From Global Commitments to National Action:

A Closer Look at Nationally Determined Contributions from a Food and Land Perspective

The Food and Land Use Coalition

CORE PARTNER
UN Sustainable Development Solutions Network

About this report

The Food, Environment, Land and Development (FELD) Action Tracker undertook a systematic analysis of Nationally Determined Contributions (NDCs) submitted before October 2021 by G20 members and key forested countries from the Food and Land Use coalition (FOLU), together representing over 60% of global greenhouse gas emissions, in advance of COP26.

The purpose of this analysis is to provide answers to the following questions: How action-oriented are the NDCs with regard to transforming the food and land sector? What specific policy measures do they propose, and which institutional mechanisms have been put in place to coordinate implementation? What are the main policy gaps and opportunities for countries to prioritise now, globally and at home?

This work complements other studies of the quantitative targets included in NDCs. Information on the applied methodology of this qualitative analysis is included in Annex 1. Detailed profiles for each of the 15 NDCs are available alongside this brief on FOLU's website and the online platform of the FELD Action Tracker.

NDCs reviewed in this analysis:

- Argentina
- Australia
- Brazil
- Canada
- Colombia
- Ethiopia
- European Union
- Indonesia
- Japan
- Rep. of Korea
- Mexico
- Russian Federation
- South Africa
- United Kingdom
- United States of America

About the FOLU Coalition and the FELD Action Tracker

The Food and Land Use Coalition

Established in 2017, the Food and Land Use Coalition (FOLU) is a community of organisations and individuals committed to the urgent need to transform the way we produce and consume food and use our land for people, nature and climate. We support science-based solutions and help build a shared understanding of the challenges and opportunities to unlock collective, ambitious action.

Food, Environment, Land and Development ACTION TRACKER

The Food, Environment, land and Development (FELD) Action tracker is a strategic initiative of the FOLU Coalition, led by the UN Sustainable Development Solutions Network (SDSN) to undertake systematic analyses of national policies, identify good policy practices for cross-country learning and facilitate accelerated, ambitious country action. We build on the work of FOLU country platforms and members of the Food, Agriculture, Biodiversity, Land Use and Energy (FABLE) Consortium in more than 20 countries.

FOLU Policy Brief, based on analysis undertaken by the FELD Action Tracker

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Additional analysis and resources are available on the FOLU and FELD websites. Please click here to sign up to FOLU's newsletter to receive updates.

Executive summary

As the world assembles in Glasgow for COP26 – the 26th Conference of Parties under the United Nations Framework Convention on Climate Change (UNFCCC) – we have a remarkable opportunity to accelerate the required transition to a net zero future. There is growing acceptance that this transition must happen in the next decade to meet the long-term goal of the Paris Agreement of keeping average global warming below 1.5°C above pre-industrial levels by the end of the century. National commitments towards this are gaining momentum and ambition. Progress towards reducing emissions from the energy and transport systems has begun.

However, the rapid decarbonisation of food and land use systems, which are responsible for roughly a third of global net greenhouse gas emissions, has not received nearly as much attention from national policymakers. The pace of progress is too slow. Transforming the world's food and land use systems is necessary to meet our climate objectives. It is also central to achieving the 2015 Sustainable Development Goals (SDGs) and ensuring a just and fair transition for all.

Policymakers must urgently set ambitious, detailed and actionable policies to transform food and land use systems in order to reach net zero emissions by mid-century. Nationally Determined Contributions (NDCs) are an important mechanism to set national targets, outline the actions needed in-country, and guide progress. They allow countries to both set specific objectives across sectors and identify pathways – including priority policies, financing mechanisms and technology requirements – needed to achieve set targets. Furthermore, NDCs serve as a central benchmarking device, enabling the world to collectively track and assess progress towards global goals.

A systematic analysis conducted by the Food, Environment, Land and Development (FELD) Action Tracker looked at a first set of fifteen updated or enhanced NDCs, representing the majority of G20 members and over 60% of global emissions.

We found that, six years on from the Paris Agreement, **the world's largest emitters are still showing weak commitments and insufficient actions to reducing emissions and increasing carbon sinks in the food and land sector.**

How well do NDCs cover food and land transitions?

While some NDCs mention goals associated with the transformation of food and land use systems, such as protecting nature and shifting towards productive and regenerative agriculture, the depth of coverage varies greatly. Few NDCs go beyond target-setting, in terms of providing action-oriented detail around how such targets will become operationalised through policy design and implementation planning. Our analysis specifically shows that:

- Only half of the analysed NDCs mention policies that are explicitly linked to actions in the food and land sector;
- Only two NDCs provide specific information on funding to support transitions toward more sustainable food and land systems;
- Only five NDCs refer to integrated spatial information and planning, which underpins good land-use management.

Encouraging examples of commitments to action in the food and land sector in the NDCs include:

- Canada's target of protecting 25% of the land and 25% of the oceans by 2025 and working towards 30% of each by 2030, and of reducing emissions from fertilisers by 30% below 2020 levels by 2030;
- Colombia's NDC annex containing precise detail on mitigation actions at the national and territorial levels, including targets covering most aspects of the food and land system, the policies and planning associated with them and the institutions responsible for their implementation;
- Ethiopia's specific mitigation goals for both the agriculture and LULUCF sectors, further broken down into actions in different subsectors;
- The UK's wide-ranging list of policies covering many aspects of food and land systems, including reducing emissions from food storage and distribution;

- Argentina's mention of Minimum Budgets laws for climate adaptation and mitigation and for the Environmental Protection of Native Forests;
- Indonesia's emphasis on the development of environmentally friendly technologies in forest management.

Other positive examples can be found throughout the different NDCs and are highlighted in the accompanying country profiles.

The biggest gaps in NDC's coverage of food and land use system transformation include a lack of focus on dietary shifts, the diversification of protein supplies or the development of local food economies. Most lack a focus on the implementation of stated actions, such as coordination, integrated planning and monitoring of land use systems. While half mention policies tied to specific actions, only four do so for both the agriculture and food, and the land use, land-use change and forestry (LULUCF) sectors. Few NDCs address technology needs directly in relation to driving impacts in the food and land sector.

Institutional arrangements for integrating climate action into broader policy development are well detailed and offer important insights into how countries design and plan for effective implementation. However, the NDCs do not, in most cases, provide consistent information on how cross-sectoral policy action to achieve NDC targets will be implemented, monitored, and adjusted over time. More information – but also more analysis of relevant institutional arrangements associated with implementing climate mitigation actions within respective national context – is needed.

More coherent and ambitious policies are needed to drive the required changes

Despite their overall lack of concrete measures to address food and land transitions, we recognise that NDCs are not the only piece of the policy puzzle, with countries outlining their expected low-carbon pathways in other national and international policies and plans, with long-term strategies playing a critical role. However, change will not happen at the required pace unless a more coherent approach is taken across policies and scales – and unless global commitments are followed by concrete, tangible and trackable actions in country, to shift food and land transitions towards the centre of the agenda. Governments should explore all aspects of ongoing and planned national policy instruments, investments and innovation to complement NDCs.

Policy makers have an opportunity to ratchet up their NDCs after COP26 and ahead of the first Global Stocktake in 2023, making them more inclusive of food and land use systems. To ensure NDCs put us on a pathway to a low carbon future, policymakers must:

1. **Align NDCs and national policy development and planning**. If NDCs are to play their central role in driving coordinated action under the Paris Agreement, more work is needed to improve processes around their development, their alignment with national planning processes and their coherence with other strategic documents such as long-term strategies. Ultimately, NDCs need to provide clear directions for the development of domestic policies, in line with international commitments and implemented across sectors and jurisdictions.
2. **Facilitate national level intersectoral policy dialogue,** to systematically identify concrete policy measures and the associated costs and barriers to implementation.
3. **Learn from positive examples of other countries.** There are already several ambitious national policy initiatives (see Tables 1 and 2) determined to practically address the challenges around nature, food and land in their respective contexts. These efforts are critical beyond national borders and deserve broad international support and attention. The documentation of lessons learned will be important to facilitate shared experience and mobilisation of action prior to the Global Stocktake.

Unless the sustainability of food and land use systems is drastically improved in the next ten years, both the goals of the Paris Agreement and the SDGs will be out of reach. There is no time to lose.

1. Why NDCs? Linking strategic directions with operational implementation

The global fora of the COPs provide an opportunity for international policymakers to come together and discuss collective action to tackle climate change. They provide frameworks and guides for action to take place on the ground, nationally and sub-nationally, to align local action with international commitments. Ahead of COP26, Parties[1] were called on to provide their updated or enhanced climate pledges – or Nationally Determined Contribution (NDC) – stating emissions reduction commitments up to 2030 and their plans to achieve these.

