TIME TO PULL THE BRAKE

Actors at all governance levels need to achieve more faster

Ambition to Action

NEW CLIMATE INSTITUTE

November 2021

NDC UPDATE REPORT

Time to pull the brake

Actors at all governance levels need to achieve more faster

Authors: Marie-Jeanne Kurdziel, Julie Emmrich, Xander van Tilburg, and Frauke Roeser

Design: weeks.de, Munich

Project number: 20_I_409

ACKNOWLEDGEMENTS:

We are grateful for the input from all the NDC experts who responded to our survey. Furthermore, we would like to extend special thanks to the organisations that shared their perspective on the role of sub-national actors in NDC implementation: Tom Cyrs and Cynthia Elliott (WRI), Amanda McKee and Jesus Alvarado (NDC Partnership Support Unit), Maryke van Staden (ICLEI World Secretariat), Libby Ferguson and Sarah Clark (Under2 Coalition), Martin Baumann and Celia Zoe Wicher (BUND), Margot Eichinger and Alexandra Linden (GIZ). We also thank Takeshi Kuramochi (NewClimate Institute) for his valuable insights.

This project is part of the International Climate Initiative (IKI). The Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) supports this initiative on the basis of a decision adopted by the German Bundestag

Supported by

Federal Ministry
for the Environment, Nature Conservation
and Nuclear Safety

based on a decision of the German Bundestag

EXECUTIVE **SUMMARY**

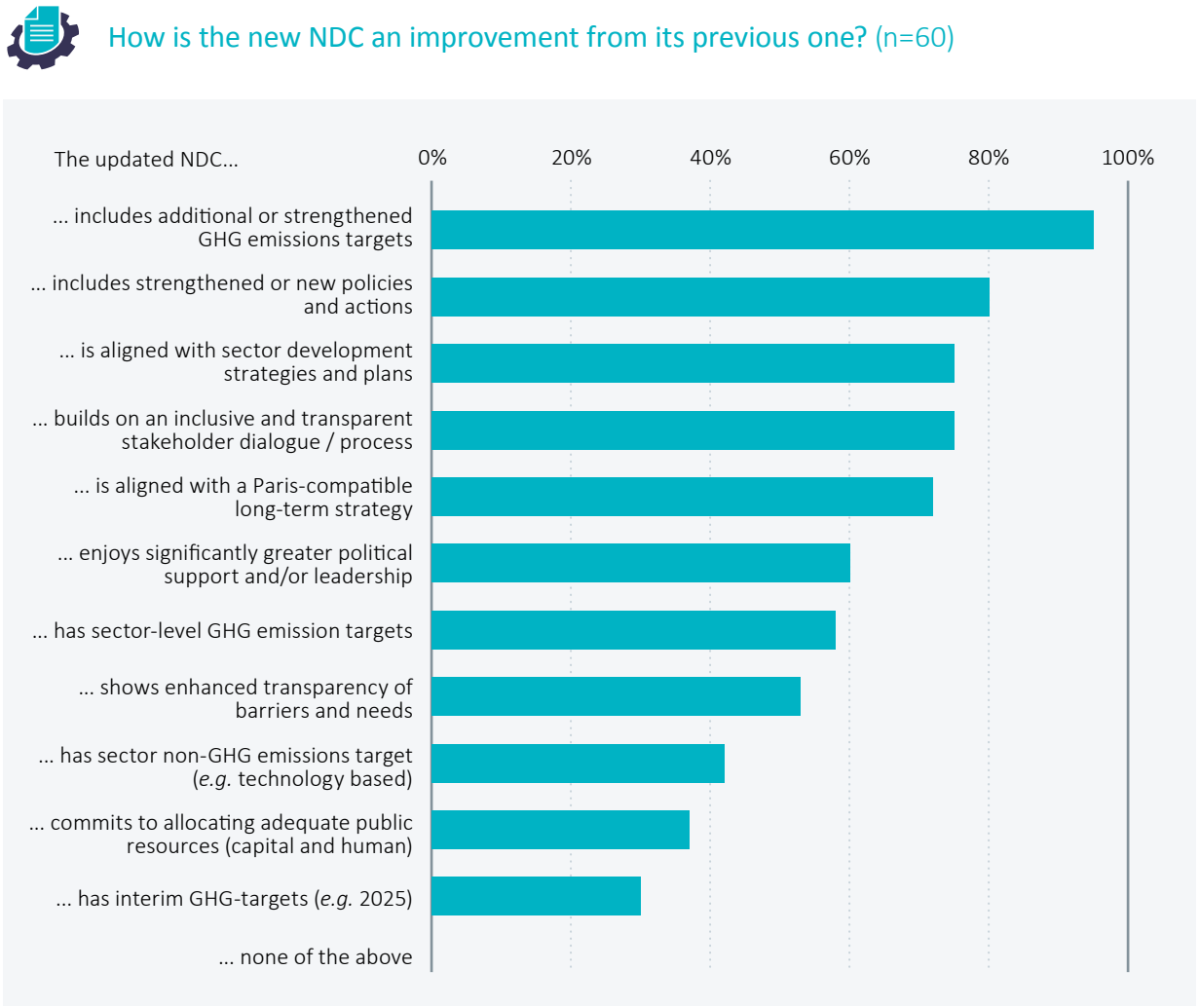
In this edition of our annual NDC Survey we once again find optimism and confidence about progress made on Nationally Determined Contribution (NDC) planning and implementation. Based on responses from 97 policy makers and experts across 92 countries, we discuss how updated NDCs show progress, how they are linked to long term strategies, and which persistent challenges remain. Our survey findings confirm that we have come a long way since the 2015 Paris Agreement.

