2** • Resources: Bowman (2023) considers cooperation and collaboration as a necessary part of an integrated regulatory architecture for a net zero transition; Macquarie et al. (2023) consider the different dimensions of an effective institutional model for coordination.

Source: Authors' analysis and accompanying policy report (Manning et al., 2024)

PART 2. Guidance

1. Foundations

Establish a clear Strategic Ambition for the government's contribution to a just, global transition towards a net zero greenhouse gas emissions, climate-resilient and nature-positive economy. This should set the direction for the whole of government and the wider economy; inform pathways for all major sectors; and give companies and financial services firms the confidence to commit capital.

Our approach is anchored in the concept of a national Strategic Ambition (see Recommendation 1.1). The national Strategic Ambition will be science-based and informed by the government's commitments under international agreements such as the Paris Agreement, Global Biodiversity Framework and the Sustainable Development Goals (SDGs). It will also align with the country's NDC and national adaptation programme (NAP). Reflecting country characteristics, including sustainable development and growth priorities, the Strategic Ambition will set clear objectives and priorities for the government's contribution to a just, global transition towards a net zero-emissions, climate-resilient and nature-positive economy.

The Strategic Ambition will form the basis for a coherent whole-of-government strategy across the many layers, branches and functions of government, exploiting synergies and managing trade-offs (see Recommendation 1.2).

To guide policy and climate action across the economy, we also recommend translating the Strategic Ambition into transition pathways for all major sectors (Recommendation 1.3); again, importantly, this should reflect country-specific characteristics. A government may pragmatically prioritise the most critical and impactful sectors for the economy (see Section 4 of the policy report).

Recommendation 1.1. Strategic Ambition

Recommendation. Establish the Strategic Ambition of national transition planning, including short-, medium- and long-term targets. Informed by science and international commitments, the national Strategic Ambition will comprise the government's objectives and priorities for its contribution to a just, global transition towards a net zero-emissions, climate-resilient, and nature-positive economy.

Strategic Ambition is the compass of national transition planning activities, helping to steer the transition across all major sectors, and in the context of the country's sustainable development and growth priorities. Clear direction to decision-makers, both within government (see Recommendation 1.2), and in the corporate and financial services sectors, will help to align climate action across the economy.

The national Strategic Ambition will be science-based and informed by the government's commitments under international agreements including the Paris Agreement, Global Biodiversity Framework and the SDGs; and it will align with the country's NDC. In some cases, international commitments will have binding legal status in the jurisdiction (see Recommendation 5.1).

By setting targets and goals, the government communicates how ambitious it is about leading the country towards a low-emissions and climate-resilient economy. It clarifies where the government's priorities lie, and also how it will address other social, environmental and growth imperatives as it transitions. An ambitious national Strategic Ambition will set the government's objectives and priorities for its contribution to a just global transition towards a net zero-emissions, climate-resilient, nature-positive economy.

- **Science-based, emissions reduction pathways and targets.** To be perceived as credible by stakeholders, the government's Strategic Ambition will reference short-, medium- and long-term, science-based emissions reduction pathways and targets that reflect country-specific characteristics and the principle of common-but-differentiated responsibility. In some sectors, setting pathways and targets will be relatively straightforward. In others, particularly in hard-to-abate sectors, governments will need to consider the phase-out of polluting assets, the availability of relevant technologies, and other time-specific information. As a result, high-quality national transition planning will incorporate sector-specific transition pathways tailored to local circumstances (see Recommendation 1.3). Sectoral transition pathways are also key to assessing the ambition and alignment of private-sector transition plans (see e.g. OECD, 2022).

- **Complementary objectives towards a just, equitable, climate-resilient and nature-positive economy.** Especially in the case of emerging markets and developing economies (EMDEs), strategic planning can help domestic and international stakeholders understand more clearly how climate action incorporates climate resilience, societal and biodiversity considerations, and how climate policy is connected to broader sustainable development and growth objectives and priorities. See Box 2.1.

- **Goals related to the provision of, or reliance on, international climate finance, cooperation and support.** Governments of advanced economies may include in their Strategic Ambition how they plan to support mitigation and adaptation efforts in EMDEs, in line with their responsibilities under the Paris Agreement. This may also include the provision of technical assistance and capacity-building support for national transition planning. As part of this, development partners and multilateral development banks (MDBs) may develop their country partnership frameworks based on the published outcomes of a government's national transition planning activities.

Box 2.1. Examples of Strategic Ambition on climate and sustainable development - Brazil and Colombia

Brazil's Ecological Transformation Plan

Launched in October 2023, this plan (Federal Government of Brazil, 2023) sets out the Brazilian government's Strategic Ambition in the form of three overarching goals:

1) Higher productivity and green jobs: incorporate technological innovations in industrial processes and in natural resource management, to generate well paid jobs.

2) New relationship with the environment: reduce the environmental footprint of economic development, notably greenhouse gas emissions.

3) Shared and fair earnings: promote equitable development, with better income distribution and widespread benefits.

The objective of emissions reduction (captured under goal 2) is being pursued in the wider context of sustainable development and growth (goal 1), and just transition imperatives (goal 3).

The plan goes on to articulate actions under six pillars: sustainable finance; technological development; bioeconomy; energy transition; circular economy; and new infrastructure and adaptation. In the context of our national transition planning framework, these actions would be elaborated under 2. Implementation Strategy.

Colombia's Leadership Portfolio for Climate Action and Socio-Ecological Transition

Similarly, the Government of Colombia (2023) has expressed its Strategic Ambition in five strategic areas, allocating US$34 billion to corresponding initiatives:

1) **Nature tourism:** development of community initiatives for nature tourism.
2) **Sustainable production systems:** transformation of productive sectors, including livestock and energy-intensive industries to improve energy efficiency and encourage sustainable management of forests and their ecosystem services.
3) **Protection and restoration of ecosystems:** restoration of 753,000 hectares of land, including forests, by 2026.
4) **Fair energy transition, including clean mobility:** decarbonisation of energy generation and promotion of the deployment of renewable energy.
5) **Adaptation to climate change:** Reduction to vulnerability to floods and promotion of community resilience to adverse climate scenarios.

Recommendation 1.2. Whole-of-government strategy

Recommendation. Embed the national Strategic Ambition coherently across the layers, branches and functions of government, aligning policy and strategy at national and sub-national levels.

True transformation will inevitably have deep impacts on, *inter alia*, growth, job creation, productivity, wealth distribution and social policy. As a result, a joined-up, coordinated strategy across government, at national and sub-national levels, will be essential. With the government's 'mission' articulated in its Strategic Ambition, principles such as those advanced by Mazzucato (2021) can help to inform the whole-of government strategy (detailed in 2. Implementation Strategy, and 3. Engagement Strategy) that flows from it, i.e.:

(i) Vision and strong sense of purpose
(ii) Risk taking and innovation
(iii) Organisational dynamism
(iv) Cross-sectoral collaboration
(v) Outcomes-based budgets and long-term horizons
(vi) Dynamic public-private partnerships.

A joined-up approach will reveal synergies and co-benefits between policies, as well as trade-offs, conflicts, competency gaps and internal blockages. Conflicting and contradictory policies and signals can undermine confidence in delivery and its effectiveness, slowing down the momentum in climate action.

Across the economy, companies cite challenges arising from a lack of long-term funding certainty, mixed policy signals and a slow public planning system. A whole-of-government

planning approach can help to orchestrate across an integrated package of policy instruments, spanning financial (e.g. tax policy, catalytic funding, government procurement) and facilitative measures (e.g. financial regulation, licensing and performance standards) – see 2. Implementation Strategy. Legislation in areas such as clean air, water and the phase-out of chlorofluorocarbons (see the 1987 Montreal Protocol on Substances that Deplete the Ozone Layer [UNEP, 2018]) illustrates how the market can find an optimal solution when policy direction is clear, and when financial mechanisms linked to the policy realign market expectations.

Relevant considerations include:

- **Anchoring public policy in the national Strategic Ambition.** Evaluating each government intervention, across the many layers, branches and functions of government, through the lens of the national Strategic Ambition, will support a coherent, aligned national strategy. Establishing structured mechanisms for coordination across government (see Recommendation 5.2) will help determine the optimal policy mix, support prioritisation efforts, and ensure that planning and coordination efforts reveal synergies and co-benefits between policies, along with trade-offs, conflicts, competency gaps and internal blockages. For instance, coordinated planning may reveal tariff barriers to the import of green technology, or tax policies that disincentivise green investment. Careful consideration of the interactions and interdependencies between policies will be especially critical where the national Strategic Ambition sets complementary environmental and social objectives and priorities – i.e. across climate change mitigation and adaptation, just transition and nature.
- **Addressing any misalignment of policy, and harnessing opportunities for greater alignment.** Embedding the national strategic ambition in a whole-of-government strategy will help to identify:
    - Misalignment of policy and regulatory frameworks with Strategic Ambition: signals and incentives arising from misaligned policies can lead to confusion and undermine otherwise-positive actions, hindering the transition (see OECD, 2015). An example is the continued application of fossil fuel subsidies (estimated by the International Monetary Fund [IMF] to be $7[2] trillion globally).[3]
    - Misalignment of financial regulation: this may include unintended incentives that discourage long-term financing, e.g. the labelling of certain de-risking instruments as 'complex', creating disincentives under prudential regimes;[4] or embedded norms and market practices that favour short-termism, e.g. remuneration, performance appraisals.[5]
    - Opportunities to correct, align and reinforce policy across sectors and key policy domains: e.g. investment, taxation, trade, innovation and skills as well as less obvious domains such as urban planning rules that encourage urban sprawl.

[2] $ refers to US dollars unless otherwise stated.
[3] See IMF fossil fuel subsidies data, 2023 update at Black, et al. (2023). Fossil fuel subsidies are a pertinent example of inconsistent policy signals. Despite featuring in G20 communiques since 2009, subsidies remain as high as ever. The absence of a market response to official statements reiterating phaseout intentions (e.g. the 2023 G7 Hiroshima Summit communique) reveals that markets do not expect governments to follow through. The IMF's analysis suggests that addressing subsidies and pricing on a market efficient basis would set emissions on course for a 50% cut by 2030, bringing the Paris Agreement's 1.5ºC target back within reach.
[4] See High-Level Expert Group of Scaling Up Sustainable Finance in Low- and Middle-Income Countries (2024).
[5] Ibid.

The Government of Chile's LT-LEDS, summarised in the Appendix, provides an example of whole-of-government planning, including the allocation of roles and responsibilities across ministries, and mechanisms for inter-ministerial coordination.

Recommendation 1.3. Sectoral pathways and other planning assumptions

Recommendation. Determine sectoral pathways aligned with the national Strategic Ambition, in the context of the specific constraints and opportunities of the country, and identify other key planning assumptions.

Sectoral transition pathways

Achieving a national Strategic Ambition in line with the Paris Agreement and other international agreements will require whole-of-economy transformation. Drawing on the insights from Gates (2021), Box 2.13 describes the scale and magnitude of change required across sectors.

Sectoral pathways can be a powerful way for government, working with industry, to set a common direction for all major sectors, grounded in science, and aligned with the national Strategic Ambition.

Use of sectoral pathways

Sectoral pathways can be instrumental in informing the design of sector-specific and broader government policy. For instance, they can help to target public sector support for research, development, commercialisation and deployment of new or emerging technologies. They can also guide the design and application of other policy instruments: e.g. policies to develop 'green' skills and capabilities; and the provision of just transition compensation and retraining programmes for adversely affected workers and communities.

Sectoral pathways can then be used both as a reference point for private sector transition plans, and as a benchmark against which investors and other stakeholders can assess progress and hold companies to account (see Box 2.2). Furthermore, in contributing to the development of sectoral pathways, industry participants can identify and communicate common challenges, while also surfacing opportunities for coordination and pre-competitive collaboration.

Box 2.2. The use of sectoral pathways by investors

The Institutional Investors Group on Climate Change (IIGCC) surveyed financial institutions in Australia on the usefulness of sectoral pathways to scale up investment for the transition (IIGCC, 2023). Investors found sectoral pathways useful for:

- Understanding emission reduction goals at national, sector and sub-sector levels, and the allocation of emissions abatement responsibilities between sectors
- Understanding macroeconomic and energy sector drivers, and gaining insight into government policy goals
- Identifying and assessing potential investment risks and opportunities in real assets

- Improving decision-making about investments in listed companies
- Enabling better evaluation and management of portfolio climate change risks
- Assisting investors to meet regulatory climate change requirements
- Supporting companies in their climate change transition
- Engaging with governments on climate change policy

Developing sectoral pathways

No standard definition of a sectoral pathway yet exists but the EU is currently attempting to develop a standardised, credible, qualitative and ambitious Sectoral Transition Plan, which is due to be published from January 2025 (ADEME, 2024).

To serve their purpose, sectoral pathways will ideally:

- Be science-based and Paris-aligned
- Take into account the interaction between pathways across sectors (for instance, the sectoral pathway of the energy sector will necessarily have a major impact on all other sectors' pathways)
- Be the product of a collaboration with the stakeholders of a sector to ensure buy-in and the accuracy of inputs
- Be very transparent on all the underlying assumptions
- Build in nature restoration, resilience and adaptation, and just transition as integrated design features (not as add-ons).

To support international coherence, it will be good practice to ensure consistency with relevant global pathways and scenarios, such as the International Energy Agency's Net Zero Emissions by 2050 (NZE) Scenario. The NZE, first introduced in a 2021 report, and updated in IEA (2023a), "involves a global energy system transformation that is unparalleled in its speed and scope". It considers how different sectors are transformed, with a particular focus on "the supply of fossil and low-emissions fuels, electricity generation and three main end-use sectors – industry, transport and buildings". For each sector, the IEA details critical technology and infrastructure milestones and the policies required to achieve them.

The IEA's scenarios may then be adapted for relevant country-specific circumstances. Australia's national science agency, CSIRO, for instance, has developed "rapid decarbonisation" pathways (see Brinsmead et al., 2023) for key Australian sectors, overlaying the IEA's scenarios with local information. Local tailoring will be especially important in the context of EMDEs, where for reasons of credibility, feasibility and fairness, all foundational policy parameters will need to be viewed through a country-specific lens; this includes taxonomies and other investment allocation criteria.[6] We note that many EMDEs do not yet have tailored emission reduction pathways at the national level, so it may take some time to develop tailored sectoral pathways.

[6] See NGFS (2024); IMF (2023a); TPT (2024).

Working back from a 2050 target, policymakers and industry participants can identify key dependencies, and consider carefully the necessary sequencing of investments – including investments in core infrastructure. As noted by the IEA:

> *Electricity transmission and distribution grids need to expand by around 2 million kilometres each year to 2030 to meet the needs of the [Net Zero Emissions] Scenario. Building grids today can take more than a decade, with permitting a particularly time-consuming bottleneck. The same is true for other kinds of energy infrastructure. Policy makers, industry and civil society need to work together to nurture a 'build big' mentality and to expedite decision making, while preserving public engagement and respecting environmental safeguards.* (IEA, 2023: 15)

Rather than governments dictating a single, top-down pathway, it may be good practice to present stakeholders with several possible pathways, spanning a range of scenarios, for informed analytical debate. In the US, for instance, Haley et al. (2023) have developed long-term 'deep decarbonisation' pathways, ranging from a 'drop-in' scenario that minimises capital, labour and institutional disruption, to a '100% renewables' scenario. Six other scenarios examine different outcomes for changes in demand, land use and behaviour.

Ideally, pathways will not rely unduly on 'negative' solutions and technologies, given uncertainties regarding their sustainability and commercial viability. Modelling assumptions will need to be updated regularly to reflect the dynamics of the transition – e.g. rapid changes in technologies, domestic policies, international policies, and the evolving understanding of climate change science. While targeting such features, it will of course be important to maintain a flexible mindset that recognises the experimentation needed to develop and commercialise new technologies.

The IIGCC (2023) recommends several features for sectoral pathways to maximise their usefulness to decision-making as a reference point for investors and other providers of capital. These include the speed of technology development and commercialisation required; the type and quantity of skills and capabilities needed to support sector pathways; and the timing of the transition away from fossil fuel exports and domestic fossil fuel use.

Boxes 2.3 and 2.4 present examples of sectoral pathways, developed in France and Japan, respectively.

Box 2.3. A guide to drafting a sectoral transition plan developed by the French Environmental Agency

In France, the National Low-Carbon Strategy (Stratégie Nationale Bas-Carbone - SNBC) sets a target of cutting greenhouse gas emissions by 81% between 2015 and 2050 for the manufacturing industry.

To translate this target into concrete implementation actions, the French Environmental Agency (ADEME, 2024), has set out decarbonisation trajectories for the nine principal energy-intensive industrial sectors (cement; steel; aluminium; ethylene; ammonia; chlorine; glass; paper/cardboard and sugar). These plans were informed by consultation with participants in the heavy industries, and were developed by a multidisciplinary team in order to harness both technical and socioeconomic inputs.

The plans approach the industrial transition not only from a technological point of view but also taking into account relevant markets, costs, funding dependencies and job market implications. ADEME's approach is organised in four phases: scoping (Phase 0); survey of the industry (Phase 1); scenarios (Phase 2); and courses of action (Phase 3). Development of scenarios is at the heart of the approach, with construction of reference points, a transition universe and technological and market pathways feeding into the decarbonisation trajectory and investment timeline.

Box 2.4. Sectoral pathways and policies in Japan

Following the announcement of its commitment to net zero by 2050 in October 2020, the Japanese Government declared its aim to mobilise policy measures to incentivise private companies to undertake "bold investment and innovations" (METI, 2021). In the context of these policy measures, the Ministry of Trade, Economy and Industry (METI) worked with the Ministry of the Environment and the Financial Services Agency to release the *Basic Guidelines on Climate Transition Finance* in May 2021. These Guidelines created the label "transition bonds/loans".

To further incentivise transition finance, METI set up a taskforce to formulate "sector-specific roadmaps that can be used as a reference for formulating transition strategies and judging their suitability when considering transition finance" (METI, 2021). These roadmaps have been developed for 22 industrial sectors, each presenting a pathway for reducing emissions towards net zero by 2050 through the introduction of decarbonisation technologies. Each pathway establishes a timeline through the phased *conversion*, *decommissioning*, and *discontinuation* of legacy technologies and facilities.

Japan has since announced the development of more specific investment strategies over the next 10 years, as well as action plans for the next five years, in line with the 'GX' (Green Transformation) Promotion Strategy published in July 2023 (Japanese Agencies, 2023).

Other planning assumptions

National transition planning will necessarily build on a range of assumptions, for example regarding macroeconomic conditions, the evolution of new, clean energy technologies, and the changes these will bring to production methods, the wider economic structure, and the labour market in decades to come. Communicating these assumptions transparently will help stakeholders evaluate the robustness, credibility and feasibility of the outcomes of the national transition planning process. For example, high-quality national transition planning will be clear about the extent to which achieving a given emissions reduction target relies on carbon removals – and whether these arise from nature-based solutions, or future technological breakthroughs in carbon capture and storage and how these will be achieved.

Any government planning process, including national transition planning, also relies on assumptions regarding future developments in global economics and politics, as well as trade and investment flows, and the behaviour of business and development partners. Again, providing clarity on how the government assumes these external factors will evolve, and how these are expected to impact the country's transition path, will both inform implementation decisions and help stakeholders assess the robustness the plan. A well-designed planning process that incorporates a variety of contingencies will reassure companies, investors and other stakeholders in the real economy that the government's transition is not likely to fall apart in the face of external challenges.[7]

[7] Ranger, et al. (2023) emphasise the importance of a resilient net zero transition – i.e. building "shock-proofing and shock-responsiveness approaches into fiscal policies and the global financial architecture so that shocks no longer inhibit progress."

2. Implementation strategy

Drawing from a menu of financial and facilitative policy tools, detail concrete actions designed to provide incentives, finance and support for a whole-of-economy transition in line with the national Strategic Ambition and the sectoral pathways that flow from it; embed just transition principles and other sustainability objectives across all measures; and track the financing needs to implement these actions by way of a costed national investment plan.

The Parties to the Paris Agreement (2023) (paragraph 16(b), referencing IPCC, 2023) observe that "there is sufficient global capital to close the global investment gap but there are barriers to redirecting capital to climate action, and that Governments through public funding and clear signals to investors are key in reducing these barriers and investors, central banks and financial regulators can also play their part."

To ensure that national transition planning delivers a costed action and investment plan, we recommend that governments develop a detailed implementation strategy. Informed by the Strategic Ambition and sectoral pathways (1. Foundations), an effective implementation strategy will apply an integrated regulatory and policy approach, with a mix of financial and facilitative policy tools, that sets incentives and provides finance and support for a whole-of-economy transition in line with the national Strategic Ambition (see Recommendations 2.1-2.7). It will also embed just transition principles and other sustainability objectives across all measures, and be supported by a costed national investment plan.

An integrated regulatory and policy approach

The implementation strategy will ideally be grounded in an *integrated* regulatory and policy approach, which draws from a menu of financial and facilitative policy tools (see Bowman, 2023) to arrive at a package of complementary interventions (see also Recommendation 5.1).

Taking a similar approach, the OECD's *Climate actions and Policies Measurement Framework* (CAPMF; described in Nachtigall et al., 2022) identifies a range of 'market' and 'non-market' instruments:

- **Market-based instruments** result in direct, costed financial flows to support the national Strategic Ambition. They may include instruments such as explicit carbon pricing instruments (carbon taxes, emissions trading schemes), implicit carbon pricing instruments (fuel excise taxes), other charges related to reducing GHG emissions (e.g. congestion charges in urban areas), as well as support policies for renewable electricity (e.g. feed in tariffs, auctions) and financing instruments for low-carbon technologies or energy efficiency.

- **Non-market-based instruments** span mandatory restrictions – in some cases, prohibitions – on certain activities, plus facilitative measures such as disclosure rules, and regulatory incentives and disincentives, both within the financial sector and in the real economy. They may include, for instance: standards (e.g. voluntary and mandatory building energy codes, emission limit values, minimum energy performance standards), information instruments (e.g. energy efficiency labels), other regulatory instruments (e.g. bans and phase outs of carbon-intensive technologies, energy efficiency mandates, planning frameworks for renewables), as well as non-climate instruments that would reduce GHG emissions (e.g. motorway speed limits, public investment in rail infrastructure, air pollution standards).