The NDCs are countries' mitigation commitments formulated every five years, taking into account their national circumstances. They are crucial because they allow: (1) international stock-taking and tracking of action from one NDC to the next; (2) national policymakers to plan, develop and implement national and subnational policies in line with international commitments; and (3) countries and groups of countries to learn from each other and identify solutions that are relevant to their own national contexts. Alongside these NDCs, countries must develop long term low-emissions development strategies, which serve as their longer-term emissions reduction roadmaps up to 2050.[2]

The **food and land sector** lies at the heart of the global response to climate change and action in this sector should be an integral part of NDCs. This includes actions in agriculture, forestry and other land use (AFOLU, see Box 1) as well as actions to reduce emissions from broader food systems, including not only production but also food processing, distribution, packaging, retail, consumption and transport. While AFOLU emissions account for roughly a quarter of total net human-induced emissions,[3] this figure is closer to one third when broader food systems are included.[4] The land sector is also a key part of the solution to tackling climate change because it can absorb CO_2 in its soil and biomass. Meeting the goal of the Paris Agreement to keep the increase in global average temperature below 1.5°C above pre-industrial levels by 2100 requires global carbon dioxide (CO_2) emissions to reach "net zero" by mid-century.[5] This means that in a few decades, all remaining emissions must be compensated by an equivalent amount of carbon removal from the atmosphere. The land sector is expected to produce most of these "sinks", through sequestering carbon in soils, trees, and organic matter.[6]

NDCs are critical strategic policy documents and a key opportunity to ensure that international action in the food and land sector is aligned with climate objectives. To meet our long-term climate goals, the Paris Agreement established a cyclical process in which countries plan their NDCs, communicate them to the UNFCCC, implement these plans, and then review their individual actions and collective progress through the Global Stocktake (for an overview of the Paris Agreement process up to and beyond COP26, see overview on p.29). The stocktaking exercise is to be carried out every five years and to be completed before new NDCs are due, to inform future planning and support countries in designing their next plans.[7] NDCs are therefore important documents for two reasons:

- First, they allow to take stock of collective global commitments. If all pledged NDC emissions reductions are implemented, how close are we to meeting the long-term goal of the Paris Agreement?[8] Currently, the world is way off–track. Depending on mitigation decisions after 2030, the first NDCs, submitted after the signing of the Paris Agreement, would cumulatively track toward a warming of 3°–4°C above pre-industrial temperatures by 2100, with the potential for further warming thereafter[9] – much higher than that set by the long-term goal of the Paris Agreement. As of September 2021, over 100 countries had submitted their updated or enhanced NDCs but not all increased their level of ambition: only 70 provided enhanced commitments, together covering
  less than a third of global emissions,[10] and many of them are not on track to meet their targets under existing policies.[11] Additionally, the latest UNFCCC NDC Synthesis Report states that a significant increase in the level of ambition or overachievement of the latest NDCs will be needed between now and 2030 to achieve the goals of the Paris Agreement.[12]
- Second, by specifying clear commitments across sectors, NDCs provide strategic guidance for developing operational national policies – laws, regulations, sectoral and cross-government roadmaps – that are aligned

with these commitments in terms of targets, human and financial means, and monitoring and evaluation. For this, NDCs should provide sufficient information not only on national objectives, but also on specific sectoral policy interventions, indicators and targets. Overall, the first NDCs provided little clarity on the anticipated land-based mitigation,[13] with the full potential of forests for addressing climate change largely remaining untapped.[14] Given the central importance of the AFOLU sector and food systems in achieving our climate goals, it is crucial that ambitious actions in the food and land sector are addressed in NDCs.

This brief presents a first assessment of how 15 new updated or enhanced NDCs submitted before October 2021 address the need for mitigation action from the food and land sector. It analyses NDC content to explore whether: (1) they reflect ambitious and focused policy action in agriculture, food systems and land, and (2) they include specific policy measures and concrete actions regarding key food and land transitions. This analysis focuses on a subset of NDCs from high-emitting countries, as well as Food and Land Use Coalition member countries, where the food and land sector is particularly relevant.[15] Together they make up over 60% of global emissions.[16]

Section 2 explores whether the analysed NDCs treat changes in the food and land sector operationally, through providing information on means of implementation.

Section 3 assesses what concrete actions and interventions are included in the NDCs to facilitate key transitions in the food and land sector.

Section 4 identifies institutional mechanisms outlined in the NDCs and **section 5** provides conclusions from this preliminary analysis and explores opportunities for further work ahead of the Global Stocktake.

A short methodological section is included as an **annex**. Detailed information on the content of each NDC as it pertains to the analysed criteria is presented in separate individual **NDC profiles**.

NDCs covered by this brief:

- Argentina
- Australia
- Brazil
- Canada
- Colombia
- Ethiopia
- European Union
- Indonesia
- Japan
- Rep. of Korea
- Mexico
- Russian Federation
- South Africa
- United Kingdom
- United States of America

G20 NDCs pending as of 1 October 2021, to be included in updated brief

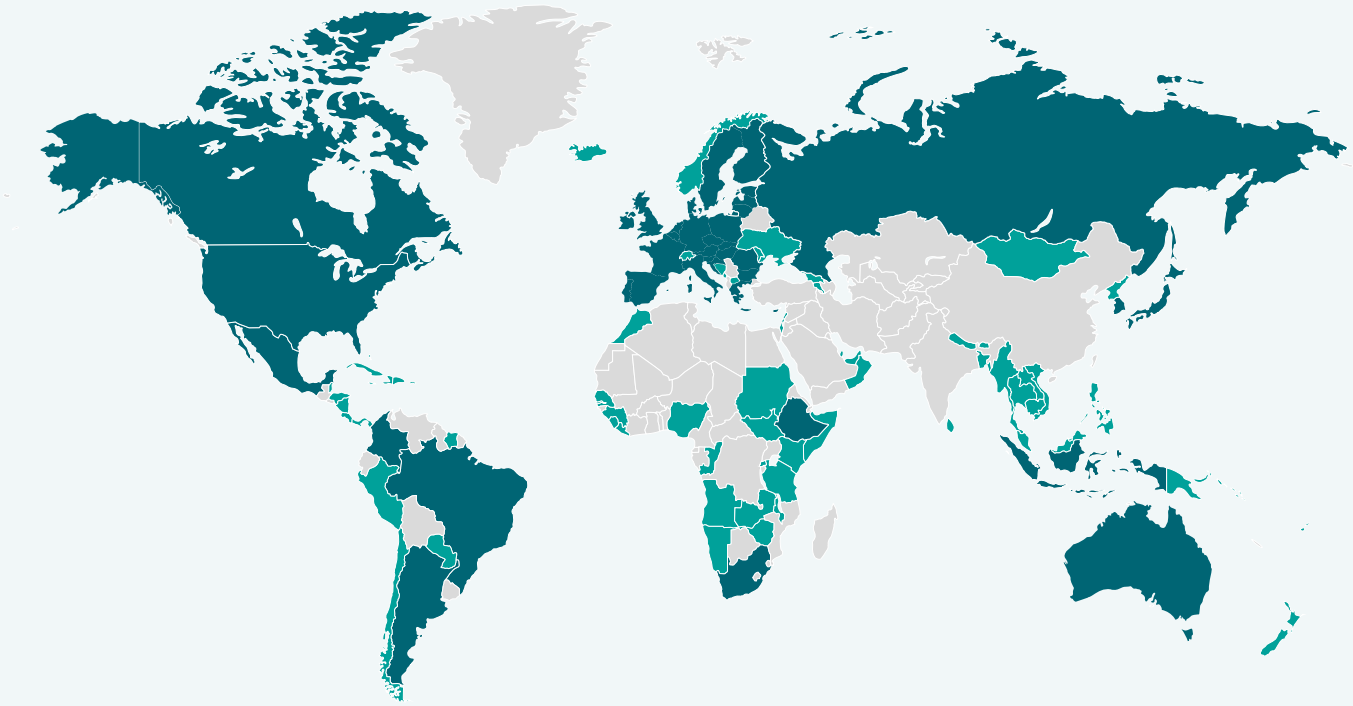
- China
- India
- Saudi Arabia
- Turkey
- Japan (updated submission)*

*Japan submitted a new and strengthened NDC update on 12 October 2021. Other updates to existing submissions will also be included. Analyses of non-G20 countries where the food and land sector is of particular relevance will be included in future work.

