

COP28

DATA-TO-DEAL (D2D): AN EMERGING AND EFFECTIVE APPROACH TO FINANCING THE CLIMATE TRANSITION

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Abstract

Developing nations encounter significant challenges in accessing the necessary finance to meet climate goals. The emerging 'Data-to-Deal' approach is a collaborative effort by 60 specialists, which aims to address this by providing a flexible framework of options, tailored to individual country circumstances, aiming to enhance core functions and capabilities; it serves as a basis for

concrete action, informing capacity building, technical assistance, and research.

This paper argues for the mainstreaming of a holistic approach to accessing climate finance by outlining the components of the Data-to-Deal pipeline and showing the effectiveness of Data-to-Deal through the demonstration of its successful implementation in Costa Rica.

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necessarily imply an endorsement of the report or represent any official institutional position.

A policy brief that summarises the Data-to-Deal approach is also available: Luscombe, H., Foster, V., Howells, M., Quiros-Tortos, J., and Jaramillo Gil, M. Data-to-Deal: An Emerging and Effective Approach to Supporting Countries in Climate Transition. Climate Compatible Growth Programme COP28 Policy Brief Series. Available at: <https://climatecompatiblegrowth.com/wp-content/uploads/Data-to-Deal-COP28-Policy-Brief.pdf>

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Introduction

In 2015, world leaders made a landmark commitment by adopting the Paris Agreement, placing governments worldwide at the forefront of an extraordinary challenge: the complete decarbonisation of vital economic sectors. Such transformative changes will necessitate an expedited increase and reallocation of investments. Estimates suggest that between 2016 and 2050, annual global investments of US\$3.1 to US\$5.8 trillion are needed for the low-carbon energy transition (BNEF, 2021). However, the current investment has been inadequate, standing at US\$1.1 trillion in 2022, necessitating a minimum threefold increase in the current investment levels (BNEF, 2023). This disparity will disproportionately impact low- and middle-income countries (LMICs), which will require 2.5 times more investment compared to developed nations (IPCC, 2022). For these nations, securing the necessary climate and development finance remains a formidable challenge, and there is no straightforward or universally applicable process to follow.

This paper argues for the mainstreaming of a holistic approach to accessing climate finance that marries political leadership with sound technical analysis; integrates decarbonisation within national development plans; dovetails system planning with financing strategies; and focuses on building local capacity and country ownership. The primary objective of the paper is to outline the components of this novel approach, building on transparent evidence and a comprehensive multidisciplinary engagement to help countries expedite their efforts to combat climate change by unlocking international finance.

Following Jaramillo et al. (2023), this approach will be described as ‘Data-to-Deal’ (D2D), drawing inspiration from the successful experience of Costa Rica, which mobilised over US\$2.4 billion of climate finance based on a systematic process of technical analysis and stakeholder engagement costing US\$200,000 over a period of just 3 years. The term ‘Data-to-Deal’ refers to action along an entire pipeline that runs from data collection,

system modelling, and development planning all the way through to national financing strategies and project finance arrangements all driven by a strong stakeholder engagement process (**Figure 1**). Throughout the paper, we will discuss each of these components in further detail, illustrating them with reference to different aspects of Costa Rica's experience as highlighted in the Jaramillo et al. (2023) paper. We acknowledge that Costa Rica is a somewhat exceptional case among low- and middle-income countries, due to its relatively high GDP per capita and robust governance. The details of the process can be expected to differ significantly across countries, as will be elucidated by subsequent publication of further case studies currently underway. However, as an illustrative case, it presents the distinct advantage of being fully completed, all the way through to the successful unlocking of finance.

The paper is directed primarily at stakeholders within country line ministries working on the climate transition, but it is designed to be useful to any professionals seeking information on how to overcome barriers that prevent countries from unlocking climate finance. The paper is the fruit of a collaboration among 60 specialists, including government officials, practitioners, financiers, and academics who were convened at a joint workshop hosted by Climate Compatible Growth (CCG) in London in March 2023. All members of the workshop have been consulted on the evolution of the paper and have had the opportunity to review and comment on an earlier draft of this guide. Every statement in this report is either properly cited when sourced from external literature, or otherwise originates from discussions held

among workshop participants that cannot be directly attributed due to the application of Chatham House rules.

This paper adheres to the structure outlined by the D2D pipeline (**Figure 1**), encompassing seven key elements. The subsequent sections will provide a detailed account of each element, combined with illustrations from Costa Rica:

1. **Politics:** Garnering high-level support for decarbonisation.
2. **Preparation:** Establishing the foundations of institutional capacity.
3. **Vision:** Aligning climate change objectives with broader development goals.
4. **Modelling:** Conducting deliberative quantification of scenarios.
5. **Consultation:** Engaging inclusively across stakeholder groups.
6. **Operationalisation:** Enhancing the policy and regulatory framework.
7. **Finance:** Developing investment plans and financing strategies.

Rather than being prescriptive, the D2D pipeline provides a framework of options to help countries enhance their core functions and capabilities to act according to their national circumstances. Countries will find themselves at different stages, and entry points to the pipeline will vary from one case to another. The framework is designed to provide the basis for concrete action and can inform capacity building, technical assistance, and research efforts. While the framework will no doubt be further refined as additional experiences accumulate, this working paper distils current best practices and seeks to outline the fundamental elements of an effective D2D approach.

