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Key questions guiding the process of setting up long-term low-emission development strategies

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Foreword

This document was prepared by the OECD and IEA Secretariats in response to a request from the Climate Change Expert Group (CCXG) on the United Nations Framework Convention on Climate Change (UNFCCC). The Climate Change Expert Group oversees development of analytical papers for the purpose of providing useful and timely input to the climate change negotiations. These papers may also be useful to national policy-makers and other decision-makers. Authors work with the CCXG to develop these papers. However, the papers do not necessarily represent the views of the OECD or the IEA, nor are they intended to prejudge the views of countries participating in the CCXG. Rather, they are Secretariat information papers intended to inform Member countries, as well as the UNFCCC audience.

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Abstract

Key questions guiding the process of setting up long-term low-emissions development strategies

The Paris Agreement states that all countries should strive to formulate and communicate long-term low greenhouse gas emission development strategies (LT-LEDS) and the Paris Agreement's accompanying decision invites countries to communicate a LT-LEDS by 2020. LT-LEDS are a fundamental tool available to countries to envision low-emission development in alignment with broader sustainability, socio-economic and climate change adaptation goals. This document aims to support countries' efforts in the development of LT-LEDS, as it provides points of reflection for the establishment of an effective process for developing LT-LEDS. The document discusses potential elements to be included in a LT-LEDS; identifies and explores potential linkages between Nationally Determined Contributions (NDCs) and LT-LEDS; examines governance options for setting up a LT-LEDS process and analyses countries' experience to date in developing LT-LEDS. The paper also provides a set of guiding questions useful for the development of LT-LEDS.

JEL Classifications: Q56, Q58, F53, Q54

Keywords: UNFCCC, Paris Agreement, climate change, decarbonisation, LT-LEDS, NDCs

Résumé

Élaboration des stratégies à long terme de développement à faibles émissions de gaz à effet de serre : questions clés pour articuler la réflexion

L'Accord de Paris encourage chaque pays à tout mettre en œuvre pour formuler et publier une stratégie à long terme de développement à faibles émissions de gaz à effet de serre (GES). La décision qui accompagne l'Accord les invite quant à elle à communiquer leur stratégie d'ici 2020. Ces stratégies sont, pour les pays, un outil fondamental permettant de tracer la voie d'un développement à faibles émissions qui soit conforme à des objectifs plus vastes concernant la situation socio-économique, la durabilité et l'adaptation au changement climatique. Le présent document a pour but d'aider les pays à formuler leur stratégie en fournissant des points de réflexion à aborder pour parvenir à un processus d'élaboration efficace. Il examine les éléments susceptibles de figurer dans ces stratégies, recense et étudie les liens éventuels entre elles et les contributions déterminées au niveau national (CDN), passe en revue les scénarios de gouvernance envisageables dans la mise en place d'un processus d'élaboration de stratégie et analyse l'expérience acquise par les pays à ce jour dans la formulation de ces stratégies. Il propose également un ensemble de questions autour desquelles articuler la réflexion, qui peut se révéler d'une aide précieuse dans l'élaboration d'une stratégie à long terme de développement à faibles émissions de GES.

Classifications JEL : Q56, Q58, F53, Q54

Mots-clés : CCNUCC, Accord de Paris, changement climatique, décarbonation, stratégie à long terme de développement à faibles émissions, CDN

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List of Acronyms

BAU	Business-as-usual
CCUS	Carbon capture, utilisation and storage
CCXG	Climate Change Expert Group
EU	European Union
IEA	International Energy Agency
IPCC	Intergovernmental Panel on Climate Change
LDC	Least-Developed Country
LT-LEDS	Long-term Low Emission Development Strategies
M&E	Monitoring and Evaluation
MRV	Measurement, Reporting and Verification
NC	National Communication
NDC	Nationally Determined Contribution
OECD	Organisation for Economic Co-Operation and Development
SDG	Sustainable Development Goal
UNFCCC	United Nations' Framework Convention on Climate Change

Key takeaways

Article 4.19 of the Paris Agreement states that all countries “should strive to formulate and communicate long-term low greenhouse gas emission development strategies (hereinafter LT-LEDS) mindful of the long-term goals of the Paris Agreement” (UNFCCC, 2015^[1]). The Paris decision invites all countries to submit a LT-LEDS by 2020 (UNFCCC, 2016^[2]). This document explores different phases of the process of setting up a LT-LEDS, analyses current experiences in developing LT-LEDS and provides a set of key questions that could guide countries in this process.

1. LT-LEDS: an introduction

LT-LEDS are national, subnational or supranational strategies¹ for achieving low-emission long-term (often focused at mid-century) development considering broader sustainability, socio-economic and climate change adaptation goals. There are several reasons why it is be useful for countries to develop a LT-LEDS, such as:

- **LT-LEDS may be useful to guide long-term climate action:** a long-term vision for low-emission development is important to inform and ensure the coherence of short-term climate action with long-term climate goals.
- **LT-LEDS represent an opportunity for governments to ensure effective alignment of diverse policies, such as development and climate policies:** identifying and promoting the socio-economic co-benefits of climate change mitigation and adaptation can facilitate the achievement of multiple development objectives.
- **Developing LT-LEDS may help promote low-emissions development across different stakeholders:** as they reinforce linkages between climate change mitigation and other development priorities, LT-LEDS are a way to promote the public acceptability of ambitious transformation.
- **Developing LT-LEDS may enhance trust across countries and improve the credibility of international commitments:** the communication of LT-LEDS in line with the temperature goal set by the international community with the Paris Agreement can encourage greater efforts and ambition across countries.
- **Establishing LT-LEDS could help attract international support for developing countries:** by defining a long-term vision and by identifying priority areas of action, LT-LEDS can encourage flows of international finance aligned with climate objectives from bilateral and multilateral investors and donors.

¹ In the UNFCCC context, LT-LEDS are to be understood as national documents. Nevertheless, LT-LEDS have been developed or are in the process of being developed also at the subnational level (e.g. California) (Government of California, 2017^[40]) and at the supranational level (e.g. the European Union).

2. Linkages between LT-LEDS and Nationally Determined Contributions (NDCs)

Given the numerous inter-dependencies across short-, mid- and long-term strategies, it can be particularly useful for a country to align its LT-LEDS process with its NDC process. The long-term perspective laid out in LT-LEDS may be useful to inform the shorter-term action of NDCs and can help identify obstacles and barriers to implementing climate change mitigation. In turn, the demonstrated achievement of successive NDCs — potential milestones to the LT-LEDS process — can contribute to improving the credibility of the LT-LEDS. To ensure an effective linkage between a LT-LEDS and an NDC, governments could:

- **Ensure coherence of coverage and targets:** make sure that the long-term opportunities for transformation identified in a LT-LEDS are translated into shorter-term action in NDCs. Milestone targets in the LT-LEDS can help inform NDC ambition.
- **Ensure synergistic and sustainable institutional and governance arrangements to link LT-LEDS and NDC processes:** clearly defining and maintaining institutional arrangements, including roles and responsibilities that ensure linkages in the processes of formulation and implementation of NDCs and LT-LEDS.
- **Ensure co-ordinated synchronised timeframes:** co-ordinate the periodic revision of the strategy with the NDC cycles, so that feedback from the former can inform the latter, and vice versa.

3. Developing a LT-LEDS

In developing the LT-LEDS, countries will decide on the scope of the strategy in terms of sectors and greenhouse gases (GHGs) included and other climate forcing agents, targets, policies, and financial pathways that can lead to the achievement of such targets. The process of developing a LT-LEDS could build upon a process of stakeholder and institutional consultations. Key actions include:

- **Defining the starting point for the LT-LEDS,** considering other existing national long-term strategies, policies and plans already in place that can constitute a basis for developing the LT-LEDS.
- **Taking a whole-of-government approach:** define an effective governance for the LT-LEDS process, including by securing a high-level leadership from ministries, the necessary institutional arrangements and a stakeholder engagement process.
- **Defining the elements of the LT-LEDS** including a timeframe for the strategy; a long-term vision for effective climate change mitigation; long-term vision for the country's development and well-being; modelling and scenario development long-term vision for adaptation and climate resilience; finance and investment strategies; plans for monitoring progress and assessing results and plans for implementation.

4. Current experience

As of October 2019, 13 countries have submitted a LT-LEDS to the UNFCCC. Outside of the UNFCCC context, several other countries have developed such strategies, including Indonesia and the United Arab Emirates. An analysis of 15 LT-LEDS², conducted for this paper, highlights the following:

² These include the 13 countries that have submitted a LT-LEDS to the UNFCCC as of October 2019 (Benin, Canada, the Czech Republic, France, Fiji, Germany, Japan, the Marshall Islands, Mexico, Portugal, Ukraine, the United Kingdom and the United States, noting that the latter was released in 2016 by a previous administration and is no

- **Focus on climate mitigation:** most LT-LEDS lay out a vision that focuses on decarbonisation. Thirteen strategies set quantifiable, GHG emission reduction targets, and three countries aim at reaching net-zero carbon emissions by mid-century.
- **Comprehensive sectoral coverage:** all the LT-LEDS examined in this paper propose multi-sectoral plans, and all the strategies include at least the energy and/or electricity sector.
- **Weak linkages with NDCs, Sustainable Development Goals (SDGs) and other societal goals:** less than half of the LT-LEDS examined refer to the GHG or CO₂ emission reductions targets expressed in their countries' NDCs yet. Only two LT-LEDS contain deep linkages with the country's NDC (e.g. co-ordinated processes). Only six LT-LEDS explicitly reference the SDGs. Development and well-being targets beyond climate change mitigation or adaptation are often missing.

longer being implemented by the United States) and two countries that, among other countries, have developed a LT-LEDS outside of the UNFCCC process: Indonesia and the United Arab Emirates.

1 LT-LEDS: An introduction

Article 2.1 of the Paris Agreement establishes the long-term temperature goal of “holding the increase in the global average temperature to well below 2°C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5°C above pre-industrial levels [...]” (UNFCCC, 2015^[1]). Meeting this global target implies deep worldwide transformation at unprecedented rate and scale. To ensure the implementation of an efficient and effective transition, it will be helpful for countries to develop and design forward-looking national plans encompassing long-term low-emission economic development.

Article 4.19 of the Paris Agreement states that all countries “should strive to formulate and communicate long-term low greenhouse gas emission development strategies (hereinafter LT-LEDS) mindful of the long-term goals of the Paris Agreement” (UNFCCC, 2015^[1]). The Paris Agreement accompanying decision (§ 35) invites countries to formulate and communicate these strategies by 2020 (UNFCCC, 2016^[2]). LT-LEDS are to be developed by countries “mindful of Article 2” of the Paris Agreement, including the global temperature goal in the Agreement, and “taking into account their common but differentiated responsibilities and respective capabilities, in the light of different national circumstances” (UNFCCC, 2015^[1]). Along with the Nationally Determined Contributions (NDCs), LT-LEDS are an important tool available to countries to frame their efforts to help putting the world onto a pathway that is in line with the Paris Agreement temperature goal. While NDCs allow countries to set a plan of action in the short- and medium-term, LT-LEDS provide a long-term vision for increasing countries’ ability to mitigate and, potentially, adapt to adverse effects of climate change while making other development policies consistent with such objectives.

This document aims to support countries’ efforts in the development of LT-LEDS, as it provides points of reflection for the establishment of an effective LT-LEDS process. The document provides an overview of the foundational elements of a LT-LEDS (Section 1); identifies and explores potential for linkages between NDCs and LT-LEDS (Section 2); examines aspects of the process of setting up and potential elements to be included in the LT-LEDS (Sections 3); analyses current experience in developing LT-LEDS (Section 4), and lays out a set of guiding questions useful for the development of LT-LEDS (Section 5).

What are LT-LEDS?

The concept of low-emission development strategies (LEDS) first emerged in 2008, during the lead-up to the UNFCCC climate negotiations in Copenhagen (COP15). The Copenhagen Accord recognises that “a low-emission development strategy is indispensable to sustainable development” (UNFCCC, 2010^[3]). While not having a set definition in that context, LEDS have since emerged in the form of e.g. national climate plans or green growth strategies to help countries link objectives of sustainable development with objectives of climate change mitigation.³

³ Examples include Kenya’s National Climate Change Action Plan (Government of Kenya, 2013^[38]) and Guyana’s Low-Carbon Development Strategy (Government of Guyana, 2010^[39]).

LT-LEDS are national, subnational or supranational⁴ long-term strategies for envisioning low-emission development while identifying national priorities that are in line with decarbonisation pathways. LT-LEDS are voluntary strategies that guide governments as they consider climate change mitigation and national socio-economic development in an integrated and strategic manner. LT-LEDS have the potential to become a fundamental, robust and long-term planning tool that can facilitate the identification of socio-economic options and opportunities for low-carbon transformation. The main goal of a LT-LEDS is therefore to identify potential low-emission pathways while considering synergies and potential co-benefits to ensure the achievement of multiple economic and societal goals. Because of their focus on development, LT-LEDS may also include strategies for climate change adaptation – which for some countries and regions may be a precondition to the achievement of other societal goals. As LT-LEDS are strategic documents that identify national priorities and goals, their development process is unique to each country and there is no one-size-fits-all approach. There are however several LT-LEDS' features that may be common to different countries.