Notes: Not all Parties to the UNFCCC have submitted an updated or enhanced NDC at the time of this analysis, including several G20 Countries. The 15 NDCs (including the joint NDC for the members of the European Union) represent the majority of G20 members, and are responsible for over 60% of global emissions. Pending NDCs, in particular from China, India and other G20 members will be analysed in future work.

It is important to note that the presence or absence of specific information in the NDCs following the different assessment criteria outlined in this brief do not necessarily reflect the presence or absence of action in the country or group of countries represented, nor excludes explicit information being present in other documents including to the UNFCCC, but rather reflects the lack of explicit action stated in the NDC against which progress and coherence can be tracked. Furthermore, the NDCs were specifically analysed for the mitigation actions and policies outlined in the food and land sector. Adaptation actions are critical in addressing the threat of climate change and will be the focus of future policy analysis.

Countries that submitted updated NDCs before Oct 2021



Countries with updated or enhanced NDCs (before Oct 2021)

Countries analysed

AFOLU emissions and removals include…

Agriculture

- Agriculture soils for food and non-food crops
- Agriculture waste
- Enteric fermentation
- Manure management
- Rice cultivation

LULUCF

- Changes in forest,
- Woody biomass
- Grassland
- Managed land stocks and use
- Soil emissions and removals
- Wetlands and settlements

On top of which are emissions linked to the broader production, distribution and consumption of food

Box 1. Key terms used in this brief

The analysis in this brief covers the food and land sector. Key terms related to this sector include:

Agriculture, forestry and other land use (AFOLU): AFOLU plays a central role for food security and sustainable development. The main mitigation options within AFOLU involve one or more of three strategies: prevention of emissions to the atmosphere by conserving existing carbon pools in soils or vegetation or by reducing emissions of methane and nitrous oxide; sequestration–increasing the size of existing carbon pools and thereby extracting carbon dioxide (CO_2) from the atmosphere; and substitution–substituting fossil fuels or energy-intensive products for biological products , thereby reducing CO_2 emissions. Demand-side measures (e.g., reducing loss and waste of food, changes in human diet, or changes in wood consumption) also play a role. (Source: IPCC 2014)

Land use, land-use change and forestry (LULUCF): The subset of AFOLU emissions and removals of greenhouse gases (GHGs) resulting from direct human-induced land use, land-use change, and forestry activities from carbon pools in managed lands, excluding non-CO_2 agricultural emissions. Following the 2006 IPCC Guidelines for National GHG Inventories, "anthropogenic" land-related GHG fluxes are defined as all those occurring on "managed land", i.e., "where human interventions and practices have been applied to perform production, ecological or social functions". (Source: IPCC 2014, IPCC 2018)

Food systems: A food system is all processes and infrastructure involved in satisfying a population's food security; that is, the gathering/catching, growing, harvesting (production aspects), storing, processing, packaging, transporting, marketing, and consuming of food, and disposing of food waste (non-production aspects). It includes food security outcomes of these activities related to availability and utilisation of, and access to, food as well as other socioeconomic and environmental factors. The current food system (production, transport, processing, packaging, storage, retail, consumption, loss and waste) feeds the great majority of world population and supports the livelihoods of over 1 billion people. (Source: IPCC 2014, IPCC 2019)

Food and land sector: The agriculture and LULUCF sectors as well as food systems more broadly.

2. How action-oriented are the NDCs in the food and land sector?

This section analyses the extent to which the analysed NDCs treat the food and land sector operationally, i.e., whether the NDCs reflect specific policy actions in the sector and are sufficiently action-oriented to enable both (1) national policies to be developed in line with international commitments and specifically the objectives stated in the NDC, and (2) specific tracking and stocktaking during each new NDC development process and submission to the UNFCCC. The inclusion of quantitative targets in NDCs is another key aspect of national commitments to operationalise international goals. These are not part of the scope of this analysis but will be included in ongoing work.

Reducing emissions in the food and land sector is challenging, and some of the main barriers to implementing ambitious mitigation actions include financial barriers, the absence of incentives (and linked to this, appropriate policies putting these in place), limited access to relevant technologies, low consumer awareness and the limited spatial scale at which the success of practices and methods have been demonstrated.[17]

Five criteria were chosen as a basis for this assessment (see methodology annex), relating to key barriers to the implementation of mitigation options in the food and land sector. Other barriers such as institutional barriers are discussed in later sections.

A. **Do NDCs specify priorities and actions for (a) agriculture and food and (b) land use, land-use change and forestry (LULUCF)?** All of the analysed NDCs include the agriculture and LULUCF sectors in their mitigation target, but the extent to which this is prioritised and specified in policy terms varies widely. When emissions reductions from the food and land sector are highlighted, what specific actions or sub-orientations in agriculture, food or land use are envisioned, planned or already in place?
B. **Do NDCs provide an overview of key national policies related to the food and land sector in support of these priorities?** The association of specific national policies to specific priority actions in an NDC further increases its ability to provide clear indications of intent, and to assess any institutional or political steps needing to be taken. It also provides a benchmark for national and subnational policymakers to evaluate current and planned policies against the NDC. NDCs also contain information on cross-sectoral, government-wide policies that may have an impact on actions in the food and land sector. Unless the NDCs explicitly refers to these in the context of food and land actions, these policies have not been included here. Parallel work focused on national implementation of international pledges will analyse these policies in further detail.
C. **Do NDCs mention dedicated financial resources associated with these policies and actions?** This category assesses the extent to which the NDCs provide information on national public financing instruments to support the stated mitigation actions and transitions in the food and land sector. Certain NDCs also address private finance flows as well as actions that are conditional on sources of funding outside of the national budgetary cycle. Financing human resources and human capacity is also key in enabling national implementation. These are also important and will be integrated into future assessment frameworks.
D. **Do NDCs reference spatial information related to climate mitigation and make use of actionable maps?** Countries need national spatial data to identify mitigation potential from different land-use changes and to identify threats and priority areas for conservation and restoration that underpin nature-based solutions.[18] The integration of spatial data and spatial planning in food and land policy development and implementation can therefore provide a further means by which NDCs can drive concrete action at country level.
E. **Do NDCs address the technological developments needed to implement change?** While social and economic drivers are primary drivers of change, the wide-scale application in the near term of potential mitigation responses in the land sector may be limited by technological barriers.[19] The development and transfer of existing, new and emerging technologies can support the transitions needed in the food and land sector at the global scale, and the NDCs provide an opportunity to indicate technology priorities and needs, and for countries to build on each other's knowledge.

Each NDC was analysed against these elements following a systematic assessment framework (Table 1). This assessment is based on the presence or absence of explicit information in the NDCs regarding elements that could support making them more operational. It can also help identify areas where further national planning or international support may be required.

How action-oriented are the analysed NDCs from a food and land perspective?

Table 1a. Overview of findings

	Actions in agriculture and food	Actions in LULUCF	Food and land policies	Public finance commitments	Spatial information	Technology
Argentina	▲▲	▲▲	▲▲	▲	▲▲	▲
Australia	▲	○	○	▲	○	▲
Brazil	▲▲	▲	▲▲▲	▲▲	○	○
Canada	▲▲▲	▲▲▲	▲▲	▲▲▲	○	▲
Colombia	▲▲▲	▲▲▲	▲▲▲	○	▲▲	▲▲
Ethiopia	▲▲▲	▲▲▲	▲▲▲	▲	○	▲
EU	○	▲	▲▲	○	○	○
Indonesia	▲▲	▲▲▲	▲	▲	▲	▲▲
Japan	▲▲	▲▲	○	○	○	○
R. of Korea	○	▲	○	○	○	○
Mexico	▲▲	▲▲	▲▲	○	○	▲
Russian Fed.	○	▲	○	○	○	○
South Africa	▲	○	○	○	▲	▲
UK	▲▲	▲	▲▲▲	▲	▲	▲▲
USA	▲▲	▲	○	▲	○	▲▲
Overall Number of NDCs with a very high (green), high (light green), medium (yellow) or low (orange) rating (out of 15 NDCs analysed)	3 7 2 3	4 3 6 2	4 4 1 6	1 1 6 7	2 3 10	4 6 5

Legend	Priority actions in food and land	Food and land policies supporting priorities	Public financial commitments	Spatial information	Technology
▲▲▲ **Very high**	Specific orientations across different subsectors including specific targets and means of implementation	Sectoral policies referenced in relations to actions for both sectors	Specific indications of funding for actions in both sectors	Inclusion of specific map(s) of current and intended land use	Specific indications of technological development needs or plans in the food and land sector, detailed focus areas, and means of implementation/funding
▲▲ **High**	Specific orientations across different subsectors	Sectoral policies referenced in relations to actions sector	Specific indications of funding for actions in one of the sectors	Inclusion of potentially-actionable maps	Specific indications of technological development needs or plans in the food and land sector and detailed focus areas
▲ **Medium**	Generic orientations	Sectoral policies referenced but not linked to specific actions	General indications of funding for actions in at least one sector	Generic information on spatial planning and/or non-actionable maps	General indications of technological development needs or plans in the food and land sector
○ **Low**	No coverage or details on orientations	No sectoral policies listed	No detail on funding for actions in the food and land sector	No information on spatial planning	No detail on technological development needs or plans in the food and land sector

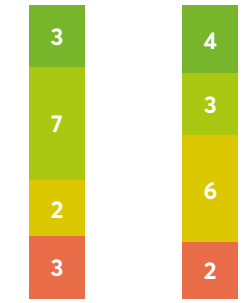
For detailed assessment criteria, see annex

How action-oriented are the analysed NDCs from a food and land perspective?