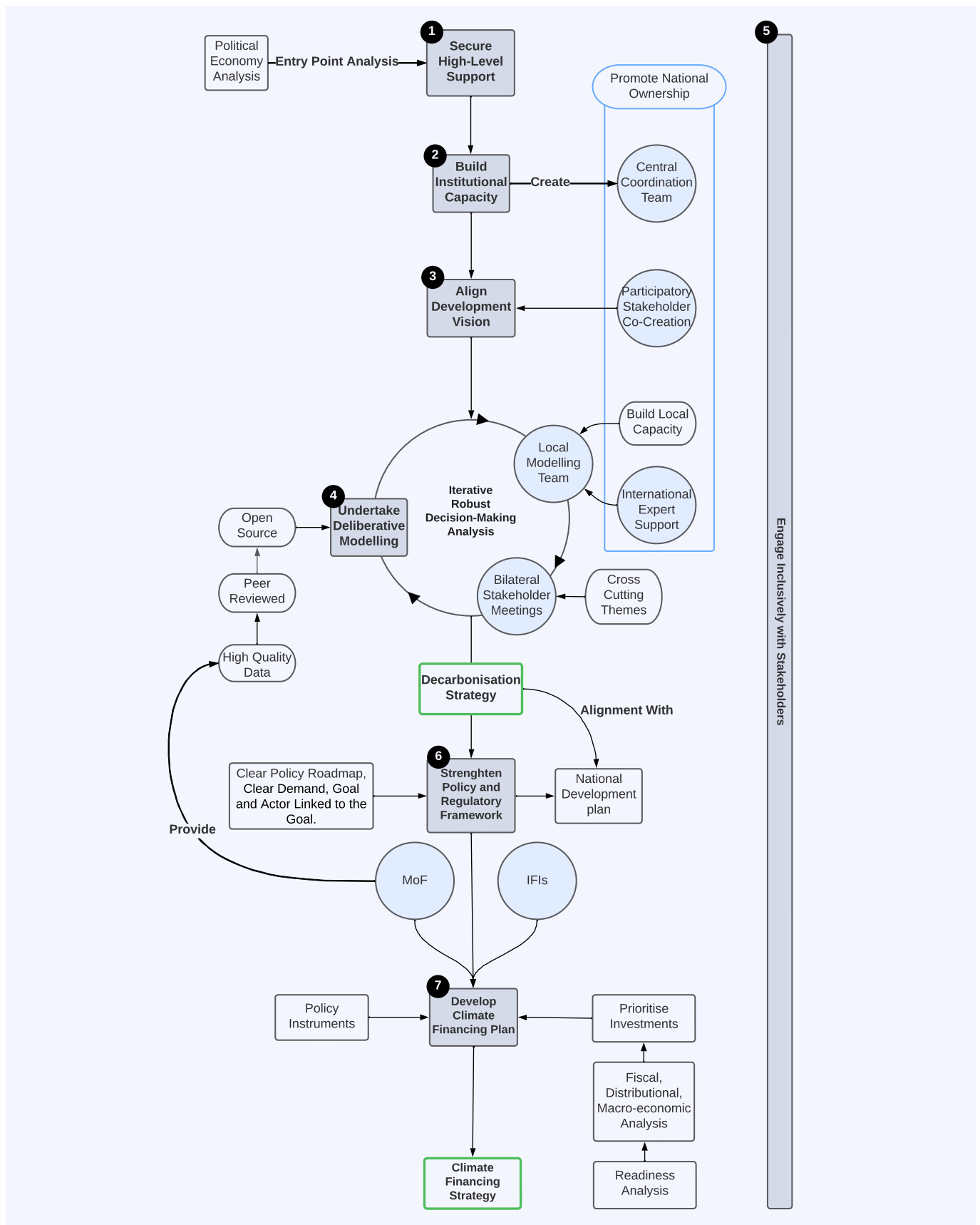


Figure 1. Emerging Data-to-Deal Workflow (each numbered circle corresponds to a chapter). NB: IFI = International Finance Institution; MoF = Ministry of Finance

1 POLITICS: GARNERING HIGH-LEVEL SUPPORT FOR DECARBONISATION

High-level political commitment to decarbonisation is a critical foundation for the D2D process. Ideally, this takes the form of a high-level political leader making an official declaration of a national commitment to a decarbonisation target in line with the Paris Agreement. Whether the mandate is at the presidential or ministerial level, it is crucial that relevant line ministers are engaged and that the Ministry of Finance (MoF) is on board. Such a high-level mandate for a country's decarbonisation target helps to align policy priorities, enabling collaborative workflows, efficient use of resources, and consistency between various government plans which reassures investors with certainty and transparency. Otherwise, ineffective horizontal coordination on climate change among national government departments can foster a siloed culture, posing challenges for securing funds to implement nationally determined contributions (NDCs) and associated policies (Averchenkova, Gannon and Curran, 2019).

A significant hurdle in garnering political commitment lies in the misconception that emission reduction policies are not drivers of social and economic development but rather constitute restrictive measures. Ideally, this political mandate should be firmly rooted in an understanding of how the transition to a decarbonised economy can bolster the country's broader socioeconomic development objectives. Notably, some countries have seen the link between emissions reduction and social and economic development through the creation of more jobs and business opportunities. Nevertheless, an inclusive planning approach acknowledges the existence of trade-offs and facilitates the development of strategies that

concurrently address both development and climate goals.

Where high-level interest may be lacking, academia and other technical experts may be able to motivate the adoption of decarbonisation targets. This can be done by encouraging conversations about climate change and helping to build a cogent narrative about a decarbonisation target's contribution to the national development plan and other country priorities, as well as developing academic exercises that demonstrate the potential socioeconomic benefits of pursuing decarbonisation. Once high-level policymakers are aware of the value proposition of a low-carbon pathway, a relatively small investment in policy-relevant analytical work can inform areas of action and unlock the finance needed to implement the strategy, simultaneously contributing to the broader development agenda. The stronger the commitment at the highest political levels, the greater the possibility of unlocking climate finance for the implementation of the strategy – as demonstrated by the case of Costa Rica (see box below).

Nonetheless, if the government remains ambivalent regarding national decarbonisation targets, the process can still begin within research institutions in preparation for future opportunities. Starting the local capacity building, modelling, and stakeholder engagement processes will enable rapid responses to future demands as well as animate conversation in country on the topic.

Undertaking Political Economy Analysis

A helpful starting point is to conduct a political economy analysis (PEA) of the decarbonisation process in a country, to identify the interests and

positions of existing stakeholders and decision-makers, as well as the relations between them, thus pinpointing the most promising strategic approaches. This process should also explore the viable pathways for decarbonisation, thereby helping to shape the entire D2D pipeline in the most functional way possible. PEA should be

integrated into and guide all activities within the D2D pipeline. For instance, an initial PEA can be undertaken to assess the feasibility of a decarbonisation strategy and inform the initial steps. Subsequently, more comprehensive PEAs can be conducted to inform the development of a detailed decarbonisation plan.

CASE STUDY: How Costa Rica secured a high-level mandate

Jaramillo et al. (2023) explore how Costa Rica went from open data and modelling of a long-term strategy (LTS) to mobilisation of financial resources. Costa Rica's national decarbonisation target, launched in 2019, has been the foundation for mobilising US\$2.4 billion of climate finance up until the end of 2022. The paper argues that formulating an LTS, which encompasses iterative, transparent analysis and engagement with a clear road map, can help governments plan financial resources for delivery and increase access and effectiveness to international climate finance.