Table 1. LT-LEDS: Foundational elements

LONG-TERM	The strategy needs to cover a time horizon that is sufficiently long to capture the development of policies and programmes capable of shifting current socio-economic structures. Given the typically long lifespans of most infrastructure assets, mid-century is considered as a suitable milestone for LT-LEDS developed today.
LOW-EMISSION	The main goal of the strategy is to identify one or more low-emission pathways in line with development objectives. Despite the LT-LEDS process being a voluntary, country-driven exercise, low-emission development strategies are to be guided by Article 2 of the Paris Agreement and therefore strive to identify emission pathways compatible with the temperature goal set by the Paris Agreement. Indeed, several LT-LEDS set a quantified, long-term, low-emission targets. The IPCC Special Report on Global Warming of 1.5°C (IPCC SR 1.5°C) estimates that, in order to be consistent with pathways with no or limited overshoot of 1.5°C, the international community should reach carbon neutrality (see Box 1 in Section 3) by around 2050. For limiting global warming to below 2°C by 2100, carbon neutrality is to be achieved by 2070 (IPCC, 2018 ^[41])
DEVELOPMENT	LT-LEDS are, ultimately, development strategies aiming to ensure an improvement in the overall well-being of a society. This could include, according to national circumstances, objectives of economic development, poverty reduction, improved education, food security, or health conditions. The value-added of LT-LEDS, therefore, is that of identifying low-emission policies compatible with and, more importantly, promoting national development.

Source: Authors.

Why are LT-LEDS useful?

At the national level, LT-LEDS guide or inform long-term climate action, and can help a country to ensure the effective alignment of policies in diverse areas, integrating climate change mitigation with other societal and economic objectives. Ensuring alignment of policies within a country is key to facilitate the achievement of a wide range of objectives avoiding undesirable overlaps (OECD, 2015^[5]). If developed with a holistic and cross-sectoral approach, LT-LEDS can help a country achieving low-emission development, while meeting multiple societal and development goals, including achieving objectives set by the Sustainable Development Goals (SDGs). Planning long-term, low-emission strategies

⁴ In the UNFCCC context, LT-LEDS are to be understood as national documents. Nevertheless, LT-LEDS have been developed or are in the process of being developed also at the subnational level (e.g. California) (Government of California, 2017^[40]) and at the supranational level (e.g. the European Union) (European Commission, 2018^[56]).

and can also help governments to better align financial and fiscal policies with long-term climate risks and opportunities.

A clear and forward-looking vision of the transformation needed in order to meet the Paris Agreement's goals can reduce the risk of stranded assets or disadvantageous lock-ins of high-emitting infrastructure. LT-LEDS can help countries to plan national action for a just transition for workers and communities. In some sectors, the structural transformations needed for the transition to a low-emission economy may result in job losses. Because of their long-term and cross-sectoral character, LT-LEDS may help countries identify policy opportunities to minimise disparities among winners and losers, mitigating these negative impacts (UNFCCC, 2019^[6]). For example, LT-LEDS could help anticipating impacts on employment and planning for adequate socio-economic protection for job losses. Countries may therefore consider in their LT-LEDS the areas where programmes for the re-skilling of workers or social subsidy schemes would be needed in the long-term. LT-LEDS, in this context, can also be useful to promote the public acceptability of ambitious climate action, demonstrating that compensation systems can offset the regressive impacts of mitigation measures (OECD, 2015^[5]).

At the international level, the communication of LT-LEDS can contribute to greater efforts and ambition globally, as trust across countries is enhanced and credibility of international commitments improved. Clarity on international long-term plans and efforts for the achievement of the temperature goal of the Paris Agreement can create a positive feedback loop where international trust is reinforced, therefore motivating individual countries to pursue enhanced climate ambition. In addition, if LT-LEDS include policies and measures for a low-emission development, they can be a key instrument for sharing innovative strategies and best practices, which can provide useful points of reflection for other countries with similar circumstances. LT-LEDS can also provide useful inputs for more accurate projections of national and collective action, facilitating the assessment of global progress towards the Paris Agreement temperature goal.

LT-LEDS may promote the acceptability of ambitious climate mitigation across different stakeholders. For a government, by integrating a wide range of sectors and sectoral policies, the development of a LT-LEDS may promote co-ordinated action across different ministries and agencies. For businesses and entrepreneurs, LT-LEDS could serve as an indication of regulatory certainty and identification of national fiscal and financial priorities, as they could provide information regarding the trajectory of national policies and development. For civil society, LT-LEDS can be useful to raise awareness on climate change, involving the broader community in the process of policy planning and facilitating their participation and engagement in the country's action to mitigate climate change.

For developing countries, LT-LEDS can also be a useful tool to send out signals of support needs to donor countries and financial institutions, thereby encouraging international inflows of finance. While several factors play a role in determining the actual volumes of climate finance provided and mobilised, demand (e.g. the project pipeline), enabling environments and domestic policies in developing countries play a major role (OECD, 2016^[7]). Indication of priority areas and mitigation activities, as well as expected outcomes, can strengthen the case for international financial support. Communication of a long-term vision, clear and defined mitigation targets, predictability of climate-related support policies as well as increased level of ambition, would positively influence the ability to mobilise private climate finance. Beyond bilateral donors, financial strategies linked to a LT-LEDS may help multilateral financial institutions identify potential investment opportunities (IIED, 2018^[8]).

If the LT-LEDS is a credible document developed using a whole-of-government approach, these benefits can be maximised. The chances the LT-LEDS will be able to facilitate alignment of policies and achievement of goals other than climate change mitigation will increase if a whole-of-government approach is adopted, engaging different ministries and departments. To enhance trust across the international community and to send strong signals to investors and donors, LT-LEDS could come up with policy guidance and strategies, based on realistic targets and supported both by highest levels of governments and by iterative processes for engaging different stakeholders.

2 Linkages between LT-LEDS and Nationally Determined Contributions (NDCs)

Aligning LT LEDS and NDCs would strengthen the effectiveness of both, given strong linkages, as would aligning LT LEDS with key national and international objectives (e.g. SDGs). While NDCs look at the shorter-term (e.g. 5 to 10 years from today), LT-LEDS set a long-term vision (e.g. 30 years from today). Given the many inter-dependencies in the planning of short-, mid- and long-term policies, it would be important to ensure linkages between these two processes. This section explores how the long-term perspective laid out in LT-LEDS may best inform near-term action through the formulation and implementation of NDCs and vice-versa.

How can LT-LEDS feed into the NDC process?

The long-term perspective in LT-LEDS is useful to inform and generate momentum for NDC's shorter-term action. LT-LEDS may help countries to identify the long-term mitigation opportunities for transformation in all sectors of society and the areas where near-term action is needed to support such transformation. The long-term and economy-wide vision outlined in a LT-LEDS can contribute to the generation of social buy-in for the transition towards a low-emission economy, reinforcing the implementation of near-term action. Guided by a long-term vision, NDCs can put in place measures, projects and programmes which do not create a lock-in, i.e. deliver emissions reductions only in the short-term but not the transformation needed in the long-run (Fay et al., 2015^[9]). For example, adopting a long-term vision of the role of infrastructure in national development is key to reduce the risk of stranded assets or of locking-in carbon-intensive infrastructure and maladaptive technology. While substituting coal with natural gas could be an effective emission reduction measure in the short- and mid-term, coal-to-gas switching without implementation of further efforts and deployment of carbon capture, utilisation and storage (CCUS) technologies may be insufficient to meet the transformation needed in the long run (IEA, 2019^[10]).

The long-term perspective in LT-LEDS is useful to help countries identify potential barriers to implementing low-emission development, and identify solutions on how these can be overcome in the near-term. While the case for global ambitious climate mitigation is a compelling one, the scale of action worldwide still falls far short from what is needed to prevent the most dangerous impacts of climate change. There are many barriers to effective climate change mitigation happening at different and interconnected scales, ranging from the individual (including e.g. the perception of risks, worldview, gender, etc.) to the national levels, including political and economic factors. These barriers differ across countries and across sub-national structures and jurisdictions. LT-LEDS provides an opportunity to backcast from ambitious emissions outcomes to identify milestones and barriers in the short-, mid- and long-run (Williams and Waisman, 2017^[11]). This can help policy-makers better understand the conditions and time frames that may require a certain type of action, which can inform the process of NDC formulation and implementation.

How to ensure that the LT-LEDS and the NDCs are effectively linked?

When setting up a LT-LEDS process and when developing the strategy, it would be important for countries to look for concrete opportunities for linking their LT-LEDS to their NDC. While opportunities for linkages may be country-specific and vary based on national needs and circumstances, countries could:

- **Ensure consistency across thematic areas and scenarios identified by a country's NDC and its LT-LEDS:** a long-term vision for decarbonisation may highlight thematic or sectoral areas with higher potential for transformation. A NDC may, in turn, set concrete and defined objectives for climate action in high-priority areas that have been identified by the long-term strategy. Ensuring consistency across thematic and sectoral areas of short-, mid- and long-term action can result in a more coherent and efficient national transition towards a low-emission economy.
- **Use the intermediate milestones and targets within NDCs as a means to implement the LT-LEDS:** setting short- and medium-term targets and milestones in NDCs in line with LT-LEDS may be the way for governments to plan shorter-term steps and measures that will enable the country to reach the long-term goal. Moreover, considering that the level of ambition in current NDCs are not in line with the Paris Agreement goals, working back from long-term targets in the LT-LEDS may be the way to amend near-term policies and investments over time to reach the needed emissions reductions to meet globally agreed temperature goals. LT-LEDS may also contain interim targets (e.g. for 2025, 2030, 2035, etc.) that are in line with NDC cycles, which can be used to inform and shape a country's future NDC. The achievement of successive NDCs, in the context of a longer-term strategy towards decarbonisation and development, will also have a positive effect on the credibility of the strategy, triggering a virtuous circle of implementation, providing confidence in the feasibility and benefits of the LT-LEDS. This process may strengthen the enabling environment for the finance investments needed to deliver on the long-term goal development and low-emission transition in the LT-LEDS.
- **Ensure synergistic and sustainable institutional and governance arrangements to link LT-LEDS and NDCs processes:** clearly defining and maintaining institutional arrangements, including roles and responsibilities, in the processes of formulation and implementation of NDCs and LT-LEDS will allow for greater ownership, enhanced technical capacity, political leadership and efficiency. Strong governance will lay the ground for strong co-ordination between the two processes so that both processes can leverage, build on and learn from each other. Over time, ensuring continuity in the system, retaining expertise and institutional memory will allow for enhanced knowledge and deeper understanding of gaps, challenges and opportunities and how best to address them. Institutional arrangements such as the establishment of a national co-ordinating institution that supervises the development of a country's LT-LEDS and its successive NDCs may help to maintain alignment and identify synergies between these two tools.
- **Co-ordinate the timing of a potential revision of LT-LEDS with the process of communicating new and updated NDCs every five years:** when planning the LT-LEDS revision processes, governments may want to ensure its co-ordination with the process of updating NDCs and vice-versa. For example, Fiji has planned for the review and revision of its LT-LEDS to take place at least one year before the submission of an updated NDC (Government of Fiji, 2018^[12]). Changing national circumstances, assessments of performance of LT-LEDS implementation and other types of long-term considerations may provide useful inputs to new NDCs. The LT-LEDS implementation strategy may also be aligned with other types of national processes, such as review and approval of national budget or approval of new development programmes. The United Kingdom, in particular, has aligned the timeline of its LT-LEDS to the one set by the UK Climate Change Act (2008), which requires the British Government to set intermediate targets (carbon budgets) which caps the GHG emissions that can be emitted across the UK during a five-year period (Government of the United Kingdom, 2008^[13]).

3 Developing a LT-LEDS

Setting up a LT-LEDS process will require a thorough exercise of assessing current development trends, areas of vulnerability and national priorities (LDC Expert Group, 2012^[14]). This section analyses key aspects pertaining to the development of a LT-LEDS, including defining the starting point of the LT-LEDS, an effective governance to lead planning and implementation, and the key elements countries could consider including in their LT-LEDS.

Starting point for the LT-LEDS: What are the other national long-term strategies, policies and plans already in place?

When setting up a LT-LEDS process, existing long-term strategies and national development plans can constitute an important starting point. Under several international agreements, following international summits and declarations, or for domestic purposes, some countries may have already produced strategic national development documents, albeit with different foci. These may include, for example, Low-Emission Development Strategies (LEDS), Green Growth Strategies, National Development Strategies or National Sustainable Development Strategies⁵. These national strategic plans could already contain information useful to the LT-LEDS process, such as (in no particular order):

- **Climate change mitigation potential, opportunities, measures and/or costs:** LEDS or National Climate Change Strategies may have already identified a country's main mitigation potentials, opportunities, measures and costs. These can inform the longer-term vision of a LT-LEDS.
- **Development goals and priorities:** a National Development Strategy, on the other hand, may have already identified development priorities, such as improving public health or alleviating poverty, which may be taken into consideration when developing a LT-LEDS.
- **Specific, measurable and time-bound targets:** LEDS, National Climate Change Strategies, Green Growth Strategies and other national action plans may have already set specific, measurable and time-bound targets; LT-LEDS could build upon these targets, adapting them to the new, long-term vision when appropriate.
- **Institutional arrangements, stakeholder engagement and legal framework:** the development of some existing strategies may have led to the establishment of inter-ministerial institutional setups, multi-stakeholder committees, processes for monitoring and evaluation and/or relevant legal framework. These elements can be built upon for the development of the LT-LEDS.
- **Data collection and scenario building:** Many long-term strategies or national climate reports are based on collected data and on scenarios and projections (e.g. Kenya's National Climate Change Action Plan; Lebanon's National Communication)⁶. These long-term strategies and climate reports can be updated and complemented to serve as a foundation for the development of the LT-LEDS.

⁵ Introduced for the first time with the Rio Summit in 1992

⁶ (Government of Kenya, 2013^[38]); (Government of Lebanon, 2016^[46]). See also (Ellis et al., 2018^[45]) for further analysis on GHG projections and scenario in National Communications.