However, we cannot ignore the fact that progress is too slow, pledges are insufficient, and action is not convincing: not on reducing current emissions, not on climate finance, and not on credible and detailed long-term plans to full decarbonization. It is time to pull the emergency brake: all actors, including national and subnational governments, need to put forward bold climate pledges, carefully consider socioeconomic impacts, and back up commitments with concrete plans and real action.

Survey respondents communicated significant progress of their countries' updated NDCs - but collective ambition remains insufficient. Almost all (95%) indicated that their country has added or strengthened greenhouse gas (GHG) emissions targets (see Figure ES 1). Most progress can be observed in the grounding of NDCs, especially at the sector level: countries added new sector-specific targets, developed sector-level plans, or secured political support from line ministries. Respondents indicate slower progress in obtaining sufficient buy-in from the private sector and securing funds for NDC implementation. As in previous editions, financial barriers remain a major obstacle to raising climate ambition.

The development of long-term strategies (LTSs) faces substantial delay in many countries. As of October 2021, only 33 countries (17% of Parties) have communicated an LTS to the UNFCCC. Of our respondents, only a quarter stated that their country is currently developing an LTS. This suggests that many countries have no imminent plans to develop one, risking a disconnect between their NDC and long-term commitments.

Figure ES1 Improvements in updated NDCs.



SUBNATIONAL ACTORS: ACHIEVING MORE FASTER

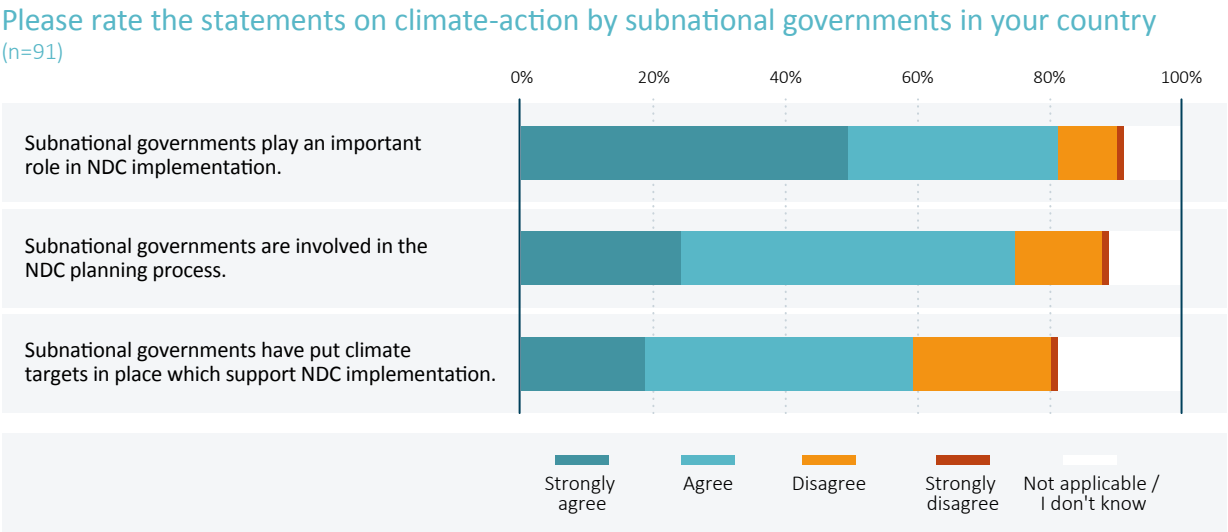
The role that subnational actors, such as local and regional governments, play in climate change mitigation and adaptation action is critical to achieve the global goals of the Paris Agreement. Only if all actors across all levels of government significantly increase their climate ambition, can the Paris temperature goals remain within reach. Momentum for subnational climate action is building up around the world. This is reflected in an increasing number of initiatives created alongside the UNFCCC process, promoting stronger collaboration between all actors to jointly push the climate agenda. Recent analyses point out that the contribution of subnational governments to more ambition and faster action can be substantial – far beyond what is currently achieved by national governments alone.

For most respondents (80%) it is clear that subnational governments play an important role in NDC implementation. For more and more countries this acknowledgement is matched by actual involvement of subnational governments in NDC planning (75%). Many of our respondents state that subnational governments have put climate targets in place to support NDC implementation (60%) (see Figure ES2).

There are several governance aspects that need to be better understood to fully harness the potential of subnational actors. Effective climate action by subnational governments depends heavily on the powers and capacities they have to act in and across sectors. While governance structures can boost or limit climate ambition top-down and bottom-up, there are opportunities for national and subnational governments to iteratively support each other in their efforts to ratchet up.

Looking forward, increased transparency and accountability for subnational climate action can drive ambition and dynamism in the NDC process. Concepts like Regionally and Locally Determined Contributions hold the potential to localise and further align the climate and sustainable development agendas.

Figure ES2 Rating of climate action by subnational governments.