One of the keys to success, in this case, was a high-level mandate, including support at the presidential level. The Costa Rican government, at the time, made a clear commitment to reaching net-zero and developing a national decarbonisation plan (NDP) in 2018. This vision was supported at the highest level and had strong country ownership, resulting in a government that was dedicated to achieving a climate-compatible future. The NDP was launched with high-profile support and played a pivotal role in coordinating priorities among government ministries while also gaining widespread public support.

2 PREPARATION: ESTABLISHING THE FOUNDATIONS OF INSTITUTIONAL CAPACITY

It is crucial to establish the necessary human and institutional capacity within national and local governments to deliver on decarbonisation targets. It is worth noting that a decarbonisation strategy and high-level mandate are not necessarily prerequisites for the capacity-building effort, although they may certainly help to motivate engagement and participation. Consensus building through stakeholder engagement is key throughout the process. Specifically, this step involves political convening, consultation processes, inception workshops, and technical capacity building. To sustain the momentum and implement this effectively, establishment of a central coordination team can be very helpful.

Building Technical Capacity In-Country

A common problem is lack of in-country technical modelling capacity and excessive reliance on external consultants for critical analytics. It is important for policymakers to be proficient in the relevant analytical methods and for institutions to have the in-country capacity needed to provide adequate context specificity and build country ownership of the resulting decarbonisation plan. The required capacity encompasses consensus building, technical analysis, scenario development, and effective translation of modelling results into policy insights.

Capacity building plays a crucial role in facilitating effective collaboration and understanding among

different stakeholders involved in the process of developing a decarbonisation strategy. While technical skills are typically tailored to specific roles and responsibilities, it is also important to ensure that each specialist has at least a high-level understanding of the contributions of other specialists, as this facilitates cross-sectoral and interdisciplinary collaboration. Policymakers can benefit from gaining a basic understanding of technical subjects, enabling them to appreciate the value of a quantitative approach in the planning process and to interpret results in an informed manner. Likewise, scientists and technical experts can benefit from acquiring knowledge about policy processes, enabling them to enhance the relevance of their scenarios for policymakers and thus operationalise the science-policy interface.

To ensure the sustainability of capacity-building efforts, it is essential to adopt an integrative perspective that emphasises the development and mobilisation of capacity across multiple institutions, rather than focusing on a single entity. Ideally, capacity building should implicate both government institutions where decisions are made and research institutions where longer-term technical expertise can reside, thereby safeguarding against capacity loss during political transitions. Engaging simultaneously with policymakers and academics makes it possible for plans to be co-created by harnessing the collective expertise available and promotes informed policymaking.

Capacity-building engagement should be characterised by its long-term nature and commitment to strengthening local capabilities. It is crucial to continue these efforts until in-country capacity becomes robust and self-sustaining. Self-sustenance can be further facilitated by the establishment of community platforms that support peer-to-peer learning and knowledge sharing among various stakeholders. Integration of planning skills into local university curricula also helps to provide a longer-term talent pipeline.

The uptake of capacity-building opportunities can be supported through the provision of user-friendly tools and relevant course offerings. To enhance the accessibility of capacity building, it is important to ensure that modelling tools are open source and not overly complex, while training courses are designed to be engaging and relevant. Often overlooked, the private sector is another important target for capacity-building efforts, deserving greater attention from the international community, given the critical role it plays in the implementation of decarbonisation strategies. Further, a micro-credential system can be developed, wherein individuals receive credits for participating in capacity-building events. Over time, these credits can accumulate to equivalent qualifications such as an MSc, increasing the appeal and recognition of such capacity-building initiatives. Furthermore, international partners may enhance stakeholder acceptance of modelling tools, for instance, by demonstrating a strong and ongoing commitment to the use of modelling tools offering open-access and user-friendly tools and supporting community capacity (Ramos et al., 2021).

Forming the Central Coordination Team

To promote effective coordination among ministries and strengthen the implementation of national decarbonisation strategies, the establishment of a central coordination team is recommended. Such a team can advocate for the decarbonisation process within government and act as a hub for facilitating collaboration, understanding, and alignment among various domestic and international entities. The central coordination team should ideally encompass a diverse group of stakeholders, including government officials, academics, researchers, businesses, civil society organisations, and relevant experts.

The team can promote the decarbonisation agenda by generating momentum and public interest, thereby encouraging the government to set

ambitious but realistic targets for mitigation and resilience. This entails a strategic communication process to support broad engagement on the decarbonisation agenda and socialise some of the key associated messages. The team also helps manage coordination issues that may arise both within the country and with the country's international partners. By centralising coordination efforts, the team overcomes challenges stemming from fragmented and incoherent approaches.

Furthermore, the inclusion of not only government officials but also academics and researchers within

the team helps to ensure sustainable retention of capacity and knowledge. By leveraging academic expertise, the team can transcend political cycles, providing continuity and stability in advancing the decarbonisation agenda, and ensure a balanced, rigorous, and evidence-based approach to decision-making. Furthermore, building a strong connection between technical capacity and policymakers is vital, and this should be built on trust and cooperation between the parties involved. This may take time and will require the team to establish a reputation for providing high-quality and politically neutral technical support.

CASE STUDY: How Costa Rica deployed a central coordination team

In Costa Rica, effective communication relied on the central coordination team, which facilitated seamless collaboration across institutional boundaries. This team comprised consultants from the Directorate of Climate Change (DCC), which operates under the Ministry of Environment and Energy in the Costa Rican government. The consultants within the DCC served as the vital link between the DCC and the academic team at the University of Costa Rica (UCR), ensuring smooth technical communication. They possessed a comprehensive understanding of the ongoing analysis and were responsible for conveying the technical findings to the DCC's head, who then spearheaded communication efforts with other stakeholders at a strategic level.

The central coordination team was formally established in response to a request for technical support from the DCC to Multilateral Development Banks (MDBs) and other organisations. Each participating team operated under their own specific Terms of Reference. While the central coordination team was formally created and presented to other stakeholders, it was a purely administrative entity and was not established through a legal instrument or decree.

The central coordination team operated within the DCC, aiming to support the DCC in the political dialogue and dissemination of decarbonisation plans by presenting technical insights effectively. This meant operating in parallel at two distinct

levels. When engaging with other technical teams, the UCR modelling team led the discussion in great scientific detail. When engaging with political stakeholders, the DCC led the policy discussions that were pitched at a higher level, though these were always underpinned by the findings from UCR's technical analysis.