Table 2. Potential uses of existing national strategies and reports in the context of LT-LEDs

Type of Strategy	Description	Elements potentially useful for LT-LEDs process
National Climate Change Strategy	Plan or strategy with a focus on climate change mitigation and/or adaptation. It can contain short- or mid-term goals and strategies. It generally includes mitigation, adaptation, financial support and, for developing countries, technology development and transfer and/or capacity building.	<ul style="list-style-type: none"> Climate change mitigation and adaptation potentials, goals, priorities and costs; Vulnerability assessments; Short- and mid-term (e.g. 2030) mitigation and adaptation measures – different levels of specificity; Overview of international climate-related support (when available);
Green Growth Strategy	Strategy aimed at integrating economic growth with the preservation of environmental services. It generally includes all environmental areas (e.g. climate change, biodiversity, local pollution).	<ul style="list-style-type: none"> Focus on reinforcing aspects of economic and environmental policy (including climate change mitigation); Focus on the identification of cost-effective strategies for attenuation of environmental pressures; Analysis of economic impacts of measures aimed at environmental protection (including climate change mitigation).
National Sustainable Development Strategy (UN Commission on Sustainable Development)	Strategy aimed at achieving economic, environmental and social objectives in a balanced and integrative manner (UNDESA, 2002 ^[15]).	<ul style="list-style-type: none"> National sustainable development objectives and priorities; Short- and mid-term (e.g. 2030) development policies (e.g. poverty alleviation, education, gender equality, environmental protection); Situation analysis of current development status with respect to Millennium Development Goals or Sustainable Development Goals.
National Development Plan	Plan or strategy aimed at identifying economic priorities and key development objectives of a country. It is not necessarily linked to environmental-related goals.	<ul style="list-style-type: none"> National sustainable development objectives and priorities; Situation analysis of current development trends; Financial and investment roadmap for the achievement of development objectives; Overview of international development aid.
National Adaptation Plan (UNFCCC)	Plan or strategy aimed at identifying medium- and long-term adaptation priorities and needs. One of its main objectives is that of facilitating the “integration of climate change adaptation, in a coherent manner, into relevant new and existing policies” (LDC Expert Group, 2012 ^[14]), along with development planning processes.	<ul style="list-style-type: none"> Vulnerability assessments; Identification and analysis of national climate change adaptation priorities and needs; Sectoral and sub-national plans and policies to address adaptation needs; Analysis of economic, social and development co-benefits of climate change adaptation. (Potentially) dedicated institutional setup.
National Communication (UNFCCC)	Document aimed at reporting information on national circumstances; high-vulnerability areas or sectors; financial support provided or received; technology transfer and education, training and public awareness. NCs often contain information on main policies and measures relevant to climate change adaptation and mitigation. Some NCs may also contain projections for different mitigation scenarios. National Communications (NCs) are currently part of the UNFCCC reporting framework.	<ul style="list-style-type: none"> GHG inventory and GHG projections (if available) under different scenarios; Vulnerability assessments; Short and mid-term climate mitigation and adaptation objectives and policies (if available); Monitoring and evaluation of implemented climate change adaptation and mitigation policies (if available); Financial support received and needed (for developing countries only).
National Agriculture Plan	Plan or strategy aimed at identifying policy implementation challenges, lessons learned and key recommendations to guide future action in the agriculture sector.	<ul style="list-style-type: none"> Assessment of climate change mitigation opportunities in the agriculture sector; (Potentially) Short- and mid-term (e.g. 2030) mitigation and adaptation policies; Assessment of linkages with other development goals; Climate mitigation targets for the agriculture sector and sometimes also for forestry.
REDD+ Strategy	Plan or strategy aimed at presenting policies and measures, identifying responsible institutions, legal frameworks, funding needs and setting targets relevant in the context of deforestation and forest degradation. The development of these strategies usually includes extensive consultations with stakeholders. REDD+ Strategies are to be developed by countries participating in the Warsaw Framework on REDD+.	<ul style="list-style-type: none"> Short and mid-term policies and measures to address deforestation (with implications on mitigation and adaptation); Analysis of existing legal frameworks to combat deforestation; Analysis of funding needs for the implementation of projects and activities; Processes for stakeholder engagement; Definition of roles and responsibilities for the implementation of the plan.

Source: Based on (Clapp, Briner and Karousakis, 2010^[16]) and further expanded by Authors.

LT-LEDS are a distinct and valuable strategic planning tool for governments, especially when they align with, build on and/or enhance existing strategies. In developing LT-LEDS, however, policy-makers may need to revise assumptions and enhance goals and targets of existing strategies, as the LT-LEDS may have a larger scope and have a longer-term perspective. For example, Green Growth Strategies generally aim to integrate economic growth with environmental protection, and National Climate Change Strategies present specific short- to mid-term policies aimed at countering climate change. Thus, LT-LEDS' goal may be that of looking at climate change mitigation (and, potentially, adaptation) with a more holistic lens, highlighting linkages with economic development and other well-being goals.

Beyond providing a useful starting point in terms of targets, priorities and policies, analyses of the planning and development processes of other strategies can provide insightful lessons. Building upon institutional frameworks (e.g. inter-ministerial committees) that may have been set-up in order to produce existing development plans may enhance efficiency and help retaining best practices. In addition, analyses of the functioning of institutional setups put in place for the development of previous strategies can provide insightful lessons learned, helping the government to establish more effective processes for the development of a LT-LEDS. An analysis of existing monitoring and evaluation processes may be particularly useful to better understand the feasibility of monitoring progress, which can help to better identify LT-LEDS' targets and indicators.

Defining an effective governance for the LT-LEDS process: a whole-of-government approach, solid institutional arrangements and stakeholder engagement

Because of its inter-disciplinary and long-term nature, the design and implementation of a LT-LEDS may benefit from a process that may deviate from the typical policy making process in some ways. Given the potentially very broad scope of the LT-LEDS, the demand for inter-agency collaboration is especially important as a way to achieve a wide range of goals. Adopting a whole-of-government approach and therefore engaging ministries with portfolios traditionally considered unrelated to the climate agenda will reduce potential duplications, making the process more effective (OECD, 2015^[5]). Engaging stakeholders outside of the government will facilitate the development of a shared vision towards low-emission development across the whole of society. This section looks into what an effective governance to support the formulation and the implementation of the LT-LEDS could be.

High-level political signal and leadership

High-level political signal on the benefits of developing a long-term vision is important to initiate and support the design process of the LT-LEDS. Importantly, a high-level political signal on the need and the benefits of developing a LT-LEDS may be the very first step needed to raise awareness among the relevant players e.g. the government, governmental and non-governmental agencies and civil society, on the issue. Setting the development of the LT-LEDS as a priority for the country, while highlighting the broad scope and links between the LT-LEDS and multiple national objectives (e.g. low-emission transition, development and growth) may enable a whole-of-government approach to the LT-LEDS. Such an approach would promote and support co-ordination and collaboration across different ministries and across local, sub-national and national levels.

Strong political leadership may also provide direction and oversight during the implementation of the LT-LEDS. In promoting and maintaining regular dialogue with multiple players, strong leadership could encourage, for example, periodic stocktaking to evaluate the progress and action towards the implementation of the LT-LEDS, enhancing the transparency of the LT-LEDS process nationally. Country representation and participation in high-level international platforms on relevant related issues to LT-LEDS

may also contribute to enhancing transparency of the overall LT-LEDS process at the international level, leading to more trust between countries. That participation would also be key for countries to share experience, best practices, challenges and lessons learned in their process for developing and implementing their LT-LEDS.

High-level political leadership, in addition, may reinforce the credibility of a LT-LEDS, and help place low-emission development at the centre of the national political debate. Support from a high-level political leader, furthermore, may reinforce the idea of a LT-LEDS being an economy-wide development strategy, helping to frame climate change as an issue crosscutting a number of agendas rather than as an issue pertaining solely to the Ministry of Environment. High-level political leadership may support the establishment of a LT-LEDS process by endorsing or adopting the strategy (OECD, draft_[17]). Several countries have sought high-level political support to strengthen their LT-LEDS process; for example, Fiji's LEDS is supported directly by the Prime Minister (Government of Fiji, 2018_[12]), whereas the United Kingdom's LT-LEDS is introduced by a foreword from the then-incumbent Prime Minister (Government of the United Kingdom, 2017_[18]).

Institutional arrangements

A whole-of-government approach to planning and designing LT-LEDS is important to establish a unified effort across the government and to maximise all available resources in a collaborative effort. Adopting a whole-of-government approach means assembling resources from different Ministries and Public Agencies in order to address a cross-cutting issue. The development and implementation of a LT-LEDS as a whole-of-government process will need the participation, co-operation and co-ordination across several branches of government, institutions and ministries – e.g. the ministries of environment, finance, planning, energy and agriculture – and a wide range of other state and non-state actors.

To facilitate the LT-LEDS process, governments may want to establish a supervising independent public committee, body or task force cutting across relevant ministries to co-ordinate the development and implementation of the strategy. This would ensure the active participation and co-ordination both horizontally, across the different ministries and segments of the society, and vertically, across national, sub-national and local levels. Such an independent public body could ensure that the institutional set up is seen as independent from particular political groupings, increasing buy-in across different political parties and other national and sub-national entities. The establishment of an independent public body may be supported by a legal framework. Mexico's General Law on Climate Change, for instance, establishes the Inter-ministerial Commission on Climate Change (Government of Mexico, 2016_[19]), and the UK Climate Change Act (2008) sets out the independence of the Committee on Climate Change (Government of the United Kingdom, 2008_[13]), a public body made of highly experienced committee members. The establishment of an independent public body could facilitate more continuity through different governments, reducing the risk of the strategy being disregarded by subsequent political leaders.

Countries do not need to start from scratch and may build upon existing institutional arrangements in developing their LT-LEDS. This is particularly true given that other national processes, such as the NDCs or the 2030 Agenda for Sustainable Development, have already started. This is not only useful in terms of building on existing technical capacity and ensuring retention of expertise and institutional memory; it is also a means to create strong links and synergies between the different processes. Linking the LT-LEDS process with shorter-term goals and targets may also be a way to show stakeholders that the Paris Agreement does not just address long-term climate change issues but also helps deliver benefits for shorter-term national development and planning issues.

Stakeholder engagement

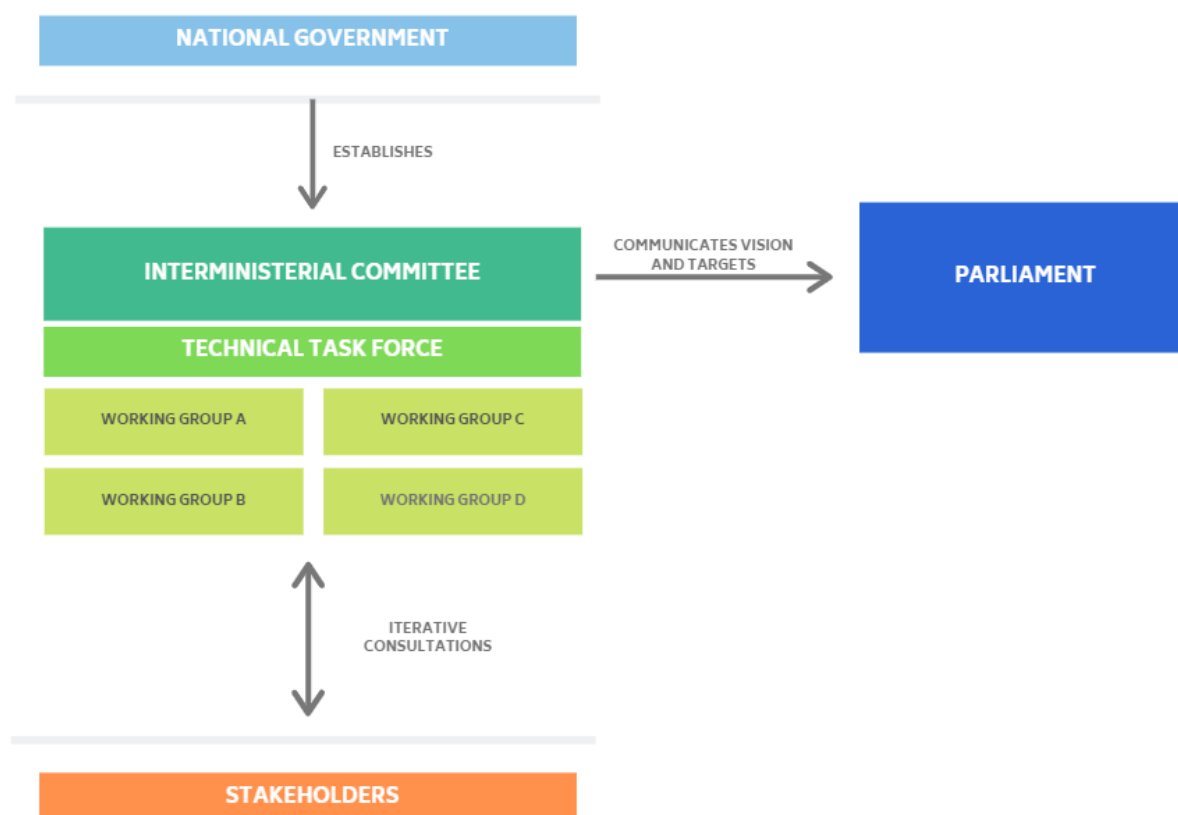
Strong stakeholder consultation and engagement processes spanning LT-LEDS development and implementation will result in more robust LT-LEDS. Robust and transparent stakeholder engagement can include collaborating across a very wide range of actors, including government agencies and engaging with scientists, businesses, civil society, and the public. In addition to creating the support needed for the LT-LEDS in the short-, mid- and long-term, involving the public will also contribute to improving the quality and the feasibility of the strategy. Strong and consistent stakeholder engagement will increase public acceptance of the strategy, incentivising collective action for the achievement of its targets. Engaging with relevant stakeholders may prove fundamental particularly when designing policy pathways and building scenarios, as it can contribute to the development of more realistic, and therefore more implementable, options. Moreover, involving civil society could also be a way to make the process of design and implementation of the LT-LEDS less political, which could strengthen the ambition of the strategy.