Table 1b. Synthesis and country examples

A.

Do NDCs specify policy priorities and actions for the agriculture, food and LULUCF sectors?



Both the agriculture and food, and the LULUCF sectors are covered comprehensively by most of the analysed NDCs. Many provide specific policy orientations and actions to be pursued across these sectors to achieve their overall NDC target: ten out of 15 NDCs for agriculture and food, and seven for the LULUCF sector. Some NDCs provide information on strategies for the implementation of these actions and provide specific targets for the sector. Only three NDCs include no or inexplicit policy orientations for agriculture and food, while only two do so in the LULUCF sector.

NDC examples

- NDCs from **Canada**, **Colombia** and **Ethiopia** include specific objectives, targets, and information on the means of implementation of actions in these sectors.
- **Colombia's** NDC includes an annex containing precise detail on mitigation actions and targets at the sectorial (national) and territorial (subnational) levels, including several targets covering most aspects of the food and land system, the policies and planning associated with them and the institutions responsible for their implementation.
- **Ethiopia's** NDC sets specific mitigation goals for both sectors, which account for the majority of emissions, further broken down into actions in different subsectors, including a Livestock Master Plan to reduce emissions from the livestock sector. The NDC provides further detail on the implementation of these targets through existing and planned national policies and strategies, such as an Agriculture Growth Program and Sustainable Land Management Program.
- **Canada's** NDC sets specific targets related to emission reductions from fertilisers (by 30% by 2030), reforestation and the protection of land and the oceans, among other areas of action. These priorities are linked to specific national programmes, strategies and detailed information is provided on the funding allocated to them.

B.

Do NDCs reference national policies that support actions in the food and land sector?

The extent to which policy orientations and actions in the sector are supported by national policies varies in the set of analysed NDCs. Eight NDCs list at least some national policies supporting their targets either in the agriculture and food or the LULUCF sector, but only four NDCs do so for both sectors. Seven NDCs did not mention any policies in the sector or did not directly link them to the implementation of actions in the sector. Most NDCs also provide information about broader, whole-of-government climate or environmental policies but few specify the extent to which, and the mechanisms by which, these drive actions across different sectors including food and land.

NDC examples

- **Brazil**, **Colombia**, **Ethiopia** and the **UK** list at least some national policies supporting their targets in both the agriculture and food, and the LULUCF sectors.
- **Colombia's** NDC in particular provides a detailed list of mitigation actions in the food and land sector, and these are associated to a specific sectoral or territorial climate plan, down to the subnational level.
- The **UK's** NDC also provides a list of wide-ranging policies covering many aspects of food and land systems, although these are not directly listed under the "policies and measures" section of the NDC.

C.

Do NDCs indicate financial resources allocated to mitigation actions in the food and land sector?

NDCs provide little detail on financial resources, instruments, or policies to support the transitions envisioned by countries in the food and land sector. Only four NDCs detail a specific programme, law, fund or investment directly related to transitions in the sector, and only two of these provide specific details on the amount of funding committed. The absence of such details from the NDC itself does not mean that it is absent from the stated policies, but makes the tracking of policy action more challenging. Moreover, seven NDCs do not provide any detail on funding commitments for actions in the sector.

NDC examples

- **Canada**, **Argentina**, **Australia** and **Brazil** detail specific programmes, laws, funds or investments directly related to transitions in the sector. **Brazil** and **Canada** further provide specific figures related to these public investments, **Canada** doing so for both agriculture and LULUCF, and for both mitigation and adaptation.
- **Ethiopia's** NDC describes overall climate mitigation funding for both conditional and unconditional actions but does not specify how much is to be deployed for transitions in the food and land sector, nor how (however, most mitigation in the NDC is envisioned in this sector).
- **Colombia's** NDC provides detailed information on external financing needs for different actions in the food and land sector; it provides little or no detail, however, on public financing of mitigation actions, nor on national budgetary plans to meet the NDC objectives in the sector.

A-C bar charts are out of 15 NDCs reviewed.

How action-oriented are the analysed NDCs from a food and land perspective?

Table 1b. Synthesis and country examples

D. **Do NDCs include spatial information or integrate maps to support operational policies?** 	Regionally tailored and detailed spatial planning, as well as the development of actionable maps, are central to the implementation of nationally appropriate, equitable and just transitions in the food and land sector. While such information may be present elsewhere, the analysed NDCs include little information on spatial planning, with many also not providing any information on the (planned) development, use of spatial data or maps. **NDC examples** • Only the NDCs of **Argentina** and **Colombia** include maps that are relevant for informing land-use planning – though they are mostly focused on mapping vulnerability and risk. Both NDCs hint at the existence of spatial planning programmes at the subnational level for the sustainable management of land and soil. • **Argentina** flags territorial planning as a priority axis. However, the maps included in the NDC are principally focused on climate adaptation and are not, in their current form, associated with concurrently driving the implementation of mitigation measures. • **Indonesia's** is the only other NDC to extensively mention the need for and use of spatial planning. While it does not include any map, it recognises the need to integrate climate change into development and actions related to spatial planning are frequently mentioned.
E. **Do NDCs specify their needs or resources for technology development and transfer?** 	Most NDCs address the need for technology transfer or technology development to some extent, but only a few NDCs address technology needs directly in relation to driving impacts in the food and land sector. When these are mentioned, this is primarily focused on the agricultural sector. **NDC examples** • **Colombia**, **Indonesia**, the **USA** and the **UK** provide details on specific focus areas for technology development and transfer in the sector, such as improved manure management and cropland nutrient management (**USA**), and a phase down of HFC gases in refrigeration equipment (**UK**). • Only **Indonesia** and **Colombia** provide specific details for both the agriculture and food, and LULUCF sectors, including for example the development of environmentally friendly technologies in forest management in the case of Indonesia. • **Australia's** and **Canada's** NDCs mentions a specific programme of fund for the development of new technologies in the agricultural sector (the Technology Co-Investment Fund and Technology Investment Roadmap for Australia, and the Agricultural Clean Technology Program for Canada), but they do not provide any further details on specific focus areas. • **Canada's** NDC is the only one to mention details on planned public investments for technology development in the sector.

D-E bar charts are out of 15 NDCs reviewed.

3. What specific policy measures are included in NDCs regarding key food and land transitions?

This section summarises the analysis of the extent to which NDCs specify concrete interventions to achieve the sustainable and just transformation of food and land-use systems. These transitions, outlined in FOLU's *Growing Better* report (Box 2), can provide environmental, social, and economic benefits, but they require tangible actions by national governments and producers. Aligning NDCs and broader climate strategies with these transitions could ensure that climate change mitigation, biodiversity loss, sustainable development and social justice are addressed hand in hand.

Additionally, reflecting the transitions in national policies would ensure that countries address climate and nature considerations coherently and align key objectives at the international level with national and subnational policies. For instance, ensuring food security and diets that are conducive to human and planetary health for a growing global population, while also tackling core issues such as climate change is critical. Food and nutritional security largely determine the quality of life of a population, so policy decisions should be made from an intersectoral and interdisciplinary approach considering each country's unique cultural practices.

Box 2. FOLU's Ten Critical Transitions toward food and land use transformation

To meet our climate objectives and achieve the sustainable development goals, deep changes are needed in the way we manage our agricultural systems, use our land, produce, and consume our food, and address transportation issues, to lower emissions from these sectors and enhance natural sinks. Achieving these requires strong choices and tangible actions by all governments and all actors involved. The Food and Land Use Coalition (FOLU) 2019 flagship report *Growing Better* presented ten key transitions in detail, outlining how their implementation can support countries to transform their food and land use systems,[a] which served as the basis for our qualitative analysis.