The unique setup of the central coordination team in Costa Rica was driven by a clear need to base the National Decarbonisation Plan on scientific analysis. The use of well-recognised modelling tools developed by a renowned local team, with capacity built by an international team, was essential to enhance the acceptance of the analysis. The establishment of the central coordination team within UCR ensured that modelling capacity would persist across political cycles. Additionally, the credibility of UCR as a respected institution played a crucial role. The presence of the consultant team within DCC bridged the gap between UCR's technical expertise and other stakeholders, facilitating effective communication and access to decision-makers.

Long-term involvement was secured through coordination between MDBs to ensure continuity between contracts, as DCC submitted support requests to different MDBs in a synchronised manner. Despite the use of various short-term contracts, there was a strong commitment to carry out the tasks, and the entire team was comprised of local capacity, further enhancing ownership of the plan.



3 VISION: ALIGNING CLIMATE CHANGE WITH BROADER DEVELOPMENT OBJECTIVES

Before modelling begins, the country must identify the broad development aspirations that provide the context for any discussion of long-term national decarbonisation targets. As noted above, ownership and support for

decarbonisation strategies depends critically on their integration within a country's broader development strategy beyond the climate agenda. In some cases, development visioning and decarbonisation modelling

may proceed simultaneously, as was the case in Costa Rica. In other cases, this may prove prohibitively complex, and the development visioning would need to come first to set the direction and provide the context for decarbonisation efforts.

Co-creating the Country Vision

A foundational element for the design of decarbonisation strategies includes the creation of narratives that outline potential future scenarios and the subsequent modelling of these scenarios. An open discussion with stakeholders is essential to foster consensus-building around what these potential future scenarios may look like and to identify the most critical policy questions. This helps to ensure the continued robustness of the modelling process. This must be a highly iterative and extensive consultation process with opportunities for valuable feedback to be incorporated into the models. Consultation should be based on an inclusive approach, involving stakeholders from the whole of government, civil society, and the business sector. Emphasising the ongoing and unfinished nature of the consultation builds transparency and trust, which are pivotal factors in successfully mobilising funds. Clear mechanisms should be established to effectively integrate stakeholder feedback into the modelling process. Co-creating scenarios with stakeholders is crucial as it fosters a sense

of involvement in the assessment, enhances transparency, and empowers stakeholders to embrace and trust the analysis.

Promoting National Ownership

Country ownership of national decarbonisation plans also helps to ensure that the country's context is adequately reflected. This is also true of the modelling process; countries should have full ownership of the modelling exercise and associated skills, with non-prescriptive guidance from international partners. In-country modellers and stakeholders possess valuable understanding of the local context, including political, economic, and social factors. This nuanced knowledge needs to be incorporated into the scenario development process. Country ownership and context specificity is in turn supported by capacity building, which – as noted above – needs to be a part of all such processes.

Once a long-term vision is drafted and validated, a work plan must be decided on that will allow the country to move onto a deeper phase. The existence of a widely shared vision and associated political commitment will increase the chances of more funding being made available at this point to support the subsequent work plan. In parallel, the vision should be communicated to society at large through public channels.

CASE STUDY: How Costa Rica promoted national ownership and cross-sectoral collaboration

The involvement of high-level ministerial teams was crucial in promoting national ownership and crystallisation of the country vision. In Costa Rica, a shared sense of ownership translated into collaboration with technical teams through co-creation activities. Initially, the model operated using publicly available data. However, stakeholders recognised the opportunity to enhance the model's accuracy by contributing their own data, enabling better estimations. Their

concerns and ideas were actively incorporated into the analysis, and the results were presented during subsequent workshops.

This iterative interaction occurred multiple times, ensuring genuine stakeholder involvement. Additionally, there were instances where real-time adjustments were made to the 2030/50 targets to observe their effects, which proved to be critical in empowering the stakeholders' perspectives of the robustness of the targets.

4 MODELLING: CONDUCTING DELIBERATIVE QUANTIFICATION OF SCENARIOS

The design of national decarbonisation strategies requires an iterative approach that combines quantitative analysis and in-depth stakeholder consultation. A robust modelling process – encompassing technical, economic, and social dimensions of decarbonisation scenarios and utilising sectoral and macro-economic modelling tools – assumes paramount importance in informing the design phase.

Fostering Inter-sectoral Linkages

The development of decarbonisation strategies is inherently complex and politically sensitive due to the transformative nature of these initiatives. Hence, the effectiveness of any modelling analysis lies in its ability to generate inputs for policy discussions that are comprehensible, subject to scrutiny, and capable of garnering support from stakeholders. To achieve this, it is important to undertake analysis of sectoral interlinkages between energy plans and other sectors such as agriculture, land use, forestry, waste, transport and industry. By completing a cost-benefit analysis, governments are provided with a comprehensive perspective on external factors related to policy impacts, including effects on employment and public health. It is also crucial to incorporate social aspects – such as poverty, justice, and gender – which can help obtain stakeholder buy-in and mobilise finance, especially when these issues also align with mandates of funding entities.

Ensuring High-Quality Data

Models serve as valuable frameworks for evaluating strategies and facilitating policy deliberations pertaining to decarbonisation pathways and should be driven by high-quality and open data (Howells et al., 2021). The lack of

high-quality data to feed into models is a well-documented difficulty, as data are often missing or may not be publicly available. Establishing a strong partnership between the modelling team, which can operate within a trusted organisation, and government ministries, enables access to accurate and reliable data sources. It is also an opportunity to start collecting new data for ministries and understand better what data are needed and what they can be used for. In this context, ministries are encouraged to share government data with the modelling team to ensure the calibration and reliability of the models.

Enhancing Energy System Design through Demand-Side Focus

Improving energy system design entails a shift away from the more traditional supply-side approach towards a more balanced supply-demand focus. This requires an understanding of the drivers of future demand, including the performance of current and future demand-side technologies, as well as the scope of demand management policies. Defining plausible future demand trajectories is crucial for designing efficient and effective energy systems, but many countries lack the detailed long-term vision necessary for this task, including well-defined sectoral and sub-sectoral economic goals.

Moreover, there is a shortage of accessible and dependable data concerning demand-side technologies. To rectify this, increased financial and capacity-building support is necessary to improve data collection and management, with a greater emphasis on demand-side information. The establishment of a government-led database, particularly for energy-related data, is imperative. Once properly desensitised, this database

can be made public and freely accessible for research institutes engaged in academic studies. Furthermore, exploring stakeholder engagement strategies which specifically target distribution system operators could significantly enhance the quality of data related to demand-side technologies, especially in areas such as smart home systems and smart charging. Such collaboration has the potential to bridge existing data gaps and foster innovation within the energy sector.