BEYOND THE SMOKESCREEN: IT'S ACTIONS THAT MATTER

Since the start of the COVID-19 pandemic, governments have responded by injecting vast sums of money to get economies back on track as quickly as possible. Narratives around co-benefits of climate action suggested an overwhelmingly strong case for a green recovery and leaders committed to building back better. **We argue that these narratives can indeed be powerful but should not be used as a smokescreen to cover up inaction or delay; it's actions that matter.**

Many linkages between climate actions and development outcomes can be positive, in which case objectives are mutually reinforcing, but the two are not always neatly aligned and they may involve difficult trade-offs or unrecoverable costs. We are running out of time and no longer have the luxury to focus only on win-win propositions or postpone decisions on climate action until innovation brings down the costs. **Where there are trade-offs, sometimes hidden, across aspects of development (i.e. SDGs), between groups of stakeholders, or across current and future generations, these need to be well-managed to ensure a just transition.**

Our survey results show that alignment of SDGs and NDCs is stronger than in previous editions. However, despite mounting evidence of co-benefits, it is not straightforward to turn this evidence into higher ambition and faster action. **Looking ahead, we expect co-benefits analyses to be especially relevant for NDC implementation through local climate action**, for assessing interactions with resilience and adaptation, and for planning inclusive and fair transitions.

PERSPECTIVES ON THE ROLE OF SUB NATIONAL ACTORS IN IMPLEMENTING NDCs

The successful implementation of (updated) NDCs will require efforts by all stakeholders – especially from subnational actors closer to the local context. **Guest contributions** cover the need to turn pledges into deeds (WRI), technical assistance provided to national governments to integrate subnational actors (NDC Partnership), recommendations on the type of support that national governments can provide to regional governments (ICLEI World Secretariat), and how better exchange between national and regional governments can raise national climate ambition (Under2 Coalition). The last two contributions focus at city-level climate action: BUND makes the case that several cities are front-runners in climate action and GIZ discusses the need of financial support to implement city-level climate measures.

ABBREVIATIONS

A2A	Ambition to Action
AFOLU	Agriculture, Forestry and Other Land Use
BRDE	(Brazilian) Far South Regional Development Bank
CAEP	Climate Action Enhancement Package
CAT	Climate Action Tracker
CCPI	Climate Change Performance Index
CO_2	Carbon dioxide
COP	Conference of the Parties
COVID-19	Coronavirus disease 2019
EIB	European Investment Bank
EIM	Employment Impact Model
FAO	Food and Agriculture Organization of the United Nations
FONADIN	(Mexican) national infrastructure fund
G20	Group of Twenty
GCAA	Global Climate Action Agenda
GCC	GreenClimateCities™
GGGI	Global Green Growth Institute
GHG	Greenhouse gas
GIZ	Germany Development Agency
HFC	Hydrofluorocarbon
IEA	International Energy Agency
IKI	International Climate Initiative
iNDC	Intended Nationally Determined Contributions
IPCC	The Intergovernmental Panel on Climate Change
LGMA	Local Government and Municipal Authorities
LPAA	Lima-Paris Action Agenda
LTS	Long-term Low GHG Emissions Development Strategies
LULUCF	Land Use, Land Use Change and Forestry
NDC	Nationally Determined Contributions
OECD	Organisation for Economic Co-operation and Development
OECS	Organisation of Eastern Caribbean States
PV	Photovoltaic
SCAN Tool	SDG Climate Action Nexus tool
SDGs	Sustainable Development Goals
SNV	Netherlands Development Organisation
UNCDF	United Nations Capital Development Fund
UCLG	United Cities and Local Governments
UN	United Nations
UNDP	United Nations Development Program
UNEP	United Nations Environment Program
UNFCCC	United Nations Framework Convention on Climate Change
WRI	World Resource Institute
WWF	World Wide Fund for Nature

ABOUT THIS REPORT

This report is part of a series of (bi-)annual NDC Update Reports, published ahead of international climate change negotiations, presenting recent developments, analysis, opinion, and discussion pieces. Drawing on the Ambition to Action (A2A) project and insights from a wide range of climate change experts and practitioners, the reports aim to be a platform for learning, sharing insights, and discussing topics around the implementation of the Paris Agreement. The NDC Update Reports focus on mitigation ambition and action in developing countries and emerging economies (with an occasional look at industrialised countries for contrast or comparison). The reports offer a podium for external contributors to reflect on the topics covered in it from their perspective.

ABOUT THE AMBITION TO ACTION PROJECT

This report is an output of the Ambition to Action project, which supports NDC implementation through technical assistance and thought leadership. The second phase of the project is implemented collaboratively by NewClimate Institute and Xander van Tilburg, over a two-year period until March 2022. Project funding is provided by the International Climate Initiative (IKI) of the German Federal Ministry for the Environment, Nature Conservation, and Nuclear Safety (BMU). Ambition to Action's technical assistance aims to support the mainstreaming of climate and development goals at the sector level, through the development of evidence on social, economic and environmental benefits of mitigation actions and pathways. This benefits evidence, for example detailing employment, energy security, and air pollution impacts, will show how sector planning decisions can support NDC implementation as well as national development priorities and can help reduce policy costs, identify trade-offs, and build stakeholder support for ambitious mitigation approaches at the sector level. Through a series of (bi-)annual reports (of which this is the eighth edition) and additional research papers, the project provides a platform for discussion, analysis, and sharing of lessons learned about NDC implementation in developing countries and emerging economies.

CONTENTS

1. INTRODUCTION

As 2021 comes to an end, the world looks back on a year which has seen an unprecedented number of extreme weather events, from heatwaves and hurricanes along the Atlantic coast, to flooding in Europe and China, to wildfires in multiple parts of the world. It fits the picture that the latest report of the IPCC's Sixth Assessment cycle confirms: from a physical science point of view, human-induced climate change is affecting weather extremes in every region across the globe, and it is rapidly speeding up. The average global temperature for the past five years was among the highest on record and it is likely that future temperatures will, at least temporarily, breach the threshold of 1.5°C above pre-industrial levels (IPCC, 2021).