Meaningful stakeholder consultations must target the relevant stakeholders and be carried out in an effective manner. First, it is key to ensure that key stakeholders are identified and involved in developing the strategy. Which stakeholders to engage in developing or validating the LT-LEDS will strongly depend on national context, the focus or even the stage of implementation of the strategy. For example, it is important to engage in particular with potentially negatively affected communities, businesses and subnational governments to build an inclusive shared vision in the society, as these are important constituencies for the implementation of the strategy. Consulting with those whose livelihoods are tied to a high-carbon economy is also particularly important to inform the LT-LEDS and ensure a fair and just transition, increasing public acceptability of the strategy. By engaging with vulnerable groups, it will be easier to identify priority actions to outweigh negative socio-economic trade-offs; such discussions may help develop, for example, education strategies to re-skill the workers or other forms of social-safety nets that will deliver improvements in well-being.

There are different ways to engage meaningfully with stakeholders in the LT-LEDS process. Different approaches may vary according to national social and cultural context. It is important for the stakeholder engagement process to be designed as an *iterative* process, to allow for a dynamic exchange of views and to facilitate the shift away from initial individual ideological attachments towards a collectively shared vision. Stakeholder consultations can be carried out through the organisation of workshops, where different stakeholders can engage as part of smaller working groups. In developing their LT-LEDS, Fiji held three National Stakeholder Consultation Workshops, during which participants could provide feedback on proposed plans and actions (Government of Fiji, 2018^[12]). In contrast, Germany established a bottom-up approach, randomly selecting 500 citizens to discuss the Climate Action Plan (OECD, draft^[17]). Finally, it is important to ensure that stakeholders are able to exchange views in a free and open environment. In South Africa's experience, this meant holding the discussions under Chatham House Rules, or alternating multi-stakeholder sessions with bilateral sessions, as some groups may not feel comfortable discussing sensitive issue in a multi-stakeholder environment (Ramalope, 2019^[20]).

It is important to create opportunities for stakeholders to communicate with the governmental body in charge of developing the strategy, and vice versa. Establishing a channel for regular exchanges between stakeholders and government can make stakeholder engagement more meaningful. Stakeholder consultations, in fact, will contribute only partially to the process if citizens and other relevant actors are given only limited and reactive (as opposed to proactive) opportunities to contribute to the LT-LEDS. Figure 1 represents an example of institutional setup that can be set up for a national LT-LEDS process.

Figure 1. Example of institutional setup for the LT-LEDs process



Source: Authors.

What could elements of a LT-LEDs encompass?

LT-LEDs are a nationally-driven exercise, tailored to specific national contexts and circumstances, varying on a number of elements e.g. scope, coverage, type of targets across different countries. Nonetheless, there are some key elements that a LT-LEDs could usefully address. This section looks into what appropriate elements to consider when developing a LT-LEDs could be.

A mid-century timeframe for the strategy

Decision 1/CP.21, paragraph 35, invites Parties to communicate “mid-century, long-term low greenhouse gas emission development strategies” (UNFCCC, 2016^[21]). Unlike most development plans, LT-LEDs have the unique characteristics of capturing the lifespan of most infrastructure assets and long-term infrastructure changes needed for decarbonisation. Indeed, 2050 is a suitable timeline according to the latest science (IPCC, 2018^[4]) considering lifecycles of key infrastructure for climate change mitigation (e.g. power plants and buildings). Twelve of the 13 LT-LEDs communicated to the UNFCCC as of October set targets to 2050. Outside of the UNFCCC context, for example, Indonesia’s LT-LEDs set a target to 2045, while the LT-LEDs published by the United Arab Emirates looks at 2050 as well (Government of Indonesia, 2019^[21]; Government of the United Arab Emirates, 2017^[22]).

A long-term vision for effective climate change mitigation

A long-term vision for climate mitigation could usefully contain a quantifiable economy-wide long-term GHG emissions reductions target. In adopting the Paris Agreement, nations around the world have agreed to the temperature goal of holding the increase in the global average temperature to well below 2°C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5°C above pre-industrial levels (UNFCCC, 2015^[1]). This long-term temperature goal is linked to another goal of bringing global emissions of GHG emissions to effectively zero in the second half of the 21st century (UNFCCC, 2015^[1]). Formulating a long-term emissions target can be a complex exercise taking into account global temperature and emissions goals in the Paris Agreement and how to translate those into the national context, considering national circumstances, mitigation potential, short-, mid- and long-term co-benefits and opportunities for reductions. Box 1 explores recent messages from the scientific community, and how it can be used in the target-setting exercise. In addition, in setting up long-term emissions reductions targets, countries may wish to consider the following aspects and features of the target:

- **Sectoral coverage:** LT-LEDs would ideally cover economy-wide emission reductions, with a particular focus on emission-intensive sectors. To date, most of the submitted LT-LEDs include policy actions and measures aimed at achieving emission reductions in three sectors: energy, industry and transport. Nevertheless, sectoral opportunities for low-emission development may be significantly different in different countries – with forestry and agriculture being key in many. When considering specific sectors to be included in the LT-LEDs, it could be useful to identify leverage points for intervention, that is, places in the system (or in the economy) where “a small change could lead to a large shift in behaviour” (Meadows, 2010^[23]).
- **Gas coverage:** being responsible for 32% of global anthropogenic GHG emissions, emission reductions of non-CO₂ GHGs a key to avoid the most dangerous impacts of climate change⁷ (UNEP, 2018^[24]). Because of their different nature, efforts in reducing non-CO₂ emissions may differ from efforts in achieving a low-CO₂ development, and therefore it may be useful for countries to consider specific mitigation measures. Just like CO₂ mitigation efforts, limiting non-CO₂ GHGs may result in co-benefits other than climate mitigation (e.g. reducing levels of contamination of local waters, with significant positive impacts on local ecosystems and public health).
- **Target year or period for peaking GHG emissions and/or for achieving net zero GHG emissions:** the global temperature goal stated in Article 2 of the Paris Agreement will inform the process of setting up emissions targets under individual countries’ LT-LEDs. In this context, legally binding carbon neutrality targets at the national level send strong political signals to both the national and international community, which may create confidence across countries and promote enabling environment for ambitious climate mitigation. For example, with the Climate Change Act of 2008, the United Kingdom has set the basis for its LEDs process, setting the legally binding target of reducing GHG emissions by at 100% of the 1990 baseline (Government of the United Kingdom, 2008^[13])⁸. Other countries, such as Chile, are also likewise considering setting legally-binding commitments for climate change mitigation to support its strategy. Box 1 discusses the current status of carbon neutrality targets around the world.
- **Interim targets and milestones and interactions with NDCs:** analysis of interactions between the long-term target with other interim goals and milestones, including the NDCs, is crucial for understanding how these different processes are leveraging and building on each other, rather than acting as independent strategies. A good understanding of the existing synergies and trade-offs is key for optimising efforts and resources and, as a consequence, maximising the outcomes.

⁷ For instance, methane is estimated to have 28-36 times of the global warming potential when considering its impacts over a 100-year timeframe (IEA, 2019^[37]).

⁸ The Climate Change Act 2008, which set the target of ensuring that “the net UK carbon account for the year 2050 is at least 80% lower than the 1990 baseline” (Government of the United Kingdom, 2008^[13]), was later amended in 2019 for “80%” substitute “100%” (Government of the United Kingdom, 2019^[48]).

Box 1. Scientific insights for science-based targets and international experience

As defined by the IPCC, carbon neutrality is the achievement of “net zero carbon dioxide (CO₂) emissions at a global scale through the balance of residual CO₂ emissions with the same amount of CO₂ removal” (IPCC, 2018_[4]). “Carbon neutrality” is therefore not the same as “net zero GHG emissions” or “climate neutrality” for which, *all* GHG emissions are considered.

LT-LEDS represent an opportunity for countries to explore different pathways and scenarios compatible with the long-term temperature goal set by the Paris Agreement of “holding the increase in the global average temperature to well below 2°C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5°C above pre-industrial levels [...]” (UNFCCC, 2015_[1]). In order to keep the window open for 1.5°C of warming by 2100, global net anthropogenic CO₂ emissions need to be nearly halved by 2030 relative to 2010 emissions levels, reaching net zero, or carbon neutrality, around 2050 (IPCC, 2018_[4]). To keep temperature increase limited to 2°C by 2100, CO₂ emissions need to decrease by 25% by 2030 relative to 2010 emissions levels and reach net zero by 2070 (IPCC, 2018_[4]). Additionally, Article 4.1 of the Paris Agreement states that countries aim to undertake rapid reductions in GHG emissions “so as to achieve a balance between anthropogenic emissions by sources and removals by sinks of greenhouse gases in the second half of this century” (UNFCCC, 2015_[1]).

Achieving net zero CO₂ or GHG emissions at the global scale does not necessarily imply that individual countries are to achieve carbon-neutrality or net zero GHG emissions by mid-century or in the second half of this century respectively. Nevertheless, considering these long-term emissions targets when developing LT-LEDS will facilitate the alignment of national visions to a long-term, global vision consistent with the temperature goal of the Agreement.

International commitments to carbon neutrality and net zero GHG emissions

The UN Secretary-General’s Climate Action Summit, held in New York in September 2019, showed growing recognition on behalf of countries for the need to increase the global efforts in the achievement of carbon neutrality. In particular, during this Summit, 65 countries and major sub-national economies committed to the achievement of net zero greenhouse gas emissions by 2050 (UN, 2019_[25]). In addition, during the Summit, 15 world leaders released a joint statement in which they expressed their commitment to submit LT-LEDS aimed at achieving net zero global emissions by 2050 (Government of the Marshall Islands, 2019_[26]).

While not many countries have yet submitted a LT-LEDS to the UNFCCC, an increasing number of countries have put forward national pledges for the achievement of carbon neutrality by 2050. Pledges for carbon neutrality vary significantly across countries in terms of scope and timeframe. For example, while most pledges look to the mid-century, Norway and Sweden have set a carbon neutrality target for 2030 and 2045, respectively. These two countries also allow for the use of international credits of GHG emissions offsetting mechanisms in meeting their targets. Moreover, while most countries put forward commitments to achieve carbon neutrality, some countries such as France and the United Kingdom set net zero GHG emissions targets. While this distinction is usually made clear in the countries’ pledges, an analysis of the long-term commitments made by countries over the past few years shows that the term “carbon neutrality” is, at times, being used to refer to “net zero GHG emissions”.

National commitments to carbon neutrality or net zero GHG emissions also vary significantly in terms of their legal nature. France, Norway, Sweden, the United Kingdom and New Zealand have formalised such commitments in national legislation, whereas Germany is currently discussing the legal status of its pledge. Several other countries, including Denmark, Fiji, Iceland, Ireland, Japan, Portugal and Switzerland have announced their intentions of reaching carbon neutrality or net zero GHG emissions in national climate change plans or, indeed, in their respective LT-LEDS. These intentions have not been formalised in law yet.⁹

⁹ The relevant documents, national strategies, LT-LEDS, legislation or official statements are (in order of citation): (Government of Norway, 2017_[53]); (Government of Sweden, 2019_[54]) (Government of France, 2019_[58]); (Government of the United Kingdom, 2019_[48]); (Government of New Zealand, 2019_[57]); (Government of Germany, 2019_[55])

Long-term vision for development and well-being

Establishing a LT-LEDS process can guide countries to integrate climate action with development goals and well-being priorities. Effective climate mitigation and adaptation are crucial to achieve development goals in the longer term by reducing the worst and most dangerous impacts of climate change. Integrating climate action with a strong development agenda and a well-being perspective will help policy makers identify potential trade-offs as well as synergies between climate change mitigation, adaptation and other societal goals. For example, climate change mitigation can have significant positive impacts on public health through improved air quality; improved mobility through integrated public transport; and expansion of energy access through deployment of distributed renewable energy. This can help governments to better align the incentives for early and ambitious mitigation action that also delivers wider well-being benefits for both current and future generations.

LT-LEDS are an opportunity for linking the temperature goal set by the Paris Agreement with the Sustainable Development Goals (SDGs) defined in the Agenda 2030. Important synergies link climate change mitigation and adaptation with the SDGs. Taking urgent action to combat climate change and its impact is at the heart of Agenda 2030, expressed in SDG13. Climate change mitigation is also crucial for the achievement of other SDGs. Notably, important linkages can be drawn with SDG3 (good health and well-being), SDG7 (access to affordable and clean energy), SDG14 (life below water) and SDG15 (life on land), to mention a few. Because the SDGs set targets for 2030, they can help set the basis for a long-term vision for sustainable development in the context of LT-LEDS. Analysing SDG indicators through a climate mitigation lens can guide countries in the process of identifying policies and measures capable of achieving multiple well-being goals. Despite the potential for leveraging interlinkages between climate change and SDGs, only a few countries have highlighted synergies between the two in their LT-LEDS. Some countries, however, have made the connection. Fiji's LT-LEDS' Monitoring and Evaluation (M&E) process, for example, will include measures to monitor progress towards the achievement of SDGs (Government of Fiji, 2018^[12]).