Communicating the Strategy to Domestic and International Audiences

After the drafting of the decarbonisation strategy, it is important to engage with society at large and share the decarbonisation strategy for broader socialisation. Additionally, the strategy must

be submitted to the UNFCCC Secretariat for review and consideration. It is essential that the chosen approach aligns with social, political, and environmental considerations to achieve an optimal solution that is acceptable to all stakeholders.

When engaging with domestic audiences, it must be acknowledged that many may believe that the costs of decarbonisation fall disproportionately on the current generation of households, farmers, and businesses, while the benefits primarily manifest in the distant future. Communications efforts to counterbalance such views can emphasise the short-term advantages of low-carbon electricity access, the immediate social costs associated with climate change, and the importance of acting as a responsible global citizen in the fight against climate change.

CASE STUDY: How Costa Rica facilitated broad participation in deliberative modelling

Costa Rica's approach to extensive stakeholder engagement has proven to be a significant driver in its mobilisation of funds. Through a series of 20 workshops, stakeholders were actively involved in co-creating scenarios and shaping a narrative for Costa Rica's decarbonisation.

The narrative informed model development and/or was translated into modelling assumptions and scenarios, and feedback from stakeholders during the workshops was analysed. The iterative engagement process resulted in the examination of 3,003 potential futures, leading to a robust scenarios framework. By involving a wide range of stakeholders and adopting a transparent approach, the team gained credibility and reduced fragmentation. Notably, Costa Rica's model encompassed all seven sectors reported to the IPCC: energy, transport, agriculture, land use, forestry, waste, and industrial processes. This holistic representation of the entire economy within the models contributed to a comprehensive and integrated approach.

Calibration and scenario development are distinct yet equally vital components. Calibration instils confidence in a model, ensuring it reflects reality

accurately. Meanwhile, scenarios must align with political objectives to foster trust. Costa Rica's approach accomplished both tasks: calibrating the model using data provided by stakeholders to depict the current economic landscape and formulating scenarios rooted in stakeholder perspectives, all with the overarching goal of achieving net-zero greenhouse gas emissions.

Moreover, the engagement with ministries, particularly the Ministry of Finance (MoF), allowed access to relevant and more detailed data sources. For example, the MoF shared transportation data with a trusted university for the development of the OSeMOSYS model. This collaboration with the MoF fostered a culture of data sharing among other institutions. This collaboration with the MoF aimed to enhance the calibration and detail of the model. Importantly, in Costa Rica, the Ministry of Energy and Environment operates as one entity, aligning the ministry responsible for emissions with the one driving the decarbonisation agenda. This coordinated approach between ministries, including the Ministry of Planning, strengthened the overall effectiveness of the decarbonisation strategy in Costa Rica.



5 CONSULTATION: ENGAGING INCLUSIVELY ACROSS STAKEHOLDER GROUPS

Deep, iterative, and transparent stakeholder consultation is an indispensable element throughout the entire Data-to-Deal (D2D) pipeline, playing a critical role in fostering consensus and shaping a shared vision for the

country. This can help reconcile green energy development with environmental concerns, mainstream public investments with the energy transition goals, and plan for the construction of enabling infrastructure. To ensure a robust

process that builds trust and incorporates diverse perspectives, it is essential to develop methodologies for stakeholder consultations. Three key points of good practice include engaging early, communicating effectively, and involving the Ministry of Finance (MoF).

Engaging Early

It is essential for the central coordination team to begin effective engagement with all relevant stakeholders from the early stages of the national decarbonisation process. This is particularly important when developing modelling scenarios. Key stakeholders include key ministries, namely the Ministry of Energy, Ministry of Environment, Ministry of Agriculture, Ministry of Climate Change, Ministry of Finance, and Ministry of Planning and Economic Development. Among the stakeholders, the MoF and International Financial Institutions (IFIs) play a crucial role and should be involved in a timely manner to ensure that conditions for access to finance can be met as the process advances. Engaging early also ensures the ministry learns about the project directly from the modelling team, avoiding a situation where the modelling team is in a defensive position justifying its work. However, engagement should not happen before a compelling offer can be made, as ministers' time and attention are limited. Identifying opportune moments for engagement, such as preceding important events like the Conference of Parties (COP), can be advantageous. Supporting the MoF in making ambitious and achievable statements during these events can foster a positive relationship between the modelling team and the MoF, facilitating further collaboration and commitment. It is crucial to emphasise that engagement should not be limited solely to direct interactions with the minister but should also extend to higher-ranking civil servants within the MoF before engaging with the minister.

Communicating Effectively

Effective stakeholder engagement is greatly enhanced when communication is tailored to stakeholders' specific language and interests. It should be made clear that the decarbonisation strategy seeks to capture stakeholders' existing goals, not change them. Differences in terminology commonly breed misunderstandings during cross-ministerial conversations. To avoid this, actors should be supported in learning the internal vocabulary of the groups they speak to. The stakeholder engagement team should not be afraid to directly enquire about these goals and how the strategy can support them. It is important to recognise that different ministries have different goals, as do the same ministries in different countries, and different individuals within the same ministry depending on their respective roles and seniority, values, and beliefs.

Involving the Ministry of Finance

The specific role of the MoF varies from country to country, making it necessary to identify the nature of this role at the local, national, and international levels in any specific case. Involvement of the MoF is essential for several reasons. The MoF has the power to shape economic norms and policies and brings a comprehensive understanding of the overall national landscape, including the economic and distributional impacts of different policies (Coalition of Finance Ministers for Climate Action, 2023). Furthermore, the MoF bears the responsibility of overseeing public finances, necessitating a keen awareness of the fiscal implications of the transition – both positive and negative. By communicating with the MoF, it becomes easier to integrate climate and other green transition initiatives into national plans. Additionally, other Ministries with portfolios related to finance, such as public management, debt management, public investment, tax policy, and fiscal planning, also play important

roles and can be brought along as part of the engagement on finance issues.

Furthermore, the MoF takes a proactive leadership role in engaging with IFIs. From the perspective of IFIs, the MoF should lead the engagement on projects and policies that require collaborative design and funding. The Ministry

should play a more active role in aligning policy reforms with financial instruments, to streamline the process of accessing finance. Given the significant impact of certain transition areas on the country's prosperity, it should also take a proactive stance in investment decision-making, to ensure full coherence with broader development plans.