Almost two years after the onset of the COVID-19 crisis, carbon dioxide (CO_2) emissions are rapidly increasing again as economic activity picks up and greenhouse gas (GHG) concentrations in the atmosphere continue to hit record levels. Given that spending for economic recovery packages has fallen short of countries' commitments to build back more sustainably, many countries saw their emissions climb above pre-COVID-19 levels in 2021.

A recent wave of net-zero commitments has spurred optimism that the severity of climate change is being recognised and that more and more governments are ready to take action. To date, around 140 countries have communicated a net zero target (Energy & Climate Intelligence Unit, 2020). To remain feasible and credible, however, these long-term targets must be matched with significantly more ambitious Nationally Determined Contributions (NDCs) for the period up to 2030.

Yet, collective climate ambition still falls short. The recent NDC Synthesis Report finds that the 86 new or updated NDCs submitted by July 2021 collectively present a progression from previous contributions but the total global GHG emissions level in 2030, accounting for full implementation of those new or updated NDCs, is still expected to be 16% above the 2010 level (UNFCCC Secretariat, 2021).

In the run-up to the 26th Conference of the Parties (COP26), several countries have put forward bold climate actions. For example, the United States of America pledged the highest ever financial contribution to support developing countries in combatting climate change. China has communicated it would stop financing coal-fired power plants abroad. The United Arab Emirates, a major oil producer, announced it would pursue net zero emissions by 2050 and invest USD 163 billion in clean and renewable energy, while the United Kingdom pledged to decarbonise its electricity mix by 2035.

Limiting global warming to 1.5°C can, however, only be achieved if climate action is accelerated considerably across the board. Not only must national governments update their targets and increase ambition, but subnational governments and non-state actors must make an all-out effort to keep the goals of the Paris Agreement within reach. Recent studies suggest that the aggregate GHG emissions reduction potential of subnational actors, including local and regional governments, is significant. There is a need to reinforce the collaboration between different actors in a multi-level governance approach and to provide clear frameworks for subnational governments to ensure that additional mitigation and adaptation potential is leveraged, and ambitious targets are implemented on the ground.

> *This year's NDC Update Report focuses on the challenges and opportunities of NDC implementation, as faced by subnational actors and on the role of co-benefits in driving ambitious climate action.*

As in previous years, we surveyed government representatives and experts involved in national NDC- and LTS-processes to gain a better understanding of the current state of NDC ambition raising, climate planning, and NDC implementation.

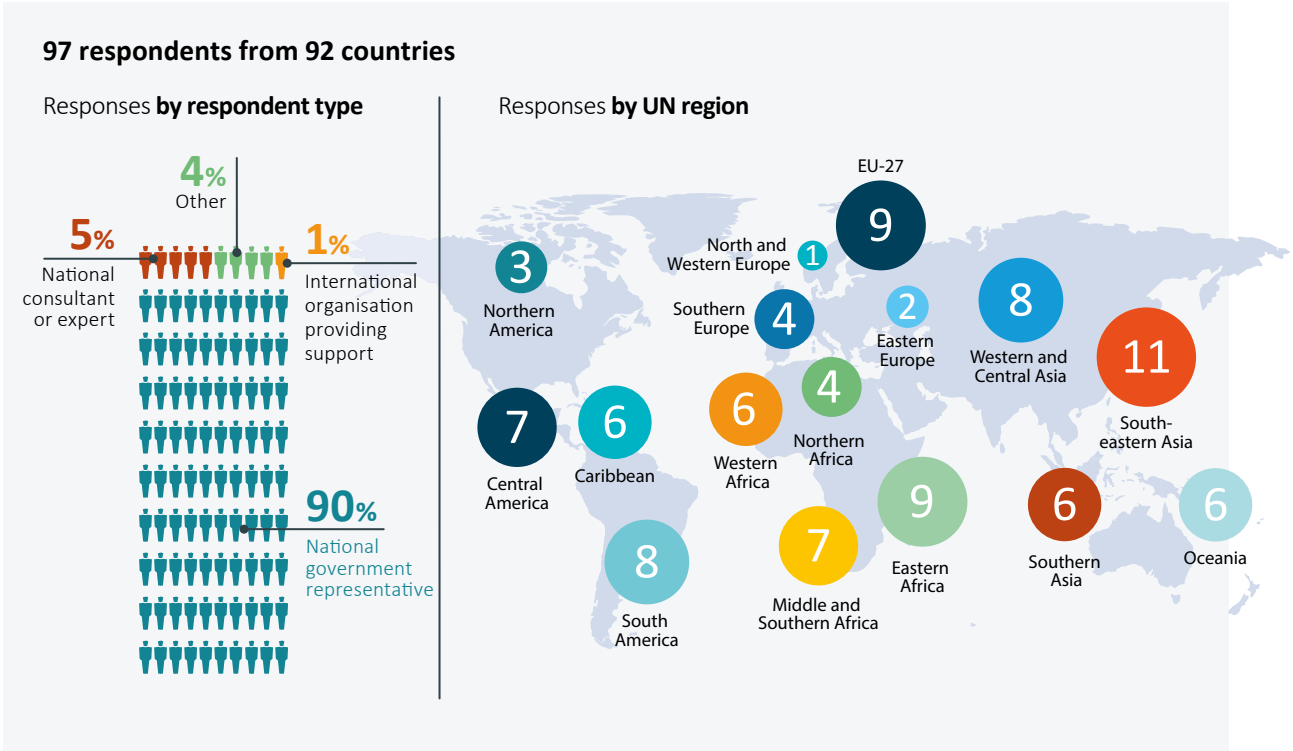
The report is structured as follows: chapter 2 discusses the results of the annual NDC Survey on the first NDC update cycle, the development of LTSs and on perceived progress of NDC implementation. In chapter 3, we look at specific top-down and bottom-up aspects of implementation that can reinforce ambition at and beyond the national government level. In chapter 4, we assess the synergies of climate action and sustainable development priorities under the assumption that climate ambition is highest if it also shows positive contributions. In chapter 5, we include expert contributions from a variety of fields, invited to reflect on the role of subnational actors in successfully implementing NDCs.