The optimal policy mix will be jurisdiction-specific and contingent on the national Strategic Ambition, as reflected in sectoral pathways (see 1. Foundations). The mix will also take into account the effectiveness of each tool, by sector, and the economic efficiency, revenue mobilisation, administrative practicality and political acceptability of each tool (see Figure 2.1).

Countries' circumstances vary considerably, e.g. in terms of economic development, decarbonisation trends and needs, industrial fabric, administrative capabilities, social buy-in, and political context. As a result, selecting the appropriate policy mix for any country's particular context is as challenging as it is fundamental. For instance, a carbon tax (see Recommendation 2.2) may set good decarbonisation incentives and raise much-needed public resources, but may be a non-starter if its political feasibility is null.

At the same time, given the urgency to act and the need, simultaneously, to innovate rapidly, shift the economics of new technologies, transform business models, and change social norms and behaviours, a government will want to mobilise a range of tools that fit its context, and carefully consider synergies and co-benefits between them. While some tools are likely to be more catalytic than others, including some of those identified in Figure 2.1, others – such as financial regulation – may be slower to incentivise the market and drive change. Nonetheless, these policies may facilitate important information flows, as well as policy signalling, benchmarking, and greenwashing safeguards, therefore complementing other more direct catalytic policy measures.

The policy instruments selected should also work in tandem with international climate policies, and their design should consider interactions between them (conflicts, co-benefits and trade-offs); see IMF, 2023b.

Figure 2.1. Comparison of mitigation instruments

Table 1.1. Comparison of Mitigation Instruments

Mitigation Instruments		Desirability and Feasibility				Environmental Effectiveness by Sector						
Coverage	Instrument	Economic Efficiency	Revenue Mobilization	Administrative Practicality	Political Acceptability	Power	Industry	Transport	Buildings	Forestry/ Land Use	Extractives (CH_4)	Livestock (CH_4, NO_x)
Economywide policies	Carbon taxes					✓✓✓	✓✓✓	✓✓	✓✓	✓	✓✓✓	✓✓✓
	Emission trading systems					✓✓✓	✓✓✓	✓✓	✓✓	✓	✓✓	✓✓
Sectoral policies	Feebates (fees/rebates for dirty/clean firms/ products/activities)					✓✓	✓✓	✓✓✓	✓✓	✓✓	✓✓	✓✓
	Tradable performance standards					✓✓	✓✓	✓✓			✓	✓
	Green subsidies					✓✓	✓✓	✓✓	✓	✓	✓	✓
	Requirements for green technologies/ activities					✓	✓	✓✓	✓✓	✓	✓	✓
Complementary policies		Issue			Network externalities for clean technologies	Innovation market failures			Burdens on households		Burdens on firms	
		Instruments			Public investments	R&D incentives, timebound technology subsidies			Targeted assistance, equitable revenue use		Output-based rebates, tax relief, border adjustments	

Declining efficiency/revenues/practicality/acceptability

✓ = Somewhat environmentally effective
✓✓ = Effective
✓✓✓ = Very effective

Source: IMF (2023: Table 1.1)

ASCOR, introduced in Part 1, identifies the key aspects of a government's climate policy and climate finance that are considered relevant to investors' decisions. These have informed our

recommendations in the Implementation Strategy pillar. Appendix 2 of the policy report includes a mapping between our recommendations and the ASCOR framework.

In a detailed study of around 1,500 climate policies, spanning two decades, 41 countries and four sectors, Stechemesser et al. (2024) observe a wide range of policy approaches. The authors find that 'command-and-control' measures are the most prevalent in all sectors, with the exception of transport (270 observations). These include emissions standards and technology mandates. Market-based policies, such as subsidies, are more frequently observed in advanced economies, particularly in the transport sector. The study observes 116 cases of carbon pricing, with the majority of these again in advanced economies.

Examining the effectiveness of the observed policies, both individually and when implemented as part of a package, the authors find evidence of just 63 successful policy interventions. This underscores the importance of carefully designed and well targeted policy. Furthermore, the authors find that in most cases:

> *…effect sizes are larger if a policy instrument is part of a mix than implemented alone. Some policies – for example, labels and fossil fuel subsidy reforms – are only ever associated with large emission breaks in a mix, which suggests that these types of policy intervention are either never implemented as a stand-alone policy or do not cause major emission reductions by themselves. Several popular instruments – such as bans, building codes, energy efficiency mandates, and subsidies – are either also only ever detected in policy mixes or have smaller average effect sizes if they are associated as stand-alone policy with emission breaks.* (Stechemesser et al., 2024)

Embedding just transition principles and other sustainability objectives

To support the breadth of objectives and priorities in the government's Strategic Ambition, the government's integrated regulatory and policy approach ideally will be designed to advance climate change mitigation, adaptation, just transition and nature goals together.

For instance, viewing its policy choices through a just transition lens, a government may consider how to manage potential adverse impacts for the most heavily impacted households, communities or small businesses. This may include transition assistance policies, such as regulatory exemptions, fiscal transfers, reemployment or relocation support, or targeted subsidies (Macquarie, et al., 2023).

More generally, while the government's overall goals may be guided by the Paris Agreement and other international commitments (e.g. a fair share contribution to net zero emissions by 2050), its particular sectoral priorities and other objectives will reflect strategic, national and energy security, social and other local imperatives.

The International Labour Organization (ILO) has set out a number of considerations for governments to address environmental, economic and social sustainability simultaneously. These include considerations in the areas of macroeconomic and growth policies; industrial and sectoral policies; enterprise policies; skills development; occupational safety and health; social protection; active labour market policies; rights; and social dialogue and tripartism (ILO, 2016). See Recommendation 2.7 for more on skills development policies; and Recommendation 3.2, on the imperative of engagement with civil society, communities and the public.

A national investment plan

Good practice will see governments tracking the financing needs to implement their planned actions by way of a fully costed *national investment plan*.

A national investment plan sets out in a clear and transparent manner:

- The public and private financing needs to achieve the national ambition, based on detailed incremental costing as compared with a business-as-usual scenario (see example below)
- Whether there is a gap between these financing needs and the policy instruments currently being deployed (either direct public investment, or policy instruments to incentivise private investment)
- The policy instruments needed and not yet deployed to fill the gap.

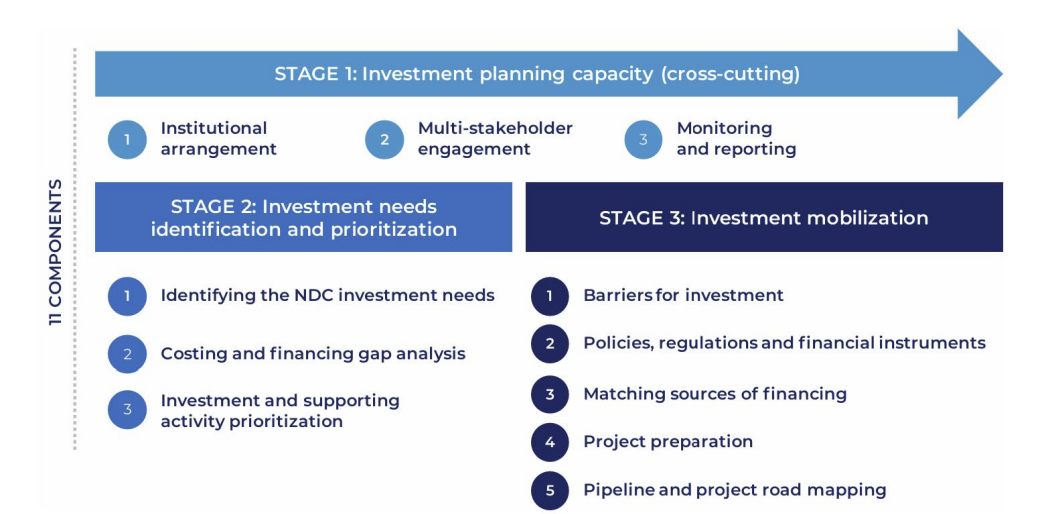
Financing needs would be informed by close engagement with actors across the economy (see Recommendation 3.1). In this way, the government can work towards the implementation of its strategic vision by targeting public support where it is most needed, ensuring sound macroeconomics while crowding in private finance.

Box 2.5 summarises best-practice guidance on national investment planning from the NDC Partnership, while Box 2.6 presents the observed example of Kenya's Energy Transition Investment Plan. See also the example of South Africa's Just Energy Transition Investment Plan (JET IP) in the Appendix.

Box 2.5. Guidance on national investment planning from the NDC Partnership

The NDC Partnership has developed best practice guidance on investment planning for NDCs, which can be a useful tool to support governments' national transition planning (NDC Partnership, 2023). The guidance sets out three process stages, presented in the figure below.

NDC investment planning stages and components



Source: NDC Partnership (2023)

Jointly with the Green Climate Fund (GCF), the NDC Partnership has built from this guidance to develop a comprehensive *Climate Investment Planning and Mobilization Framework,* designed to help governments move "from planning for the implementation of NDC/NAP/LT-LEDSs to identifying and mobilizing finance for investment needs" (GCF and NDC Partnership, 2023).

The framework emphasises the importance of: assessing investment needs across sectors and by sector based on sectoral pathways, national trajectory and the baseline of investment; identifying best-fit financing options (public, private and also blended finance; donors' finance for developing countries); implementing the strategy by providing public finance, engaging with financing partners and addressing investment barriers.

Box 2.6. Example of a national investment plan: Kenya's Energy Transition Investment Plan (ETIP)

Examples of fully costed national investment plans are beginning to emerge. An example is Kenya's ETIP (Republic of Kenya, 2023). Issued in 2023, the ETIP is a comprehensive strategy to achieve 100% renewable energy for the country's electricity needs by 2030, and reduce greenhouse gas emissions by 30% by the same year. These ambitious goals align with Kenya's NDC and are integrated into the broader *Kenya Vision 2030*, which outlines the country's long-term development agenda. The ETIP provides sectoral pathways and scenarios, an overview of the investment plan, and assessments of the socioeconomic impacts of the energy transition on Kenya's economy.

The plan reveals that Kenya's energy transition plan requires an estimated additional capital investment of around $165 billion. Kenya has mapped out potential financing sources over the next 10 years across sectors, taking into account investment barriers and whether de-risking is needed (Republic of Kenya, 2023).

The ETIP is supported by the Climate Change Act of 2016, which establishes the legal and institutional structures necessary to drive the energy transition. The government has since created an enabling environment for investment in renewable energy sources, notably through the Kenya FiT Policy 2021 (EPRA, 2020) and the 2021 Renewable Energy Auction Policy (see DLA Piper, Africa, 2021). Key regulatory measures include feed-in tariffs (FiTs) that encourage private sector investment by guaranteeing fixed payments for renewable energy; and net metering, which enables consumers to feed excess generated power back into the grid. The introduction of green bonds in 2019 also marked a significant step towards financing environmentally sustainable projects, particularly in renewable energy.

A valuable tool to complement investment planning is climate budget tagging. This is a mechanism to support the tracking of climate-related activities and associated expenditures. Several different tagging methodologies and approaches have been used by countries around the world; see World Bank Group (2021a) for a review of international experience.

Recommendation 2.1. Direct and indirect public investment

***Recommendation*:** Invest public funds in activities aligned with the national Strategic Ambition, either directly or indirectly (e.g. via public financial institutions/development finance institutions).

A public investment programme is likely to be a key aspect of the government's implementation strategy. This may, for example, include measures to finance and support the deployment of national transition-enabling infrastructure (such as public transport, charging infrastructure, or an extended flexible grid), R&D, innovation, and education programmes, and bioeconomy initiatives and adaptation measures against climate disasters (see also Recommendations 2.4 and 2.5). Granularity and specificity in the articulation of projects and commitments under the programme – with reference to the national investment plan – will be important for whole-of-government and whole-of-economy planning purposes.

The IEA emphasises the role of government in committing public funds to basic scientific research, and incentivising and cooperating with the private sector to accelerate the development and deployment of new technologies (IEA, 2020). This chimes with the observation that research and development is necessary, but not sufficient: how knowledge flows through the system is critical, with the state typically playing a vital role in supporting, facilitating and coordinating this flow (Mazzucato, 2023).

Among the recommendations in its tracking of progress on clean energy, the IEA calls for governments to "increase public spending on clean energy R&D and demonstration to address pressing innovation gaps" (IEA, 2024), and to "accelerate development of enabling infrastructure".[8] The IEA acknowledges that "putting in place the enabling conditions to commercialise new technologies and products can help de-risk investments." Box 2.7 provides an example of government-led innovation; Box 2.13 discusses the 'green premium' and the role governments can play in changing the economics of new and emergent technologies.

Box 2.7. Government-led innovation and the DARPA Model [Defense Advanced Research Projects Agency]

This case study leans heavily on the book 'The Entrepreneurial State' (Mazzucato, 2023), which describes DARPA and the 'DARPA model' in some detail; and the academic papers of Fred Block (University of California, Davis), especially Revisiting the Hidden Developmental State (2024, with Matthew R. Keller and Marian Negoita).

Substantial innovation is needed to develop all of the technologies required for the net zero transition of different economic sectors. Because many technologies are early-stage and far from deployment at scale on a commercial basis, governments should not assume the private sector (corporations, start-ups and venture capital investors) will drive this innovation, and should play a highly proactive role in helping to move technologies from the lab to the marketplace.

In considering the role of government in stimulating innovation and R&D, the approach that the US government has taken since the 1950s is instructive. The US 'developmental network

[8] IEA Tracking Clean Energy Technology Innovation. Other recommendations include that a government should: create incentives for private clean energy innovation; enhance publicly available tracking mechanisms to deliver on pledges, measure progress and adjust priority setting; identify opportunities to improve the resilience and sustainability of clean energy technology supply chains; accelerate development of enabling infrastructure; and work across borders to de-risk investments in clean energy innovation, especially in EMDEs.

state (DNS)' comprises a large number of government agencies that have been able to foster very substantial economic development by supporting academic research, developing ties between academia and startups, and providing both financial support and other forms of assistance to new and existing firms.

One of the US government agencies that is central to this approach is the Defense Advanced Research Projects Agency (DARPA). Along with its sister agency ARPA-E ('E' standing for energy), DARPA offers an interesting model that other governments may wish to consider.

DARPA was set up to give the US superiority in different sectors, mainly (but not only) those related to technology, and has always been aggressively mission-oriented. It has a budget of more than $3 billion per year, 240 staff, operates flexibly with low overheads and is connected to but separated from government. Going a long way beyond simply funding research, DARPA funded the formation of computer science departments, provided start-up firms with early research support, contributed to semiconductor research and support to human-computer interface research and oversaw the early stages of the Internet.

The four key characteristics of the DARPA model as identified by Block et al. (2024) are:

1. A series of relatively small offices, often staffed with leading scientists and engineers, are given considerable budget autonomy to support promising ideas. These offices are proactive rather than reactive and work to set an agenda for researchers in the field. The goal is to create a scientific community with a presence in universities, the public sector and corporations that focuses on specific technological challenges that have to be overcome.

2. Funding is provided to a mix of university-based researchers, start-up firms, established firms and industry consortia. There is no dividing line between 'basic research' and 'applied research', since the two are deeply intertwined. DARPA personnel are encouraged to cut off funding to groups that are not making progress and reallocate resources to other groups that have more promise.

3. Since the goal is to produce usable technological advances, the agency's mandate extends to helping firms get products to the stage of commercial viability. The agency can provide firms with assistance that goes well beyond research funding.

4. Part of the agency's task is to use its oversight role to link ideas, resources and people in constructive ways across the different R&D sites.

The main focus is to assist firms in developing new product and process innovations. The key is that the government serves as a leader for firms to imitate, in an approach that is 'hands-on' in the sense that public sector officials are working directly with firms in identifying and pursuing the most promising innovative paths. In so doing, the government can attract top minds – exactly the kind of expertise that generates the dynamism that government is often accused of not having.

We consider below examples of public investment activities – in particular, the role of public financial institutions (PFIs) and development finance institutions (DFIs), and de-risking activities, such as public-private financing. We also consider the role of international climate finance and sovereign sustainable debt issuance.

Public financial institutions' and development finance institutions' activities

PFIs and DFIs, including national development banks (NDBs) and MDBs, can play a crucial role in scaling up investment, alongside other development partners. According to the Climate Policy Initiative, DFIs accounted for almost one-third of global climate finance flows in 2020/21, and more than half of total public finance (Climate Policy Initiative, 2023). Much of this was project-level finance at market rates.

NDBs are often the primary interface between the public and private sectors, helping to mobilise public and private capital, including through the issuance of sustainable financial instruments. NDBs can also help mitigate risks associated with investing in emerging technologies by offering guarantees, equity investments, and other de-risking instruments. Beyond financing, NDBs can provide essential technical support and capacity-building to ensure the successful implementation and management of sustainable projects as well as supporting innovation through the financing of R&D; see Box 2.8 for an example.

Box 2.8. Funding and support for climate action: UK Green Investment Bank (GIB)

The GIB was set up by the UK government to address market failures in the UK's green economy by helping direct private finance towards novel green infrastructure projects that were struggling to attract mainstream private sector finance due to them being more complex and attracting longer-term returns.

As an example of an early investment, in 2014 the GIB took a 25% stake in the Dong Energy [now Ørsted] Westermost Rough Offshore Wind Farm project. This project was unique in that it was the first large-scale application of the Siemens 6MW turbine, which was significantly more efficient than previous turbines deployed at that time. The project helped accelerate cost reductions in offshore wind across the UK.

Secondary benefits across the supply chain included job creation for local communities: Siemens invested in a new factory in the local city of Hull to manufacture the turbines, and the factory has doubled in size since opening in 2016, employing 1,200 people directly. The University of Hull has developed specialist training courses for engineers to create long-term jobs for the offshore energy sector.

As made clear by Ørsted, this project would not have taken off had the involvement of private investors been unsupported by the GIB. The investment was supported by GIB's statutory objectives and its ability to overcome the complexity and perceived risk of emerging climate solutions with long investment time horizons.

At a multilateral level, MDBs can be instrumental in unlocking large-scale projects, often also supporting the activities of NDBs. Box 2.9 offers an example of credit enhancement provided by the World Bank to support the issuance of a sustainability-linked bond by the Development Bank of Rwanda. We consider further the role of sovereign sustainable debt issuance below.

DFIs also currently account for the vast majority of adaptation finance (86% of total global adaptation finance, as tracked by Climate Policy Initiative, 2023); see also Recommendation 2.5.

Financing programmes can also be designed simultaneously to advance climate, nature and social goals. An example is Costa Rica's Financing Platform for Bio Businesses, launched in 2020. With the strategic support of a range of development partners, the Platform promotes "companies and enterprises (startups) that apply the sustainable use of biodiversity or whose business model seeks to mitigate, reduce or eliminate the negative

impacts of human activities on ecosystems". The Platform supports innovative private initiatives through targeted preferential green credits, seed capital and risk capital in accordance with defined criteria (Monagas, 2023). These criteria consider not only the biodiversity business model of the startup but also alignment with social policies (e.g. related to gender, or vulnerable communities).

Box 2.9. Unlocking national climate action: the Development Bank of Rwanda (BRD) sustainability linked bond issuance

BRD issued its first sustainability linked bond (SLB) in September 2023, thanks to an innovative credit enhancement mechanism structured and funded by the World Bank (World Bank Group, 2023). This was the first SLB issued by a development bank globally. It was also the first SLB to be issued in Eastern Africa, and marked BRD's debut in the bond market.

BRD, a vital development partner of the Rwandese government, sought to diversify its funding sources to meet growing lending demands sustainably. The issuance, a $24.8 million tranche of BRD's $120 million Medium Term Note (MTN) programme, was designed to align with BRD's strategy and Rwanda's work towards meeting the SDGs, minimise lending costs, and bolster the domestic capital market.

The World Bank supported BRD in issuing the SLB, rewarding BRD with lower interest repayments based on meeting specific key performance indicators (KPIs) related to sustainable development. These KPIs encompass improving environmental, social and governance practices, increasing funding to women-led projects, and financing affordable housing.

A critical feature is the credit enhancement mechanism to lower the borrowing cost: BRD funded an escrow account at the National Bank of Rwanda serving as collateral in the event of a default by BRD. The funds are invested into risk-free Government of Rwanda bonds and provided via a loan from the Government of Rwanda, which is itself financed by the World Bank.

Rwanda has also been a recipient of funds under the IMF's Resilience and Sustainability Facility (RSF), which is designed to "provide long-term financing to strengthen economic resilience and sustainability", including by "supporting policy reforms that reduce macro-critical risks associated with climate change". Funds are disbursed under the RSF, conditional on policy reform. In Rwanda's case, these reforms have included "measures to implement climate budget tagging, integrate climate risks into fiscal planning, and strengthen disaster risk management" (IMF, 2024).

De-risking investments

As the GCF-NDC Partnership framework emphasises (see Box 2.5), a key aspect of the finance mobilisation strategy is "mapping investment needs to different potential financial sources" depending on the "the risk-reward profile of the activity" underlying the investment, and the nature of barriers to the investment (e.g. technology, policy, finance).

The IMF observes that, especially in EMDEs, "public-private risk sharing is critical to foster climate private investments. Financing structures that allow for pooling, diversification, and credit enhancements can help reduce the cost of private capital and attract a broad range of investors" (IMF, 2023a). These may include blended finance, public-private partnerships (PPPs) and other similar financing structures. To facilitate the use of these structures in EMDEs,

the World Bank has developed climate toolkits for infrastructure PPPs. Box 2.10 presents another example of de-risking to mobilise climate finance for EMDEs.