CASE STUDY: How Costa Rica conducted extensive stakeholder consultations

Costa Rica's decarbonisation strategy was developed with extensive consultation across all sectors impacted by the strategy, ensuring that stakeholders perceived it as a comprehensive and integrated strategy. This helped to reduce fragmentation, which is often a big challenge when it comes to delivering finance to the country.

Costa Rica's success in developing a robust decarbonisation strategy involved using both qualitative and quantitative methods, employing open data, peer-reviewed open tools, and a transparent workflow. Importantly, the local modelling team used tools that were enabled for participatory stakeholder engagement, specifically to provide policy support. The whole process, including the formulation of strategy,

the big vision, and the definition of targets requires analytical and carefully timed stakeholder engagement.

In the case of Costa Rica, the work that was developed by the modelling team was used by the Ministry of Environment and Energy to discuss inputs and possible pathways for decarbonisation with line ministers, civil society, and the private sector. Stakeholder engagement with the different sectors greatly enhanced the credibility of the analysis, given the complexity and the political sensitivity of planning a long-term decarbonisation strategy and the associated economic transformation. In the case of Costa Rica, the team focused on addressing the concerns of different actors and producing inputs for policy discussion.

6 OPERATIONALISATION: ENHANCING THE POLICY AND REGULATORY FRAMEWORK

Mobilising capital successfully requires a low-risk environment and strong real economy policies to create clear incentives. Well-designed policies establish a clear strategic vision and reduce downside risks; investors must be certain that countries are committed to achieving decarbonisation targets, with key aspects and investments clearly identified. The lower the perceived risk the more likely a country is to secure financing.

In many LMICs, significant barriers to investment remain because of uncertainty over what

transitions are likely to mean for each sector. Key actions to deliver a clear strategic vision and offer certainty to investors include a shift away from structuring standalone projects towards providing strategies that incorporate integrated, multisectoral, and cross-cutting policies. Defining sectoral targets, and a policy roadmap with assigned responsibility across government agencies and line ministries, along with relevant regulation, facilitates the translation into a pipeline of integrated projects that, in

turn, attract financing from multilateral and bilateral resources.

Creating a Clear and Granular Roadmap

Governments play a critical role in establishing an enabling environment for policies and regulations for long-term, climate-aligned investment. By developing decarbonisation strategies with short-, mid-, and long-term milestones, each associated with a clear goal and responsible actor, they will provide a clear signal to investors regarding the direction of future policy, reducing uncertainty and encouraging sustainable investment. Particularly, the inclusion of short-term targets in longer-term strategies can result in the mobilisation of financial resources relatively soon after the official publication of a decarbonisation plan. These can include policy and regulatory reforms, which may help to attract policy-based lending, as well as pre-feasibility and feasibility studies, pilot projects, and catalytic infrastructure investments which can capture grants and concessional loans. In addition to intermediary targets, a good strategy with milestones and performance indicators will give rise to many pertinent questions requiring further attention via policy and regulation. Addressing these questions in a systematic and rigorous manner contributes to the robustness and effectiveness of the overall strategy, ensuring that it aligns with the broader goals of sustainability and economic efficiency.

Aligning with Development Plans

Furthermore, decarbonisation strategies must be calibrated to align with a country's national development plans to help ensure policy coherence across different sectors. This will avoid conflicting objectives and ensure that policies and regulations are consistent and complementary. Once decarbonisation

strategies are submitted to climate bodies like the UNFCCC, it becomes essential to review all national plans to verify their compatibility with the published strategies. In cases where existing policies fall short of the required ambition, revisions should be considered.

Establishing a strong link between a country's long-term decarbonisation strategy and its national development plans is fundamental for attaining sustainable development goals. This linkage plays a vital role in mobilising resources, gathering political and social support, and maintaining policy coherence. By integrating decarbonisation objectives into national development plans, countries can align their economic, social, and environmental priorities, ensuring a holistic and integrated approach to sustainable development.

Evaluating Macroeconomic Implications

This points to the importance of modelling the macroeconomic and fiscal implications of any intended decarbonisation pathway. The net-zero transition may result in an overall increase in investment during the transition period, as well as a shift in the composition of investment across economic sectors. This will have implications for economic growth and employment, as well as possible impacts on vulnerable groups that need to be considered. Given the prevalence and fiscal significance of fuel taxation and energy subsidisation across LMICs, the decarbonisation process will also call for a redesign of a country's fiscal architecture to ensure that revenue bases are preserved and benevolent fiscal incentives are introduced.

To ensure effective implementation, a robust monitoring process needs to be established, allowing for the operationalisation of the strategy, and tracking progress towards its goals.

CASE STUDY: How Costa Rica produced a roadmap for action

Costa Rica's long-term strategy (LTS) not only defined the long-term aspiration of becoming a modern and green economy, but also provided a very clear and granular roadmap for action. In addition, it encompassed all the relevant policy goals and milestones, with clear institutional responsibility associated with each. This helped to provide investors with confidence that the necessary policy measures would be undertaken over time, as well as clarifying what volumes of finance would be needed when and where. This was complemented by eight cross-cutting strategies, considered equally important in facilitating the delivery of the desired transformation. These were institutional and fiscal reform, digitalisation, just transition, human rights and promotion of gender equality, transparency, and educational culture.

For example, one of Costa Rica's objectives was to develop a mobility system based on safe, efficient, and renewable public transport and active mobility schemes. The long-term target defined for 2050, was to make public transport the number one commuting option and to have 85% of public transport be zero emission. However, clear timebound short-term and medium-term objectives were also defined to establish the transition trajectory. The immediate

policy measure, targeted for completion by 2023, is to revise concession contracts for buses to incorporate targets and conditions for the adoption of new technologies such as electric vehicles. Whereas the medium-term goal, for the period between 2030–2035, is to reach 30% penetration of electric buses.

Additionally, Costa Rica **linked the LTS to the National Development Plan**. The result of the iterative modelling process, and stakeholder engagement, was an LTS which had a clear and integrated climate and development vision. Moreover, Costa Rica's National Adaptation Plan complements the country's net-zero vision and is also reflected in the NDC.