2. PLEDGES, PLANS AND CLIMATE ACTION UNDER THE PARIS AGREEMENT

In this year's NDC Survey, we collected 97 responses representing 92 of the 198 Parties to the Paris Agreement, most of which (90%) are filled out by national government representatives. Responses cover all geographical regions, with 27% of respondents from Africa and Asia each, 24% from the Americas, followed by 16% from Europe and 6% from Oceania (Figure 1). Of the 16 responses from Europe, nine are from the EU-27 and share the same NDC. The 2021 NDC Survey particularly gives a voice to representatives of non-OECD countries, who account for 89% of responses. The 92 countries represented in this report collectively account for 28% of global emissions.

Note that all survey responses need to be interpreted with care as they are biased by personal opinions and experiences, and since survey respondents may change from one year to the next. They provide a snapshot of, and perspective on, the current and expected situation within countries. Because of this subjective nature, we aim to show a perspective that is complementary to other analyses of the state of NDCs such as the UNFCCC NDC Synthesis Report, the Climate Change Performance Index (CCPI), the Climate Action Tracker, the Climate Transparency Reports and the UNEP Emissions Gap Report.

Figure 1 Overview of survey respondents to the NDC Survey 2021.



Source: 2021 NDC Survey

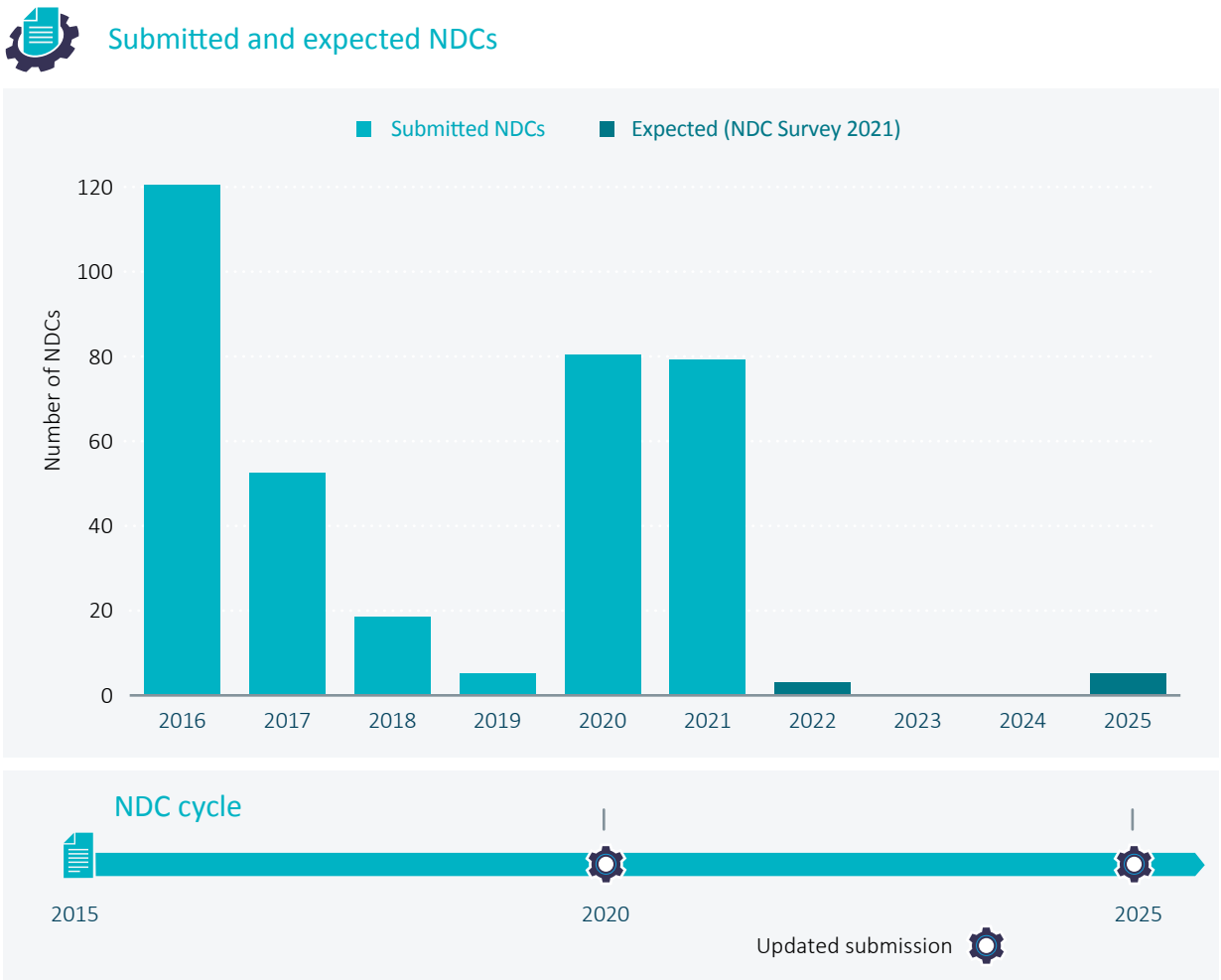
2.1 THE FIRST NDC UPDATE CYCLE

In advance of the 21st Conference of the Parties (COP21) and the drafting of the Paris Agreement, countries submitted their intended NDCs (iNDCs) in 2015. As countries ratified the Paris Agreement at or after COP21, they became Parties to the Paris Agreement and submitted their 'first NDC', which for many meant re-submitting their iNDC. The ratification process took longer for some Parties than others, therefore many 'first NDCs' were submitted in subsequent years (Figure 2). These are commonly referred to as the 'first round of NDCs'.