Box 2.10. Example of de-risking: the Green Guarantee Company (GGC)

Launched in 2024, the Green Guarantee Company (GGC) aims to minimise risk for private investors supporting renewable energy and climate projects in EMDEs. The GGC is raising $100 million to underpin 'investment-grade' guarantees that will enable companies in EMDEs to secure affordable, long-term loans. Among the early investors are the governments of Nigeria, Norway, the UK and the US, alongside the GCF.

By improving ratings and lowering risks, GGC aims to facilitate climate investment. Through small borrower fees, GGC seeks both profit and climate impact, focusing on borrowers with local investment-grade ratings. Each transaction is evaluated for its potential climate impact. This launch, supported by international development communities, is expected to catalyse $1 billion in climate investment for the least developed countries (see Hirji and Rathi, 2024).

Sovereign sustainable debt issuance

Issuance of sustainable sovereign debt plays an important role in mobilising capital for public investments and building up trust in public transition strategies broadly. If linked to national transition planning commitments, such issuance can also act as a communication and commitment device for governments. In addition, sovereign 'green' issuances can facilitate deepening of sustainable debt markets in less developed financial contexts. They are therefore an important market-based instrument to support national transition planning.

There has been an increase in sustainable debt issuance by sovereigns and other public sector bodies (as a share of global sustainable debt issuance) since the first such issuances by Poland and France in 2016 and 2017, respectively; and especially since the EU's NextGenerationEU issuance to finance the post-pandemic Recovery Fund (see Cheng et al., 2022). Sovereigns have also been significant innovators in the sustainable debt market. Prominent examples here are Uruguay's sustainability-linked bond (SLB) issuances and Japan's Transition Bond (Box 2.11); see also Government of Chile (2023).

Box 2.11. Uruguay's SLB and Japan's Climate Transition Bond

Uruguay: In October 2022, Uruguay issued a $1.5 billion sovereign SLB (Uruguay Ministry of Economy and Finance, 2022). The bond, which was more than twice oversubscribed, involves a symmetrical 'step-up' and 'step-down' in its pricing structure (15 bps) – a novelty in the market – linked to the government's under- or overperformance relative to sustainability targets included in the bond's structure. The instrument's sustainability performance targets include two greenhouse gas emissions reduction-related KPIs, plus forest conservation targets. The goal of the issuance is explicitly to link the country's cost of capital to the achievement of its climate and nature-based goals under international agreements. The features of the SLB were assessed by the second-party opinion provider to align with the International Capital Market Association (ICMA's) SLB principles (ICMA, 2024).

Japan: In February 2024, Japan raised JPY800 billion ($5.3 billion) from its debut 'climate transition' bond, with the issuance almost three-times oversubscribed. Issued in accordance with the Japan Climate Transition Bond Framework (Japanese Agencies, 2023), and designed to align with ICMA's *Climate Transition Bond Handbook* (ICMA, 2023)

and Green Bond Principles (ICMA, 2021), the proceeds are intended to finance Japan's Pathway to Green Transformation ('GX'). Eligible products include decarbonisation of thermal processes in the manufacturing sector and use of hydrogen in the steelmaking sector (Japan Ministry of Economy, Trade and Industry, 2024). The issuance is explicitly linked to sectoral transition roadmaps (e.g. iron and steel, chemicals, power, automobiles) with the aim of promoting transition finance for their implementation (see also Box 2.4).

Recommendation 2.2. Carbon pricing and other fiscal reforms

Recommendation: Influence private actors' economic decisions through fiscal measures, including by setting incentives (and disincentives) that accelerate private investment in projects and activities that align with the national Strategic Ambition.

Setting fiscal incentives (and disincentives) that make transition pathways cost- and profit-competitive can help to accelerate the development, commercialisation and deployment of new technologies, and crowd-in private finance. Such policies may include well targeted environmental taxes, catalytic subsidies that alter the economics of new low-emissions technologies, or the removal and repurposing of fossil fuel subsidies. We consider three examples below: carbon pricing, wider fiscal reforms, and promotion of economic clusters.

Carbon pricing

As the IMF observes, governments are faced with a fundamental trade-off: if they rely mostly on public spending to reach net zero goals by 2050, public debt could rise by 45-50% of GDP; if, on the other hand, governments restrict investment in climate action, the physical impacts of warming will increase, elevating macroeconomic and financial stability risks (IMF, 2023b).

The use of carbon pricing, either through carbon taxation or via 'cap-and-trade' (and similar) emissions trading schemes, is often seen as a tool to alleviate the trade-off.[9] Domestic measures may be accompanied by tools with extra-territorial reach, such as carbon border adjustment mechanisms (CBAMs). At the time of writing, the EU's CBAM is in a transition phase, with the 'definitive regime' to come into force from 2026. The stated aim of the EU's CBAM is to reduce the risk of carbon leakage by putting "a fair price on the carbon emitted during the productive of carbon intensive goods that are entering the EU, and to encourage industrial production in non-EU countries" (European Commission, 2024).

Carbon pricing has the particularity of being an emission-reducing measure that is both cost-effective *and* generates revenue, which in turn can reduce the debt burden. However, carbon pricing can often be a politically unpopular measure, thereby "transforming the trade-off into a trilemma between achieving climate goals, fiscal sustainability, and political feasibility" (IMF, 2023b).

As a result, although carbon pricing is a critical tool, it needs to be part of a broader package of mitigation instruments – e.g. implemented as part of an integrated policy package along with some of the other instruments described elsewhere in this section. Importantly, to support a just transition, carbon pricing measures will typically need to be accompanied by fiscal transfers to those households and communities that may suffer the most from higher energy prices and other flow-on costs arising from carbon pricing.

[9] The voluntary carbon market has emerged in addition to so-called 'compliance markets' for emissions trading – i.e. those established by governments (see International Organisation of Securities Commissions [IOSCO], 2023b). Regulators and other public authorities are taking an increasing interest in voluntary carbon markets (see IOSCO, 2023c).

According to the World Bank's *State and Trends of Carbon Pricing 2024* report (World Bank Group, 2024), in 2023:

- 75 carbon pricing instruments were deployed worldwide, covering 24% of global emissions.
- Carbon pricing revenues reached $104 billion.
- More than half of these collected revenues were allocated to fund climate and nature-related programmes.
- Large middle-income countries such Brazil, India, Chile, Colombia and Turkey are contemplating or planning on deploying an emissions trading system.
- Carbon pricing continues to be applied to the traditional sectors of power and industry, but the application to new sectors such as aviation, shipping and waste is now emerging.
- The full deployment of the EU's CBAM might incentivise governments to consider carbon pricing for iron and steel, aluminium, cement, fertilizers, and electricity.

In its report, the World Bank observes that, despite these positive developments, "less than 1% of global greenhouse emissions are covered by a direct carbon price at or above the range recommended by the High-level Commission on Carbon Prices to limit temperature rise to well below 2°C". The coverage and levels of global carbon prices therefore currently remain far too low.

Fiscal programmes

As observed by the World Bank, "finance ministries can leverage fiscal reforms to reduce climate emissions and deliver on important development goals" (World Bank Group, 2019). Such policies may include well-targeted environmental taxes, catalytic subsidies that spur innovation by altering the economics of new technologies, or the removal and repurposing of fossil fuel subsidies. Box 2.12 illustrates the example of the US Inflation Reduction Act.

Box 2.12. Example of fiscal incentives: the US Inflation Reduction Act (IRA)

The United States passed the Inflation Reduction Act (IRA) in August 2022 (The White House, 2022). This law has the potential to unlock nearly $400 billion in federal funding for clean energy to substantially reduce the country's emissions by 2030. The Bipartisan Infrastructure Law (BIL) and the CHIPS and Science Act were passed in the same period (see McKinsey & Company, 2021; 2022). Together these three bills are expected to inject more than $2 trillion into the US economy, not only to reduce emissions, but also to support the country's domestic manufacturing, innovation, job creation and industrial productivity in green value chains.

The IRA bill's provisions comprise both *demand-pull* and *supply-push* policies:

- Demand-pull policies include subsidies and rebates for clean energy consumers, and tax incentives for firms that use components produced in the US.
- Supply-push policies include low-interest government loans and tax credits for new factories and clean energy projects, and direct investment in onshore clean energy manufacturing.

Together, the IRA and CHIPS Act offer generous incentives for new clean energy technology through the innovation stages from R&D, to providing infrastructure to scale up growth and deployment. As at end-May 2024, incentives provided by the IRA had already generated around $332 billion in new investments in clean energy and transport technologies, most of this being private investment encouraged by an estimated $48 billion in federal tax credits (according to Clean Investment Monitor). $114 billion in new projects in battery manufacturing for electric vehicles have also been announced (see the Big Green Machine).

Economic clusters

Other fiscal measures may target economic clusters to support their energy transition, while also incentivising the emergence of new clusters. Economic clusters have long been recognised as critical features of industrial policies. They encourage deep industrial transformation through economies of scale and innovation, while also facilitating vertical and horizontal linkages through the value chain.

A range of governments have now taken steps to make economic clusters a springboard for the transition. The following examples are adapted from BCG (2024):

- Spain is supporting the Basque Industrial Super Cluster by promoting clean hydrogen, renewable energy and CO_2 capture.
- In October 2023, the US Department of Energy announced the launch of seven regional clean hydrogen hubs, with $7 billion in funding from the BIL (see Box 2.10, above) and a goal to catalyse $40 billion in private investment;[10] as another example, the US is supporting the sustainable construction boom by providing national training and certification programmes for green jobs.
- The Indian government directly invested in and equipped the Tirupur Knitwear Cluster with a zero liquid discharge strategy to reduce groundwater pollution and water use.
- South Korea's Songdo International Business District has become a sustainable urban development and cleantech innovation centre, relying on green construction and smart waste and grid systems.

Recommendation 2.3. Public procurement

Recommendation: Align public procurement with the national Strategic Ambition.

Public procurement (a government's purchase of goods and services) typically comprises a high share of GDP in both advanced economies and EMDEs. In OECD countries, public procurement represented almost 13% of GDP in 2021 (OECD, 2023). In many EMDEs, the share rises to around 30% of GDP (UNEP, 2017). Public procurement can help to support the national Strategic Ambition:

- **Shifting demand and scaling up new technologies.** Green public procurement (GPP) can shift market demand towards low emissions alternatives by helping to absorb the initial 'green premium' – the premium on non-mature low emissions technologies –

[10] The White House (2023). The hydrogen hubs are also designed to promote a just transition, through coverage under the 'Justice40 Initiative'. This initiative "aims to ensure that 40 percent of the overall benefits of certain federal investments go to disadvantaged communities that are marginalised by underinvestment and overburdened by pollution".

while also fostering innovation and scaling up new technologies to become more cost-competitive (Cancino et al., 2024).

- **Features of effective GPP.** A well-structured GPP system will be aligned with the national Strategic Ambition and associated sectoral pathways. It will entail: a robust governance framework; dedicated capacity; specific and escalating mandatory targets (e.g. the share of government procurement that should meet certain environmental or social standards over time, by industry); standardised quantification methods; and strict monitoring and compliance mechanisms.

- **Purposeful public procurement.** To be effective, a GPP should evolve from a passive mechanism, following market trends and mature technology, to a proactive mechanism that fosters the development and uptake of nascent decarbonisation technologies, especially in hard-to-abate sectors (see also Mazzucato, 2020).To this end, innovation needs to permeate current procurement systems. For instance, the CO_2 Performance Ladder piloted in the Netherlands integrates carbon management into preferential buying procurement processes; and Carbon Contracts for Difference (CCfDs), piloted in Germany, the Netherlands and Canada, are designed to provide stable revenue streams for companies adopting green technologies in hard-to-abate sectors, shielding companies from carbon market volatility (ibid.).

Recommendation 2.4. Energy transition and other sectoral policies

***Recommendation*:** Determine the national strategy for clean energy upscaling and deployment, while also establishing the optimal policy mix for other key sectors, informed by sectoral pathways aligned with the national Strategic Ambition.

'Supply-side' measures to restrict, phase out or ban certain high-emissions activities – most notably fossil fuel exploration or extraction activities – are increasingly observed, alongside measures to upscale the deployment of renewable energy alternatives and associated infrastructure.

The government may consider other sector-specific policies, informed by the sectoral pathways determined under Recommendation 1.3. In many cases, these policies will rely on measures considered under 2. Implementation strategy – e.g. public investment or fiscal measures – and may be implemented as part of a complementary package with measures targeted at adaptation, just transition or other sustainability objectives.

It is important to note that energy transition or sectoral policies may need to be pursued in the context of regional efforts – e.g. regional power generation and distribution; or region-wide management of forests and other ecosystems. This again underlines the importance of a strong emphasis on 3. Engagement strategy in the national transition planning process.

Fossil fuel phaseout and other activity restrictions

In recent years, there has been an increasing incidence of measures to restrict, phase out, or ban certain high-emissions activities in particular countries and regions, most notably fossil fuel exploration and extraction activities. For instance, Germany's Coal Phase-out Act stipulates the ending of coal-fired power generation by 2038, while the Biden-Harris administration in the United States has proposed restricting future oil and gas leasing on 5.3 million hectares in the Alaskan National Petroleum Reserve, while at the same time "supporting subsistence activities" for indigenous communities. The proposal also covers 1.1 million hectares of the Arctic Ocean to ensure that the "entire United States Arctic Ocean is off limits to new oil and gas leasing" in perpetuity (US Department of the Interior, 2024).

Global coordination of 'hard-edged' supply-side measures could be impactful, especially if implemented alongside demand-side policies, such as those that rely on carbon pricing to disincentivise consumption of fossil fuels.[11] In fact, taking steps to reduce demand for fossil fuels is as critical as limiting their supply, especially to avoid supply crunches, price hikes and backlash against the transition (Green and Denniss, 2018). Regional integration can be an accelerator of change. For instance, regional power integrators, like those that have been established in Europe, can help to smooth out the impact on energy security of transitioning away from fossil fuels.

In a similar vein, several countries, including the 27 countries of the EU, are moving to phase out sales of new internal combustion engine (ICE) vehicles. And consistent with the Glasgow Declaration on Forests and Land Use, many countries are introducing laws that prohibit or otherwise regulate trading in goods that have contributed to deforestation. Others have set binding energy efficiency standards for buildings: e.g. minimum energy efficiency requirements for leased buildings, with penalties for non-compliance.

The upscaling and deployment of clean energy alternatives

The transition away from fossil fuels can only work with commensurate upscaling of renewable energy investments. Renewable investment needs to increase much faster to ensure that the energy transition hits all the goals at the same time: climate goals, energy access for all, and energy security.

According to the IEA's 2024 *World Energy Investment* report (IEA, 2024), total energy investment worldwide is expected to reach $3 trillion for the first time in 2024 with about $2 trillion flowing towards clean technologies such as renewables, electric vehicles, nuclear power, grids, storage, low-emission fuels, efficiency improvements and heat pumps. Despite this record, the IEA recognises that there are still major imbalances in clean energy investment in many parts of the world, with two-thirds of these investments coming from China, the US and Europe. In EMDEs (outside China), the IEA observes that the level of spending in clean energy investments (about 15% of the global total) is insufficient to meet growing energy demand. The high cost of capital in EMDEs is particularly hampering the scale-up of clean energy investments (with these being much more sensitive to the cost of capital than fossil fuel investments).

Clean energy policies span a range of measures that a government may consider, depending on the country's circumstances and its endowment with renewable sources. Key elements of policy generally include: clarifying the legal framework; setting renewable energy targets; and introducing mechanisms such as contracts for difference to level the playing field in terms of energy pricing. The UK government uses contracts for difference to support electricity generation from low-carbon sources, for instance. Low-carbon generators enter into a contract with the government-owned Low Carbon Contracts Company, agreeing a "flat indexed rate for the electricity they produce over a 15-year period; the difference between the 'strike price' (a price for electricity reflecting the cost of investing in a particular low carbon technology) and the 'reference price' (a measure of the average market price for electricity in the GB market" (HM Government, 2023a).

To ensure smooth rollout and deployment, and appropriate sequencing of measures, an effective policy response also requires integrated energy planning (e.g. investment in grid capacity), electrification of end uses, and steps to foster public demand for clean energies (IEA, 2018). Carefully planned and appropriate sequencing of investment in infrastructure such as grid capacity will be critical.

[11] Higham and Koehl (2021) surveyed fossil fuel production restrictions in G20 countries ahead of COP26. They found nine examples, with varying scope and reach, and underpinned by varying legal instruments.

As observed by the IEA:

> *Clean energy transitions are now driving the transformation of our energy systems and expanding the role of electricity across economies. As a result, countries' transitions to net zero emissions need to be underpinned by bigger, stronger and smarter grids … Modern and digital grids are vital to safeguard electricity security during clean energy transitions. As the shares of variable renewables such as solar PV and wind increase, power systems need to become more flexible to accommodate the changes in output … Delays in grid investment and reform would substantially increase global carbon dioxide (CO_2) emissions, slowing energy transitions and putting the 1.5°C goal out of reach …* (IEA, 2023b: 7-8)

Minimisation of the social and environmental externalities associated with the deployment of new technologies is key to ensuring public sector support for clean energy innovation.

Sectoral policies informed by sectoral pathways

Having worked with industry participants and other stakeholders to determine sectoral pathways (Recommendation 1.3) and set milestones over time, the next step will be to design and deploy relevant policy instruments. Some of these will be sector-specific; some will be cross-sectoral. Given the 'green premium' that is currently observed on most low-emission solutions across sectors, governments have a substantial role to play to help change the economics (see Box 2.13). This may involve the application of a range of policy measures considered elsewhere under 2. Implementation strategy – e.g. public investment and government-led innovation (Recommendation 2.1; Box 2.7); fiscal programmes (Recommendation 2.2); and public procurement (Recommendation 2.3).

Adopting a backcasting approach can support the development of adequate sectoral policies: that is, starting from the end goal, aligned with the Strategic Ambition and working backwards to understand what needs to be done in the short- and mid-term, and in what sequence, with the end goal in mind (for example, net zero by 2050, a climate-resilient, just and nature-positive economy, with decarbonised infrastructure). This approach does not imply static sectoral policies: on the contrary, sectoral policies should adapt to progress in technologies and science.

As a result, sectoral policies would be crafted on the basis of the currently urgent known required actions (e.g. improving permitting and grid infrastructure for renewable energy penetration, as discussed in Box 2.13) as well as on the basis of a roadmap towards the end goal. Backcasting and long-term sectoral policies also facilitate stakeholder engagement and societal understanding and buy-in on ways to accomplish a just transition (see 2050 Pathways, 2017)."

Box 2.13. Scale and magnitude of the transition: multiple transitions, multiple solutions

In discussions about transition plans, the extraordinary range of economic activity that will require transitioning often gets lost: the focus is often on electricity generation which is important but responsible for only 25-30% of emissions. Other sectors also need to transition, most notably industry, agriculture, transport and the built environment.

This box describes the broad buckets of economic activity responsible for most emissions and that therefore will require some form of transition to achieve net zero goals. This may be helpful to governments as they plan and prioritise for a whole-of-economy approach. This content is based on the book *How to Avoid a Climate Disaster* (Gates, 2021), which identifies five buckets of economic activity, indicates the amount of emissions for each,

and then lists the solutions that are available and the breakthroughs we need for other solutions. Gates also calculates the 'green premium' for solutions: the additional cost of the low-carbon option compared with what we use today.

Almost without exception, the green premium for solutions is positive: the cost of the low-carbon solution is higher than whatever is used today, and thus solutions cannot yet be deployed on a commercial basis at scale. For solutions that are cheaper than current technologies often there are other impediments to deployment (e.g. intermittency of supply, permitting issues). Some solutions can be deployed commercially in some locations but not in others. As a result, governments have a large role to play: creating the policies that change the economic incentives (through taxes and subsidies, public procurement); investing in innovation, R&D and energy infrastructure; and removing other barriers to deployment (e.g. permitting).

Needless to say, an overview such as this can never be exhaustive. However, it should give governments a very good sense of the scale and magnitude of the multiple transitions that they will need to engineer and the variety of solutions that will be needed to achieve it.

The five buckets of economic activity identified by Gates are:

1. **Plugging in (electricity): 26% of total emissions.**
   Solutions: Generation: wind (onshore and offshore); solar; nuclear (fission and fusion); geothermal. Storage (to deal with intermittency): batteries (lithium-ion; flow batteries); pumped hydro; thermal storage; green hydrogen. Infrastructure: upgrade of grids. Fossil-based generation: outfit with carbon capture & storage (CCS) or direct air capture (DAC). Other solutions: load/demand shifting (using power more consistently throughout the day).

2. **Making things (cement, steel, plastic): 29% of total emissions.**
   Solutions: (NB The focus in the book is on steel, concrete and plastic; steel and cement alone account for 10% of global emissions. However, manufacturing processes for most other materials also need to change: e.g. fertilizer, glass, paper, aluminium, etc.) Electrification: processes can be electrified to a degree, so depend on solutions listed under 1. Steel and cement: steel (requires extremely high temperatures electricity cannot generate) and cement (requires carbon as input which creates CO_2 as by-product) can effectively not be decarbonised; this requires carbon capture and storage (CCS) and direct air capture (DAC) to reduce emissions as much as possible. Other solutions: steel – using recycled carbon dioxide is possible but can reduce emissions by only 10-33%; cement – making out of seawater and CO_2 captured through CCS and using molten oxide electrolysis (both possible but early stage). Plastics: capture CO_2 so can be net negative if the manufacturing process can be made carbon-free (green electricity). Policies: public procurement creating more demand for low-carbon products and driving prices down; policies to stimulate more efficient use of materials.