Data collection, modelling and scenario development for target setting

Given the complexity of potential interactions linked to climate change mitigation policy, it is important to set targets and design policies based on robust data, modelling and realistic scenarios/projections. These quantitative assessments can help policymakers to gain a more comprehensive understanding of mitigation potential, costs related to climate mitigation or climate impacts, co-benefits and trade-offs across a range of climate policies, which may all be important factors for planning the LT-LEDS. There is a wide range of models that can be used, including energy-system models, integrated assessment models or more sectoral models. They will vary in their level of complexity, detail, and adequacy for the issue in question. Regardless of the type of model used, transparency of assumptions made and of the results are key for generating common understanding among different stakeholders.

Modelling and scenario building cannot alone identify achievable targets. Because of their implicit level of uncertainty, it is important to complement modelling outcomes with other types of socio-economic considerations. The use of qualitative narratives and/or storylines (Awafo, 2018^[27]) can help link quantitative assessments with policy narratives. Moreover, "foresight units" can add to the strategic value to scenarios and projections, by tracking and analysing emerging trends ("weak signals") and produce predictions about how these trends could impact scenarios and projections obtained from models (OECD/The World Bank/UN Environment, 2018^[28]).

(Government of Denmark, 2018^[49]); (Government of Fiji, 2018^[12]); (Government of Iceland, 2018^[50]); (Government of Ireland, 2019^[51]); (Government of Japan, 2019^[43]); (Government of Portugal, 2019^[29]); (Government of Switzerland, 2019^[52]).

Gathering granular data and running a modelling exercise is challenging, as it requires technical and financial resources that many countries may lack. This lack in resources and capacity can be one of the most important barriers preventing countries from developing LT-LEDS, especially considering that they are not mandatory under the Paris Agreement. In order to improve this, countries lacking the capacity, but wishing to obtain it, may include in their LT-LEDS the goal to strengthen technical capacity in this area.

Availability of new technologies and changing national circumstances influence countries' strategies for long-term low-emission development. In the LT-LEDS analysed in this paper, if different pathways are presented (based on e.g. different policies and/or technologies), they are associated with different emissions reductions targets.¹⁰ Countries may however also opt to develop different scenarios leading to the same target or level of emissions reductions, varying in e.g. transformation opportunities, technology options and costs of overall mitigation. Modelling and scenario development exercises can therefore help countries to identify different potential pathways and trajectories with different policy options and economic and carbon budget implications that countries can implement to achieve one final, long-term target.

Long-term vision for adaptation and climate resilience

Although LT-LEDS, by definition, have a focus on low-emission development, climate change adaptation is often a critical component of national priorities. For some countries, climate change adaptation may be a precondition for continued development and economic growth. In addition, planning long-term adaptation strategies in combination with long-term climate mitigation strategies can help governments to better identify and take advantage of the strong synergies existing between the two. For example, in its LEDS Fiji usefully highlights and reinforces linkages between adaptation and mitigation measures in the electricity sector: the strategy envisages a review of design and construction standards for renewable energy facilities with the aim to improve climate resilience, as changed weather conditions as a consequence of climate change may put facilities and infrastructure at risk (Government of Fiji, 2018^[12]).

Resourcing the LT-LEDS

The inclusion of a long-term financial and investment vision in a country's LT-LEDS can significantly facilitate the implementation of the transition to a low-emission economy. The development of a long-term financial and investment vision can include (i) the identification of national resources or funds that are readily available in the short-term for the implementation of the strategy, (ii) the identification of areas of actions where further investments may be needed in the long run, as well as (iii) potential policies and instruments that may be useful to promote such investments. A long-term financial and investment vision can also include the identification of planned investments that are incompatible with the transition to a low-carbon economy, and considerations on long-term exit strategies from such investments. Because of the long-term nature of investment cycles for most infrastructure, a long-term vision for investments in this area, for example, can be fundamental to reduce the risk of stranded assets and lock-ins.

It would be useful for governments to include in their LT-LEDS preliminary estimates of the overall implementation cost of the strategy, including assessments of what can be covered by national budget and identify areas that may benefit from international aid and investments. Some countries (e.g. Portugal and the United Kingdom) have included in their LT-LEDS aggregate or sector-specific estimates of the financial resources needed to implement the strategy (Government of Portugal, 2019^[29]) (Government of the United Kingdom, 2017^[18]). Costing exercises along with an analysis of current public expenditures and existing national funds can help a country to gain a clearer understanding of the financial

¹⁰ Eleven of the LT-LEDS analysed for this document contain at least two different scenarios.

resources that could be available to finance the low-emission transition. For example, in estimating the aggregate amount of investments needed by 2050 to implement its strategy, Portugal has identified what share of these investments is already covered by planned and ongoing measures for the modernisation of the economy (Government of Portugal, 2019^[29]). In addition, assessing potential financing gaps can facilitate the identification of suitable policies aimed at enhancing investments in specific areas and leveraging additional resources. OECD work suggest that potential investment gaps worldwide may not be the result of a lack of capital, but are rather linked to the lack of easily identifiable and bankable projects (OECD, 2018^[30]).

Finance and investment strategies may also have a significant impact on other domains, including facilitating inter-agency co-operation and better alignment of national policies. Considering investment and finance vision in the context of LT-LEDS may result in numerous co-benefits:

- **Reinforcing the whole-of-government approach:** a vision for resourcing the strategy as part of a LT-LEDS could foster dialogues between Finance and Environment Ministries and alignment of fiscal and financial policies with a low-emission pathway, helping reduce risk of misaligned fiscal incentives.
- **Policymaking and planning:** planning a long-term vision for fiscal budgets and investments may lead to better policy alignment. In particular, it can have an impact on resource allocation, and help governments to re-consider budgeting processes and fiscal incentives in a more strategic and climate-oriented manner. Including considerations on how to resource a country's LT-LEDS can also facilitate the identification of synergies between mitigation measures and fiscal revenues. Some policy tools relevant for climate change mitigation –notably carbon pricing— can generate significant revenues that can thereafter be used to support investments aimed at reinforcing sustainable infrastructure and at achieving other national objectives.¹¹ Finally, a long-term vision for resourcing the strategy can also point out to the need of identifying measures and areas of actions that are a priority for domestic budgetary support.
- **Encourage investments:** by setting long-term priorities, LT-LEDS can enhance policy and regulatory certainty for investors, encouraging investment from the private sector to financing the transition. Investment decisions are ultimately conditioned by national priorities and financial policies. Setting a vision for the investments needed to implement the LT-LEDS in the medium and long run and on the priority areas for investments could promote stability in the public finance environment. In addition, LT-LEDS can help governments to design strategies aimed at the development of robust infrastructure project pipelines (OECD, 2018^[30]).
- **Attract climate finance inflows (applicable to developing countries):** when feasible, including preliminary estimates of financial support needed in developing countries' LT-LEDS can be useful to send out signals to donor countries and financial institutions to attract investments and support. Particularly, the transparent and stable rule of law, clear and defined targets and stability of climate-related support policies as well as increased level of ambition, would positively influence the ability to mobilise private climate finance. Beyond bilateral donors, a financing and investments vision linked to a LT-LEDS may help multilateral financial institutions identify opportunities for investments (IIED, 2018^[8]).

¹¹ See (Nachtigall, 2019^[47]).

Plans for monitoring progress and assessing results

Monitoring progress towards the goals set in the LT-LEDS is important to determine if and where the strategy can be improved, while providing transparency for stakeholders. When developing the LT-LEDS, it is important that countries also consider how they can monitor for progress in the implementation of the strategy as well as how they assess results. A clear plan for monitoring progress and assessing mitigation outcomes of a LT-LEDS could include:

- **Effective systems for Monitoring and Evaluation (M&E) and for Measuring, Reporting and Verification (MRV):** M&E systems generally refer to the package of tools, indicators and processes that are needed to assess whether a project has been implemented and to determine (and evaluate) its impacts. In the case of LT-LEDS, M&E systems can periodically assess whether the country is on track to reach the set adaptation targets, and to better understand where and if a revision may be needed. An MRV system, on the other hand, is useful to keep track of national GHG emissions levels and the impact of mitigation actions. A list of planned publications or communications, including dates, disseminating results of the monitoring process can contribute to enhancing the credibility of the strategy across different stakeholders.
- **Suitable Indicators for SMART targets:** Specific, Measurable, Achievable, Relevant and Time-bound (SMART) indicators are key to measure overall progress of the strategy, as well as to track progress towards individual targets and actual transformation achieved. The process of developing SMART indicators needs to be, to some extent, linked to the process of setting targets, so to ensure the feasibility of monitoring progress.
- **Roles and responsibilities of monitoring agencies or groups:** assigning well-defined roles can help to ensure that M&E and MRV systems will function effectively. Where the government does not have sufficient resources to ensure an adequate M&E or MRV taskforce, it is useful to plan in advance and seek the support of external national or international agencies and organisations that can support the process.
- **A clear plan for preparing the next iteration or revision of the strategy:** LT-LEDS are living documents and, as such, would have to undergo periodic reviews and revisions, informed by the outcomes of the M&E and MRV processes, new stakeholder consultations and the latest science. When developing a LT-LEDS it would be therefore useful to include discussions on how the country is planning to revise the strategy, including potentially time and frequency for the process of revision and updating of the strategy and envisaged dates for stakeholder consultations.

Plans for implementation

LT-LEDS, rather than outlining specific programmes or projects, provide a direction and potentially a framework for guiding decision and policy-making in the short- and medium-term. In this regard, it is crucial that LT-LEDS reflect on the following:

- Roles and responsibilities during implementation, including national, sub-national and local entities, as well as non-state actors;
- How the vision designed in the LT-LEDS builds on, feeds into and influences other national processes such as the NDC process and the 2030 Agenda for Sustainable Development;
- How the strategy relies, builds on and/or plans to enhance existing policies and legal instruments and how it ensures coherence with such policies;
- How the strategy relies on existing plans to attract additional financial support for implementation;
- How the strategy foresees the role of international co-operation for the implementation of its vision;
- What are the technical capacity resources needs and gaps, and an approach to bridge those gaps.

4 Current experience

Several countries have already started their process of formulating and communicating LT-LEDS. Through the UNFCCC submissions portal, 13 countries¹² have communicated their long-term strategy as of October 2019. In addition, other countries have also developed domestically and outside of the UNFCCC context long-term national climate strategies. These include, for example, the *National Climate Change Plan* of the United Arab Emirates, or the *Low Carbon Development Report* released by Indonesia in 2019.

Although LT-LEDS are tailored to specific national contexts and circumstances, a joint analysis of existing LT-LEDS can provide useful insights on how the preparation of these strategies can be better structured or made more effective. Based on the authors' analysis of 15 LT-LEDS, this Section explores (i) the vision and targets put forward by countries in their LT-LEDS; (ii) their sectoral coverage and presence of GHG scenarios; (iii) the linkages between the strategies with NDCs and SDGs; (iv) the institutional setups put in place to develop existing LT-LEDS; and (v) the approaches to resource the strategy in the long-run. Table 4, Table 5 in Annex A provide a more detailed analysis of the 15 LT-LEDS included in this section.¹³

Vision and targets

Nine of the LT-LEDS analysed lay out a vision that clearly emphasises the need to pursue a low-emission pathway. Inclusion and specificity of other societal and development goals in the LT-LEDS vary significantly across countries. For example, Indonesia expresses a vision that encompasses both climate mitigation and economic development (Government of Indonesia, 2019^[21]). The Republic of the Marshall Islands, Fiji, Mexico and Indonesia specifically include in their vision the achievement of other, and more specific well-being objectives such as eradication of poverty or good health (Government of the Marshall Islands, 2018^[31]; Government of Fiji, 2018^[12]; Government of Mexico, 2016^[19]; Government of Indonesia, 2019^[21]).

In terms of targets, 13 out of 15 LT-LEDS set a quantifiable, GHG or CO₂ emissions reduction target, with three countries aiming at reaching net-zero carbon emissions by mid-century. In setting their targets, most countries envisage a reduction expressed in terms of percentage compared to a base year, whereas the Czech Republic and Benin set absolute targets expressed in terms of Mt CO₂-eq (Government of the Czech Republic, 2017^[32]; Government of Benin, 2016^[33]). Some countries set also milestone targets,

¹² In order of submission : Canada, Germany, Mexico, United States, Benin, France, Czech Republic, United Kingdom, Ukraine, Republic of the Marshall Islands, Fiji, Japan.

¹³ The findings presented in this Section are based on the analysis of 15 LT-LEDS, which include the 13 LT-LEDS communicated to the UNFCCC as of October 2019 and 2 LT-LEDS developed domestically outside of the UNFCCC context. Examples included in the text are drawn from the country's LT-LEDS. These LT-LEDS are: (Government of Benin, 2016^[33]); (Government of Canada, 2016^[41]); (Government of the Czech Republic, 2017^[42]); (Government of Fiji, 2018^[12]); (Government of France, 2018^[36]); (Government of Germany, 2016^[34]); (Government of Indonesia, 2019^[21]); (Government of Japan, 2019^[43]); (Government of the Marshall Islands, 2018^[31]); (Government of Mexico, 2016^[19]); (Government of Portugal, 2019^[29]); (Government of Ukraine, 2017^[44]); (Government of the United Arab Emirates, 2017^[22]); (Government of the United Kingdom, 2017^[18]); (Government of the United States, 2016^[35]); (Government of Indonesia, 2019^[21]); (Government of the United Arab Emirates, 2017^[22]).

either quantitative or qualitative, or both. For example, in its LT-LEDS Mexico sets, *inter alia*, a 10-year target of achieving “zero percent rate of carbon loss in original ecosystems” (Government of Mexico, 2016^[19]). Other countries (e.g. Fiji and the United Arab Emirates) set several sub-sectoral quantifiable targets, such as improvements in the share of renewable energies or in the energy efficiency of the country (Government of Fiji, 2018^[12]; Government of the Marshall Islands, 2018^[31]). Finally, some developing countries (e.g. the Republic of the Marshall Islands and Benin), include qualitative targets concerning resilience and adaptation (Government of the Marshall Islands, 2018^[31]; Government of Benin, 2016^[33]).