1. **Healthy diets:** Global diets need to converge towards local variations of the "human and planetary health diet" – a predominantly plant-based diet which includes more protective foods (fruits, vegetables, and whole grains), a diverse protein supply, reduced consumption of sugar, salt, and highly processed foods.
2. **Productive and regenerative agriculture:** Agricultural systems that are both productive and regenerative must be developed and promoted, which combine traditional techniques, such as crop rotation, controlled livestock grazing systems and agroforestry, with advanced precision farming technologies which support more judicious use of inputs.
3. **Protecting and restoring nature:** The conversion of forests and other natural ecosystems for food production must end and countries should massively invest in restoration at scale.
4. **A healthy and productive ocean:** Sustainable fishing and aquaculture is needed to deliver increased supply of ocean proteins, reducing demand for land and support healthier, and more diverse diets.
5. **Diversifying protein supply:** Human protein supply should be diversified to include aquatic, plant-based, insect-based and laboratory-cultured proteins, which could account for up to 10% of the global protein market by 2030 and are expected to scale rapidly.
6. **Reducing food loss and waste:** Food loss and waste, which affects one third of the total food produced, must be reduced. This would lead to significant benefits relating to environmental, health, inclusion and food security.
7. **Local loops and linkages:** Efficient and sustainable local food economies in towns and cities must be strengthened and scaled.
8. **Digital revolution:** Digitisation of food and land use systems should be developed to support producers and consumers choices and to connect to the value chain rapidly and efficiently.
9. **Stronger rural livelihoods:** The transformation of food and land systems must be achieved in a just and equitable manner, providing benefits to rural communities and allowing them to adapt to new challenges, protect and regenerate natural capital and invest in a better future.
10. **Gender and demography:** Equal access to resources, such as land, labour, water, credit and other services, must be central to policies concerning the ten critical transitions.

[a] Food and Land Use Coalition (2019), Growing Better: Ten Critical Transitions to Transform Food and Land Use

This review is based on a two-part assessment framework, which evaluates NDCs based on the inclusion of critical reforms and policy interventions, called "essential actions" (Annex Table A2), and their link to national policies, funding or commitments associated with the critical transition (e.g., invest $3 billion to support resilient management of agroecosystems). An essential action is any statement regarding a country's intention to undertake a specific act in relation to the ten key transitions. Essential actions were developed to take a holistic approach to the transformation of food and land use systems, cognisant that some reforms will vary from country to country. This assessment does not necessarily reflect implementation on-the-ground in a country, but it rather serves as a proxy for progress and national support of the development of the key transitions. Its purpose is to systematically analyse the breadth and depth of the treatment of food and land use across updated NDCs, using FOLU's ten critical transitions, and to identify opportunities for clarifying how actions to achieve these transitions are integrated in current and future NDCs.

Overall, actions in support of the ten critical transitions for the sustainable transformation of food and land systems are not well represented in this subset of NDCs, with none of the NDCs addressing all ten transitions. However, some NDCs address a range of these transitions in detail, suggesting that these key considerations are integrated into their mitigation strategies. The depth of coverage varies greatly, and few NDCs provide detailed information on sector-specific targets, planned or existing policies, or financing needs to enable the required emissions reductions in these sectors.

According to our analysis, a mix of countries seem to be leading the way in addressing climate, nature, and justice objectives coherently in their NDCs, with Latin American and forested countries doing so extensively (Table 2b). **Argentina, Canada, Colombia, Mexico**, and **Ethiopia** address at least seven of the ten critical transitions in detail. Colombia's NDC addresses all critical transitions, except for protein diversification. The NDCs that fell short in terms of the critical transitions, lacking sufficient information and detail on food and land systems, are **Australia**, **Brazil**, the **Republic of Korea**, and the **Russian Federation**.

The transitions that were well addressed include productive and regenerative agriculture, protecting and restoring nature, stronger rural livelihoods, and gender and demography. NDCs addressing productive and regenerative agriculture refer to various essential actions, however the level of detail and policy actions are not consistent across the subset of NDCs, with some including several commitments for regenerative agricultural practices and others only one or two. NDCs addressing protecting and restoring nature reference strategies addressing deforestation and degraded lands, with few addressing Indigenous rights to the land. A number of NDCs emphasise the need for a just transition and support for farmers and rural communities with training, funding or resources. However, these commitments are not consistently linked to a policy action. Many of the NDCs address gender in some form, mostly in terms of gender-informed policies, generally with no clear connection to food and land use.

What specific policy measures are included in the analysed NDCs with regard to policy interventions to transform food and land use?

Table 2a. Indications of policy responses to leverage critical transitions and food and land use transformation

Critical Transitions	ARG	AUS	BRA	CAN	COL	ETH	EU	IDN	JAP	ROK	MEX	RUS	RSA	UK	US	*Highlights*
Sustainable and healthy **diets**																*Only the UK and Colombia provide indications of diet-related policy measures.*
Productive and regenerative **agriculture**																*Consistently addressed by most NDCs.*
Protect and restore **nature**																*Consistently addressed by most NDCs.*
Healthy and productive **ocean**																*Covered by almost half of the NDCs.*
Diversified **protein** supplies																*Only covered by Ethiopia in relation to diversifying livestock.*
Reduce **food loss/waste**																*Most countries address waste management without explicitly linking food waste.*
Sustainable **local food** economies, loops, and linkages																*Mostly addressed by Latin American countries regarding circular economy policies.*
Digitalised and efficient food and land use systems																*Covered by half of the NDCs, but none address open-source tools.*
Stronger and better adapted **rural livelihoods**																*A just transition is addressed by most NDCs, but not consistently linked to a policy action.*
Gender and **equal access**																*Consistently addressed by most NDCs, mostly in terms of gender-informed policies.*

Essential Action

NDC lists essential policy action(s), including specific commitments, strategies, or funding, related to the critical transition.

Nominal Mention

NDC provides inexplicit or unclear information on the key transition (i.e., topic is mentioned, but not as a policy action).

No Mention or Action

NDC does not mention any specific information on policy interventions for the critical transition.

What specific policy measures are included in the analysed NDCs with regard to policy interventions to transform food and land use?

Table 2b. Summary of NDC analysis and country examples
Based on FOLU's ten critical transitions, as outlined in its 2019 *Growing Better* report

1	**Healthy Diets** 	Healthy diets are not covered well in this subset of NDCs with four NDCs addressing diet-related transitions. Only the **UK** and **Colombia** provide indications of essential actions in place to achieve this transition, such as transitions to healthy diets, and targeted policies and commitments. The **UK** commits to delivering a national shift to healthy diets supported by a sustainable food system. Furthermore, the NDC states that the government will be obligated by law to produce a domestic and international food security report every three years. **Colombia's** NDC addresses the prevalence of deficiencies in energy intake in the population, and malnutrition. It provides a reference to a national food and nutritional security plan for the period 2012 to 2019.
2	**Productive and Regenerative Agriculture** 	Productive and regenerative agriculture is covered well in the NDCs, with 12 out of 15 addressing the transition, 11 of which refer to one or more essential actions towards achieving this transition. However, the level of detail and policy-actions throughout the subset of NDCs is not consistent, with some NDCs including several commitments for regenerative agricultural practices and associated policies (e.g., **Ethiopia**), while others list only few commitments and actions (e.g., **Australia's** generic mention of its Technology co-investment fund supporting businesses in agriculture and **Japan's** mention of conservation farming machinery and soil management). **South Africa's** NDC addresses climate-smart agriculture and providing capacity building to the farming sector. **Indonesia** and **Ethiopia** treat this transition in greater detail. **Indonesia's** strategy provides financing schemes for agriculture, enhancing the management of ecosystem services in the agricultural sector. **Ethiopia's** NDC focuses on improving agricultural production in a climate-smart manner, which includes the expansion of agroforestry, improved crop varieties, livestock diversification, rangeland management and more.
3	**Protecting & Restoring Nature** 	Nature is treated well in the NDCs, with 12 out of 15 addressing the transition explicitly through references to one or more essential actions, and an additional two NDCs mentioning the transition albeit in an inexplicit manner. There appear to be many relevant strategies addressing deforestation and degraded lands across the NDCs, with few addressing Indigenous rights to the land. **Canada's** NDC addresses increased funding for Indigenous Protected and Conserved Areas and Indigenous Guardians programmes. These programmes include investments of $2.3 billion in Canada's Nature Legacy Initiative which aims to reduce biodiversity loss, tackle climate change, and protect and create jobs.
4	**A Healthy & Productive Ocean** 	Most analysed NDCs list policies or commitments to healthy oceans with nine out of 15 addressing this transition in some capacity (six including essential actions and three providing inexplicit mentions). Specific essential actions mentioned include driving sustainable fishing and improving the sustainability of the shipping infrastructure, actions for ocean protection, including specific targets such as **Canada's** NDC target to protect 25% of the oceans by 2025 and work towards 30% by 2030, or protecting and restoring mangroves as seen in **Colombia** and **Indonesia's** NDC. The **UK's** NDC includes a dedicated section on ocean and the marine environment, with specific policies aimed at the sustainable use, protection, and restoration of the UK's marine environment. The policies include UK Marine and Coastal Access Act (2009), the Environment Bill and Fisheries Act, UK Marine Policy Statement, UK Marine Strategy and the UK Marine and Coastal Access Act and Fisheries Act.
5	**Diversifying Protein Supply** 	**Ethiopia's** is the only NDC to address diversifying protein supply through a commitment to diversify livestock and animal mix through the promotion of poultry and small ruminants.
6	**Reducing Food Loss & Waste** 	Waste reduction is relatively well addressed in the analysed NDCs, however mostly in an inexplicit or unclear manner with respect to its application to food loss and waste. Many of the NDCs address the waste generation sector, including reviewing waste legislation, producing waste strategies, or objectives to decouple waste from growth. Few however provide specific information on actions to tackle food waste, without specifying food loss or waste. Ten out of 15 NDCs address the transition, with only four including essential actions. All NDCs that address the transition inexplicitly include references to "solid waste management", which accounts for organic waste although not specified in the NDC itself (i.e., they do not explicitly mention food waste). **Canada's** NDC is one of the only strategies to specifically address reducing food and organic waste sent to landfills by 2030. Although the NDC sets a clear commitment, it lacks detail and an associated strategy. **Ethiopia's** NDC references policy interventions for organic waste. **Colombia's** NDC addresses the recovery of waste in the agricultural sector and the decomposition of organic waste in composting and management techniques. The **UK** addresses food storage, which if improved can reduce food loss.