3. **Growing things (plants, animals): 22% of total emissions.**
   Solutions: Most emissions are not from CO_2 but methane (from animals; causes 28x more warming than CO_2) and nitrous oxides (from fertilizer and manure; causes 265x more warming). Methane solutions: 3-nitrooxypropanol (3-NOP) reduces emissions by 30% (but needs to be given to cattle once a day, so not feasible for most grazing operations). Spread best practice (make veterinary care and higher-quality feed affordable); spread improved breeds. Nitrous oxide solutions: spread techniques that reduce use of manure and make them more affordable. Fertilizer: no practical zero carbon alternatives today; research needed on new crop varieties that get nitrogen from bacteria and on genetically modified microbes that provide nitrogen (all very early stage). Other solutions: plant-based meat; cultivated meat; technologies and policies to reduce food waste. Deforestation: advanced satellite-based monitors to

spot deforestation and forest fires; synthetic alternatives to palm oil; create economic incentives to maintain forests; enforcing rules to protect areas; creating economic opportunities for rural communities so they don't extract natural resources. Planting trees (to capture CO_2): impractical on the large scale needed, so effects on reducing climate change are probably very limited.

4. **Getting around (planes, trucks, cargo ships): 16% of total emissions.**
   Solutions: Electrification: see 1. Also: policies to encourage buying of EVs and creating networks of charging stations. However, cars still come with a green premium; also completely switching to EVs requires them to be nearly 100% of sales in 15 years; today it is 3%. Larger vehicles, ships, planes: electrification (batteries) is not practical, so we will also require alternative fuels. Alternative fuels: ethanol (though not zero carbon); advanced, second-generation biofuels; electrofuels (very expensive); green hydrogen. Other solutions: policies to encourage less travel; use fewer carbon-intensive materials in cars; fuel efficiency standards; nuclear-powered container ships.

5. **Keeping warm and cool (heating, cooling, refrigeration): 7% of total emissions.**
   Solutions: Air conditioning: requires green electricity, see 1. For F-gases (refrigerants that cause thousands x more warming than CO_2): replace with less harmful coolants (though all very early stage). Heating: electrify what we can: replace gas furnaces with heat pumps, technology is available, requires policies to stimulate replacing of gas furnaces. Given that replacement will be slow: develop clean fuels (see 4). Other solutions: policies to promote efficiency (e.g. efficiency standards; encourage switching to more efficient A/C models), and insulation.

Industry standards and practices

More generally, across sectors, it is important to build a supportive environment for private actors to contribute to the national Strategic Ambition, including by encouraging aligned industry standards and practices.

Economies need to transform behaviour quickly, but it may be neither desirable nor feasible to hard-code certain changes directly in law or regulation. A prior phase of learning, experimentation, may be necessary, with reliance on market-led approaches to change behaviour[12] (see also Recommendation 3.1). Equally, there may be opportunities to combine 'harder' regulation with 'softer' interventions or market-led action. We consider below the case of industry standards.

Governments can encourage the development of (pre-regulatory) industry quality and performance standards linked to the Strategic Ambition. Typically voluntary and set by a national standard-setter or other recognised body, industry standards represent the norms of practice expected of companies operating in a particular industry – e.g. relating to the characteristics of products, processes or governance arrangements.

There are, of course, well-understood limits to voluntarism. Without the force of law or regulation behind them, industry standards rely on other vehicles to ensure they are adopted – e.g. enlightened self-interest, peer pressure, or consumer pressure. Industry standards can nevertheless be impactful as a driver of change. In particular, they:

- Are *consensus-based.* Developed 'by industry, for industry', industry standards can attract widespread buy-in, quickly diffusing accepted practice throughout the

[12] This is consistent with the 'conveyor belt model' proposed by Hale (2021), who says: "We know the most important things to do now, even if we don't know every step to 2050. But this uncertainty means that governance of net zero needs to be adaptive and dynamic. We need a system that encourages experimentation and learns as it goes."

industry; furthermore, standards that are developed and agreed at national level can be exported globally through the International Organization for Standardization (ISO).[13]

- Are often supported by third-party *certification mechanisms.* Submission to independent oversight can help to build trust among consumers and other stakeholders, and act as a source of discipline in the absence of regulation.
- Are easier to *refine and update* than legislation or regulation. Especially where practice is still evolving, industry standards can be more readily updated in response to market-learning.
- Can *drive transformative innovation.* If they set a higher level of ambition than is already present in the market, industry standards can be the catalyst for industry participants to develop new innovative solutions (Blind, 2023).
- *Level the playing field.* Standards set a common baseline of industry practice, also providing certainty – a 'fixed point' – for participants in the industry (or in related industries) to develop complementary products and services.
- Can complement *existing regulation.* While typically voluntary, industry standards may establish practices that help organisations meet existing regulatory requirements in an effective way.
- Can influence *future regulation.* Once established in industry practices, perhaps with some refinement, regulation may follow.

Recommendation 2.5. Adaptation planning

***Recommendation*:** Integrate identification and assessment of physical climate risks, hazards and vulnerabilities into national transition planning, and develop policies and strategies to address them, in line with the national Strategic Ambition.

Effective national transition planning will consider climate change mitigation and adaptation together. Adaptation planning entails careful consideration of physical climate risks, hazards and vulnerabilities that could crystallise over the planning horizon, and the plans to address them – with these set out in the government's national adaptation plan (NAP). Many of the steps taken as part of a NAP will rely on public investment, fiscal measures and other actions taken under 2. Implementation strategy.

Principles for effective adaptation and resilience strategies

The UNFCCC's technical guidelines for NAPs (Least Developed Countries Expert Group, 2012) emphasise four stages: 1. Lay the groundwork and address gaps; 2. Preparatory elements; 3. Implementation strategies; 4. Reporting, monitoring and review. The guidelines provide detailed steps under each element, including key questions.

World Bank Group (2020) has identified six principles for effective adaptation and resilience strategies:

[13] For example, ISO issued Net Zero Guidelines in 2022. Nigel Topping, the UK's UN High Level Champion for Climate Change was quoted as saying "The Net Zero Guidelines… can be used as a core reference text on net zero to bring global actors into alignment, ratchet up ambition and address greenwashing" (Reuters, 2021). It was announced in June 2024 that ISO would build on the Net Zero Guidelines to develop ISO's first standard on net zero (Furness, 2024). ISO has also launched a working group to develop net zero transition planning for financial institutions (ISO, 2024).

- Build resilient foundations with rapid and inclusive development
- Help people and firms do their part
- Revise land use plans and protect critical infrastructure
- Help people and firms recover faster and better
- Manage impacts at the macro level
- Prioritise according to needs, implement across sectors and monitor progress.

These principles chime with the criteria used by UN Environment Programme (UNEP) to assess adaptation planning: see Box 2.14.

Box 2.14. Lessons learned from UNEP adaptation projects

Based on its work on adaptation planning with 23 countries in Africa, Latin America, and the Middle East and Asia, UNEP has identified a number of lessons learned (UNEP, 2023a). While many of the countries considered in the report remain in the preparatory phase and are continuing to build capacity, the leading countries have taken steps in each of the five areas covered by UNEP's assessment criteria for adaptation planning (UNEP, 2023b):

- ***Comprehensiveness*** – e.g. identifying the breadth of climate risks and hazards and assessing vulnerability to hazards in order to inform priority actions. Good practice example: the Dominican Republic developed a series of socioeconomic scenarios to identify "climate vulnerabilities, risk assessments and priority responses in 10 priority territories" (UNEP, 2023a).
- ***Inclusiveness*** – e.g. building buy-in, empowering and enhancing ownership of implementation by engaging all stakeholder groups and "paying due regard to differentiated needs of women and men." Good practice example: Zimbabwe developed a training initiative focussed on 'gender mainstreaming' in climate change projects and programmes (ibid.).
- ***Potential for implementation*** – e.g. "planning can benefit from a central administrative body that is officially in charge of adaptation policymaking and a variety of policy instruments, including investment, incentives and regulations that lead to the desired outcomes." Good practice example: Zimbabwe developed an adaptation financing strategy as part of the NAP process, including opportunities to crowd-in private finance for projects in the agriculture, water and infrastructure sectors through public-private partnerships and other mechanisms (ibid.).
- ***Integration*** – e.g. "mainstreaming adaptation planning and action horizontally (across sectors) and vertically (across levels of administration) is increasingly recognised as an important component of effective adaptation planning." Good practice example: as part of its adaptation financing strategy, Zimbabwe found opportunities to mainstream adaptation spending into existing public investment programmes (ibid.).
- ***Monitoring and reporting*** – e.g. establishing monitoring and tracking systems to oversee plan delivery. Good practice example: Nepal has established a NAP Monitoring and Reporting Framework, which identifies and improves access to data sources (including through data-sharing across government), and enhances the analysis and dissemination of data (ibid.).

Mobilising adaptation finance

Ultimately, adaptation finance will need to be mobilised at scale to build resilience. Public funds – and development finance institutions, in particular – accounted for the overwhelming majority of the $63 billion in adaptation finance recorded in 2021/22 (Climate

Policy Initiative, 2023) (see also Recommendation 2.1). Much of the DFI funding to date has been allocated to large-scale capital projects in the water and wastewater sector (e.g. wastewater treatment and desalination plants), along with policy and capacity-building support and disaster risk management.

Globally, adaptation finance still falls far short of the estimated need: Climate Policy Initiative estimates a need of $212 billion annually up to 2030 in EMDEs, rising to $239 billion annually up to 2050 (Climate Policy Initiative, 2023). UNEP estimates needs in the range of $215 billion to $387 billion per year this decade for developing countries alone (UNEP, 2023b).

It is increasingly accepted that more needs to be done to scale up adaptation finance. Climate Policy Initiative (2023) cites analysis estimating that "every dollar invested in adaptation could provide net economic benefits in the range of 2-10 dollars in the form of reduced risks, losses, increased productivity, and innovation". In particular, scaling up adaptation finance and investing in disaster risk reduction can reduce future costs associated with loss and damage.

Alongside direct and indirect public investment, and efforts to crowd-in private finance, UNEP sees an important role for international financial architecture reform to help bridge the adaptation finance gap. Governments may therefore consider advocating for such reforms through international policy engagement (Recommendation 3.3):

> *Bridging the adaptation finance gap requires more ambitious mitigation and effective adaptation. In addition to increased international public adaptation finance, private-sector finance and domestic expenditure, several approaches can help bridge the gap. These include remittances, increased finance for small and medium-sized enterprises (SMEs), reform of the international financial system and the implementation of article 2.1(c) of the Paris Agreement. The latter offers significant potential, including for developing countries, but it also brings the risk that vulnerable developing countries become less attractive to invest in if article 2.1(c) is driven solely by financial materiality*. (UNEP, 2023b)

Recommendation 2.6. Financial policy and regulation

***Recommendation*:** Set out an approach to financial policy, regulation and supervision that can support private climate and sustainable finance in line with the national Strategic Ambition, and remove any barriers, including by supporting trust and transparency and financial stability as the economy transitions.

Guided by the government's Strategic Ambition, financial policy and regulation can further support and incentivise private finance to invest in the transition – contributing to the Paris Agreement's goal of "making finance flows consistent with a pathway towards low greenhouse gas emissions and climate-resilient development". Without prejudice to institutional mandates, adopting a whole-of-government approach should, at the very least, ensure that financial and monetary policy authorities remove barriers to financing transition activities, helping to mainstream transition considerations in financial markets.

To this end, policymakers may consider taking measures aligned with the national Strategic Ambition, spanning:

- Market conduct rules
- Macro- and micro-prudential regulation and supervision
- Market development efforts

A government may set out its overall approach to such facilitative measures in a dedicated financial sector policy strategy. Examples include the EU's Sustainable Finance Action Plan[14] (see Box 2.15) and the UK government's Green Finance Strategy.[15] Both of these strategies have been updated periodically, taking account of relevant developments, and the impacts achieved.

Any such interventions should be mindful of the global climate finance context. The IMF identifies specific barriers to scaling up finance for EMDEs, calling for a mix of structural policies and enhancements to the "climate information architecture" (IMF, 2023a). To meet the needs of EMDEs, national regulatory frameworks ideally will be tailored to the local context and interoperable across jurisdictions, while international frameworks will include proportionality clauses or other flexibility mechanisms.

Box 2.15. The European Union's Sustainable Finance Strategy

The EU adopted its first Sustainable Finance Action Plan in 2018, informed by numerous analytical reports by relevant technical bodies and agencies (including the European Banking Authority [EBA], Joint Research Centre [JRC], Platform on Sustainable Finance, and European Systemic Risk Board).[16] The EU's policy interventions target all relevant market segments (banking, insurance, capital markets) and support both the demand and supply sides of sustainable finance. These interventions mainstream the EU's 2021 Climate Law (which enshrines the EU's decarbonisation targets as binding) across financial regulation, demonstrating how a clear strategic direction can inform policy across domains.

The Plan focuses on three main policy areas:

- ***Market conduct*** (e.g. common classification regimes [EU Green Taxonomy], sustainable labels and disclosures for financial products and services [EU Green Bond, Sustainable Finance Disclosure Regulation], corporate sustainability disclosures and corporate governance rules [CSRD and CSDDD], and investor protection)
- ***Prudential regulation*** (banking sector[17] and insurance regulation)
- ***Ecosystem support*** through capacity-building and awareness-raising (Platform on Sustainable Finance, Technical Support Instrument,[18] Joint Research Centre)

Given the pace of implementation, lawmakers have relied heavily on prudential and market conduct supervisors to provide adequate supporting guidelines. The EU has also been challenged for increasing the compliance burden on economic actors and undermining competitiveness.

While early studies from the Platform on Sustainable Finance reveal some increase in sustainable finance activities, and the ECB's analytical work shows banks are increasingly integrating climate risk considerations in their lending policies,[19] the overall impact of these interventions has yet to be fully observed. Therefore, in the spirit of experimenting with new policy instruments, it is important that regulatory authorities deploy monitoring mechanisms, with a view to reappraising and adapting, as necessary.

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[14] The European Commission published the first Sustainable Finance Action Plan in 2018 (European Commission, 2018), with updates in 2021 (European Commission, 2021) and 2023 (European Commission, 2023).
[15] HM Government (2019); HM Government (2023b).
[16] See, for example: EBA consultation on management of ESG risks (2024), JRC's EU Science Hub; the EU's Platform on Sustainable Finance; and the European Central Bank - European Systemic Risk Board's report on macroprudential risks from climate change (ESRB/ECB, 2022).
[17] 2019 and 2024 Capital Requirements framework reform (EU Council, 2023). See also Smolenska and van 't Klooster (2022).
[18] See, for example, European Commission DG REFORM's dedicated sustainable finance capacity-building projects (European Commission, 2024).
[19] See, for example, European Commission (2024) on EU Taxonomy uptake in the financial sector, and ECB (2024) on climate risk, bank lending and monetary policy.

Market conduct

- **Transparency rules on sustainability-related risks, opportunities and impacts.** Better transparency along the value chain, from corporate issuers to institutional investors to household savers, can help to address informational barriers that may be holding back the commitment of capital to support the transition. Sustainability-related corporate reporting requirements, in particular, ensure that capital providers' decisions are supported by comprehensive, consistent, comparable and decision-useful information on how companies across the economy are managing sustainability-related risks and opportunities. The International Sustainability Standards Board (ISSB) was established in 2021 to develop a global baseline of sustainability-related reporting standards. These were issued in June 2023 (see IFRS Foundation, 2023a; 2023b) and endorsed by securities regulators shortly thereafter (IOSCO, 2023a). The Standards are now being adopted around the world.[20] Some jurisdictions may mandate complementary information on companies' external sustainability impacts (e.g. in the EU [European Parliament, 2022]). Even where such impacts are not yet driving investors' decisions,[21] this information may inform further stakeholders (such as governments, NGOs and the public), and in time increase pressure on companies to manage their adverse impacts on the environment and society more effectively.

- **Transparency rules on corporate transition plans.** As observed in our accompanying policy report, momentum has built behind transition plan disclosures in the private sector, with reporting standards such as the ISSB Standards and the European Sustainability Reporting Standards (under the EU CSRD) requiring disclosure of forward-looking information on how entities intend to adapt their corporate strategies and business models to respond and contribute to the net zero transition. The IFRS Foundation has assumed responsibility for the TPT's disclosure-specific materials and will use these to develop educational materials to support disclosures against the transition plan-related provisions in the International Sustainability Standards Board (ISSB) climate-related disclosure standard (IFRS S2) (IFRS Foundation, 2024b). Firms' transition plan disclosures, and accompanying engagement, can inform national transition planning in the markets in which they are active. There are, of course, limits to how far disclosure regulation alone can accelerate climate action. Some governments may therefore consider changes in regulation to require that certain companies develop transition plans – rather than simply requiring that they disclose their plans *if they have them*.[22]

- **Classification schemes for sustainable activities.** 'Green taxonomies' and similar mechanisms introduce definitions of sustainable and transition activities.[23] Such schemes can support the national Strategic Ambition, e.g. by enabling the identification of investments aligned with government objectives and priorities. For example, the EU uses the Green Taxonomy in the context of the EU Green Bond Standard.

- **Standards for 'labelled' financial instruments and products.** Setting integrity standards for labelled market instruments – e.g. transition finance, use-of-proceeds debt instruments (green bonds), or sustainability-linked bonds or loans – is another regulatory measure aimed at increasing trust in climate or sustainable finance (see

[20] As of May 2024, jurisdictions representing over half of global GDP were working towards adopting the ISSB Standards in their legal and regulatory frameworks (IFRS, 2024a).
[21] The Global Reporting Initiative (GRI) has developed a framework for reporting on companies' impacts on the environment, the economy and people. The IFRS Foundation and GRI are collaborating to examine how the ISSB Standards and the GRI framework can be used effectively together.
[22] The EU is already moving beyond disclosure with the Corporate Sustainability Due Diligence Directive (CSDDD) (2024).
[23] See EU Green Taxonomy (2020), the Singapore-Asia and ASEAN transition taxonomies. Climate Bonds Initiative (2023) provides an overview of global taxonomies.

ICMA Principles and Guidelines and Handbooks, which are widely adopted around the world; and Climate Bonds Initiative). Robust national transition planning and associated sectoral pathways will provide an additional benchmark for the assessment of credibility of such instruments. Uptake of sustainable finance instruments may be further promoted through fiscal policy incentives and other measures (see Recommendation 2.2). In a similar vein, rules and standards for retail financial products, such as investment funds or 'green' mortgages, aim to build trust and integrity. In the UK, having identified 'greenwashing' as a material harm in the retail market, the Financial Conduct Authority (FCA) finalised a set of product labelling and disclosure rules in November 2023 (FCA, 2023). One of the four investment labels in the FCA's regime, 'Sustainability Improvers', provides explicitly for investment in activities that support a whole-of-economy transition.

- **Trust in the wider capital market ecosystem.** Facilitative regulation may also be directed at building trust in the wider market ecosystem – e.g. calling on stock exchanges and financial market infrastructure providers to play their part in facilitating sustainable finance, leveraging their position at the centre of market networks; and through regulatory oversight of dedicated service providers such as ESG data and ratings providers.

Macro- and micro-prudential regulation and supervision

Central banks and prudential supervisors have an important role to play in advancing the national Strategic Ambition by supporting financial stability as the economy transitions, including by improving management of transition-related financial risks and supporting resilience across the financial system, within the context of their mandates. Playing this role effectively can support and encourage early action, avoiding the potential build-up of risks and higher economic, fiscal and human costs in the future.[24]

As already recognised by global bodies such as the Network for Greening the Financial System, Financial Stability Board, International Organisation of Securities Commissions and the Basel Committee for Financial Supervision, central banks, financial regulators and supervisors can:

- **Lead by example.** Financial and monetary authorities can support the implementation of national transition plans by aligning their own strategies with the Strategic Ambition where relevant, promoting high standards of disclosure, conduct and risk management, and supporting the government through advice and research (see Box 2.16).

- **Refine the prudential framework.** Refinements could include the extension of supervisory time horizons and methodological adaptations – in particular to remove unnecessary obstacles to transition. Some jurisdictions have begun to treat transition plans as a forward-looking proxy for financial institutions' risk exposure. This approach was also explored in the BCBS consultation on Pillar 3 disclosures on climate-related financial risks (BCBS, 2023).[25] The national Strategic Ambition, reflected in national and sectoral transition pathways, would provide a benchmark for prudential regulation and supervision, better enabling regulators to assess how well financial institutions are positioned in respect of the transition across their activities (a micro-prudential perspective). Economy-wide assessment of the robustness of corporate

[24] Central banks can also play a role in providing feedback to governments on systemic risk and options for non-financial regulatory intervention to shift asset allocation decisions and market valuations.
[25] It is worth acknowledging that in this context the focus is on the risk rather than the opportunity side of transition plans, the latter being only a partial view.

transition plans to policy change has implications for the stability of both individual banks and the whole system (a macroprudential perspective).

- **Develop climate stress testing and scenario analysis.** Micro- and macro-exercises may test the resilience of firms, and the financial sector as a whole, as physical climate risks crystallise across the economy and as national transition planning moves to delivery. Such exercises can be used to inform macroprudential policy to safeguard financial stability in times of transition.

Box 2.16. Central bank transition plans

A whole-of-government approach should extend to independent institutions, such as central banks, within relevant institutional framework constraints. There is already broad awareness of the relevance of transition to monetary and prudential policy: more than 90 central banks are currently members of the NGFS. Given the implications of transition for financial stability, many central banks have also begun to integrate transition policy objectives into their strategies in a forward-looking manner. Such documents serve typically to 'green' central banks' own operations and to signal the policy commitment to the market participants.

For example, in 2023 the Bank of England published its *Climate Transition Plan*, with a scope initially limited to physical operations. Following the TPT framework, the Bank's approach is anchored in the UK's legally binding 'net zero' commitment, with the Engagement Strategy pillar of the plan comprising the Bank's relevant supervisory and analytical work in the context of climate financial risk.

Several central banks have also included net zero targets in their own portfolio management (Robins et al., 2021). The Banco de Portugal's 'Decarbonisation Program' of 2024 goes even further in the context of the Portuguese Climate Framework Law (Law No. 98/2021), which requires that "The management bodies of … independent administrative entities … shall approve specific decarbonisation programmes for their services and institutions." In a practical example of a 'whole-of-government' approach, the Banco de Portugal developed a strategy that spans carbon footprint across emission Scopes 1-3, environmental footprint of monetary issuance and environmental impact of the its own financial assets. With regard to the latter category, the Banco de Portugal foresees *inter alia* increasing investment in green bonds, decarbonisation objectives for corporate bond holding and annual publication of Scope 3 emissions related to investment as part of its strategy to 2050.