Sectoral coverage and GHG scenarios

All the LT-LEDS analysed develop multi-sectoral plans, and all the strategies include at least the energy (and/or electricity) sector¹⁴. Three of the LT-LEDS submitted include actions and plans for all the following emitting sectors: energy, industry, agriculture, forestry and land use and waste. Sectoral and particularly sub-sectoral coverage vary accordingly to national needs and circumstances. For example, some countries (e.g. Germany and the United States) have a dedicated plan for energy sub-sectors such as transports and buildings (Government of Germany, 2016^[34]; Government of the United States, 2016^[35]). In turn, the Marshall Islands note that the industrial sector is not particularly relevant in terms of GHG emissions, and focus instead on cooking and lighting (Government of the Marshall Islands, 2018^[31]).

Most LT-LEDS include GHG projections for different mitigation scenarios. Most countries include at least a Business-as-usual (BAU) and a “with measures” scenario. Many developing countries, furthermore, include both conditional and unconditional scenarios, indicating different outcomes based on availability of technical and financial resources.

Linkages with NDCs, SDGs and other well-being and economic goals

Nearly half of the LT-LEDS analysed do not contain any specific reference to the country’s NDC. When the reference is made, the documents simply mention the NDC targets without exploring the potential linkages between that target and the LT-LEDS in terms of e.g. scope, gas and coverage, policies or institutional arrangements. Two countries (Mexico and Indonesia) provide long-term GHG projections in line with their NDC targets (Government of Mexico, 2016^[19]; Government of Indonesia, 2019^[21]). Only Fiji and the Republic of the Marshall Islands contain deeper linkages with their respective NDCs, and the latter in particular states that the strategy is intended to inform and provide recommendations for targets to be included in future NDCs (Government of Fiji, 2018^[12]; Government of the Marshall Islands, 2018^[31]).

Only five out of the 15 LT-LEDS analysed highlight linkages with SDGs. When mentioned, linkages with SDGs and some of the potential co-benefits are simply listed and not explored in detail. The United Arab Emirates, for example, provide a map of how climate mitigation and climate adaptation strategies can contribute to the achievement of selected SDGs (Government of the United Arab Emirates, 2017^[22]).

Only few LT-LEDS have a clear and concrete focus on economic and/or societal development. Of the LT-LEDS analysed, only the strategy developed by Indonesia presents a quantitative economy-related goal (GDP growth of 6% per year between 2019 and 2045) (Government of Indonesia, 2019^[21]). Fiji’s LT-LEDS is expected to contribute to making Fiji’s economy “more innovative, sustainable and resilient by leveraging a variety of sustainable development and adaptation co-benefits of mitigation actions”. The

¹⁴ Scope and definition of the “energy sector” is not always included in a country’s LT-LEDS. Most countries, when considering the “energy sector”, mainly focus on power generation. Examples include Japan, Fiji, the Marshall Islands and France. (Government of Japan, 2019^[43]; Government of Fiji, 2018^[12]; Government of the Marshall Islands, 2018^[31]; Government of France, 2018^[36])

development focus of the Fijian strategy is underpinned by other national development strategies produced by the country, such as the Green Growth Framework for Fiji and the National Development Plan (Government of Fiji, 2018^[12]).

Institutional setup, legal framework and stakeholder engagement

The LT-LEDS analysed provide little background information on institutional setup and legal framework underlying the strategy. For some countries (e.g. Mexico), the mandate to develop a LT-LEDS is provided by law (Government of Mexico, 2016^[19]). Other countries (e.g. Benin) have attributed legal status to the strategy (Government of Benin, 2016^[33]). The United Kingdom has made the emissions reduction target in the strategy legally binding (Government of the United Kingdom, 2017^[18]). The form of the institutional setup underlying the strategy varies widely across countries. While some countries (e.g. the United Arab Emirates and Mexico) have entrusted an inter-ministerial committee with the task of developing a LT-LEDS, other countries (e.g. Germany) have designated a dedicated taskforce within the Ministry of Environment (Government of the United Arab Emirates, 2017^[22]; Government of Mexico, 2016^[19]; Government of Germany, 2016^[34]).

The process for engaging stakeholders is mentioned in eleven LT-LEDS, and few countries provide a detailed description of such process. Most countries who have engaged in stakeholder consultations have done so by convening a series of workshops that have thereafter informed the strategy e.g. Fiji) (Government of Fiji, 2018^[12]). It appears that in all cases, the workshops have been limited to a maximum of three encounters, and it is not clear whether consultations will continue after the submission of the strategy.

Resourcing the strategy and monitoring and implementation

Hardly any of the strategies include investment plans for resourcing the LT-LEDS, but at least five LT-LEDS provide cost estimates for some of the measures and visions outlined, with variable levels of detail. Portugal is the only country to provide detailed and sector-specific information on investment needs and to identify national, European and private sector financing instruments that can be used to resource the strategy (Government of Portugal, 2019^[29]). In the remaining strategies, the level of detail and the scope of information on financial resources and investment needs vary considerably. For example, Mexico highlights that the country's General Climate Change Law creates the Climate Change Fund, which will help financing relevant projects in the country and underlying the need to "promote investment" in some areas (e.g. in the photovoltaic sector) (Government of Mexico, 2016^[19]). Germany identifies macro-areas for intervention, such as the need to incentivise climate-friendly investments and enhancing transparency on climate risks to which investors are exposed (Government of Germany, 2016^[34]). Finally, the Republic of the Marshall Islands, which does not include specific information in financial resources and investments, recognises the importance of developing a financing roadmap and foresees the development of a long-term climate finance strategy in the future (Government of the Marshall Islands, 2018^[31]).

Ten LT-LEDS provide information on MRV or M&E processes aimed at monitoring progress towards the goals set by the strategy, also with varying levels of detail. Several countries (e.g. Mexico and Benin) state that an M&E and/or MRV system are currently under development (Government of Mexico, 2016^[19]; Government of Benin, 2016^[33]). Fiji foresees the development of performance indicators aimed at tracking, inter alia, impacts of policies in creating co-benefits and GHG emissions reductions (Government of Fiji, 2018^[12]). France's LT-LEDS identifies two main tools to monitor the implementation of the strategy: carbon budgets (and reductions in emissions) and monitoring indicators. The latter, in particular, are to be monitored annually or bi-annually and cover multiple scopes such as e.g. air, energy poverty, employment). (Government of France, 2018^[36])

5 Guiding questions

This document has provided points of reflection for the establishment of an effective process for the development of LT-LEDS. Drawing upon the key messages presented, as well as on countries' current experience in developing LT-LEDS, this section presents a set of guiding questions that governments may wish to consider when setting up and developing their national LT-LEDS.

Table 3. Key guiding questions to the LT-LEDS process

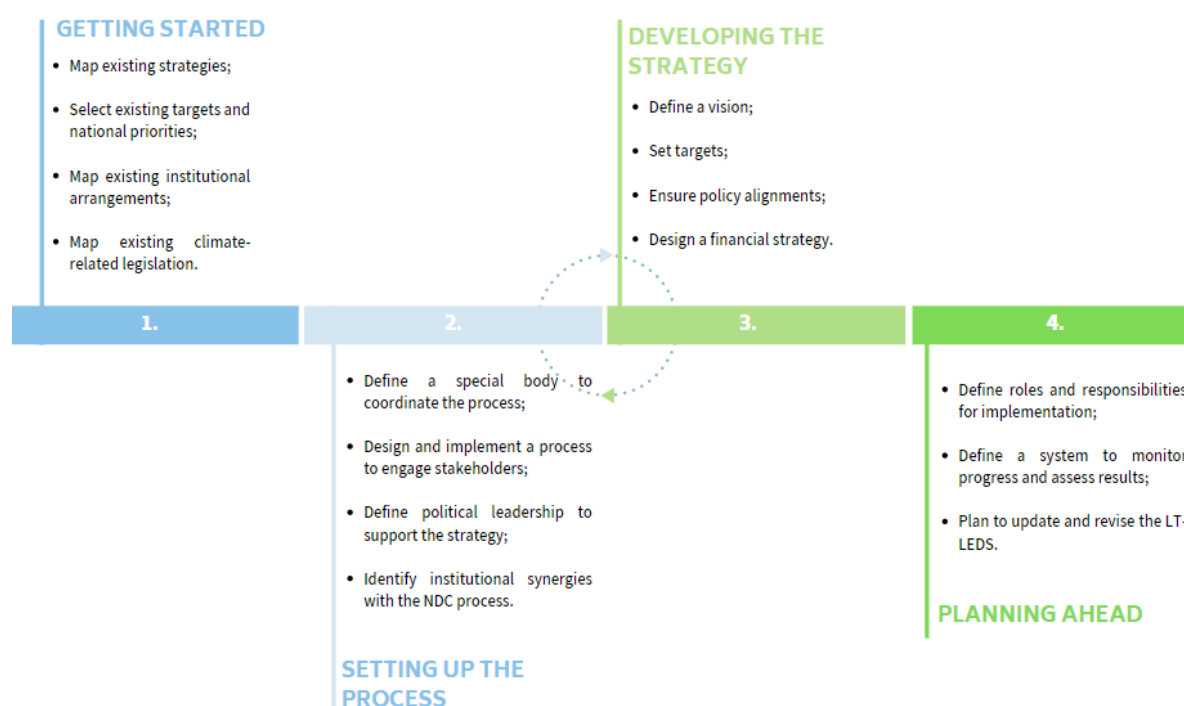
1. GETTING STARTED	
Mapping existing related strategies and national processes	<ul style="list-style-type: none"> Does the country already have national development and/or climate change strategies? What are the national priorities identified in the existing strategies? Do the strategies have any specific and quantifiable targets? <ul style="list-style-type: none"> Are these climate change mitigation, development and well-being and/or adaptation targets? What are their timeframes? Do existing development pathways have a mitigation component? In these strategies, are there relevant data, modelling frameworks or scenarios which could be used to support the development of the LT-LEDS?
Mapping existing policies and legal framework	<ul style="list-style-type: none"> Are there existing policies or legal instruments that can be leveraged and built upon when designing the LT-LEDS? <ul style="list-style-type: none"> Do they have specific cycles or timeframes that can be aligned with the LT-LEDS process?
Mapping existing institutional arrangements	<ul style="list-style-type: none"> What are the Ministries or institutions involved in preparing other strategies and national targets? <ul style="list-style-type: none"> What were the roles and responsibilities within these Ministries or institutions for establishing other strategies? Has a special committee / task force been set up in order to develop the strategy?
2. SETTING UP THE PROCESS	
Institutional arrangements	<ul style="list-style-type: none"> What are the relevant ministries, agencies and other government actors in the country that should participate in the process? Will a Ministry co-ordinate and lead the LT-LEDS process? Will a special committee/task force lead the LT-LEDS process? <ul style="list-style-type: none"> Does such a committee/task force already exist or would it need to be created? Can the taskforce be independent from political processes/cycles? Will the committee / taskforce be an inter-ministerial body? What are the roles and responsibilities of and within the committee / taskforce? Will the taskforce seek inputs from other stakeholders? How and when? Is there a strategy to retain institutional memory? <ul style="list-style-type: none"> Will the members of the taskforce change with a change in government? Will there be a team of technical experts to ensure continuity throughout different legislatures? Is there enough technical capacity domestically to set up the process and develop the strategy or is there need to find capacity elsewhere? What are the entities, including individuals that have the required capacity or will be involved in the process of capacity building?

Engaging stakeholders	<ul style="list-style-type: none"> Who are the stakeholders that need to be engaged in the process? <ul style="list-style-type: none"> How will representatives of the civil society, the private sector and the sub-national level be selected? What will the engagement consist of? <ul style="list-style-type: none"> Will there be regular consultations? Will the engagement take place throughout the implementation of the LT-LEDS? How will the stakeholder engagement process feed into the institutional setup for the LT-LEDS? <ul style="list-style-type: none"> Will representatives of different stakeholder groups participate in institutional consultations? Will the stakeholder consultations result in written feedbacks to inform the LT-LEDS process? How to ensure an effective process for engaging the stakeholders? <ul style="list-style-type: none"> How to manage conflicts across different stakeholders? How to create a solution-driven environment? Could it be useful to hold the stakeholder engagement process under Chatham House rules?
Political leadership and legislative support	<ul style="list-style-type: none"> Is there a high-level political mandate in the country for setting up a LT-LEDS? Is there an institutional leader supporting the strategy? Is there a high-level event (national or international) that can be used as a means to mobilise support and kick-off work on the LT-LEDS? Are there any legislative instruments supporting the process?
3. DEVELOPING THE STRATEGY	
Defining a vision	<ul style="list-style-type: none"> What will be the scope, main targets and timeframe of the LT-LEDS?
Setting targets	<ul style="list-style-type: none"> Will the strategy put forward long-term GHG emissions reduction targets? <ul style="list-style-type: none"> What is the sectoral and gas coverage? What are the methodological assumptions for defining the targets? Will the strategy include scenario building? Will the strategy include other types of targets? <ul style="list-style-type: none"> Are there any adaptation and resilience targets? Are there any development and well-being goals and targets? Will there be any intermediate targets and/or milestones?
Ensuring policy alignment	<ul style="list-style-type: none"> Will the strategy contain an analysis of the co-benefits of low-emission development measures? <ul style="list-style-type: none"> Are these co-benefits linked to other national targets and priorities? Are these co-benefits linked to specific SDGs? Which ones? Has the country carried out an analysis of existing policies and measures potentially counterproductive in the context of low-emission development? <ul style="list-style-type: none"> Is there a strategy to gradually phase out these policies and measures? Is there a strategy to outweigh the potential costs of phasing out these policies and measures? Has the country carried out an analysis of the sectors that will be mostly and potentially negatively affected by the transition? <ul style="list-style-type: none"> Which sectors will be mostly affected by the transition? How many livelihoods may be affected with the low-emission transition? What measures are planned or have been put in place to ensure that livelihoods from such sectors will be compensated by the negative impacts of the transition?
Designing a financial strategy	<ul style="list-style-type: none"> Is the Ministry of Finance (or similar) involved in the LT-LEDS process? Is there an overview of the national budget and investment priorities? Does the country already have a long-term vision for climate finance? <ul style="list-style-type: none"> Is this vision in line with other national fiscal and budgetary plans? Does the LT-LEDS provide cost estimates of measures and actions outlined? Are potential financing gaps and needs well identified? Does the country have a plan for increasing climate investment? <ul style="list-style-type: none"> Does this plan take into consideration the needs of relevant stakeholders (e.g. the private sector?) Does the plan outline clear project pipelines? Does the plan provide a strategy to overcome barriers to investments? Is there a system to monitor national and/or international flows of climate finance?