What specific policy measures are included in the analysed NDCs with regard to policy interventions to transform food and land use?

Table 2b. Summary of NDC analysis and country examples
Based on FOLU's ten Critical Transitions, as outlined in its 2019 *Growing Better* report

7	**Local Loops & Linkages** 	Essential actions relevant to this transition include circular economy actions (in the form of policies, targets etc), specifically linked to closing food system loops. While six of the analysed NDCs address the circular economy, four of which highlight specific policies and actions, the importance of closing food system loops and of local routes is rarely explicit. **Argentina** broadly discusses the development of public policy instruments to increase the sustainability of food systems, while the **UK's** NDC highlights Scotland's commitment to developing a local food strategy. Additionally, a missing element was supporting local economies and connecting the circular economy to food and land use systems. The **UK** plans to move away from a linear economy and towards a more circular and sustainable economy. In the 2020 Programme for Government, Scotland has committed to developing a local food strategy.
8	**Harnessing the Digital Revolution** 	Essential actions relevant to this transition include open access to data (e.g., on land, fisheries, etc.), digital tools to track deforestation, monitoring, reporting and verification of food and land systems and innovative technology for the food and land sector. Seven out of 15 NDCs explicitly include innovative technology and a monitoring and evaluation framework for the food and land sector. None of the NDCs address open access data, and little information is found on "digital" technologies, specifically. The **United States'** NDC mentions programmes and incentives to improve agricultural productivity through technologies but does not detail the extent to which these technologies are digital or innovative or address an associated monitoring aspect. **Indonesia's** NDC applies a national transparency framework and MRV system for mitigation including for REDD+ activities. They also have a safeguards information system for REDD+ in place, as well as an inter-ministerial team for monitoring and evaluation of NDC implementation. **Mexico's** LULUCF strategy aims to strengthen their zero-net deforestation, restoration projects and strengthen agricultural synergies – all of which have a system of constant monitoring and follow-up to ensure effectiveness.
9	**Stronger Rural Livelihoods** 	Nine out of 15 NDCs explicitly refer to essential actions including supporting farmer or rural communities with training, funding, or resources, developing protocols and policies to ensure workers' rights, developing rural infrastructure, and tracking how policies affect rural communities. Several NDCs highlight the need for a just transition. In some NDCs, a just transition is not explicitly linked to rural communities, but they reference providing safety nets for individuals impacted by a clean energy transition. **Ethiopia's** NDC provides programmes and activities in sectoral plans to support smallholder farmers including an Agricultural Growth Program, Livestock Master Plan and more. The NDC also includes policy interventions for the livestock sector including replacing cattle/oxen with tractors for farmers and smallholders. **Canada's** NDC states that it will carry out analyses to evaluate policy implications for Indigenous and rural communities and maximise positive benefits.
10	**Gender & Demography** 	Although nine out of 15 NDCs address gender, many are not explicitly linked to food and land use and lack necessary detail. None of the NDCs address maternal and child health and nutrition or access to reproductive services. Most NDCs include a gender-informed policy or an equality policy. **Canada's** NDC commits to using a Gender Based Analysis Plus (GBA+), an analytical process that provides a rigorous method to assess systemic inequalities to advance gender equality in the country.

While some countries are making progress in integrating key food and land considerations into their NDCs, significant challenges remain before achieving the necessary transitions. There is considerable opportunity to include these transformations in a more coherent way when developing updated or enhanced NDCs. NDCs that did not include essential actions for each transition could improve the treatment of the food and land-use systems by strengthening the level of detail of commitments, including by providing information on policies and regulations, indicators, financing, evaluation mechanisms and implementing bodies.

4. What do NDCs say about governance and coordination of climate action to facilitate concrete action?

Strong, inclusive, cross-sectoral, and multi-scale governance can support countries in identifying and addressing key barriers to implementing mitigation from the food and land sector

In addition to the criteria assessed in this brief – which focus on targeted actions and their implementation in the food and land sector – institutional capacity and adequate and inclusive governance are crucial for implementing change in the food and land sector.[20] National policy is often developed and implemented in siloes, which presents challenges when integrating international decisions into relevant national and subnational frameworks. Implementing stated NDC objectives requires coordinated action across all levels and portfolios of government and across a range of stakeholders, including producers, consumers, supply chain and other private businesses, land managers, and Indigenous and local communities. NDCs can serve as useful documents to analyse and assess the governance processes in place in each country or region. While 13 out of the 15 analysed NDCs refer to the presence of inter-sectoral, inter-ministerial or broader advisory committees and their role in informing the NDC development process, it is difficult to assess the extent to which these institutional arrangements are operational, nor the extent to which they do – or could – allow the improved integration of food and land transitions in cross-government policymaking. Future analyses of cross-sectoral policies and frameworks, including analyses of national budgetary cycles, will complement this work.

What specific institutional arrangements for climate have countries put in place?

Table 3. Summary of NDC analysis and country examples

Cross-sectoral NDC development and coordination 	Thirteen out of the 15 NDCs analysed mention the inclusion of inter-sectoral, inter-ministerial or advisory committees in the NDC development process, either specifically dedicated to climate change or dedicated to specific topics or sectors. Furthermore, certain NDCs outline the involvement of bodies focused on engagement with the private sector and/or civil society. **Argentina, Brazil, Canada, Colombia, Ethiopia, Indonesia,** the **Republic of Korea, Mexico,** the **UK,** and the **US** have institutionalised committee structures dedicated to climate change. **Australia** has a specifically dedicated Technology Investment Advisory Council in place; **Japan** has a Central Environment Council and a Industrial Structure Council; the **Republic of Korea** has a Committee on Green Growth, and a Joint Commission dedicated to engagement with the private sector and civil society. **Mexico** and **Colombia** outline broader mechanisms for consultation, communication, collaboration, and coordination on national climate policy, through the National Climate Change System, (SINACC), and the national system of climate change (SISCLIMA), respectively. Importantly, only **Mexico's** Council on Climate Change and the **UK's** Committee on Climate Change seem composed of experts and not of ministers or civil servants. Only the **UK's** Committee on Climate Change is explicitly stated as being independent. **Colombia's** NDC outlines the development of sectoral and territorial climate change management plans as important policy instruments. **South Africa's** NDC commits to establishing a Presidential Climate Commission and Inter-Ministerial Committee on Climate Change by 2025.

5. Conclusion and outlook

NDCs need to provide stronger strategic directions for national implementation

Transformations of food and land systems depend on clear political commitments and strategic directions. NDCs represent the central instrument for the global climate agenda and for countries to outline their near-term action, raise ambition and express the political will to put in place the necessary policies and resources to implement them. Without concrete steps undertaken this decade, national efforts to transform food and land use will be insufficient. It is imperative that national policy makers seize the momentum from COP26, to leverage the existing institutional frameworks and accelerate action for critical transitions to sustainable food and land use.