As the momentum behind transition plans and whole-of-government approaches is building, several central banks and other financial regulators are further exploring how, in addition to relevant analytical work, they may contribute by implementing dedicated regulatory requirements (e.g. sustainability-related disclosure requirements) and removing any obstacles to implementation of transition policies by financial institutions.

Market development efforts

Regulators can play a role in fostering a collaborative sustainable finance ecosystem. This may involve support for the development of innovative sustainable and transition finance product and service offerings, within a competitive setting (see also 3. Engagement strategy). Financial regulators can contribute to ecosystem development in several ways:

- **Regulatory sandboxes.** Sandboxes and other similar activities can promote innovation by creating an accommodative and supportive regulatory environment for new solutions. Regulatory sandboxes allow startup firms to 'test', in a live environment, innovative solutions that fall within the scope of regulation. Firms admitted to

sandboxes typically operate on a small scale and with support and advice from the regulator, with guardrails to ensure no consumer harm. For example, in the UK, the FCA has run two iterations of its Green Fintech Challenge, most recently in 2021 (FCA, 2021), and has also run a 'digital sandbox' pilot designed to foster early-stage testing of technology solutions on sustainability-related data and disclosure (FCA, 2022a.).

- **Research, product innovation and industry utilities.** Regulators may go further and support the establishment of research or innovation labs and other fora that bring together regulatory, industry and research stakeholders with the goal of building awareness, conducting applied research and fostering product innovation. A good example is 'Project Greenprint', launched by the Monetary Authority of Singapore "to harness technology and create a data-centric ecosystem to support the financial sector's sustainability agenda" (MAS, 2024). The Project has two main strands: the development of 'digital utilities'; and fostering collaboration among fintechs, financial institutions and real economy companies.

- **Convening industry participants and promoting collaboration.** Regulators also often play a convening role to help industry participants come together to develop best practice, or advance 'self-regulatory', market-led solutions, potentially ahead of formal regulation.[26]

- **Learning from peer regulators.** Through bilateral engagement between regulators, technical assistance programmes run by MDBs and others, and participation in convenings by international organisations – e.g. the Bank for International Settlements, and the International Organization of Securities Commissions – regulators can also learn from one another and 'fast-track' ecosystem development.

Recommendation 2.7. Skills and education

Recommendation. Determine how the government plans to introduce or adapt educational, skills-building or reskilling programmes across the economy to support a just transition and help achieve the national Strategic Ambition.

An essential element of planning for a just, equitable transition, aligned with the national Strategic Ambition, will be ensuring that knowledge and know-how for a green and more inclusive future is diffused through the economy.

The UN has estimated that transitioning to a green economy "will add 60 million new jobs to the market by 2030" (UNEP, 2021) but others provide caveats; e.g. Strietska-Ilina et al. (2011) caution that such jobs "are conditional on the availability of relevant skills and training". Therefore, an essential element of national transition planning and delivery will be ensuring that knowledge and know-how for a green and more inclusive economy is diffused throughout individual organisations, and across whole sectors, to create behavioural and cultural change that can deliver on the national Strategic Ambition.

Consistent with our recommendations of institutional alignment for whole-of-economy transition (5. Governance), internal collaboration between government ministries and also between government and external stakeholders (3. Engagement strategy) will enable integrated policymaking across areas such as education, young people, labour standards, and rural development, ensuring for example, that "green jobs are safe, have decent pay,

[26] As an example, in 2022 the FCA commissioned ICMA and the International Regulatory Strategy Group to convene an industry working group to develop a Code of Conduct for ESG data and ratings providers (FCA, 2022b).[27] This is consistent with the message in a report by the Advisory Business Group for the UK's Climate Change Committee (Advisory Business Group, 2023), which called for "new Government-business Net Zero partnerships to accelerate progress".

and provide opportunities and pathways for career growth" (Hanley, et al., 2020). The World Bank's *Clean Energy Employment Assessment Tool* (Nguyen, et al., 2021) can help governments to assess direct and indirect growth in green jobs (and provides case study examples focusing on Morocco and Yemen). According to the World Economic Forum, sectors with high growth potential and social utility include agriculture and forestry, infrastructure, construction and engineering (WEF, 2023).

The ILO has established just transition guidelines for skills development policies, among other policy areas (ILO, 2016). These include that governments should:

- Support the transitioning to more environmentally sustainable economies by reviewing skills development policies to ensure they support responsive training, capacity building and curricula.
- Coordinate skills development policies, technical and vocational education and training systems with environmental policies and the greening of the economy; and consider concluding bipartite or tripartite agreements on skills' development.
- Match supply and demand for skills through skills needs assessments, labour market information and core skills development, in collaboration with industry and training institutions.
- Give high policy priority and allocate resources to the identification and anticipation of evolving skills needs and the review and alignment of occupational skills profiles and training programmes.
- Encourage acquisition of both generic skills and skills in science, technology, engineering and mathematics and incorporation in curricula for basic training and lifelong learning.

As an example of skills building and reskilling, the labour market in the US is beginning to adapt to the opportunities presented by clean energy projects catalysed by the IRA. Analysis has concluded that, "Since the IRA's passage, announced clean energy projects will create more than 334,000 jobs in nearly every state in the country … These span industries from battery manufacturing and EV assembly, to solar installation and building retrofits" (Aston et al., 2024). Government agencies can help build these new skills, supporting a just transition by providing new opportunities for otherwise marginalised or vulnerable communities. An example from the US is Philadelphia's Energy Coordinating Agency (ECA), which provides training in new industries for low-income communities (RMI, 2024).

Toledano et al. (2023) have developed guidance for governments on how to ensure communities can benefit from renewable energy projects (e.g. projects related to power and hydrogen generation and grid infrastructure). The authors examine various policy instruments to support impacted communities, observing (p5):

> *In many countries, ensuring a fair transition of coal-dependent regions is imperative for fostering greater social acceptance of renewable energy. Simply attempting to boost renewable energy employment will not be effective unless the coal-sector employment issue is proactively addressed. For example, Spain's Just Transition Institute (ITJ), an autonomous governmental entity affiliated with the Ministry for Ecological Transition and Demographic Challenge, has developed Just Transition Agreements (JTAs). These agreements are a co-governance tool to guarantee commitment and coordination by public administrations (national, regional and local) and to propose support instruments to facilitate the reactivation of these areas. Measures have been implemented to enhance the job prospects and safeguard the well-being of the workforce directly impacted by the coal mines*

> *closures. These initiatives include offering social support in the form of early retirement or voluntary redundancies packages, establishing employment pools to prioritize the integration of affected workers into the dismantling processes, environmental reclamation projects, and other business activities. Policymakers should consider whether benefit-sharing arrangements can be a useful part of these larger efforts.*

A fair and inclusive transition also means expanding educational and training opportunities to women, young people and students, Indigenous communities and marginalised people to ensure a fair transition process (UNEP, 2021). Moreover, 'education' ought to be viewed as symbiotic, given that many demographic groups also have valuable knowledge to impart to government and educators. For example, following devastating bushfires in 2020, Aboriginal fire management techniques are being utilised by local governments in Australia (Gillies, 2017). Indeed, meaningful engagement with Indigenous perspectives is likely to be required to help shift our paradigm from one of dominance and exploitation to one of stewardship and reciprocity for a just transition.

Universities also provide an ideal forum for knowledge enhancement across curricula in all degrees, skills and competency development for both educators and students, and strengthening ties between students and employment opportunities (UNEP, 2021). Universities and other training organisations can be resourced by government to collaborate with industry and professional associations to integrate green topics into requirements for accreditation criteria. These could include accreditation in engineering, sustainable business (CISL, 2022), and green finance (GFI, Sustainable Finance Education Charter).

As an example, in March 2022, the regulatory function arm of Singapore's Stock Exchange, known as Singapore Exchange Regulation (SGX RegCo), commenced mandatory sustainability training courses for all directors of companies listed on the SGX (SGX RegCo, 2022). Directors must attend one of the eight courses to meet enhanced SGX sustainability reporting rules; and confirmation of their attendance must be included in the first sustainability report (issued from 2023).

In a similar vein, Chapter Zero was established in the UK in 2019 to build a community of non-executive directors who were equipped and prepared to lead on climate from the boardroom. Chapter Zero is the UK chapter of a wider international community of directors, the Climate Governance Initiative, which as of July 2024 had chapters in more than 70 countries.

Looking forward, relevant certification and training will need to become mandatory for *all employees* (not just titled roles) to reach the critical mass of know-how required and guard against knowledge loss if the 'lone climate expert' in a firm departs. Moreover, no matter the discipline or sector, training must provide contextual material regarding basic climate science and planetary boundaries to help trainees grasp the big picture of why meaningful action is urgent and what actions they can take within their professional job.

3. Engagement strategy

Develop plans to coordinate and connect at every level: companies and financial services firms; civil society, communities and the public; and international trading, policy and development partners – in order to inform national transition planning activities and advance the national Strategic Ambition.

An effective whole-of-system response relies on coordination and connectivity across the ecosystem, domestically and internationally. Every economic actor has some agency in the transition.

Accordingly, it will be important for governments to engage, collaborate and build partnerships with the full range of stakeholders, to inform and advance action in line with the Strategic Ambition – that is: companies and financial services firms (see Recommendation 3.1); civil society, communities, the public (see Recommendation 3.2); and international policy, trading and development partners (see Recommendation 3.3).

With the growing momentum of private sector net zero commitments and transition plans, governments can work with and support actors across the economy, designing and delivering the sectoral pathways and the supportive policy environment needed to drive action aligned with the national Strategic Ambition. Some of the hardest emissions for an entity to abate may be beyond its immediate control. It is therefore crucial that private actors work not only with governments but also with their supply chains and their peers, to co-create a better enabling environment that can help them meet their climate commitments and enhance their future prospects.

Active input from the private sector to the development of sectoral pathways (see Recommendation 1.3) will help to set a common direction, while also identifying industry-specific challenges. More generally, targeted engagement throughout the planning process, and during implementation, will help the government identify the most impactful points of intervention, revealing common barriers to climate action as well as opportunities to provide targeted financial and policy support, and to coordinate and sequence actions.

Bilateral and multilateral engagement with international trading, policy and development partners can also support systemic delivery. Influencing international partners to build consensus can help to avoid fragmentation and economic and policy bubbles. It will also encourage a lockstep approach to the transition. Overall, we expect that close engagement with international partners will lower the global cost of transition and adaptation, while supporting sustainable development outcomes globally.

Recommendation 3.1. Engagement with companies and financial services firms

Recommendation. Determine how the government plans to engage with companies and financial services firms across the economy in support of the national Strategic Ambition.

Recognising the complexity of the system, mechanisms for engagement and collaboration will be central to the integrated transition planning ecosystem. Engagement between governments, real economy actors and finance providers can help to identify systemic barriers, and coordinate a whole-of-system response to the transition. Each agent in the

system has a role to play, using their individual agency and cross-collaboration to drive success.

At the centre of system-wide efforts, the government can help stakeholders connect and align, and can learn directly from them about challenges, constraints and policy dependencies. This can help to allocate resources and capital more effectively and deliver productivity gains from new innovations – e.g. by sequencing the rollout of interconnected technologies, and harnessing knowledge spillovers.[27] An inclusive approach that brings private sector actors to the table will also be key to shifting mindsets and encouraging a strategic, rather than compliance-oriented, approach to transition.

Careful design of public-private collaborative engagements will be important in ensuring their effectiveness. For instance, there will need to be clarity of purpose, appropriate tailoring for the operational context (including relevant institutional, social, cultural and trust factors), and careful consideration of success factors – such as who is present, their agency, their capability to engage effectively, and their incentives to act on what is decided. Designing effective engagements can be informed by the concept of 'experimentalist governance' (XG): this is about creating incentives for firms and governments to test out new ideas, learn what works, and then make adjustments in light of that experience (Cullenward and Victor, 2020; see also Box 2.7).

Recognising that the transition will not be in the short-term interests of some incumbent industries and companies, there may be resistance in some quarters. Such vested interests will need to be managed if climate action is to accelerate (see Mildenberger, 2020 and Box 2.23). For instance, governments will need to balance incumbent interests with mechanisms for engagement with, and support for, innovators and disruptors (e.g. through government-led innovation mechanisms such as those discussed in Box 2.7).

Given different purposes for engagement, as well as different profiles and agency, the government is likely to need to develop tailored strategies for engagement with financial services firms compared with companies in the real economy; and for large public companies compared with small and medium-sized enterprises.

Private finance will play a particularly important role in accelerating the transition. GFANZ (2022) has defined four transition financing channels: financing to climate solutions; financing to entities that are already aligned to a 1.5°C pathway; financing to entities that are committed to transitioning in line with a 1.5°C pathway; and financing to accelerate the managed phaseout of high-emitting physical assets. National transition planning can act as a key input to decisions under any of these channels, with many financial sector firms using sectoral pathways to identify and benchmark their transition financing activities (see Recommendation 1.3). Equally, active government engagement with financial institutions can help to identify and overcome barriers to transition finance – including the absence of commercially viable projects, regulatory disincentives, or information gaps. Through close engagement and collaboration, governments can take targeted action, including, as necessary, the allocation of targeted public finance to catalyse or de-risk critical private finance.

There are myriad examples of effective public-private engagement in support of transition goals. These typically fall into one of three categories:

- **Collaborating on policy development.** In this category, private actors (and academia and civil society) support the development of an effective policy environment, aligned with national goals, by providing access to specialist sectoral knowledge and

[27] This is consistent with the message in a report by the Advisory Business Group for the UK's Climate Change Committee (Advisory Business Group, 2023), which called for "new Government-business Net Zero partnerships to accelerate progress".

additional policy development resources; and by communicating insights and shared experience that can help policymakers design their interventions more effectively. The TPT in the UK is an example of a dedicated initiative, launched by government, that brought public officials together with business, finance, civil society and academia to collaborate and co-create a policy solution. The output of the initiative was a framework for private sector transition plan disclosures that could be implemented directly in regulation (see also Appendix 1 of the policy report).

- **Identifying and addressing implementation barriers.** Here, companies, financial services firms and government come together regularly to: (i) discuss informational, technological, legal/regulatory or financial barriers to the achievement of national policy goals; and (ii) work collaboratively to address them, drawing on private sector skills, specialist knowledge, experience, creativity and resources – often also involving academia and civil society. Box 2.17 provides the example of the Danish Government's Climate Partnerships.

- **Partnering to scale up solutions.** Government and private actors can partner with one another to scale up emergent technological solutions and other high-impact practices to achieve national goals. By coming together in a well-directed way with clear goals, government, companies and financial services firms identify cross-system connections, resources and capacities that can catalyse an acceleration in the uptake of new solutions (so-called S-curve diffusion). Solutions may, for example, involve targeted research and development (see also Box 2.7), public-private financing, recalibration of incentives, or sequencing of public and private action. Box 2.18 describes an initiative led by the World Business Council for Sustainable Development (WBCSD) to scale up demand for e-trucks in emerging markets. WBCSD also launched a new project in 2024 to explore whether such collaborative public-private initiatives could be rolled out at scale internationally.

Box 2.17. Example of public-private collaboration to identify and address implementation barriers: Danish Government's Climate Partnerships

Following the passage of the Danish Climate Act in 2020, the Danish Government established 14 public-private Climate Partnerships. Each represents a different sector of the economy, and each is tasked with developing recommendations for government to support sectoral climate action plans in support of Denmark's emissions reduction targets (a 70% reduction in emissions by 2030 compared with 1990 levels; and net zero by 2050).

In establishing the Partnerships, the Danish government recognised that "while the public sector provides the ambitious long term goals and stable framework conditions, the private sector supplies the innovation, solutions and investments needed to achieve the vision" (The Danish Government's Climate Partnerships). The Partnerships emphasise the following benefits:

- Engagement – commitment to targets and action
- Innovation – unlocking new solutions
- Acceleration – raising awareness and identifying and pursuing concrete initiatives
- Co-creation – working together towards a common goal

Across the 14 Partnerships, more than 400 recommendations were developed. The majority of these have since been taken forward. The Partnerships have also been beneficial in forging new connections and revealing new possibilities for impactful change. According to Jens Dandanell Petersen, Head of National Energy and Climate Policy and Climate partnerships and the Confederation of Danish Industries:

> *When you look at the results, I think there were 432 recommendations altogether. And today, around 80% of them has been implemented, or partially implemented. I think that's a really high success rate, actually. It's a really good idea to actually prioritize this work. Because it will give a huge insight into what are the potentials within their own sectors. And also opens up for collaboration between sectors that normally not talk to each other. And at least we could see from a Danish perspective, that there was a huge learning curve, actually. New ideas arose and people got to know each other and they created a new network that wouldn't have existed otherwise.* (Quoted in State of Green, 2023)

With the success of the initiative, the Danish Climate Partnerships have developed a 'playbook', with insights for other countries that may wish to launch similar initiatives.

Box 2.18. Example of public-private collaboration to scale up solutions: WBCSD's Zero Emission Vehicle (ZEV) Emerging Markets Initiative

The World Business Council for Sustainable Development and the ZEV Transition Council launched the Zero Emission Vehicle Emerging Markets Initiative (ZEV-EMI) in 2022 (WBCSD, 2023). The initiative aims to bring governments, business and finance together to align ZEV roadmaps and form collaborative agreements.

More than 30 companies are contributing across EMDEs, representing different parts of the value chain. These companies are bringing their ideas, strategic commitments and investments together in areas such as charging infrastructure, finance, fleet decarbonisation, battery lifecycle management, and vehicle manufacturing.

As an example, the ZEV country partnership with India has developed two collaborative models: (i) an E-freight demand aggregation model, which has, *inter alia*, generated demand for 7,700 electric trucks by 2030 from 15 partner companies; and (ii) optimising infrastructure investments through digital collaboration, e.g. by sharing data along the charging infrastructure value chain.

The initiative is now being scaled up through the Collective for Clean Transport Finance.

Recommendation 3.2. Engagement with civil society, communities and the public

Recommendation. Determine how the government plans to engage with civil society, communities and the public in support of the national Strategic Ambition.

Achievement of the national Strategic Ambition will depend on governments developing a clear understanding of societal preferences[28] and building buy-in for the transformational policies identified through national transition planning. There is evidence of broad-based societal support for climate action,[29] which governments have an opportunity to harness as

[28] See, for instance, Rewired Earth.
[29] E.g. Andrew et al. (2023) examined societal attitudes to climate action across 125 countries. A large majority – some 86% of the 130,000 individuals surveyed – expressed support for 'pro-climate social norms', with 69% of the world's population willing to contribute 1% of their personal income towards climate action.

they work towards the national Strategic Ambition. Ongoing engagement with civil society, communities and the public at every stage will therefore be essential.

As countries begin to transition, there will inevitably be a normative shift in lifestyles across society, through how homes are heated, availability of transport options, job opportunities and consumption patterns. Governments may face resistance from citizens if transitional policies are not considered to alleviate cost pressures, especially for the most vulnerable communities and households (see 2. Implementation strategy). Governments have a responsibility to educate citizens, both on the necessity of transformation and on the opportunities; and to ensure that the transition is just and that the benefits are felt equitably across society. They will also need to give careful consideration to the timing of interventions, and trade-offs – e.g. to maintain energy security during the transition.

Clear communications and messaging will therefore be key, along with well-designed mechanisms for government connection and engagement across society, including via sub-national governments (cities, local authorities, etc.), and a prominent citizen 'voice'. As part of this, carefully designed public campaigns can help to deliver a value proposition for behavioural change in society.[30] Importantly, in approaching such engagement activities, it will be important for governments to ensure inclusivity, equity and impact – enabling full and active participation from all demographic groups.

There are many different options for government engagement with society, in their various roles as workers, consumers and citizens. Many of these are introduced and discussed in Macquarie et al. (2023), along with an appraisal of their strengths and limitations and examples of their application. They include the following approaches:

- Large-scale public communications and campaigns
- Targeted interviews, or focus groups
- Online participation
- Deliberative processes – e.g. structured mechanisms for engagement and co-creation
- Mini-publics and citizens' assemblies
- Participatory budgeting
- Dedicated climate or just transition commissions
- Collective bargaining arrangements

Box 2.19 provides some examples of how the various mechanisms for public engagement on climate change have been applied around the world.

Box 2.19. Examples of public engagement approaches

The Centre for Public Impact (CPI) has developed a case study compendium on *Public Engagement on Climate Change* (Centre for Public Impact, 2021). CPI considers examples of many of the approaches described in this section, drawn from around the world. Examples from the compendium are summarised below:

Interventions requiring large-scale public communication and buy-in:

- *Example*: BetterBuildings Michigan was a pilot initiative to improve energy efficiency across urban homes in Detroit, Michigan. The initiative engaged households directly, via local community-based organisations, raising awareness on options for home energy efficiency. Over the period 2010-2013, the initiative is estimated to have

[30] See, for instance, Futerra (2024).

reached more than 11,000 homeowners, and had success both in building demand for green jobs and generating energy savings.

Formal deliberation processes drawing on public perspectives to decide policy priorities:

- *Example*: Ghana's Forest Investment Programme was part of a global programme to tackle deforestation and forest degradation, while also reducing emissions and meeting sustainable development goals. Local community leaders engaged farmers and local communities to build awareness of, and buy-in for, the programme. The programme secured reforestation commitments from farmers, and Community Resource Management Areas were established for local communities.
- *Example*: In January 2019, one of the first local citizens' assemblies on climate change was established by Oxford City Council. Governed by a cross-party advisory group, the objective of the assembly was to help the council develop its approach to carbon abatement, setting its mandate, strategy and budget. The assembly informed a series of recommendations for the council, including that the council take a leadership role on climate, with the aim of achieving net zero emissions sooner than 2050. Sector-specific recommendations were also made, with the council also encouraged to consider actions across the system – by local and national government, businesses and individuals.