Regarding financing, studies showed the costs of implementing the Plan. To secure the necessary funding, in 2021, Costa Rica signed a Policy-Based Loan with the Inter-American Development Bank (IDB). This loan is aimed at supporting policy reforms and development objectives aligned with the LTS. In addition to this, other concessional loans have been allocated to fund climate-related actions in the country, further ensuring the financial resources needed for the successful implementation of the LTS.

7 FINANCE: DEVELOPING INVESTMENT PLANS AND FINANCING STRATEGIES

Once the planning process is complete, attention shifts to the mobilisation of finance for the projects identified in the least-cost expansion plan. At this stage, the Ministry of Finance (MoF) plays a crucial role in allocating financial resources based on the findings of the quantitative modelling analysis. It is essential to present detailed information to the MoF regarding the investment requirements for different sectors and technologies, including both the costs and economic benefits such as

carbon reduction and savings from electrification and efficiency measures. Emphasising the long-term benefits of short-term capital expenditures (as an investment in the future) is important, as immediate impacts may not always be apparent. The implementation of a transition pathway is likely to involve a surge in investment relative to historic levels, until cleaner infrastructure has been fully adopted. The MoF needs to understand whether the associated debt service costs are affordable at the national level and how

the associated volumes of finance can best be sourced. It is important to note that not all this finance is truly incremental, as a certain amount of investment would anyway have been needed under business as usual. An important part of the process is then to realign existing streams of finance towards decarbonisation objectives. For example, the national budget for the energy sector should gradually shift towards supporting the transition while gradually winding down support for fossil fuel related infrastructure.

Prioritising Investments

During the identification of investment priorities, the MoF must carefully consider several key factors. These include assessing the resources needed for each stage of implementing the decarbonisation strategy; providing clear guidance on the role of public funds; determining suitable financing instruments and policies to bridge financing gaps and stimulate private investment; defining interinstitutional responsibilities; and being actively involved in sectoral planning, with finance ministries in the decision-making process. Furthermore, it is important for the MoF to consider the emissions reduction potential of different projects and allocate resources accordingly. The choice of policy instruments, whether incentivising or penalising emissions, largely depends on political will. These considerations are essential to ensure effective resource allocation and coordination among relevant stakeholders.

Based on this analysis, a climate investment plan would be developed, optimising solutions while considering barriers, comparative advantages of different investors and partners, and the sequencing of investment programmes.

Collaborating with IFIs and MDBs

Equipped with this information, the MoF can take the lead in engaging with international finance institutions (IFIs) and multilateral development banks (MDBs) to secure the necessary funding.

The establishment of a comprehensive decarbonisation strategy, which includes a prioritised list of investment areas, enables governments to coordinate funding efforts for international investors and serves as a framework to guide financing from various sources. This approach fosters a practical and government-driven alignment of needs with available public and private funding resources. By effectively integrating national public budgets with potential financing schemes, governments can optimise their access to international climate finance, create an attractive investment climate, encourage private sector involvement, and accelerate the transition to a low-carbon future. Additionally, maintaining a clear roadmap and engaging in continuous analysis and evaluation further enhance the effectiveness of these efforts.

The engagement of MDBs and IFIs in this phase is particularly significant as they can serve as coordinating entities, leveraging their existing structures to bridge the financing gap across various sectors involving academia, private enterprises, philanthropic organisations, governments, and development agencies. Moreover, the regional presence of these institutions facilitates coordination among regional bodies, minimising duplicative efforts and enabling efficient mobilisation of funds.

Private Sector Finance

Ministries of Finance must tap into a diverse range of capital sources to meet their investment requirements, including domestic and international and public and private (Songwe, Stern, and Bhattacharya, 2022). The extent of private sector involvement in different countries will vary significantly due to a complex interplay of economic, political, cultural, and historical factors. Ministries of Finance (MoFs) face a series of challenges in effectively mobilising private investments.

These challenges span various stages and encompass both market-related and non-market-related obstacles. To address these challenges proactively, MoFs should take a multi-pronged approach.

At the early stages, referred to as the 'upstream', MoFs should focus on creating a stable environment for climate policies and regulations. This stability is crucial for attracting private financing. By offering predictability and reliability, MoFs can make the investment climate more appealing to private investors. Additionally, adopting a D2D approach can further bolster private investment. This approach involves demonstrating a strong commitment to climate action and providing transparency to potential private investors, thus instilling confidence in them. Moving into the 'midstream', collaboration with the private sector becomes pivotal. MoFs should work closely with private enterprises to identify and develop viable project pipelines. This collaborative effort can help align public and private interests, fostering a conducive environment for sustainable investments. In the 'downstream' phase, innovative financial tools should be employed. These tools can bridge the gap between private capital and the investment opportunities that offer suitable risk-return profiles. MoFs can leverage the capabilities of the public sector to facilitate this process effectively. Even with these measures, more concerted efforts will be needed. MoFs should engage in extensive collaboration with various stakeholders, including line ministries, central banks, regulators, supervisory bodies, and stock exchanges, to overcome these challenges and barriers. A recently published report titled "Strengthening the Role of Ministries of Finance in Advancing Climate Action" (2023) provides comprehensive insights into the role that MoFs can play in advancing climate action. The report also offers valuable recommendations on how to tap into private finance effectively.

Building Compelling Funding Narratives

When seeking funding, it is crucial to ensure that the narratives in funding requests align with the specific objectives of the potential funders. For example, some organisations have a strong focus on poverty reduction and development, yet some funding proposals for substantial energy and climate investments lack a coherent storyline connecting reliable energy access with poverty reduction and climate resilience. It is also important to establish a clear narrative regarding how the projects will contribute to climate and broader development goals. Developing narratives describing potential futures, analysing those futures, and discussing results with stakeholders have been identified as key to mobilising finance.

Requesting Readiness Analysis

Countries seeking support to navigate this process can request it from the Readiness and Preparatory Support Program run by the Green Climate Fund, which serves as a valuable tool for partners to guide them through many of the steps identified above (Green Climate Fund, 2023). These steps include strengthening institutional capacities, creating enabling environments, analysing data and building emissions scenarios, assessing climate vulnerabilities, identifying and analysing options, determining funding needs, and identifying suitable partners.

In an ideal scenario, readiness analyses would serve as a useful tool for governments, relevant stakeholders, and investors to go through a structured process before making investments. This process would involve understanding the planning required for the implementation of Nationally Determined Contributions (NDCs) and long-term strategies (LTSS), integrating climate considerations into national planning, and selecting appropriate partners. Additionally, a thorough examination of the evidence-

based system would be conducted, including system-level analyses to identify transformative interventions.