With the ratification of the Paris Agreement, Parties agreed to update their NDCs every five years, with the first update cycle due in 2020. In light of the lack of climate ambition of initial NDCs, which would collectively lead to global warming of well over 2°C, the first NDC update cycle is a critical moment to realign ambition and keep the goal of the Paris Agreement within reach (Climate Action Tracker, 2019, 2020).

> *Overall, Parties' clarity on the status of the NDC process in their countries is increasing.*

Figure 2 Submitted and expected NDCs in the context of the NDC update cycle



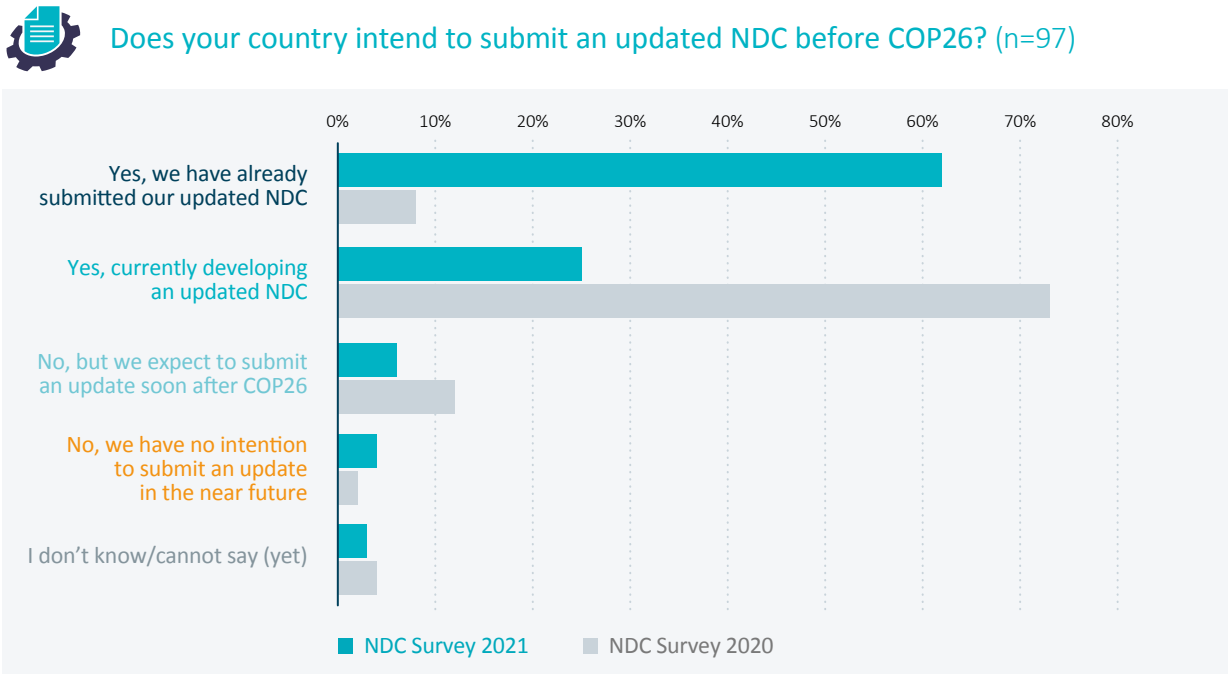
In last year's NDC Survey, around 70% of respondents indicated that their country was in the process of developing a new or an updated NDC[1]. By the end of 2020, only 78 Parties had submitted an updated NDC – of which the EU's NDC covers 27 countries. However, many countries have shifted the submission of their updated NDC to 2021: as of October 20th, 2021, 83 Parties submitted updated NDCs (UNFCCC Secretariat, 2021).

While the specific reasons for the delay are not known, the COVID-19 pandemic is most likely a determining factor. However, other reasons such as slow planning or political processes and events, including national elections, are also contributing factors to this delay.

Submissions for the first NDC update cycle are delayed.

We asked respondents whether their country intended to submit an updated NDC (Figure 3). In the midst of the (delayed) first update cycle, respondents show higher clarity on the status of their countries' NDC than in previous surveys. Only 3% of respondents state that they do not know whether their country plans to submit an updated NDC, compared to roughly half of respondents in 2017-2019. Of the respondents whose countries had not yet submitted an updated NDC at the time of the survey, a quarter expected their country to submit one before COP26, and 12% expected soon after. Between the time the

Figure 3 Intention to submit an updated NDC



Despite the urgency of the climate crisis, not all Parties plan to submit an updated NDC.