Place-based community-owned, community-led initiatives:

- *Example*: ElektrizitätsWerke Schönau (EWS) was established in Schönau, Germany, following a dispute between the town's community and the region's nuclear power provider. After active engagement across the community, including two referenda, the community established EWS and took over operations of the local electricity grid.

Multilateral approaches to societal engagement and empowerment are also observed. A good example is Free, Prior, and Informed Consent (FPIC), an initiative of the UN's Food and Agriculture Organization, which is "a specific right granted to Indigenous Peoples recognised in the UN Declaration on the Rights of Indigenous Peoples (UNDRIP), which aligns with their universal right to self-determination". The initiative gives indigenous peoples the right to "provide or withhold/withdraw consent, at any point, regarding projects impacting their territories".

Nudging public behaviour

Alongside campaigns, governments may also consider other policy options to 'nudge' public behaviour in line with the national Strategic Ambition. The concept of 'nudging' as a policy tool gathered momentum as part of the growing focus on behavioural economics in the early 2000s (see Thaler and Sunstein, 2008).

Nudging refers to small, targeted – often subtle – policy interventions with the aim of steering citizens to make choices that better align with the government's public policy objectives. The idea is that by exploiting observed human behaviour, government can 'nudge' citizens towards different norms by changing the 'choice architecture' – e.g. by restricting choice; presenting information in a different way; making options available in different orders; or using 'opt-out' rather than 'opt-in' mechanisms.

Nudging has been applied in many different fields and contexts. Examples in the healthcare domain are perhaps the most prominent: e.g. health warnings on cigarette packages, or food

nutrition facts and labels (Goyens et al., 2018).[31] There are examples too in the environmental domain and opportunities for governments to do more. For example, home energy performance ratings and 'smart meters' aim to influence choices through better information; prominent meat-free menu options steer diners towards both healthier and less methane-intensive food choices; and sustainable investment default options in pension products harness consumers' inertia.

Recommendation 3.3. Engagement with international partners

> ***Recommendation***. Determine how the government plans to engage with other international partners to influence policy, systemic oversight and development outcomes in support of the national Strategic Ambition.

Bilateral and multilateral engagement with international trading, policy and development partners can support systemic delivery of implementation actions aligned with the national Strategic Ambition. Influencing partners to build consensus can help to avoid fragmentation and economic and policy bubbles. It can also encourage a lockstep approach to the transition.

Overall, close engagement with international partners can be expected to lower the global cost of transition and adaptation while supporting sustainable development outcomes globally. Climate change and other sustainability risks are a collective action problem. Emissions and carbon budgets know no boundaries, and the risks and impacts, though unevenly distributed, are systemic. For a systemic problem, a systemic and collective response is needed. As UN Secretary General Antionio Guterres has put it: "We need maximum ambition, maximum acceleration, maximum cooperation - in a word, maximum action" (Guterres, 2024). In pursuing its national Strategic Ambition, a government therefore needs to consider not only how it will work across different actors and organs of society domestically in order to create a systemic shift in collective mindset and action (see Ostrom, 2010), but also how it can leverage international and multilateral cooperation to create a supportive global enabling environment.

To do this, a government needs to look across its spheres of influence internationally, including its bilateral, bloc and multilateral partnerships and memberships. How can it engage with, learn from, share experience with and support other countries in their own national transition planning so that action adds up to the pace and scale of change required by the scientific, economic and social imperatives for change?

Relevant considerations include:

- **Role within UN processes.** How is the country using its influence at the UN General Assembly and in the UNFCCC? At the UNFCCC COP and subsidiary body processes and in the working groups and programmes, how is the country using its influence to press for the necessary levels of ambition and action (including in NDCs)? Which negotiating groupings does it work with, and how is it pressing for actions that turn commitments made within UN processes into domestic action that can influence not only governmental action but also the incentives and actions of the private sector, finance and citizens? What transparency is it providing to those stakeholders on how the country's influence is being used on their behalf?

- **Influence as shareholders and stakeholders in MDBs, NDBs and international financial institutions (IFIs).** The role of DFIs is discussed in Recommendation 2.1 above. The importance of DFIs in supporting international efforts towards sustainable

[31] There are also examples in other domains, such as in financial products, retirement planning and charitable giving.

development and the alleviation of poverty has been increasingly recognised in multilateral processes, particularly in the context of the need to mobilise increasing levels of climate and other development finance to support EMDEs; and to create conditions in which private finance can massively increase the scale of their financing in support. Although DFIs are not directly under the jurisdiction of the UN or UNFCCC, recent UN cover texts have seen encouragement to Parties to use their influence as *shareholders* of DFIs and IFIs to seek alignment of their activity. In the Sharm el-Sheikh Implementation Plan from COP27, Parties called upon the shareholders of MDBs and IFIs to reform MDB practices and priorities, align and scale up funding, ensure simplified access and mobilise climate finance from various sources (Parties to the Paris Agreement, 2022). The UAE Consensus from COP28 similarly called on MDB shareholders to implement the World Bank's updated vision to create a world free of poverty on a liveable planet, and to continue to significantly scale up the provision of climate finance. Advanced economies' provision of liquidity support, reconstruction grants, use of special drawing rights (SDRs), and forgiveness or restructuring of debt could also feature here – see for instance the Bridgetown Initiative for the reform of the global financial architecture.[32] In short, comprehensive national transition planning will include how a government intends to use its influence in DFIs and IFIs, while also being transparent about measures it has taken.

- **Regulatory bodies across the international financial architecture.** Beyond the reform of MDBs and IFIs, the bodies that make up the governance arrangements that safeguard the stability and function of the global monetary and financial systems (United Nations, 2023) are an important lever by which a government can exert influence in support of its national Strategic Ambition. While domestic markets are domestically regulated, the principles and norms of finance are agreed multilaterally. The need for reform and renewal of the international financial architecture to provide a supportive enabling environment for the mobilisation of finance in support of the transition was recognised in the UAE Consensus from COP28 (Parties to the Paris Agreement, 2022, para. 70) and in increasing calls from the private sector for consistent systems-level reform to both align the financial system with sustainability goals and to avoid arbitrage and fragmentation and the conflicting signals that can slow down a global transition (Tayler et al., 2023.).

National transition planning can also be the strategic basis for bilateral interactions between countries, or within regions – providing a framework to seek consistency and to press collectively for a high bar on ambition and implementation. This can include: trade and development discussions; regulatory cooperation on finance and real economy policy; and building consensus around consistent approaches to issues that would benefit from a collaborative and coordinated approach – e.g. subsidy and tax reform, supply chain governance, and development and human rights frameworks.

Given the systemic nature of the sustainability and macroeconomic challenges that national transition planning addresses, it is welcome that many collaborative fora have emerged to share experience, challenges and best practice; and to create common approaches and frameworks. Comprehensive, strategic national transition planning will consider the government's approach to participation in, and contribution to, such fora. Two prominent examples are the Coalition of Finance Ministers for Climate Action, with over 90 members, and the NGFS with 138 central bank and supervisor members (as of September 2024).

As set out in 5. Governance, national transition planning and implementation will require consistency with legal and normative principles, many of which are developed multilaterally as well as domestically. Cooperation on legal developments as they continue to take into account climate and sustainability realities will be an essential element, as will the development and ratification of new normative principles to ensure a collective and

[32] The Bridgetown Initiative is discussed in Palmer and Schroeder (2022).

continual ‘raising of the bar’. Recent examples include the recognition at the UN General Assembly of the right to a clean and safe environment. This is an important step, but as with so many principles agreed internationally, its effectiveness is determined by whether the rights are brought home into domestic frameworks to enable citizens to avail themselves of them – including by holding their own governments to account.

4. Metrics and targets

Communicate key actions and outcomes clearly and accessibly across all recommendations, with regular reporting on progress against metrics and targets that build from obligations under the Enhanced Transparency Framework of the Paris Agreement and reflect the national Strategic Ambition. The aim should be to provide accountability and inform the economic decisions of private actors and international stakeholders.

Clear communication of the outcomes of the national transition planning process can help to build confidence in the plan and support private decision-making (see Recommendation 4.1). Such communication should be directed to both domestic and international stakeholders, including the public. It may take the form of a dedicated national transition plan (NTP), or an equivalent existing document such as the country's LT-LEDS, that brings all relevant planning information together across all the recommended action areas in an accessible way that is useful to decision-making.

Progress updates, made at least annually, will help to instil trust and provide accountability. It is recommended that these build from the Enhanced Transparency Framework of the Paris Agreement, also referencing other metrics relevant to the national Strategic Ambition.

The alignment of our approach with the frameworks developed for private sector transition planning can support the emergence of a common language, assisting actionable communication. The detailed indicators considered by the ASCOR framework (see Appendix 2 of the policy report) may be helpful examples as a government considers which metrics associated with its transition plan may be useful to providers of capital as they make decisions.

Recommendation 4.1. Metrics and targets on emissions and sustainable development

Recommendation. Determine the metrics and targets that the government plans to use to drive and monitor progress towards the national Strategic Ambition, and report against these metrics and targets on at least an annual basis as part of wider communication of key national transition planning outcomes and implementation actions. Relevant metrics and targets may, *inter alia*, include those related to:

- Greenhouse gas emissions and removals
- Non-greenhouse gas emissions goals
- Policy measures
- Mobilisation of public and private finance
- Engagement activity
- International climate finance and support

Metrics and targets may be monitored and reported, both on a whole-of-government basis and at a sub-national level.

Critical to building trust and buy-in for the national Strategic Ambition and informing private actors' economic decisions is using the national transition planning process as a strategic communications tool with stakeholders across the economy; this includes clear and accessible communications to citizens. It will therefore be good practice to monitor and

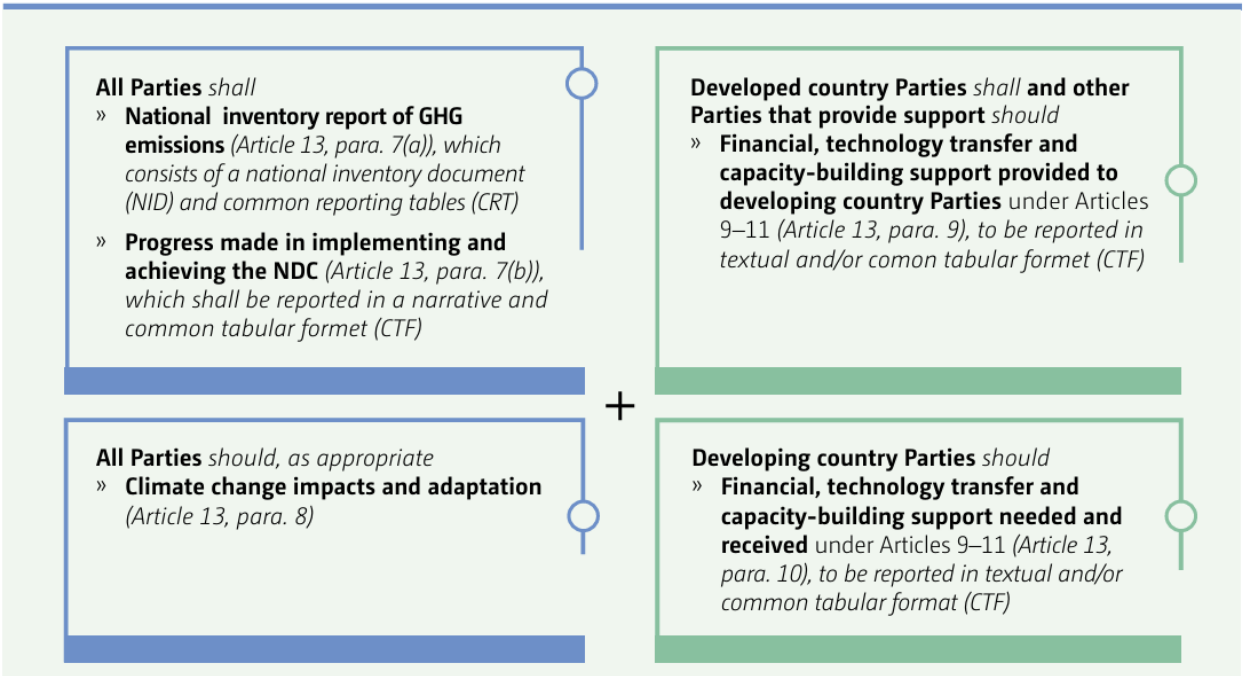
report regularly on metrics and targets that reflect the national Strategic Ambition, as part of wider communication of key actions and outcomes – across all recommendations.

Especially in EMDEs, such transparency can enhance credibility and reduce risk perceptions among international financial actors and development partners. Monitoring and reporting will include indicators linked to emissions reduction and other planning commitments. Other metrics may include performance indicators associated with key policies, investments or initiatives identified in the planning process. Since some outcomes such as emissions reductions can be driven by a variety of factors, it will be important that monitoring and reporting on progress applies a rigorous process for identifying which policies and interventions are really driving change, and which are simply happening in parallel to that change.

Article 13 of the Paris Agreement (2015) establishes an Enhanced Transparency Framework (ETF). The ETF includes the information that each Party to the Agreement is expected to report in a Biennial Transparency Report (BTR) (see Figure 2.2), the purpose of which is to:

- Facilitate transparency around the Party's contribution to "national, regional and global efforts to mitigate and adapt to climate change under the Paris Agreement" (UNFCCC, 2022)
- Track the Party's progress in implementing and achieving its NDC.

Figure 2.2. Information to be reported under Article 13 of the Paris Agreement



Source: UNFCCC (2022)

The information to be provided in the BTR, set out in detail in UNFCCC (2022: 32-29), provides a useful baseline for the government's monitoring and reporting of metrics and targets in its NTP or equivalent document. The government may then build on this baseline by monitoring and reporting on other metrics and targets, selected on the basis of the following principles:

- The metric/target helps to drive and monitor progress towards the national Strategic Ambition

- The metric/target clarifies government direction and helps to coordinate actions, both within government and between government and other economic actors
- The metric provides information useful to decision-making to providers of capital
- The metric strengthens commitment and accountability, helping to build trust among wider stakeholders – including international policy and development partners, civil society and the public.

Especially in considering which metrics are likely to be decision-useful to providers of capital, a government may wish to consult ASCOR. Box 2.20 summarises the metrics considered in ASCOR's methodology (see further Scheer et al., 2023 and Appendix 2 of the Policy Report).

Box 2.20. Assessing Sovereign Climate-related Opportunities and Risks (ASCOR)

ASCOR is an independent tool to assess countries' management of the low-carbon transition and the impacts of climate change. Its focus is to provide information relevant to investors' decision-making. The framework is organised under three pillars: 1. emission pathways; 2. climate policies; 3. climate finance. More granular indicators sit under each of these headings (see selected examples in the table below). These may be helpful examples as a government considers which metrics may be useful to providers of capital as they make decisions.

Examples of metrics drawn from ASCOR

Area	Example metrics
Emission pathways[1]	• Production-based and consumption-based emissions • Trend in emissions and degree of alignment with a 1.5°C benchmark (including on 'fair share' basis) • 2030 emissions target (and alignment with a 1.5°C 'fair share') • Reliance on carbon credits • Net zero targets, including alignment with a global 1.5°C scenario
Climate policy[2]	• Percentage of national emissions covered by an explicit carbon price • Annual expenditure on fossil fuel subsidies (% of GDP) • Level of coal, oil, natural gas rents (% of GDP) • Percentage of electricity generation from low-carbon sources • Amount of protected area (% of total land area) • Quantified sector-specific emissions targets for key sectors • Percentile ranking on World Bank's Voice and Accountability Indicator
Climate finance[3]	• 3-year average climate finance contribution (% of GDP) • Targeted international climate finance contributions (% of GDP) • Cost breakdown for NDC implementation • Cost breakdown for National Adaptation Plan • Climate-related expenditure (budget tagging?) • Solar, wind, geothermal, hydroelectric capacity

Source: Adapted from Scheer et al. (2023). [1] Drawn from Pillar 1 indicators; [2] drawn from Pillar 2 indicators; [3] drawn from Pillar 3 indicators.

Informed by the Strategic Ambition, the details of its approach under 2. Implementation Strategy, and the principles for selection set out above, a government may consider monitoring and reporting metrics and targets in the following areas:

- **Greenhouse gas emissions and removals**
    - *Baseline*: Monitoring and reporting in accordance with the ETF.
    - *Other emissions-related metrics and targets* – e.g. emissions-related metrics on both a production and a consumption basis; performance against 'fair share' targets; metrics including/excluding LULUCF;[33] reliance on carbon credits.
- **Non-greenhouse gas emissions goals**
    - Metrics and targets related to other climate-related, environmental, social or sustainable development-related objectives and priorities – e.g. changes in the energy mix; land-use/reforestation; 'green' job creation.
- **Policy measures to support the national Strategic Ambition**
    - *Baseline*: Monitoring and reporting in accordance with the ETF.
    - Metrics and targets related to specific sectoral and cross-sectoral policies set out in 2. Implementation Strategy, spanning mitigation, adaptation, just transition and nature – e.g. technology deployment; removal of fossil fuel subsidies; flood defences; crisis management infrastructure; bioeconomy subsidies; home retrofit; energy efficiency; carbon pricing; electric vehicles; public procurement; 'green' skills. See Box 2.21 for an example of sectoral metrics and targets.
- **Mobilisation of public and private finance**
    - Metrics and targets related to the mobilisation of public and private finance to achieve the national Strategic Ambition, as per the national investment plan (see 2. Implementation Strategy) – e.g. tracking of financing needs and financing sources (public versus private/domestic versus overseas); public funds committed to de-risking/blended finance/public-private partnership/provision of guarantees; development banks' provision of climate finance.
- **Engagement activity**
    - Metrics and targets related to whole-of-economy and international engagement activity – e.g. tracking of public-private engagement; including public engagement and citizen voice.
- **The provision and/or receipt of international climate finance and other support**
    - *Baseline*: Monitoring and reporting in accordance with the ETF (e.g. finance, transfer of technology, and capacity-building).
    - Other metrics and targets related to international climate finance contributions; participation in multilateral initiatives/country platforms and partnerships; other overseas development initiatives.

[33] Land use, land-use change and forestry (LULUCF). Emissions metrics are often reported excluding LULUCF in order to focus primary attention on emissions rising from burning fossil fuels in industrial sectors and transport. Emissions in the LULUCF sector are more difficult to interpret, given the role of land and forestry as carbon sinks. Data uncertainties also arise in these sectors. See UN Climate Change (n.d.).

Box 2.21. Sectoral targets in Chile's LT-LEDS

In its LT-LEDS, published in 2021, the government of Chile sets out a detailed path to net zero over three decades, involving "a series of social, institutional and sectoral transformations, implemented through mitigation and adaptation measures in organizations, industries, infrastructure and key ecosystems." The strategy comprises detailed measures across 14 sectors: energy; mining; agriculture and forestry; fishing and aquaculture; waste and circular economy; buildings and cities; infrastructure; transport; health; tourism; coastal areas; biodiversity; water resources; the ocean. These are directed at clearly specified targets, in turn linked to the SDGs (see Government of Chile, 2021, Section 5, Sector Contributions). Chile's LT-LEDS is summarised in the Appendix.

As an example, for the energy sector, seven goals have been set, with more detailed targets sitting under each of these:

1. Achieve a low-carbon energy mix by 2050. Five targets linked to SDGs 3, 7, 9 (see figure below).
2. Establish energy efficiency as a pillar of development in industrial and residential sectors, among others. Energy efficiency is a fundamental enabling action for decarbonisation. Five targets, linked to SDGs 7, 9.
3. Increase the use of low-emission technologies and energy, such as green hydrogen, in all sectors of the economy. Six targets, linked to SDGs 3, 7, 11.
4. Achieve equitable access to quality energy services that satisfy people's energy needs and contribute to human development. Three targets, linked to SDGs 1, 7.
5. Decentralisation and diversification of energy sources for a more resilient and low-emission energy sector, including both self consumption and large-scale renewable technologies. Four targets, linked to SDGs 3, 7, 9.
6. Reduce vulnerability to climate change and facilitate its integration in the development and management of the energy sector. Three targets, linked to SDGs 7, 13.
7. Design and promote the use of economic instruments, incorporating improvements in existing ones, to accelerate energy transition in line with climate objectives and scientific mandates. Three targets, linked to SDGs 7, 8.

Extract from Goal 1, Energy Sector

Energy Sector	SDGs
Goal 1: Achieve a low-carbon energy matrix by 2050.	
Target 1.1: By 2030, a 25% reduction in GHG emissions from the energy sector (according to the INGEI) compared to 2018. **Target 1.2:** By 2040, a 20% reduction in direct GHG emissions from the use of fuels in the transportation sector (including land, sea, and air transportation) compared to 2018. **Target 1.3:** By 2050, a 40% reduction in direct GHG emissions from the use of fuels in the transportation sector (including land, sea, and air transportation) compared to 2018. **Target 1.4:** By 2050, at least a 60% reduction in GHG emissions from the energy sector (according to the INGEI) in relation to 2018. **Target 1.5:** By 2050, a 70% reduction in direct GHG emissions from the use of fuels in Industry and Mining, compared to 2018.	

Source: Government of Chile (2021: 109)

5. Governance

Establish effective legal, governance, accountability and whole-of-government coordination mechanisms to support the design and development of action plans aligned with the national Strategic Ambition, along with regular review, scrutiny and oversight of implementation.

This pillar relates to arrangements for delivery, oversight, and scrutiny of the national transition planning process, supporting its role as a **commitment** and accountability device.

National transition planning will necessarily be flexible, dynamic, iterative and responsive to new information. For this reason, it will be important that plans are not static and that domestic accountability, governance and coordination processes are put in place to oversee implementation and keep plans under review. At the same time, private actors will seek policy stability beyond the incumbency of the prevailing government.

Alongside communication on the lines described in 4. Metrics and targets, an effective commitment and accountability device will entail the establishment of legal, governance and institutional arrangements (see Recommendation 5.1) to support the design and development of action plans aligned with the Strategic Ambition. Ideally, this will introduce institutional settings that reduce the risk of policy reversals and assign clear executive and decision-making roles and control processes, as well as whole-of-government coordination mechanisms (see Recommendation 5.2). Responsibility could be allocated to a dedicated ministry – one that has influence and access across government. Given the centrality of detailed investment plans, finance ministries will need to play a core role, alongside other ministries and independent bodies.