4. PLANNING AHEAD	
Defining roles and responsibilities for implementation	<ul style="list-style-type: none"> What will be the roles and responsibilities of national entities, sub-national entities, civil society and private sector during implementation? Will there be a compliance mechanism for the implementation of the strategy? <ul style="list-style-type: none"> Will there be any legislative instruments that may be useful for this purpose?
Monitoring progress and assessing results	<ul style="list-style-type: none"> Will there be any SMART indicators to monitor progress and assess results? Is there a MRV or M&E system already in place? <ul style="list-style-type: none"> Could it be used to monitor progress and assess results of the LT-LEDS? Who will be the responsible authority? At what frequency will progress be assessed? How and how often will progress and results be communicated?
Updating and revising a LT-LEDS	<ul style="list-style-type: none"> Will the LT-LEDS be revised and/or updated? How often will the strategy be revised and/or updated? <ul style="list-style-type: none"> Can the revision process be aligned with the NDC process? Can the revision process be aligned with other national / international processes? Who will be in charge of the revision? Will the review involve stakeholder consultations? <ul style="list-style-type: none"> How will the consultations take place? When will the consultations take place?

Source: Authors.

Figure 2. The LT-LEDS Process



Source: Authors.

Conclusions

LT-LEDS are national, subnational or supranational¹⁵ *long-term* strategies for envisioning low-emission development and national socio-economic development in an integrated and strategic manner. Because of their long-term character, LT-LEDS developed today generally set a vision to 2050. LT-LEDS are useful in a number of ways and at different levels. At the national level, developing a LT-LEDS can help a country to better structure national policy debates and integrate climate change mitigation with other societal and economic objectives, contributing to the public acceptability of ambitious climate action. At the international level, the communication of LT-LEDS can contribute to enhancing trust amongst countries in their intent to reduce emissions and potentially stimulate greater efforts and climate mitigation ambition globally.

While countries are invited to formulate and communicate a LT-LEDS by 2020, the scope and elements to be included in the LT-LEDS are not defined. This document identifies the following as important potential elements of a LT-LEDS:

- A timeframe for the strategy;
- A long-term vision for effective climate change mitigation;
- A long-term vision for development and well-being;
- A long-term vision for adaptation and climate resilience; A finance and investment vision for implementing the strategy;
- A plan for implementation
- A plan for monitoring progress and assessing results of the strategy.

To ensure that LEDS are implemented successfully and achieve the envisioned results, it would be helpful to align the LT-LEDS process with other national processes, such as the processes for NDC development and implementation, and their related targets. Linking these processes presents a number of benefits. First, the long-term perspective in LT-LEDS can also help countries identify long-term opportunities and/or potential barriers and how they can be overcome and to inform near-term action in NDCs. Moreover, LT-LEDS may guide countries to integrate climate action, climate change adaptation with development goals, including well-being priorities, helping governments to better align the incentives for early and ambitious mitigation action that also delivers wider well-being benefits for both current and future generations. Further, successful NDC implementation promotes confidence in the feasibility and benefits of the LT-LEDS. Tracking progress in NDC implementation could also allow the government to adjust policies over time if these prove to be insufficient to meet the goals put forward in the LT-LEDS.

The process of developing a LT-LEDS will require a thorough exercise of assessing current development trends, areas of vulnerability and national priorities and a deep understanding of national circumstances and starting points. Existing climate strategies and national development plans can constitute important

¹⁵ In the UNFCCC context, LT-LEDS are to be understood as national documents. Nevertheless, LT-LEDS have been developed or are in the process of being developed also at the subnational level (e.g. California) (Government of California, 2017^[40]) and at the supranational level (e.g. the European Union) (European Commission, 2018^[56]).

starting points for developing LT-LEDS, as they may have already identified the country's main climate mitigation opportunities as well as development and well-being priorities. Moreover, existing strategies may have led to the establishment of institutional setups, processes of monitoring and evaluation and/or legal framework that can be leveraged and built upon for the establishment of the LT-LEDS. Further, many other strategies are built based on the collection of data and on the development of scenarios and projections that can also feed into the process of developing LT-LEDS. Beyond providing a useful starting point in terms of targets, priorities and policies, analyses of the planning and development processes of other strategies can also provide insightful lessons-learned.

A whole-of-government approach, that is, relying on co-ordination across different Ministries and Public Agencies, to planning and designing LT-LEDS is important to establish a unified effort across the government and to maximise available resources in a collaborative manner. High-level political leadership is useful to enable a whole-of-government approach to the LT-LEDS, promoting and supporting the co-ordination and collaboration across different ministries and across local, sub-national and national levels. Strong institutional arrangements are key to support a whole-of-government process of designing the LT-LEDS that is effective and not overly burdened to support its implementation. Strong stakeholder engagement is important to create the support needed for the LT-LEDS in the short-, mid- and long-run. Involving the public through regular stakeholder consultations processes will also contribute to improving the quality and the feasibility of the strategy.

An analysis of the visions underlying 15 LT-LEDS suggest that those governments who have formulated a LT-LEDS recognise the value of developing long-term plans for a low-emission development. Although elements contained in the strategy and its scope vary considerably across different countries, the underlying visions and key mitigation targets often build on shared principles, namely achieving low-emission development by mid-century while ensuring societal well-being. Nevertheless, further efforts are needed to increase the number of LT-LEDS that are developed, as well as to support the implementation and credibility of these LT-LEDS with the development of clear financial and investment roadmaps and systematic monitoring and evaluation (M&E) systems.

Annex A Analysis of selected LT-LEDS

Table 4. Overview of selected countries' Long-Term Low-emission Development Strategies (LT-LEDS) Part 1

Vision and substance

Country	Title of the Strategy	Underlying Vision / Purpose of the Strategy	Timeline	Target(s)	Sectoral Coverage	GHG projections / low-emission scenarios	Adaptation	Linkages with NDC and/or SDGs
Canada	Canada's mid-century long-term low-greenhouse gas development strategy	Informing the conversation about how to achieve a low-carbon economy and outlining potential abatement opportunities and main challenges.	2050	<ul style="list-style-type: none"> 80% reduction in GHG emissions compared to 2005 	Energy; Forests; Agriculture; Waste.	YES – to 2050 “Low greenhouse gas”; “current technology”; and “new technology” scenarios.	NO Adaptation measures and/or priorities are not included in the strategy.	<ul style="list-style-type: none"> No explicit linkage to NDC; No explicit linkage to SDGs.
Germany	Climate Action Plan 2050	Providing guidance to all areas of action to achieve domestic climate targets.	2050	<ul style="list-style-type: none"> 80-95% reduction in GHG emissions compared to 1990 	Energy; Buildings; Transport; Agriculture; Forestry and other land use.	YES – to 2030 One scenario with measures.	NO Adaptation measures and/or priorities are not included in the strategy. Reference is made to the German Strategy for Adaptation.	<ul style="list-style-type: none"> No explicit linkage to NDC; SDGs will provide guidance for the implementation of the strategy.
Mexico	Mexico's Climate Change Mid-Century Strategy	Ensuring people's right to access clean energy, good health and safe environments without affecting the planet.	2050	<ul style="list-style-type: none"> Reaching at least 50% of energy generation from clean sources in 40 years; Achieving 50% emissions reduction compared to 2000 in 40 years; Several other milestones and targets 	Energy; Industry; Transport; Agriculture; Forestry and other land use; Waste	YES – to 2050 “Baseline”, “NDC policy” and “NDC more ambitious” scenarios.	YES – key component Measures for climate change adaptation and institutional processes to increase adaptability and resilience of the country to climate change.	<ul style="list-style-type: none"> The strategy builds upon NDCs targets and measures; No explicit linkage to SDGs.

Country	Title of the Strategy	Underlying Vision / Purpose of the Strategy	Timeline	Target(s)	Sectoral Coverage	GHG projections / low-emission scenarios	Adaptation	Linkages with NDC and/or SDGs
United States ¹⁶	United States Mid-Century Strategy	Demonstrating that the United States can meet the growing demands on its energy system and lands while achieving a low-emissions pathway, maintaining a thriving economy, and ensuring a just transition for Americans whose livelihoods are connected to fossil fuel production and use.	2050	<ul style="list-style-type: none"> Achieving at least 80% GHG emissions reductions by 2050 	Energy; Transport; Buildings; Industry; Forestry and other land use;	YES – to 2040 “Current policies” and “expanded ambition” scenarios.	NO Adaptation measures and/or priorities are not included in the strategy.	<ul style="list-style-type: none"> No explicit linkage to NDC (strategy was submitted before NDC); No explicit linkage to SDGs.
Benin	Stratégie de développement à faible intensité de carbone et résilient aux changements climatiques ¹⁷	Achieving a low-emission development strategy, resilient to climate change, and integrating climate-relevant considerations in the strategic policies of the country.	2025	<ul style="list-style-type: none"> Reinforce resilience of local communities; 12Mt GHG reduction and 163Mt GHG sequestered by 2025; Reinforce protection of vulnerable communities. 	Energy; Agriculture; Forests and other land use; Buildings; Health; Water.	NO	YES – key component Measures for climate change adaptation and institutional processes to increase adaptability and resilience of the country to climate change.	<ul style="list-style-type: none"> Strategy in line with NDC objectives; The strategy recognises and considers the SDGs.
France	Strategie Nationale Bas-carbone ¹⁸ (under revision)	Outlining the approach France intends to adopt to meet its GHG emissions reduction targets and set in motion the transition to a sustainable, low-carbon economy. Prescriptive for the public sector.	2050	<ul style="list-style-type: none"> 75% reductions in GHG emissions in 2050 compared to 1990 5-year carbon budgets until 2028 	Transport; Buildings; Agriculture; Forestry; Industry; Energies; Waste.	YES – to 2050 “Trend-based” and “reference” scenarios.	NO Adaptation measures and/or priorities are not included in the strategy. Reference to the National Climate Change Adaptation Plan.	<ul style="list-style-type: none"> Second and third carbon budgets are in line with the EU NDC; No explicit linkage to SDGs (strategy was drafted before SDGs were adopted).

¹⁶ The “United States Mid-Century Strategy for Deep Decarbonization” was released in 2016 by a previous administration and is no longer being implemented by the United States.

¹⁷ “Low Carbon and Climate Resilient Development Strategy” (Authors’ translation)

¹⁸ “National Low Carbon Strategy” (Authors’ translation)

Country	Title of the Strategy	Underlying Vision / Purpose of the Strategy	Timeline	Target(s)	Sectoral Coverage	GHG projections / low-emission scenarios	Adaptation	Linkages with NDC and/or SDGs
Czech Republic	Climate Protection Policy of the Czech Republic ¹⁹	Determining an appropriate mix of cost-effective policies and measures in key sectors that will lead to achieving the greenhouse gas reduction targets.	2050	<ul style="list-style-type: none"> Reduce national emissions by 2020 by at least 32 Mt CO₂-eq in comparison with 2005; Reduce national emissions by 2030 by at least 44 Mt CO₂-eq in comparison with 2005; Pursue the indicative level of 70 Mt CO₂-eq of emissions in 2040; Pursue the indicative level of 39 Mt CO₂-eq of emissions in 2050. 	Energy; Industry; Transport; Agriculture; Forestry and other land use; Waste	YES – to 2030 and 2050 “Existing measures” and “additional measures” scenarios. Eight simplified scenarios of possible development until 2050.	NO Adaptation measures and/or priorities are not included in the strategy. Reference to separate Adaptation Strategy and National Adaptation Plan	<ul style="list-style-type: none"> No explicit linkage to NDC; No explicit linkage to SDGs.
United Kingdom	The clean growth strategy	Accelerating the pace of “clean growth”, i.e. deliver increased economic growth and decreased emissions.	2050	<ul style="list-style-type: none"> Sets out plans and proposals to meet the ‘carbon budgets’ set to date – which require a 57% reduction in GHG emissions, relative to 1990 levels over the period 2028-32. Sets out scenarios for meeting the 2050 target (an 80% reduction on 1990 levels – at the time of writing). Sets out indicative sectoral pathways to 2032 alongside a range of sector-specific goals, ambitions and policies. 	Energy; Business & Industry; Housing; Transport; Agriculture; Forestry & Land Use; Waste	YES – to 2032 “Existing policy” and “2032 pathway” scenarios.	NO Clean Growth Strategy focuses on mitigation but references the UK National Adaptation Plan.	<ul style="list-style-type: none"> No explicit linkage to NDC; No explicit linkage to SDGs.
Ukraine	Ukraine 2050 Low Emission Development Strategy	Determining strategic directions for Ukraine’s economy sustainable development based on the national priorities accordant transition to low-emission growth trajectory.	2050	<ul style="list-style-type: none"> De-carbonisation of the energy system; Increase in the volumes of carbon absorption; Reduction in GHG emissions such as methane gas and nitrogen oxide. 	Energy; Industrial Processes	YES – to 2050 “BAU” and “with measures” scenarios.	YES - marginal component Adaptation to be a key priority in the long term.	<ul style="list-style-type: none"> No explicit linkage to NDC; No explicit linkage to SDGs.