Our analysis of 15 NDCs assessed their focus on action, identifying critical gaps and areas that need to be addressed urgently if we are to meet the long-term goal of the Paris Agreement and the Sustainable Development Goals. Aside from often insufficient attention to key issues, countries must address the lack of focus on concrete priorities and policy measures, as well as the required financial and human resources, monitoring and evaluation processes, coordination and institutional arrangements.

On the basis of the renewed political commitment, specific initiatives related to nature, food and land issues, and broader strategic directions emanating from COP26, we suggest that national policy makers further strengthen and enhance their existing NDCs to raise the level of ambition to match COP commitments, and guide effective policy development and implementation across sectors.

We recognise that NDCs only represent one dimension of countries' different national approaches. As over-arching national documents, however, they bear particular responsibility for ensuring coherent policy action across sectors and scales – aligned with equally ambitious national long-term low emissions strategies that outline national pathways and priorities for reaching emissions reduction targets by mid-century.

Policy makers have an opportunity after their return from COP26 to reflect new global commitments, including from the September 2021 UN Food Systems Summit, in genuinely enhanced NDCs with a stronger focus on transformative, integrated policy action on nature, food and land use. In the short time remaining in this decade to leverage a sustainable and just transition, ambitious and effective NDCs are critical for the first Global Stocktake in 2023, and to maintain the possibility of achieving the Paris goals and SDGs.

The Paris Agreement and the NDC process

Setting the goals

The Paris Agreement sets **three long-term goals:**

1. Hold the **average increase in global temperatures to well below 2°C** above pre-industrial levels **and pursue efforts to maintain this increase to 1.5°C by the end of the century** (Article 2.1a);
2. **Increase the ability to adapt** to the adverse impacts of climate change and foster climate resilience and low greenhouse gas emissions development, in a manner that **does not threaten food production** (Article 2.1b);
3. Make **finance flows consistent** with a pathway towards low greenhouse gas emissions and climate-resilient development (Article 2.1c).

Achieving the goals

To achieve these goals and drive action, each individual Party must **prepare, communicate and maintain successive Nationally Determined Contributions (NDCs) that it intends to achieve** (Article 4).

NDCs define each Party's mitigation objective and contribution and includes goals for adaptation.

Updating efforts

NDCs must be udpated every five years. Through this iterative process, Parties are meant to increase ambition over time, with each successive NDC representing a progression from the current one and reflecting the Party's highest possible ambition.

A party may at any time adjust its existing NDCs with a view to enhancing its level of ambition.

Timeline of implementation

Dec 2013
Parties were invited to communicate their *intended* Nationally Determined Contributions (NDCs) well in advance of COP21.

Oct 2015
147 Parties (75% of all Parties to the UNFCCC) submitted their INDCs, representing approximately 86% of global emissions in 2010.

Dec 2015
196 Parties adopt the Paris Agreement at COP21.

April 2016
Papua New Guinea is the first country to officially submit its NDC.

Nov 2016
Paris Agreement comes into force after at least 55 Parties to the Convention accounting in total for at least 55% of the total global greenhouse gas emissions ratified the agreement.

2017–2018
UNFCCC convenes a facilitative dialogue at COP23 and COP24 to take stock of the collective efforts and inform the preparation of nationally determined contributions.

Oct 2018
IPCC Report on Global Warming of 1.5°C finds that current NDCs would lead to a global warming of about 3°C by 2100, with warming continuing afterwards.

Sept 2021
120 countries submitted updated or enhanced NDCs. Only 70 NDCs provided enhanced commitments.

Nov 2021
COP26 in Glasgow.

2021–2022
IPCC 6th Assessment Report to be published to inform the first Global Stocktake.

2023
Completion of the first **Global Stocktake** to access the collective progress towards achieving its long-term goals and inform the next round of NDCs.

2025
Parties to submit the next round of enhancement of their NDCs.

2028
Second Global Stocktake to conclude.

Source: UNFCCC

Annex: Methodology

This section provides an overview of the methodological approach employed in the analysis of the NDCs presented in sections 2 and 3.

Section 2

The analysis presented in section 2 aims at assessing the extent to which the food and land sector is represented in the analysed NDCs and whether this is done in an action-oriented manner that enables (1) national policies to be developed in line with international commitments and specifically the objectives stated in the NDC and (2) specific tracking and stocktaking during each new NDC development process and submission to the UNFCCC. This section provides an explanation of the chosen criteria and the assessment method used in this analysis.

Five criteria were chosen as a basis for this assessment.

A. **The extent to which the NDC specifies policy priorities and actions for (a) agriculture and food and (b) land use, land use change and forestry (LULUCF).**
B. **Whether the NDC provides an overview of key national policies in support of these priorities.**
C. **The mention of dedicated financial resources associated with these policies and actions.**
D. **The extent to which the NDC provides key spatial information related to climate mitigation and the use of actionable maps.**
E. **The extent to which the NDC addresses the technological developments needed to implement change.**

In detail:

A. **The extent to which the NDC specifies policy priorities and actions for (a) agriculture and food and (b) land use, land-use change and forestry (LULUCF).**

   The first criterium assesses the depth of the NDC in relation to policy priorities and actions in the food and land sector, including objectives, targets and means of implementation. Previous assessments of the first round of NDCs have shown that they were off-track[21] and many lacked the clear information necessary to understand what land-based mitigation is anticipated in the LULUCF sector. While the sector was nominally covered by most NDCs, only few reported targets and measures that were fully quantifiable and action-oriented.[22] Subsectors of the agriculture and food sector analysed here include all parts of the food system on both the supply and demand side, and actions include but are not limited to transitions in crop production, livestock, food systems (including beyond the farm gate) and demand-side measures, as well as in sustainable land management practices. Examples of specific actions in the LULUCF sector include but are not limited to addressing the drivers of deforestation, afforestation and reforestation measures, protection and restoration measures of peatlands, wetlands grasslands and other types of land.

   The remaining four criteria assess the presence or absence of specific details that increase the extent to which each NDC is action-oriented and can drive action at the national level. This includes the mention of specific national policies linked to actions in the sector, as well as financial resources, spatial information and actionable maps, and the need for the development and transfer of innovative technologies. According to the IPCC's 2019 *Special Report on Climate Change and Land* key barriers to the implementation of mitigation and adaptation options in the land sector include financial and institutional barriers, skills deficit, absence of incentives, access to relevant technologies, consumer awareness and the limited spatial scale at which the success of practices and methods have been demonstrated.[23] Roe et al (2019) also describe how "major barriers to delivering AFOLU mitigation include political inertia, weak governance, and lack of finance".[24]

B. **Whether the NDC provides an overview of key national policies in support of these priorities.**

According to the OECD, most current agricultural support policies are not serving the wider needs of food systems,[25] i.e., their ability to provide nutritional food and employment in an environmentally sustainable way. More coherent policies are needed and NDCs could provide clear indications of intent, in order to assess any institutional or political steps needing to be taken, as well as for national and subnational policymakers to evaluate current and planned policies against the NDC targets. This criterium therefore looked for existing or planned national strategies and policies that were directly linked to the actions and orientations described for the food and land sector.

C. **The mention of dedicated financial resources associated with these policies and actions.**

Financial resources are also lacking for climate action in the food and land sector. Climate finance for forests accounts for 1.5% (US$3.2 billion) of global public climate funding (US$256 billion), and 0.1% of total public and private land-sector funding in countries with high levels of deforestation (US$1,495 billion). Similarly, a lack of finance, high transition costs and low expected returns from changed practices are the main challenges for farmers to adopt sustainable agricultural practices.[26] This criterium assesses the extent to which the NDCs provide information on national public financing instruments to support the stated transitions in the food and land sector. The analysis focused on indications of public finance towards specific actions in the food and land sector outlined in the NDCs – i.e., indications of national budgetary priorities relevant to the food and land sector. It did not include other information often provided in the NDCs on private finance as well as actions that are conditional on sources of funding outside of the national budgetary cycle. This information is important as it can facilitate directing international green financial flows towards actions in the food and land sector. However, it is not always discernable which of the actions described as priorities in the NDCs are conditional on external support.