Some governments may seek capacity-building support, including from multilateral bodies to support planning and implementation, to help develop effective governance and institutional frameworks among other things.

Accountability is essential to *actually achieving* the net zero transition. Specifically, we identify four critical ways that transition plan accountability mechanisms give credence to stated ambition and actions to enable delivery:

- *Integrity*: building trust by turning promises into action.
- *Transparency*: enabling timely course correction and ambition ratcheting.
- *Instrumentality*: ensuring that net zero targets are *actually* met.
- *Equity:* including justice considerations and a range of voices for a fair transition.

Accountability can take many forms. As in the case of private sector entities, governments face a range of litigious and non-litigious accountability mechanisms (Table 2.1). These certainly include legal mechanisms – notably litigation and regulatory enforcement. Yet accountability also exists in non-litigious spaces.

This multiplicity of accountability 'places and pathways' is to be encouraged. It can facilitate communication and understanding through transparency and dialogue. In turn, this can facilitate alignment of actors and complementarity in policy and regulation towards accelerated and ambitious action – something that we are beginning to see in disclosure regulation, for example.

Just as these places and pathways of accountability can be beneficial to companies and financial services firms, governments should similarly not "wait for accountability to happen to them". Rather, we suggest that they actively foster accountability as a positive governance tool (see Box 2.22). What we term *internal* accountability mechanisms in Table 2.1 are particularly amenable to such a proactive approach.

Table 2.1. Places and pathways of government accountability

Accountability mechanism	Internal or external?
Non-litigious	
• Parliamentary oversight (or equivalent) • Peer accountability (branches of government, independent bodies) • Explanatory memoranda for new legislative proposals	Internal
• Diverse stakeholder engagement	External
Litigious	
• Judicial review of administrative action	Internal
• Public law litigation	External

In short, for a transition plan to fulfil its promise, it must be *given consequence* by multiple stakeholders. This applies equally at the national and private sector levels. Therefore, we recommend a broad spectrum of accountability and oversight mechanisms for national transition planning. These may be:

- *Internally* via parliamentary oversight or equivalent; and through peer accountability between branches and functions of government, and independent bodies such as central banks, financial regulators or designated Climate Committees.

- *Externally*, via judicial review of administrative action and diverse stakeholder engagement.[34]

Box 2.22. National transition planning as a strategy to mitigate climate litigation

In addition to the non-litigious avenues identified above, litigation is an increasingly visible accountability mechanism for transition planning at all levels – bottom-up and top-down, private and public sector – and so deserves specific mention.

'Strategic' climate change litigation or 'systemic' climate cases are brought with the aim of triggering broader policy or behavioural change beyond the confines of any particular courtroom or "the immediate success or failure of individual cases" (Bouwer and Setzer, 2020). These suits can be rooted in public law or private law, implicating both governments and firms (Ganguly et al., 2018).

[34] Similarly, in the private sector, accountability exists and can be leveraged *between* links in the investment chain (such as investor engagement and shareholder resolutions to company boards), and *within* a company (such as employee engagement and/or internal board deliberations).

As a result, when carrying out national transition planning, a government may be concerned about potential exposure to litigation for publicly disclosing 'too much information' in public documents. It may therefore be tempting to omit vital information, known as 'greenhushing' (see Fisher et al., 2023).

However, it is becoming clear that governments may also be exposed to litigation for:

- Not saying enough, and/or for lacking in ambition and implementation; or
- Failing to establish an NTP (or equivalent) at all.

Therefore, on balance, we recommend robust national transition planning – with clear and accessible communication of both planning outcomes and progress in implementation – as a strategy to mitigate the risk of litigation.

To elaborate on this, we consider two scenarios:

Scenario A: No NTP (or equivalent) at all

A clear direction of travel for national transition planning was evidenced in the April 2024 judgment on *Verein KlimaSeniorinnen Schweiz and Others v. Switzerland* (European Court of Human Rights, 2024). The Court held that the Swiss government's failure to rapidly cut greenhouse gas emissions was a violation of human rights, and confirmed the importance of robust transition planning and carbon budgets at the national level. The Court also found that the principle of subsidiarity, being the right of individual states to act independently, is respected only in so far as determining what specific measures are put in place. It remains that the *overall climate strategy* must be compliant with net zero by 2050 in line with current climate science, the Paris Agreement and other international agreements.

The Court set out five criteria for states (European Court of Human Rights, 2024: 551-552, 555):

- Publish a timetable and targets for achieving carbon neutrality using carbon budgets
- Establish pathways and interim targets to reduce domestic greenhouse gas emissions
- Implement them in a timely and consistent manner
- Provide evidence regarding compliance with targets and regularly update targets
- Evaluate those steps via overall assessment and include adaptation measures.

This decision increases the pressure not only on Switzerland but also on EU member states and third countries to adopt legislative and regulatory measures that address climate change, quantify greenhouse gas emissions, set budgets and milestones, and meet emission reduction targets: in other words, to conduct strategic and comprehensive national transition planning. Similar cases are pending in Austria, Germany and Norway, and are being launched in Australia, Peru, Brazil and South Korea.

The *Klimaseniorinnen* case also has cascading impacts: "businesses… will likely be affected by more stringent policies and possibly increased litigation risks" (Hösli and Chassot, 2024). Indeed, a final climate-related judgment at national level increases the likelihood of legal actions against firms, including greenwashing cases, shareholder claims and tort-based lawsuits (Walderwyss, 2023). Thus, it also behoves companies to regard transition plans as a litigation mitigation tool, and to ensure that stated targets and milestones are actually met.

Scenario B: An NTP or equivalent plan exists, but lacks ambition or sufficient implementation

As the climate clock continues to tick to 2030, the ambition and implementation of extant carbon budget plans and NDCs are being challenged. Learning from these cases, our framework recommends that national transition planning be ambitious, dynamic and institutionally 'joined up' (see Recommendations 1.2 and 5.2) from the outset to mitigate litigation risks.

A leading example is the 'Carbon Budget' ruling of the UK High Court in May 2024 that said the UK Government's climate action plan is in breach of the Climate Change Act (2008) and inadequate to meet legally required net zero targets by 2050. The Climate Change Act legally binds the Government to carbon budgets that set limits on the UK's emissions over five-year periods. In 2022, the High Court had ordered the Government to revise its first Net Zero Strategy, after which the Government created its Carbon Budget Delivery Plan. This revised Plan, and the steps proposed to meet it, were successfully challenged as insufficient and unlawful by third sector organisations Friends of the Earth, ClientEarth and the Good Law Project via judicial review.[35]

The decision requires the UK to revise targets, adopt sound policies, and establish credible implementation actions in line with legislative requirements that meet internal scrutiny from independent bodies (such as the Climate Change Committee) and external scrutiny (from civil society and private sectors). Arguably, bringing existing climate policies and strategies together through comprehensive, strategic national transition planning, on the lines considered in this framework, is what the UK government ought now to design and adopt in response to the High Court's ruling.

Similar accountability cases are being launched elsewhere in the world. A notable example is *Woodpecker et al. v. South Korea* which commenced in South Korea's Constitutional Court in April 2024 on behalf of 62 children under five years old. According to the Sabin Center for Climate Change Law (2022), the plaintiffs contend that "the current NDC will result in disastrous level of climate change leading to violation of their fundamental rights" because it will deplete South Korea's carbon budget before 2030, is less ambitious than the IPCC's global reduction pathway, and contributes to the 'emission gap' identified by UNEP (i.e. the gap between where emissions reductions will be if current NDCs are borne out and where they need to be to meet the Paris Agreement target). Moreover, this case speaks to the inextricable entwining of intergenerational equity and national transition planning, which needs to be taken seriously to avert ever-increasing litigation actions.

Recommendation 5.1. Legal, governance and institutional arrangements

Recommendation. Establish effective legal, governance and institutional arrangements to support the design and development of action plans in line with the national Strategic Ambition, as well as regular review, scrutiny and oversight of implementation.

Ownership, oversight and accountability for national transition planning are all sovereign activities. Multilateral institutional regimes (such as the UNFCCC, and components of the international financial architecture) provide important context and objectives for national transition planning. Nonetheless, the national transition planning process itself is country-driven, based on and responsive to national needs across all areas of sustainability, building

[35] *R(Friends of the Earth Ltd) v. Secretary of State for Energy Security and Net Zero; ClientEarth v. SSESNZ; Good Law Project v. SSESNZ (challenges to the Carbon Budget Delivery Plan).*

endogenous empowerment while meeting climate change mitigation imperatives. In short, ownership and accountability for the planning process cannot be delegated elsewhere.

Accordingly, appropriate governance arrangements for national transition planning are key to ensuring:

- That all relevant bodies responsible for design and delivery are included and engaged (it is not enough for some or most to be on board)
- That all relevant planning elements are aligned, coherent and coordinated
- The outcomes of national transition planning become a one-stop shop: an authoritative source of direction and strategy, internally within government (at all layers, branches and functions, including regional and local government, and other public and quasi-public bodies), and across the economy.

Support for capacity-building and other resources may be engaged, from multilateral organisations and others, to support the development of effective governance and institutional arrangements.

It is also important to recognise that transition planning is synonymous with intra- and inter-generational equity. Transition planning will require diverse inputs and perspectives to ensure robustness and minimise the risk of regulatory capture by vested interests.

To achieve the national Strategic Ambition, we therefore recommend a decisive *but balanced* role for government. By setting a clear direction and coordinating climate action, the government would equip private actors to take better informed decisions. Equally, public-private coordination and cooperation cannot become a vehicle for institutionalised lobbying and private self-interest. We recall that lobbying from fossil fuel interests has been a major explanatory factor behind the sluggishness of the policy agenda (Sachs et al., 2023). It should arguably be regulated for national transition planning to deliver on its potential. Careful monitoring and governance of integration mechanisms would mitigate this risk. Box 2.23 considers the political economy of climate reforms, with reference to the work of Mildenberger (2020).

Box 2.23. Transition plans and the political economy of climate reforms

This box is based on the book 'Carbon Captured – How Business and Labour Control Climate Politics' by Matto Mildenberger (2020)

Governments planning the net zero transition should be mindful that among the main blockers of climate policy are interests of carbon-dependent constituencies: in most developed economies the constituencies that rely on carbon-based technologies have been successful in slowing down or completely blocking climate policies. This is because effective climate action involves a complete renegotiation of economic and social institutions, which creates both winners and losers. The likely losers have every incentive to influence the 'policy design' and the political power to achieve it. At the same time, the likely winners (the 'low carbon actors') do not yet have significant political influence.

This access to policy design goes far beyond simple lobbying: it is enabled by structural institutional links between economic stakeholders (to include much more than only fossil-fuel industries: automobiles, chemical manufacturing and heavy industries, agricultural interests, and labour unions in many of these sectors) and political parties or government policymakers, across the political spectrum. Mildenberger calls this "double representation": actors on both the political right and the political left represent carbon-dependent interests. Access to policy design by these policy opponents often results either in policies that do not threaten the status quo, or – in the case of proposed policies that

would threaten the status quo – in policies failing because of the mobilisation of opposition in the public arena.

Governments planning for transition will need to think about how to achieve a redistribution of political power that will enable the passing of effective policy. Mildenberger makes the following recommendations:

- Climate policymaking is not a one-shot game; it requires repeated rounds of climate reforms over decades.
- Conventional wisdom assumes that economic and political power of policy opponents will decline once economic incentives change. However, Mildenberger argues it is effectively the other way around: we need to first disrupt the political power of carbon polluters before we can effectively reshape economic incentive structures; e.g. carbon pricing policies are unlikely to pass until policy opponents' influence is weakened.
- Governments need to understand how climate reform efforts can reshape the economic power of entrenched opponents – what incentives and institutions structure policymaking debates and under which conditions can they act to create effective policy? What political coalitions can disrupt entrenched incumbents, and can those coalitions be created?
- Climate policy advocates need to secure pro-reform coalitions at each step of the policy process.
- Governments should focus not only on international institutions that facilitate climate policy cooperation, but also on entrenched opposition to reform at home: international negotiations will not reshape the distribution of political power domestically. Instead, effective climate negotiations require that domestic actors have already won difficult political conflicts at home. The Paris Agreement will be successful to the degree that it helps climate reformers entrench and extend their political influence.
- Governments should avoid automatic prioritisation of the most 'efficient' policy (e.g. carbon pricing) as this may be politically suboptimal; instead, they should focus on sequencing policy costs and benefits in ways that nurture the political coalitions necessary to pass ambitious reforms, and taking into account the extent to which policies can reshape the distribution of political power.
- Using policy carrots (e.g. subsidies, cost exemptions and voluntary programmes) can moderate tensions and help soften the impact of policy sticks (e.g. carbon prices, technology mandates, penalties and taxes).
- As carbon pricing and global negotiations falter, the loudest voices now begin to suggest we depoliticise climate change, e.g. by focusing on voluntary efforts. But carbon polluters will not voluntarily relinquish their power.
- Climate policy enactment also necessitates broad public mobilisation to counteract efforts by carbon-dependent economic actors to block reforms. This requires vibrant, inclusive political coalitions.

Moreover, alongside expert input from private industry and third sectors, certain demographics must be included in transition planning at all stages, with emphasis on young people, the elderly, and Indigenous voices. In particular, young people who are too young to vote have more 'skin in this game' than most constituents: they will be impacted harder and for longer than the adult politicians and corporate managers in current decision-making positions. To ensure a *fair transition*, their perspectives must be meaningfully included in planning processes (Jacovella, 2024). Indeed, transition planning is akin to time travelling: it brings the future into the present as a tangible basis for action. In so doing, robust transition

planning provides a critical opportunity to avert the "tragedy of the horizon" identified by former Bank of England Governor, Mark Carney (Carney, 2015).

We consider three guiding principles for setting effective governance and institutional arrangements to support the design, delivery and oversight of national transition planning:

- Adhere to legal and regulatory requirements (or create them if none exist) of targets, objectives and priorities underpinning the Strategic Ambition
- Undertake 'architectural mapping' (law, regulation, policy, institutions) as a preliminary evaluative step in the national transition planning process
- Design-in mechanisms to engage expert advice and feedback.

As a government embarks on this process – especially the architectural mapping phase – it may find that capacity-building support and other resources are required to bolster the development of effective governance and institutional arrangements. This support may be sought from multilateral organisations and others.

Legal and regulatory requirements

A government may consider a two-fold strategy:

(i) Take an integrated regulatory and policy approach

In 2. Implementation strategy, we recommend an integrated regulatory and policy approach, which draws from a menu of financial and facilitative measures to arrive at a package of complementary interventions. Such an approach can help to adjust or reform a country's institutional architecture to support a coherent, consistent, whole-of-government strategy that is aligned with the national Strategic Ambition, and that sends clear signals to private sector actors.

Importantly from a political perspective, an integrated regulatory and policy approach can enable a balanced package of reforms comprising rewards and trade-offs: for example, removing fossil fuel subsidies in agriculture-dominant countries. This can help make 'bitter pills easier to swallow' (see Bowman, 2011; Milkman et al., 2012).

The government's approach may be underpinned by a national framework legislation for climate change and associated independent institutions. For example, the UK's Climate Change Act of 2008 is internationally recognised as being the first statute in the world to set a binding domestic framework for emissions reductions to 2050. That Act also established the UK Climate Change Committee as an independent statutory body to oversee implementation and hold the government to account for national targets over the long term. The critical importance of these tools to achieving national net zero ambitions was highlighted by the High Court's 'carbon budget' ruling in 2024 (see Box 2.22 above).

(ii) Design-in regular reviews every one to three years

The point of *ex post* regulatory review is to check that measures remain fit for purpose and are achieving their objectives. Due to the speed and dynamism of the climate challenge, that would mean reviewing every one to three years, depending on national capabilities. The Asian Development Bank has noted that "the transparent implementation, monitoring and enforcement of… regulations and incentives is essential to boosting investor confidence" (Morita and Pak, 2018); and it is also essential to ensuring private sector accountability.

An example is the Implementing Decree of Article 29 of the French Energy and Climate Law 2019 (LEC), which is an upgrade of first-generation climate disclosure rules in France.[36] And in the UK, the FCA and Financial Reporting Council carry out periodic reviews of climate reporting, issuing findings and guidance to industry to support improved compliance.[37]

Architectural mapping as a preliminary step

Architectural mapping is a necessary precursor to an integrated regulatory approach. This may involve a comprehensive review and assessment of legal, regulatory, policy and institutional strengths, and of the incentives, barriers and gaps to achieving the national Strategic Ambition (Bowman, 2022).

Architectural mapping is critical for enabling:

- Assessment of current alignment, fitness for purpose and *distance to target*
- Engagement with stakeholders, especially companies, financial services firms, civil society, communities and the public, about what is required to meet the national Strategic Ambition (see 3. Engagement strategy)
- Identification and costing of technical assistance and other resources and support that may be required for effective implementation of national transition planning, and of the institutional and technical capacity and expertise to make it happen.

How best to undertake mapping will depend on the local context. For example, it can be done using experts (internal and external – see examples in Box 2.24 below) and/or through wider public engagement. The EU provides an example of the latter: it has publicly invited all stakeholders to use available platforms to make suggestions for simplifying legislation and identifying problematic cases, which the Commission then considers when preparing evaluations, impact assessments and legislative proposals.[38]

Architectural mapping while necessary is also complex and may be expensive. This puts a spotlight on the needs of EMDEs and the ways that IFIs, including MDBs, can support in-country assessments, innovation and implementation of national transition planning.

As the main intermediaries for public international funds, and increasingly as facilitators of private finance, MDBs and other IFIs (such as the Green Climate Fund) can support EMDEs not only with project finance, but also with financial and technical support. This can include mapping existing architecture and building endogenous legal, technical and educational capacity that can, in turn, mobilise private sector investment.

Box 2.24. Examples of IFI support in architectural mapping for climate finance

- ***Asian Development Bank.*** The ADB together with the IFC and Baker & McKenzie solicitors provided technical assistance to Fiji to critically assess the general investment environment and create a legal roadmap for climate finance (see case study in Morita and Pak, 2018). This included a review of extant investment policy and related legislation, enactment of new legislation such as the *International Arbitration Act 2017* and *Personal Properties Securities Act 2017* to improve market

[36] DG du Trésor, France, 2021. This legal instrument aligns France with European initiatives (EU SFDR and EU Green Taxonomy) and requires biodiversity alignment and double materiality inputs, alongside publication of a "continuous improvement plan" of tangible and corrective actions with an implementation timetable for certain firms. It also gives additional supervisory powers to the prudential regulator to sanction new issues, notably in respect of greenwashing.
[37] For example, in July 2023, the Financial Reporting Council published the *CRR Thematic review of climate-related metrics and targets* (FRC, 2023), examining the quality of companies' climate-related metrics and targets disclosures.
[38] European Commission: Have Your Say: Simplify!

processes, and an evaluation of legal barriers to investment in the renewable energy and transportation sectors.

- ***Inter-American Development Bank.*** The Inter-American Development Bank (IDB) Group created NDC Invest to provide technical and financial support for Latin American and Caribbean countries seeking to implement the Paris Agreement, including strengthening the capacity of governments and academia (Jaramillo and Saavedra, 2021).
- ***World Bank Group.*** The World Bank's Climate Change Action Plan for 2021-2025 (World Bank Group, 2021b) broadened its efforts beyond just green project investments to help countries "fully integrate their climate and development goals" by using, for example, readiness diagnostic tools such as the Country Climate and Development Report for aligning climate action.
- ***Green Climate Fund.*** The GCF has funded country projects that incorporate legal mapping and technical capacity-building, such as Project FP019 'Priming Financial and Land Use Planning Instruments in Ecuador' (with UNDP) and Project FP030 'Catalysing Private Investment in Sustainable Energy in Argentina' (with the IDB).

Engaging expert advice and feedback

In addition to enhanced cooperation and collaboration within government (see Recommendation 5.2), we recommend that external engagement be designed into governance processes to facilitate better policy outcomes and multi-stakeholder buy-in, including by leveraging smart and diverse thinking.

For example, setting up legislative or independent bodies can enable necessary advice and review functions (exemplified by the UK Climate Change Committee, as mentioned earlier) and robust parliamentary processes can ensure institutional alignment – e.g. through the inclusion of a specific section in explanatory memoranda that explains how new legislative proposals and delegated acts align with and facilitate national transition planning milestones (such as required under the EU green oath to 'do no harm'; see European Commission, 2019).

Moreover, engagement needs to reach out externally to comprise a mix of public, private and civil sector actors with diverse views to debate difficult issues in the form of advisory forums or working groups. These groups can be tasked to work through thorny national transition planning issues regarding, for example, fair and just transition processes, phase-out dates for activity restrictions (e.g. bans on gasoline/petrol or diesel engine vehicles), anti-greenwashing standards, and more. The diversity of input is critical to ensuring legitimacy. Only in this way can the resulting recommendations of such bodies inform robust national transition planning and implementation (see also 3. Engagement strategy).

Recommendation 5.2. Roles, responsibilities and whole-of-government coordination

Recommendation. Determine executive and decision-making roles and control processes, and whole-of-government coordination mechanisms, to support the delivery, governance, monitoring, management, oversight and implementation of action plans in line with the national Strategic Ambition. As part of this, the government may clarify how national transition planning is embedded within its wider control, review and accountability mechanisms.

No country can achieve whole-of-economy transformation in line with its Strategic Ambition without whole-of-government planning that manages effectively the synergies and co-benefits between policies, along with the trade-offs, conflicts, competency gaps and internal blockages. For instance, implementing progressive net zero policies while retaining legacy fossil fuel subsidies and/or weakening implementation mechanisms (e.g. by funding cuts or limiting judicial review) creates confusion and dilution between the various layers, branches and functions of government. It may also provide a countervailing business case to the private sector for inaction, or continued fossil fuel investment.