1 We do not diffentiate between new NDCs ('Second NDCs') and updated (first) NDCs. We refer to an updated NDC for any additional NDC submission after the 'First NDC'.

NDC Survey took place, from August to the beginning of October, and the release of this report, many expected updated NDCs have indeed been submitted to the UNFCCC.

The contribution of Working Group I to the IPCC's Sixth Assessment Report (AR6) reaffirms that "every tonne of CO_2 emissions adds to global warming" and that "human-induced climate change is already affecting many weather and climate extremes" (IPCC, 2021). Considering observed climate-related impacts and the urgency of the IPCC message, it is surprising that several respondents report that their country is not planning to submit an updated NDC in this cycle and five already hint that their country is not planning to renew their NDC before 2025.

Updated NDCs appear to be more grounded in national processes, plans and policies.

2.2 PROGRESSION OF UPDATED NDCS

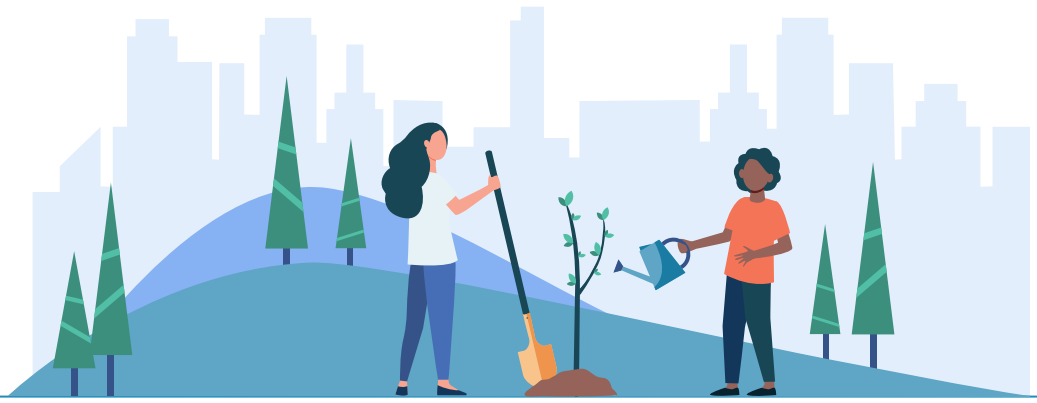
In the context of the NDC cycle, the Paris Agreement provides that each update of the NDC shall "represent a progression beyond [the previous NDC] and reflect its highest possible ambition" and that "the efforts of all Parties [must] represent a progression over time, while recognizing the need to support developing country Parties" (UNFCCC, 2015). This process is informally referred to as the "ratchet mechanism" (Falkner, 2016).

While updated NDCs shall reflect a progression to previous NDCs there is room to interpret what constitutes a progression.

What constitutes progression is not clearly defined. The NDC Synthesis Report assesses collective progression by comparing "the difference between the estimated emission levels associated with the implementation of Parties' iNDCs communicated to the secretariat as at 4 April 2016 and those according to the NDCs available in the interim NDC registry as at 30 July 2021" (UNFCCC Secretariat, 2021).

In addition to more ambitious emission pledges, progression can also be understood to include other forms of strengthening NDCs such as by enhancing mitigation efforts, introducing or enhancing policies, integrating climate goals into national policy instruments and more (UNFCCC Secretariat, 2021).

We asked respondents to specify how their new NDC is an improvement from their previous one (Figure 4). All survey respondents stated that their country has made improvements in at least one area of the NDC and almost all (95%) indicated that their country has added and/ or strengthened GHG emissions targets.



This represents a significant improvement when compared to the 2019 NDC Survey, in which only half of the respondents surveyed stated that their country expected to strengthen GHG emissions targets as part of their NDC update. Over the year, Several countries appear to have changed their stance and put forward more ambitious climate pledges after all – or are planning to do so. For example, Japan had made a public statement in 2020 that the government was not planning on updating GHG emission targets, however, in 2021 Japan raised the ambition of its 2030 emission reduction target from 26% to 46% below 2013 levels (Climate Action Tracker, 2021c).

Almost all respondents indicated that their country strengthened GHG emissions reduction targets yet collectively NDCs still lead to rising emissions until 2030.

The sum of all NDCs submitted by July 2021 to the UNFCCC would indeed collectively decrease emissions by 5.9% by 2030 below the levels indicated in the iNDCs and therefore constitutes a collective progression of climate ambition. Despite this progress, the sum of NDCs submitted by July 2021 would still result in an absolute emissions increase of 16% by 2030 compared to 2010 levels, leading to a temperature increase of more than 2°C (Climate Action Tracker, 2021a; UNFCCC Secretariat, 2021).

The strengthening of GHG emissions targets indicated by survey respondents may not only refer to more ambitious climate targets.

The strengthening of GHG emissions targets could, however, also relate to a change in the type of target. The NDC Synthesis Report notes that "an increasing number of Parties [moved] to absolute emission reduction targets in their new or updated NDCs" away from relative targets linked to a baseline scenario (UNFCCC Secretariat, 2021). As a result, the communicated strengthening of targets by putting forward absolute emission reduction targets does not necessarily mean enhanced ambition of the respective NDCs. Furthermore, several respondents may also consider an expanded sectoral or emissions coverage (including, for example, methane (CH_4) or nitrogen dioxide (N_2O) emissions) a way to strengthen climate targets.