D. **The extent to which the NDC provides key spatial information related to climate mitigation and the use of actionable maps.**

Countries need nationally relevant spatial data to identify threats and priority areas for conservation and restoration that underpin nature-based solutions and to identify mitigation potential from different land-use changes.[27] The integration of spatial data and spatial planning in food and land policy development and implementation can therefore provide a further means by which NDCs can drive concrete action at country level.[28] This criterium looked at the extent to which NDCs integrate the use of spatial planning and actionable maps – i.e., maps of current and intended land use that inform land-based policy objectives – into mitigation measures in the food and land sector.

E. **The extent to which the NDC addresses the technological developments needed to implement change.**

Technology availability has also been identified as an obstacle to implementation of mitigation actions in the food and land sector.[29] While social and economic drivers are primary drivers of change, the wide-scale application in the near term of potential mitigation responses in the land sector may be limited by technological barriers.[30] In 2021, the OECD called for investments in innovation systems, covering both knowledge generation and its transfer to the sector to be made central to agricultural support policy.[31] The development and transfer of existing, new, and emerging technologies can support the transitions needed in the food and land sector at the global scale, and the NDCs provide an opportunity to indicate technology priorities and needs, and for countries to build on each other's knowledge. This criterium looked at the extent to which the NDCs provide specific focus areas for technological development needs or plans related to agriculture, food or LULUCF and on means and funding to develop these technologies.

The assessment

The set of 15 NDCs were analysed to identify the level of detail on the aforementioned criteria, and each NDC was rated as "low", "medium", "high" or "very high" for each criterium (Table A1). As a general indication, a "low" rating indicates absent or unclear information on the criterium, a "medium" rating indicates the mention of only general indication of actions, a "high" rating indicates the mention of specific and detailed indications of actions, and a "very high" rating indicates the mention of specific and detailed indications of actions and means to implement the commitments of the NDC – though the assessment grid was developed individually for each criterium.

Table A1

	Absent or unclear information **Low.**	General indications of actions **Medium.**	Specific indications of actions **High.**	Specific indications of actions and means to implement NDC commitments – **Very high.**
A1 – **Policy priorities** and actions for **agriculture and food.**	NDC **does not cover agriculture and food** or **provides no detail on general or specific orientations**, or only in contextual manner.	NDC **mentions generic orientations of actions, commitment or strategy** in the agriculture and food sector but provides little detail on specific sub-sector orientations pursued.	NDC provides **indications of specific orientations** pursued in different agricultural and food sub-sectors.	NDC provides **specific orientations** pursued in different agricultural and food sub-sectors**, including specific targets and means of implementation (such as policies or funding associated to them).**
A2 – **Policy priorities** and actions for **LULUCF.**	NDC **does not cover LULUCF** or **provides no detail on general or specific orientations**, or only in contextual manner.	NDC **mentions generic orientations of actions, commitment, or strategy** in the LULUCF sector but provides little detail on specific sub-sector orientations pursued.	NDC provides **indications of specific orientations** pursued in different LULUCF sub-sectors.	NDC provides **specific orientations** pursued in different LULUCF sub-sectors**, including specific targets and means of implementation (such as policies or funding associated to them).**
B – Overview of key **policies supporting priorities.**	NDC **does not list any sectoral policy** related to agriculture, food or LULUCF.	NDC **lists sectoral policies** related to **either agriculture and food or LULUCF**, but these are not directly linked to actions/orientations.	NDC **lists sectoral policies** related to **either agriculture and food or LULUCF** which are directly linked to actions/ orientations.	NDC **lists sectoral policies** related to **both** agriculture and food and LULUCF, which are directly linked to actions/orientations.
C – Dedicated **financial resources** supporting policies and actions.	NDC **does not provide any detail** on public funding to mitigation actions in the agriculture, food, and land sectors.	NDC provides **a general indication** on existing or planned public funding to finance mitigation policies and actions in **either agriculture and food or LULUCF.**	NDC provides **specific details** (including amounts) on existing or planned public funding to finance mitigation policies and actions in **either agriculture and food or LULUCF.**	NDC provides **specific details** (including amounts) on public funding to finance mitigation policies and actions in **both agriculture and food and LULUCF.**
D – **Spatial information and maps** related to climate mitigation.	NDC **does not provide any information on spatial planning to support adaptation or mitigation actions in the food and land sectors** in the form of maps or indications of spatial data.	NDC provides information on spatial planning related to climate mitigation and adaptation and/or includes a **non-actionable map**, i.e., one that is not useful in isolation or when combined with other data layers to inform policy. E.g., Map of administrative regions.	NDC includes a map that has the potential to guide land-use planning, if combined with other data layers or if **underpinned by a policy commitment**. E.g., Map of biological corridors.	NDC includes a map on current or **intended land use to meet policy objectives** for climate mitigation/ adaptation, and biodiversity conservation. The map must also **underpin or explicate a policy commitment** in the NDC.
E – **Technological developments** needed to implement change.	NDC **does not provide any** detail on technological development related to the agriculture, food, and land sectors.	NDC provides **a general indication of technological development needs or plans** related to agriculture, food or LULUCF.	NDC provides detail on **focus areas of technological development needs or plans** related to agriculture, food or LULUCF.	NDC provides detail technological development needs or plans related to agriculture, food or LULUCF and **on means and funding to develop these technologies.**

Section 3

The analysis conducted in section 3 evaluates NDCs based on the inclusion of critical transitions in the food and land sector, based on the ten critical transitions from FOLU's *Growing Better* report.[32]

The assessment framework was completed in two-parts: (1) the inclusion of critical reforms and policy interventions, called "essential actions", (Table A2) and (2) their connection to national policies, funding or commitments associated with the transition. An essential action is defined as any statement regarding a country's intention to undertake a specific act in relation to the ten critical transitions. The list of essential actions was selected based on a review of the *Growing Better* report and a recent studies, which demonstrate that the implementation of certain critical actions in food and land use systems can help mitigate climate change, protect and restore biodiversity, ensure healthier diets for all, improve food security and create more inclusive rural economies.[33] According to the report, the hidden costs of the global food and land use systems amount to $12 trillion. The economic and social costs are high, with poorly allocated land and water resources, under-investment in rural infrastructure, excessive food loss and waste, and more. The essential actions take a holistic approach to the transformation of food and land-use systems, with the understanding that some reforms will differ from country to country. They are practical examples of critical transitions that countries can take to drive transformative change in food and land use system.

The assessment

There are three sets of criteria used to systematically analyse the breadth and depth of the treatment of key transitions across the subset of 14 NDCs. Each NDC was categorised as "No Mention or Action", "Nominal Mention" or "Essential Action" (Table 2a).

- The first classification assesses whether there is no mention of specific information on the critical transition or associated interventions in the NDC.
- The "Nominal Mention" rating refers to NDCs that provide inexplicit or unclear information on the critical transition, i.e., the topic is mentioned, but no associated policy actions are included.
- "Essential Action" refers to NDCs that address one of the essential actions listed in Table A2, including associated policies, funding or a commitment related to the key transition.

Table A2. Essential actions for the transformation of food and land use systems

Critical Transition	Essential Actions
Healthy Diets	• Shift to healthy diets • Healthy dietary standards/policies • Repurposed agricultural subsidies, redirecting public finance away from unhealthy foods
Productive and Regenerative Agriculture	• Payments for ecosystem services • Agrobiodiversity, including regenerative agriculture, agroforestry, agroecosystem, regenerative farming, no till, cover crops • Training, financing, and access to technology for agriculture
Protecting and Restoring Nature	• Stop the conversion of natural ecosystems • Ecosystem restoration • Sustainable forest management • Legal land rights to Indigenous peoples • Scale REDD+ approaches • Deforestation-free supply chains • Nature-based solutions approaches
A Healthy and Productive Ocean	• Protect breeding grounds • End illegal, unregulated, and overfishing • Compensate fishermen for the cost of fish stock recovery • Ocean and coastal protection and conservation
Diversifying Protein Supply	• Diversified or alternative protein products
Reducing Food Loss and Waste	• National strategies with explicit targets to reduce food loss and waste • Climate-smart storage technologies
Local Loops and Linkages	• Invest in emerging technology to close food system loop • Foster local circular economy
Harnessing the Digital Revolution	• Open access to data (e.g., on land, fisheries, agriculture) • Tools to track deforestation, illegal fishing, environmental crime, etc. • Monitoring, reporting and verification of food and land-use systems • Innovative technology in the AFOLU sector
Stronger Rural Livelihoods	• Provide training to farmers and rural communities • Safety nets and support for individuals and communities to ensure a just transition • Scale up roads and digital investments to drive productivity • Access to renewable electricity access for all
Gender and Demography	• Invest in maternal and child health and nutrition • Education for women and girls • Access to reproductive health services • Gender-informed policies

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Chapter 1

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