In short, cooperation and collaboration ought to be considered as a strategic response to a complex existential threat, and a necessary part of an integrated regulatory architecture for a net zero transition (Bowman, 2023). Through its national transition planning process, a government clarifies what actions need to be taken to achieve greater resilience and mitigation, how much they cost, and how and where they will be targeted and deployed. Therefore, clear roles and responsibilities, and *whole-of-government coordination and alignment,* are required.

Again, capacity-building support and other resources may be engaged to accelerate progress in developing appropriate mechanisms for coordination and delivery.

Within the public sector ecosystem, it may be appropriate to appoint one role or body as responsible for regularly reviewing, assuring and signing-off on the outcomes of national transition planning. This may be a senior minister in a relevant government department. For example, this was advised by the High Court in the 2024 UK 'Carbon Budget' Ruling (discussed above), which held that the Secretary of State needs to know which individual policies carry a risk of non-delivery and therefore whether the plan as a whole is likely to meet milestones and targets (see also ClientEarth, 2024).

Ministries of finance will necessarily play a key role given that a national investment plan will be a key foundation of the government's implementation strategy (see 2. Implementation strategy), with the mobilisation of public and private finance central to effective delivery. Importantly, however, finance ministries will need to coordinate and collaborate with a wide range of other ministries – e.g. environmental and energy, business and trade, education, labour, and transport – as well as central banks, financial regulators and sub-national layers, branches and functions of government. All will need to play a key role in the national transition planning process, and implementation of resulting action plans, in consultation with a wide range of external stakeholders (see 3. Engagement strategy).

Importantly, there is no single model for whole-of-government coordination. As Macquarie et al. (2023) explain:

> *There is no single institutional model that is proven to be successful across all contexts, so approaches will inevitably build on existing structures. Policymakers should consider the remits and capabilities of government departments, subnational authorities and other relevant agencies, and the roles of private sector and civil society actors. Governments can also create new working arrangements, relationships and delivery bodies to ensure coherent policy. Other important factors include data types and availability, and channels for sharing knowledge and information.*

In that report, a consortium of research institutions identifies four key dimensions of an effective institutional model for coordination:[39]

[39] Table 1 of Macquarie et al. (2023) sets out the branches and functions of government that are likely to be responsible for different aspects of a just transition strategy. These span ministries or departments responsible for climate/environment, impacted sectors, finance/central planning, labour/welfare/social inclusion, business/economy, regional development and education.

- *Political leadership*: e.g. assigning responsibility to an existing ministry, or new, dedicated government body

- *Horizontal coordination*: e.g. establishing mechanisms for effective coordination and collaboration between different national government ministries and bodies

- *Vertical coordination*: e.g. establishing mechanisms for effective coordination and collaboration between national and sub-national branches and functions of government

- *Steering non-state actors*: e.g. mechanisms for national government to direct, incentivise, finance, coordinate and enable climate action across the economy.

In addition to policy that encourages institutional coherence, it can also be legislatively enshrined. For example:

- The Lao PDR Decree on Climate Change has been described as calling for "collaboration and participation by all ministries relevant to climate change mitigation and adaptation, as well as broad public participation by all citizens and businesses in climate change activities in the country" (see case study in Morita and Pak, 2018).

- As part of the objectives and powers of the Nairobi International Financial Centre Authority, which is tasked with encouraging sustainable economic growth in Kenya, the Nairobi International Financial Centre Act explicitly includes collaboration with relevant agencies and authorities (Nairobi International Financial Centre, 2022).

- Under France's Article 29 of the Energy and Climate Law 2019, financial supervisors in the central bank and market regulator share technical task management such as scrutinising disclosures and enforcing supervisory remits, and convene two advisory Climate and Sustainable Finance Commissions that advise on regulatory implementation.

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Appendix. Examples of existing plans and strategies: Chile and South Africa

The policy report accompanying this handbook emphasises that no government is starting from scratch; it is instructive to consider how countries with already well-developed LT-LEDS or country platforms can leverage these existing plans and strategies to inform their national transition planning. As an illustration, this appendix maps key elements of **Chile's LT-LEDS** and **South Africa's Just Energy Transition Investment Plan** to the recommendations in our framework for national transition planning.

A. Chile LT-LEDS

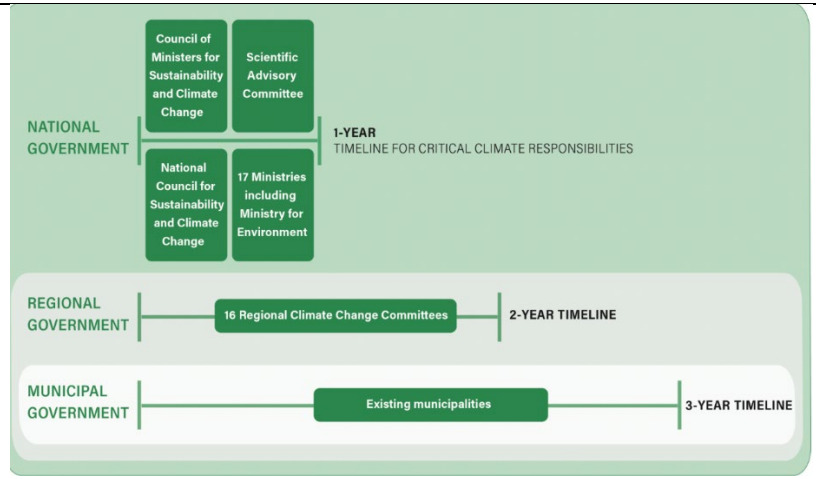
	Recommendation	Summary
Summary		Chile's government published its Long-Term Climate Strategy in October 2021, setting out its approach to achieving "sustainable and inclusive development by 2050". Within this overarching aim, the Chilean government is targeting carbon neutrality by 2050 (since enshrined in the Framework Law on Climate Change, finalised in June 2022) and climate resilience on the same timeframe. The Strategy comprises more than 400 transition goals, aligned with Chile's updated NDC (presented in 2020), including "all sectors of society in an integrated manner that will allow progress in climate action at the regional and local levels, in accordance with the regional development planning and strategies established for each territory". Alongside climate mitigation and adaptation goals, the Strategy also has regard to wider socioeconomic goals, informed by the SDGs. The Strategy was developed by the Ministry of the Environment (MMA), with technical assistance from multiple committees and ministerial teams.
Foundations	1.1. Strategic Ambition	Chile's NDC-aligned Strategy incorporates a range of "medium- and long-term objectives, targets and guidelines on climate change at the national, sectoral and sub-national levels". The Strategic Ambition articulated in the Strategy (Section 2, Chile's long-term vision, p. 34-53) is to achieve "sustainable and inclusive development by 2050". This comprises a commitment to: • carbon neutrality by 2050 • climate resilience by 2050

		These commitments are pursued with due consideration to a "social pillar", viewed through the lens of the SDGs and considering, in particular, • equity and gender equality • "a fair transition" • active participation • ancestral knowledge • water security The Strategy sets out a long-term vision for the transformation of each of 14 sectors.
	1.2. Whole-of-government strategy	The Strategy describes a government-wide approach to both the drafting and development of the Strategy, and the implementation of the actions set out in the Strategy. Responsibility for developing Sectoral Mitigation Plans in accordance with allocated sectoral budgets (see Recommendation 1.3 and Recommendation 2.4) is distributed among seven ministries (energy, transport and telecommunications, mining, health, agriculture, public works, housing and urban development), with the Strategy describing "cross-cutting and multi-level coordination between the sectoral authorities and the other state bodies that play a role in their implementation" (see 5. Governance). The Strategy also describes "close collaboration between multiple state agencies" in contributing to transformation across the 14 sectors (described in Chapter 5; see Recommendation 1.3, below).
	1.3. Sectoral pathways and other planning assumptions	The Strategy translates national targets in the NDC to the sectoral level, through the allocation of sectoral emission budgets (Chapter 3.2-3.4, p59-81). These sectoral budgets form the basis for Sectoral Mitigation Plans, with each Plan assigned to a responsible sectoral authority. The Strategy also sets detailed goals and targets for social, institutional and sectoral transformation across 14 sectors – energy; mining; agriculture and forestry; fishing and aquaculture; waste and circular economy; buildings and cities; infrastructure; transportation; health; tourism; coastal areas; biodiversity; water resources; the ocean. These targets, each linked to SDGs, are designed to steer policy in each of the 14 sectors.
Implementation strategy	*Investment plan*	The Strategy does not include detailed costings for the implementation measures required to meet the various national and sectoral level goals and targets. Some limited financial information is provided in Chapter 8.1, p220-229). The Strategy also notes the creation of a "Local and Regional (Subnational) Climate Financing and Action Group" (GAFiCoR) to help coordinate subnational climate financing from national and international sources, in collaboration with the private sector.

	2.1. Direct and indirect public investment	Chapter 8.1 (p222) includes a reference to Chile's "Sustainability Report, Progress in Project Allocation for the Sustainable Project and Investment Plan", which "identifies more than USD 2.6 billion in projects that contribute to accelerating [the] transition to sustainable development, including clean transportation, climate-resilient infrastructure, sustainable management of water resources, conservation of biodiversity, sustainable construction and energy efficiency, among other areas." The Strategy also references steps to improve Chile's institutional ability to comply with the Green Climate Fund. Beyond this, limited information is provided on how public investment will contribute to achievement of the targets of the Strategy. Since publishing the Strategy, Chile has developed a Sustainability-linked Bond Framework (see Government of Chile, 2023)and became the first country in the world to issue a sovereign SLB. The Framework incorporates a range of sustainability performance targets, including environmental targets that reference Chile's NDC and the Strategy.
	2.2. Carbon pricing and other fiscal reforms	Measures described under this category include: • a modification of Chile's pre-existing "green tax" in February 2020 to expand the scope of emissions covered and to incorporate an annual emissions threshold; the modified law also provides for an emissions offsetting scheme, subject to certain criteria and guidelines (p227). • a workplan to develop "a fiscal framework for determining climate spending, both direct and indirect" (p223).
	2.3. Public procurement	There is limited coverage of public procurement in the Strategy, with the exception of sustainable public procurement criteria at the local/municipal level in relation to office supplies, vehicle fleets, and the construction and/or maintenance of municipal real estate.
	2.4. Energy transition and other sectoral policies	The Strategy sets out detailed goals and targets across the 14 sectors referenced in Recommendation 1.3 (Chapter 5). In the energy sector, for example, goals include: • Goal 1: Achieve a low-carbon energy matrix by 2050. • Goal 2: Establish energy efficiency as a pillar of development in industrial and residential sectors, among others. Energy efficiency as a fundamental enabling action for decarbonisation. • Goal 3: Increase the use of low-emission technologies and energy, such as green hydrogen, in all sectors of the economy. • Goal 4: Achieve equitable access to quality energy services that satisfy people's energy needs and contribute to human development. • Goal 5: Decentralisation and diversification of energy resources for a more resilient and low-emission energy sector, including both self-consumption of energy and large-scale renewable technologies.

		• Goal 6: Reduce vulnerability to climate change and facilitate its integration in the development and management of the energy sector. • Goal 7: Design and promote the use of economic instruments, incorporating improvements in existing ones, to accelerate energy transition in line with climate objectives and scientific mandates.
	2.5. Adaptation planning	The Framework Law on Climate Change prescribes adaptation plans for Chile's most vulnerable sectors (11 of the 14 referenced in Recommendation 1.3). The objectives under these plans are included in the sectoral goals and targets described in Chapter 5 of the Strategy.
	2.6. Financial policy and regulation	The Strategy acknowledges that "financial ecosystems for developing bankable project portfolios are still in their early stages, with limitations on access to affordable financing by micro, small and medium enterprises (MSMEs) preventing the generation of a significant deal flow" (Chapter 8.1.3). Nevertheless, some steps have been taken to establish a framework for regulation of sustainable finance: • General Rule 276 in 2020 by the Superintendency of Pensions calls on Pension Fund Administrators to incorporate climate risks and Environmental, Social and Corporate Governance (ESG) considerations into its investment and risk management policies. • Published shortly after the issuance of the Strategy, General Rule No. 461 requires that the annual reports of financial institutions consider sustainability and corporate governance issues – e.g. corporate governance and risk management frameworks, personnel indicators and policies (diversity, gender pay gap, job security, workplace and sexual harassment, training).
	2.7. Skills and education	The Strategy includes detailed plans to develop skills and education to support implementation, organised under a Capacity Development and Climate Empowerment Strategy (CDCES) (Chapter 8.1.2). The CDCES emphasises: a) Information and participation to strengthen climate action with a gender approach b) Promotion of capacity building c) Research and Science for Climate Action d) Raising Awareness and Education for Climate Action e) Cooperation and Sharing of Experiences Particularly relevant under b), the Strategy aims to "generate job skills and competencies among people and organizations to empower them to contribute to carbon neutrality and resilience to climate change", going on to describe a number of specific measures.
Engagement strategy	3.1. Engagement with companies	The Strategy explicitly referencing public-private engagement in several of the sectoral plans (e.g. agriculture and forestry, fisheries, buildings and cities, …), and details dedicated arrangements, such as the GAFiCOR

	and financial services firms	(referenced in 2. Implementation Strategy) established for "collaboration with the private sector, academia and civil society, with a focus on subnational financing mechanisms and schemes".
	3.1. Engagement with civil society, communities and the public	The Strategy emphasises the importance of participatory processes. Chapter 2.3.3. acknowledges that "carbon neutrality and climate resilience are impossible without citizen involvement". Accordingly, the Strategy describes Chile's Capacity Development and Climate Empowerment Strategy to support implementation by strengthening "the national, regional and local capacities of people and organizations, both public and private, in academia and civil society, to achieve the country's mitigation and adaptation goals" (Chapter 2.3.3); further elaborated in Chapter 8.1.2 (see also Recommendation 2.7). The Strategy also references participatory processes for dialogue with indigenous peoples and vulnerable communities. Annex 1 describes the participatory processes, including citizen engagement during the development of the Strategy.
	3.2. Engagement with international partners	As an example of international engagement, the government works with a *CRGE Development Partners Forum* to "unlock and mobilise new sources of climate action, support, finance and technology".
Metrics and targets	4.1. Metrics and targets on emissions and sustainable development	The Strategy outlines arrangements to meet monitoring, reporting and verification obligations under the Enhanced Transparency Framework, including publication of the Biennial Transparency Report. Beyond this, the Strategy sets out detailed targets and metrics at the sectoral level (across all 14 sectors referenced in Recommendation 1.3.) that relevant ministries will monitor, with MMA committing to reporting every two years on progress, both nationally and internationally.
Governance	5.1. Legal, governance and institutional arrangements/ 5.2 Roles, Responsibilities and whole-of-government coordination	Chile's Framework Law on Climate Change was passed in June 2022, establishing climate responsibilities at national and sub-national levels. See figure below. The Strategy describes the climate governance structure, including coordination via a Council of Ministries for Sustainability and Climate Change (Figure 9, p40), and outlines the various functional responsibilities.

		 Council of Ministers for Sustainability and Climate Change Scientific Advisory Committee NATIONAL GOVERNMENT 1-YEAR TIMELINE FOR CRITICAL CLIMATE RESPONSIBILITIES National Council for Sustainability and Climate Change 17 Ministries including Ministry for Environment REGIONAL GOVERNMENT 16 Regional Climate Change Committees 2-YEAR TIMELINE MUNICIPAL GOVERNMENT Existing municipalities 3-YEAR TIMELINE

B. South Africa's Just Energy Transition Investment Plan (JET IP)

	Recommendation	Summary
Summary		The South African government launched its Just Energy Transition Investment Plan (JET IP) in November 2022, following the launch at COP26 a year earlier of the Just Energy Transition Partnership, with international partners, France, Germany, UK, US and the EU (the International Partners Group, IPG). Covering the five-year period 2023-2027, and supported by a multi-year pledge of $8.5 billion, the JET IP sets out investment needs and planned policies to meet South Africa's decarbonisation commitments, in the context of the country's wider National Development Plan 2030 and the JETP Political Declaration. The Declaration provides for "*an ambitious long-term partnership to support South Africa's pathway to low emissions and climate resilient development, to accelerate the just transition and the decarbonisation of the electricity system, and to develop new economic opportunities such as green hydrogen and electric vehicles amongst other interventions to support South Africa's shift towards a low carbon future*." Aligned with South Africa's NDC and LT-LEDS, the JET IP pursues climate goals while maintaining energy security, achieving economic growth, and creating quality jobs.
Foundations	1.1. Strategic Ambition	Aligned with South Africa's NDC and LT-LEDS, and in accordance with the Political Declaration, the South African government aims to enable: • the accelerated decarbonisation of South Africa's electricity system to achieve the most ambitious target possible within South Africa's NDC range to the extent of available resources • a just transition that protects vulnerable workers and communities, especially coal miners, women and youth, affected by the move away from coal • nationally determined efforts to successfully and sustainably manage Eskom's debt, define the role of the private sector, and create an enabling environment through policy reform in the electricity sector, such as unbundling and improved revenue collection • local value chains (including MSMEs) to benefit from new areas of economic opportunity • opportunities for technological innovation and private investment to drive the creation of green and quality jobs as part of a prosperous low emission economy.
	1.2. Whole-of-government strategy	The JET IP assumes a government-wide approach, with relevant branches and functions of government engaged to support actions across the key focus areas. The plan provides for ministerial oversight, as well as coordination mechanisms, and other governance arrangements – also involving the IPG (see also 5. Governance).

	1.3. Sectoral pathways and other planning assumptions	The JET IP focuses on three priority "sectors": Electricity; New Energy Vehicles (NEV); and Green Hydrogen (GH_2).
Implementation strategy	*Investment plan*	The JET IP sets out costed expenditures, and specified resources across the three priority and two cross-cutting sectors of the plan. Investment needs for each sector are summarised in p8-13 of the JET IP. Figure 2 and Table 11 (p15 of the JET IP) summarise *overall* financing needs, including an estimated breakdown of sources, as well as the planned allocation of the IPG's initial pledge of $8.5 billion across key activities. The majority of the initial pledge is to be allocated to infrastructure expenditure.
	2.1. Direct and indirect public investment	The JET IP sets out the South African government's approach to allocating public finances, including the initial pledge from the IPG, to priority projects and initiatives in the target areas. Prioritisation criteria for the use of funds (p39-40 of the JET IP) include that projects should: be catalytic and complementary; set the foundations for addressing the NDC's emissions reduction targets; deliver just transition outcomes; and be ready to implement. The JET IP then goes on to detail specific catalytic and other investment needs (e.g. national infrastructure investment requirements for the electricity sector, Table 14, p53; NEV investment programmes, Table 20, p87; and investment needs for the HG_2 Commercialisation Programme are set out p96-97). National intermediary institutions (the Development Bank of South Africa and the Industrial Development Corporation of South Africa) will play an important role in managing capital disbursement to municipalities, private companies and NGOs.
	2.2. Carbon pricing and other fiscal reforms	The JET IP sets out South Africa's approach to carbon taxation, which will be increased progressively over time towards $20 per tonne.
	2.3. Public procurement	The JET-IP sets out a number of mechanisms for public procurement of power generation capacity, including procurement of renewable energy at municipal level (Section 4.2; 4.6), as well as mechanisms for public procurement of NEVs (Section 4.3).
	2.4 Energy transition and other sectoral policies	The JET IP sets out targets and plans in three priority "sectors": Electricity; New Energy Vehicles (NEV); and Green Hydrogen (GH_2) – along with two cross-cutting focus areas, skills and municipalities. In the electricity sector, the main focus is on investment in decommissioning coal, developing renewable energy, strengthening the grid infrastructure, and modernising the distribution system. In green hydrogen, South Africa aims to build expertise and become a net exporter.

	2.5. Adaptation planning	Adaptation measures are integrated into the JET-IP, referencing the government's National Adaptation Strategy, which "emphasises the need to mainstream climate adaptation measures into government planning and budgeting to build resilience across society" (Section 2.1.1, p24).
	2.6. Financial policy and regulation	South Africa's financial regulators are taking steps to ensure a conducive regulatory environment for the scaling of sustainable finance. In addition to climate risk management efforts by the South Africa Reserve Bank, the regulators have issued policies in the areas of reporting and disclosure, and published the South African Green Finance Taxonomy. The Johannesburg Stock Exchange (JSE) issued Sustainability Disclosure Guidance in June 2022. The National Treasury established an Intergovernmental Sustainable Finance Working Group to coordinate policies in this area. The JET IP also sets out potential entry points and instrument types for private finance (Table 27; p126).
	2.7. Skills and education	Skills development is a key cross-cutting theme of the JET IP (Section 4.5; p99-103). Four dimensions of skills development, in particular are identified: • reskilling and upskilling • aligning the skills development system with the anticipated labour force needs of the future • ensuring foundational skills throughout the education system • addressing gender, inequality, and social exclusion
Engagement Strategy	3.1. Engagement with whole-of-economy actors	The JET IP sets out several channels for engagement with actors across the economy. Figure 12, p136, maps the range of stakeholders that will have a role to play in delivery of the plan, and the nature of their engagement. For instance, in some regions, "community-level and trade union governance structures will be appropriate for ongoing needs identification, the visibility of projects progress, monitoring, and learning".
	3.2. Engagement with international partners	The JET IP provides for extensive engagement with IPG members, in particular, with these partners not only having a prominent role in the development and financing of the plan, but also its governance (see also 5. Governance).
Metrics and Targets	4.1. Metrics and targets on emissions and sustainable development	The JET IP sets a series of targets in each of the areas of focus, with progress monitored by different bodies. The Strategy provides for a detailed Monitoring, Evaluation, and Learning Framework, including a proposed list of core indicators to be monitored and reported (Section 7.2, p139-140).
Governance	5.1. Governance and institutions/	Dedicated institutional arrangements have been established to oversee implementation of the JET IP (Figure 1, reproduced below and Section 7.1, p135-136). Alongside top-level, national government oversight provides for country-wide coordination and planning with stakeholders.

	5.2 Roles and responsibilities	Figure 1. JET IP governance