This comprehensive approach would enable countries to make informed decisions regarding

the most suitable pathway for accessing finance. It would involve developing cost assessments for different partners, considering de-risking measures – such as policy de-risking and investment strategies – and ensuring effective coordination among stakeholders.

CASE STUDY: How Costa Rica engaged the Ministry of Finance in strategic planning

The case of Costa Rica highlights the collaboration between the Ministry of Finance (MoF) and the Ministry of Planning in creating a roadmap towards 2050. The strategic plan developed by the Ministry of Planning required the approval and signatures of various stakeholders, including the Ministry of Energy, Ministry of Finance, and the President. This co-signing process ensured that the MoF became responsible for securing financing for the projects, while the other ministries took charge of implementing the plans.

To estimate costs and secure funding, the MoF conducted an analysis that emphasised the need for investments in the short term to yield long-term benefits. The net cost for the short term was estimated to be US\$350 million in Costa Rica, a relatively small portion of the overall budget. However, identifying the source of funding posed a challenge, as recent tax reforms limited the possibility of implementing new taxes. To address this, the Inter-American Development Bank (IDB) and Agence Française de Développement (AfD) provided a Policy-Based Loan (PBL) that acted as a catalyst. This loan provided financial resources to the government in exchange for certain analyses and steps, including a fiscal

analysis to demonstrate the costs and benefits to the government of adopting the LTS. With the involvement of the MoF from that point onwards, investments required for various sectors were identified and disaggregated, forming a comprehensive plan on how to allocate and spend the funds from now until 2050.

In terms of provisions for midway course correction and the review of milestones and performance indicators, there was an intention to conduct reviews every 5 years, or even more frequently, every 4 years, in line with changes in government. However, it is important to note that the political landscape in Costa Rica can shift significantly between different administrations. As a result, there is currently no clear set date for updating the analysis and plan. This underscores the challenge of maintaining consistency and continuity in long-term sustainability planning, as the pace of reviews and revisions may vary based on political changes and priorities. Nonetheless, the commitment to periodic reviews reflects the recognition of the importance of flexibility and adaptability in ensuring that the LTS remains aligned with evolving circumstances and objectives.

Conclusion

This report presents a comprehensive framework for advancing the decarbonisation agenda in the context of national strategies. Drawing upon a key case study and expert insights, it outlines a structured approach encompassing seven key sections: Politics, Preparation, Vision, Modelling, Consultation, Operationalisation, and Finance. These sections collectively provide a roadmap for nations seeking to embark on the journey towards a low-carbon future.

1. Politics: Garnering high-level support for decarbonisation

- High-level political commitment is a key driver for decarbonisation agendas.
- Conducting political economy analysis to identify the interests and positions of existing stakeholders can pinpoint the most promising strategic approaches.
- Successful communication and framing of the societal and economic benefits of climate action are vital.

2. Preparation: Establishing the fundamental groundwork for a successful process

- It is crucial to establish the necessary human and institutional capacity within government, academia, and other institutions to deliver on decarbonisation targets.
- Consensus building through stakeholder engagement is key throughout the process, this can be achieved through political convening, consultation, inception workshops, and technical capacity building.
- Establishing a central coordination team can advocate for the decarbonisation process within government and act as a hub for facilitating collaboration, understanding, and alignment among various domestic and international entities.

3. Vision: Aligning climate change objectives with broader development goals

- A long-term, integrated vision is the cornerstone of effective decarbonisation.
- Stakeholder engagement and co-creation of scenarios enhance ownership and transparency.
- Vision alignment with national development strategies fosters holistic, sustainable development.

4. Modelling: Conducting deliberative quantification of scenarios

- Quantitative modelling informs evidence-based decision-making.
- Sectoral interlinkages and demand-side focus are crucial for comprehensive analysis.
- Collaboration with government ministries and high-quality data access are paramount.

5. Consultation: Engaging inclusively across stakeholder groups

- Deep, transparent, and iterative stakeholder consultation builds trust and consensus.
- For successful communication with various stakeholders, it is vital to adjust the language and topics to their specific needs and preferences.
- Involving the Ministry of Finance is crucial due to its diverse roles, including shaping economic policies, overseeing public finances, and leading engagement with international financial institutions.

6. Operationalisation: Enhancing the policy and regulatory framework

- Clear, granular roadmaps aligned with national development plans are essential.
- Evaluating macroeconomic implications and fiscal reforms is integral.
- Seamless integration of decarbonisation objectives into national plans is critical for policy coherence.

7. Finance: Developing investment plans and financing strategies

- Implementation requires mobilising finance for decarbonisation projects.
- The MoF plays a pivotal role in allocating resources and engaging with International Finance Institutions (IFIs).
- Prioritising investments, involving private sector finance, and building compelling funding narratives are essential components.

Instead of offering strict prescriptions, this guide offers a flexible framework of choices designed to assist countries in strengthening their core functions and capabilities, allowing them to adapt effectively to their unique national circumstances. Costa Rica has successfully implemented this 'Data-to-Deal' (D2D) approach, demonstrating its potential for success in other nations as well. Moreover, countries can leverage existing experiences in long-term planning to gain insights into governance approaches and institutional arrangements that can influence project design and implementation. These efforts can build upon and strengthen overall climate action and ambition.

While the Data-to-Deal approach holds promising potential for empowering countries to achieve net-zero goals, it is currently in its nascent phase of development. Much progress has been made in recent years – by the OpTIMUS

Community and others – in equipping policy-making institutions with national analysis and planning technical tools and the training resources needed to permit the development of country-driven and locally-owned long-term strategies for sustainable development. Going forward, as countries increasingly complete the planning phase, the focus of engagement will increasingly need to shift towards the securement of investments; this is where work with the MoF is essential. The Climate Compatible Growth programme (CCG) is presently in the process of creating analytical tools to examine national-level financing strategies, that will facilitate discussions with MoFs, by translating technical demands into clear financial strategies. This will serve as a resource for the final stage of Data-to-Deal, allowing MoFs to formulate data-driven and comprehensive strategies, thereby enhancing their ability to secure the necessary investments.

By adhering to the key principles of the Data-to-Deal approach, countries can address barriers to accessing international financial resources, and accelerate their progress towards achieving a net-zero future. This report serves as a valuable resource for policymakers, planners, and stakeholders committed to driving decarbonisation strategies forward and addressing the urgent challenges of climate change.

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