¹⁹ Only the executive summary is available in English

Country	Title of the Strategy	Underlying Vision / Purpose of the Strategy	Timeline	Target(s)	Sectoral Coverage	GHG projections / low-emission scenarios	Adaptation	Linkages with NDC and/or SDGs
Republic of the Marshall Islands	Til Eo 2050 Climate Strategy "Lighting the way"	Outlining a long-term pathway for RMI to achieve its objectives for net zero emissions and 100% renewable energy, as well as to facilitate adaptation and climate resilience in a way that ensures the future protection and prosperity of the country and its women, men and youth.	2050	<ul style="list-style-type: none"> Reaching net zero carbon emissions by 2050; Reaching 100% renewable energy; Facilitating adaptation and climate change resilience. 	Electricity; Waste; Transport and Cooking and Lighting.	YES – to 2032 "Moderate enhanced ambition", "intermediate significant enhanced ambition" and "lighthouse enhanced ambition" scenarios.	YES - key component Measures for climate change adaptation and recommends the development of a National Adaptation Plan.	<ul style="list-style-type: none"> The strategy is also intended to inform and provide recommendations for targets to be included in future NDCs; No explicit linkage with SDGs.
Fiji	Fiji's Low Emission Development Strategy 2018-2050	Strengthening the global response to climate change, sustainable development and eradication of poverty, consistently with the call issued by the IPCC SR 1.5°C.	2050	<ul style="list-style-type: none"> Reaching net zero carbon emissions by 2050 across all sectors of the economy; The strategy also includes several sector-specific quantitative targets. 	Energy; Transport; Agriculture; Forestry and other land use; Waste.	YES – to 2050 "BAU Unconditional", "BAU Conditional", "High Ambition" and "Very High Ambition" scenarios.	YES - key component Detailed set of crosscutting adaptation strategies and actions.	<ul style="list-style-type: none"> Strong correlation between the country's NDC implementation Roadmap and LT-LEDS' pathways. M&E LEDS process will include monitoring progress towards achievement of NDC and SDGs.
Japan	The Long-term Strategy under the Paris Agreement	Proclaiming a "decarbonised society" and "achieving a virtuous cycle of environment and growth". The strategy also lays out sector-specific visions (e.g. "renewable energy will become an economically self-sustained and decarbonised main power source").	2050	<ul style="list-style-type: none"> 80% reduction in GHG emissions by 2050; Realizing decarbonisation as early as possible in the second half of this century For some areas, sub-sector-specific targets (e.g. 85% reduction in consumption and production of HFCs by 2036). 	Energy; Industry; Transport; Forestry and other land use; Community and living (covering various sectors including residential, agriculture) "	NO	YES - marginal component Examples of policy measures aimed at enhancing resilience and adaptation to climate change.	<ul style="list-style-type: none"> No explicit linkage with NDC. Efforts to maximise co-benefits with SDGs in the transition to a decarbonised society;
Portugal	Roadmap for carbon neutrality 2050	Identifying the main decarbonisation vectors in all sectors of the economy, the policy and measures options and the emission reduction path to achieve carbon neutrality.	2050	<ul style="list-style-type: none"> Reach carbon neutrality by 2050 	Energy; Industry; Transport; Agriculture; Forestry and other land use; Waste; Residential and Services.	YES – to 2050 "Off-track", "Peloton" and "Yellow Jersey" scenarios.	YES – marginal component The importance of adaptation is recognised. The strategy makes reference to the National Climate Change Adaptation Strategy (ENAC 2020).	<ul style="list-style-type: none"> The strategy is developed in accordance with the EU NDC. The strategy recognises that achieving carbon neutrality will contribute to the achievement of selected SDGs.

Country	Title of the Strategy	Underlying Vision / Purpose of the Strategy	Timeline	Target(s)	Sectoral Coverage	GHG projections / low-emission scenarios	Adaptation	Linkages with NDC and/or SDGs
Indonesia	Low Carbon Development : A Paradigm Shift Towards a Green Economy in Indonesia*	Identifying development policies that maintain economic growth, alleviate poverty and help meet sector-level development targets while simultaneously helping Indonesia achieve its climate objectives.	2045	<ul style="list-style-type: none"> 43% reduction in GHG emissions by 2030 GDP growth of 6% per year between 2019-2045 Other sector-specific quantitative targets. 	Energy; Agriculture; Forestry and other land use	Yes, to 2045 "Base Case", "LCDI Moderate", "LCDI High" and "LCDI Plus" scenarios.	YES - key component Detailed set of crosscutting adaptation strategies and actions.	<ul style="list-style-type: none"> The strategy builds on NDC targets; Linkages with SDG Road Map are clearly explored.
United Arab Emirates	National Climate Change Plan of the United Arab Emirates*	Identifying strategic priorities, covering both mitigation and adaptation, to consolidate UAE's climate action.	2050	<ul style="list-style-type: none"> Manage GHG emissions while sustaining economic growth; Increase climate resilience by minimising risks and improving adaptive capacity; Advance the UAE's economic diversification agenda through innovative solutions; Additional sector-specific quantitative targets. 	Not specified	NO	YES - key component Detailed set of crosscutting adaptation strategies and actions.	<ul style="list-style-type: none"> The strategy builds on NDC targets; Linkages with SDGs are recognised but not analysed / examined throughout the strategy.

Note: The strategies are listed in order of submission to the UNFCCC, from least to most recently submitted; the strategies marked with an "*" are long-term low-emission strategies that have not been submitted/communicated to the UNFCCC.

Source: Authors.

Table 5. Overview of selected countries' Long-Term Low-emission Development Strategies (LT-LEDs) Part 2

Governance, institutional setup and stakeholder engagement

Country	Legal Framework	Institutional Setup	Stakeholder Engagement	Vision for resourcing the strategy	Revision Plan	MRV or M&E processes
Canada	No information available	No information available	YES Focus on indigenous communities.	Partially The strategy provides costs estimates for some measures.	No information available	No information available
Germany	No information available	Dedicated team. (Climate Policy Division within the Ministry of Environment).	YES Consultations with randomly selected citizens and other key stakeholders.	Partially The strategy lays out directions to fund the implementation of the strategy (e.g. need for raising climate-friendly investments, improving transparency concerning climate risks to steer investments).	YES (The strategy envisions periodical review and adjustment of policies it contains, but does not specify a timeframe).	YES Climate action reports to be prepared every year.
Mexico	Existing legal framework supporting LEDS. General Law on Climate Change provides the mandate to craft comprehensive long-term climate policy.	Dedicated body. Two bodies: the Interministerial Commission on Climate Change and the National Institute for Ecology and Climate Change.	YES Advisory Councils on Sustainable Development in all states; Workshop with over 80 experts from NGOs, academic community, and the private sector; Nation-wide online consultation process.	Partially The strategy points out areas where investments are needed (e.g. need to enhance investments in renewable energies).	No information available	M&E and MRV processes under development.
United States ²⁰	No information available	No information available	No information available	NO	No information available	No information available
Benin	Existing legal framework supporting LEDS. The strategy is considered to be a legal document.	Dedicated body. National Committee on Climate Change; General Directorate on Climate Change.	FORESEEN A committee composed of representatives from ministries, key stakeholder and local communities will be set-up.	Partially The strategy lays out general directions to fund the implementation of the strategy.	YES (The strategy envisions periodical review and adjustment of policies it contains, but does not specify a timeframe).	M&E and MRV processes under development.

²⁰ The "United States Mid-Century Strategy for Deep Decarbonization" was released in 2016 by a previous administration and is no longer being implemented by the United States.

Country	Legal Framework	Institutional Setup	Stakeholder Engagement	Vision for resourcing the strategy	Revision Plan	MRV or M&E processes
France	Existing legal framework supporting LEDS. Supported by the Energy Transition for Green Growth Act.	Dedicated bodies National Committee on ecological transition (existing body gathering various stakeholders); Experts committee on energy transition (new body, provides advice to the government and parliament on the elaboration and implementation of the strategy)	YES Organisation of workshops with key stakeholders.	Partially The strategy lays out general directions to fund the implementation of the strategy.	YES The strategy will be revised every 5 years starting in 2019	YES Provision of indicators to be monitored annually.
Czech Republic	No information available	No information available	YES Consultations with stakeholders included in the Inter-ministerial Working Group on Climate Change Issues. Public consultation as part of the strategic environmental assessment.	YES The strategy provides estimates of expected funds from bilateral and multilateral foreign development co-operation. It also sets targets on increasing levels of climate finance. Finally, it estimates costs and revenues of the EU ETS.	YES The strategy specifically mentions first evaluation by the end of 2021 and update by the end of 2023.	YES MRV linked to EU mechanism on monitoring and reporting of GHG emissions.
United Kingdom	Existing legal framework supporting LEDS. Legally binding emissions reduction target within the 2008 Climate Change Act, supported by carbon budgets set every 5 years in secondary legislation.	No information available	No information available	Partially The strategy provides sectoral investment estimates.	No information available However, the strategy highlights that some targets will be reviewed. Requirement under the Climate Change Act 2008 to set out plans and proposals for meeting carbon budgets, after each carbon budget is set..	M&E process under development. The Clean Growth Inter-Ministerial Group, in charge of monitoring the implementation of the strategy, has been reinstated. The UK will also report annually on emissions intensity ratio, to measure performance.
Ukraine	Existing legal framework supporting LEDS. Concept for Implementation of the State policy on Climate change up to 2030. Other national laws and development plans support the implementation of the strategy.	No information available	No information available	NO	YES (The strategy envisions periodical review and adjustment of policies it contains, but does not specify a timeframe).	No information available

Country	Legal Framework	Institutional Setup	Stakeholder Engagement	Vision for resourcing the strategy	Revision Plan	MRV or M&E processes
Republic of the Marshall Islands	No information available	Dedicated body. (The production and implementation of the strategy is overseen by the TTE committee, comprising of key stakeholders. The Government energy planning division has served at the Secretariat to the Committee).	YES A Partnership Dialogue engaged a range of key international stakeholders who will be crucial to the realization of the goals of the 2050 Strategy. The outcomes of future dialogues will be used to inform the implementation of the strategy.	NO The strategy however contains recommendations for the establishment of a long-term finance strategy.	YES (5 years)	M&E process under development.
Fiji	Existing legal framework supporting LEDS. Detailed overview of the country's legal and institutional framework supporting the LT-LEDS process (e.g sector-specific regulations and policies).	Dedicated body. (The Climate Change and International Co-operation Division (CCICD) has led the preparation of the strategy).	YES Establishment of a Fiji LEDS Steering Committee composed of 14 government ministries and agencies; The CCICD convened three National Stakeholder Workshops.	NO	YES (4 years) (The Steering Committee will review and –if needed— revise NDC and/or LEDS).	M&E process under development. Performance indicators to (a) track specific policies and actions implemented; (b) track GHG emission reductions; (c) track impact of policies in creating co-benefits and (d) track means of implementation and support.
Japan	No information available	No information available	YES Holding a meeting on a Long-Term Strategy under the Paris Agreement, consisting of experts from various fields such as financial, business, and academic sectors. Holding a public consultation.	Partially The strategy lays out directions for policy measures intended to promote Green Finance (e.g. mobilising finance through climate-related financial disclosures TCFD).	YES (6 years) The Government will revisit the policy measures flexibility about every 6 years with reference to situations, and review the strategy as may be required. Details on the review / revision process are not included in the document.	No information available
Portugal	Existing legal framework supporting LEDS. The Strategic Framework for Climate Policy (QEPIC) establishes an “integrated, complementary and articulated framework of climate policy instruments”.	No information available	YES Cycle of technical workshops and thematic events to discuss scenarios and decarbonisation of society. The preliminary results of the plan were divulged for public consultation for a period of three months.	YES The strategy provides an estimate of aggregate amount of investment needed by 2050, detailed sector-specific estimates and estimates of investment needed in new mitigation technologies, along with an overview of European, national and private sector financing instruments that can be used.	YES (10 years)	YES The Interministerial Commission for Air, Climate Change and Circular Economy will be in charge of monitoring progress towards carbon neutrality.

Country	Legal Framework	Institutional Setup	Stakeholder Engagement	Vision for resourcing the strategy	Revision Plan	MRV or M&E processes
Indonesia	No information available	No information available	YES No additional information	YES Average investment needs for the implementation of different scenarios.	No information available	M&E process under development
United Arab Emirates	No information available	Dedicated body The Council on Climate Change and the Environment (CC&EC) is an inter-ministerial, inter-emirate governance body.	No information available	Partially Set of general recommendations to steer green finance.	No information available	YES The UEA Council on Climate Change and the Environment will monitor progress of the strategy – no further details.

Note: The strategies are listed in order of submission to the UNFCCC, from least to most recently submitted; the strategies marked with an “**” are long-term low-emission strategies that have not been submitted/communicated to the UNFCCC.

Source: Authors.

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