Updated NDCs appear to be more grounded in national processes, plans and policies. Three quarters of respondents state that their country has "strengthened or added new climate policies and actions", "aligned the NDC with sectoral development strategies and plans" and "has sector-level GHG emission targets", suggesting that NDCs are more grounded in national processes than previously. The inclusion of concrete measures and the consideration of synergies with sustainable development priorities increase the likelihood that countries can meet the emissions reductions they have proposed.

Moreover, updated NDCs also appear to "enjoy significantly greater political support and/or leadership" enhancing the likeliness proposed measures will be implemented.

Only few countries include interim GHG emissions targets or non-GHG targets. Adding interim GHG targets and non-GHG targets, such as technology-based targets, can be important drivers for timely action and help to plan sectoral transitions towards net zero emissions. Nevertheless, less than 50% of respondents state that their country's updated NDC includes interim targets such as a 2025 emissions target or sectoral non-GHG targets. The NDC Synthesis Report notes that of those updated NDCs with sectoral targets and mitigation measures, the industry sector tends to be the least well-covered (UNFCCC Secretariat, 2021). In the absence of interim and non-GHG targets, which provide further guidance and milestones to the economy-wide emissions reduction pledges, countries may not achieve the targets they put forward in their NDCs.

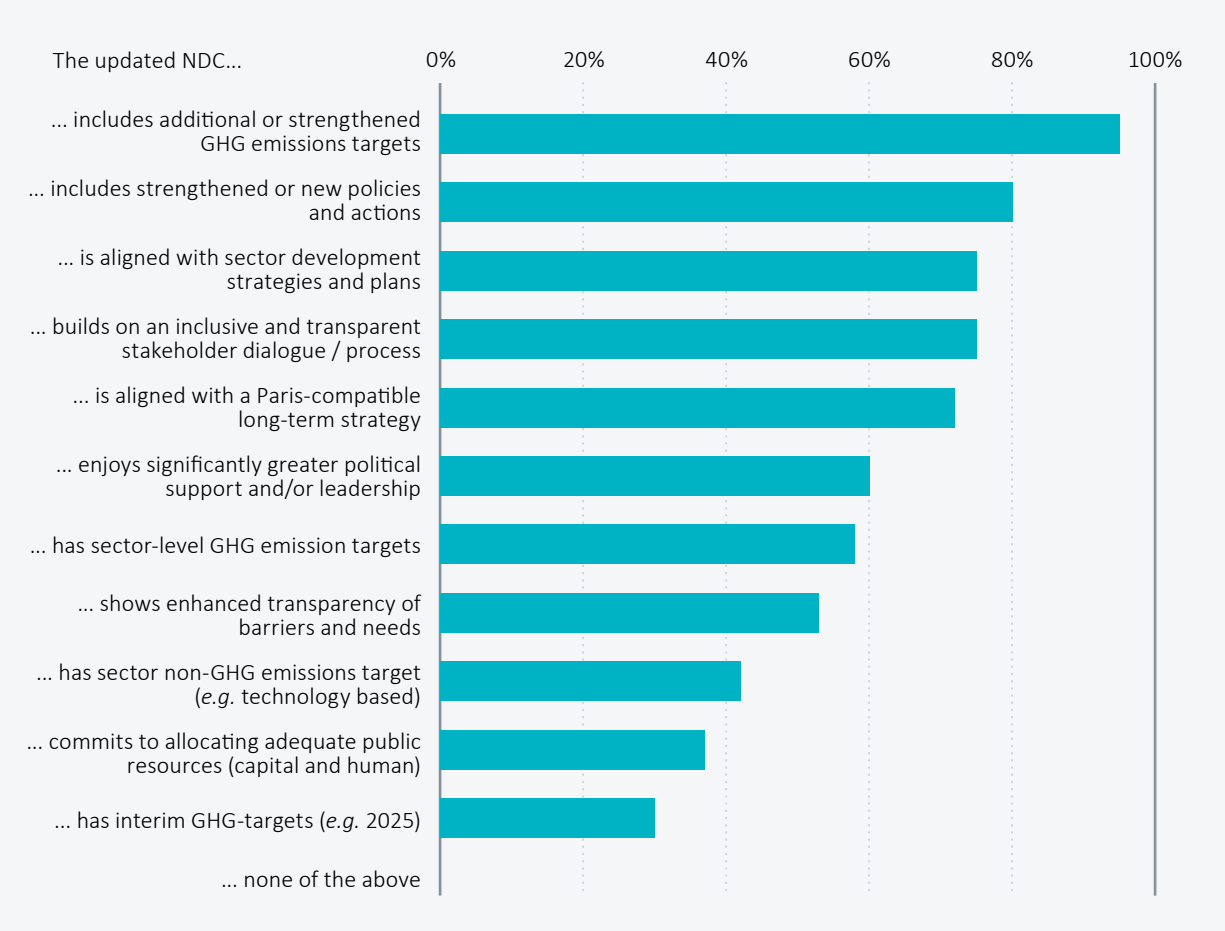
The relevance of public and private stakeholder consultations in the NDC process is increasing. The survey notes the inclusion of a wide range of public and private stakeholders in NDC planning as a key improvement to the first round of NDCs, which often did not include the perspectives of a variety of stakeholders. Three quarters of respondents state that their country relied on an inclusive and transparent stakeholder dialogue to prepare the updated NDC. This finding underpins the assumption that subnational and non-state actors are increasing their sphere of influence and becoming more important to the NDC process (see chapter 3).

More countries are aware of the need to align updated NDCs with long-term targets.

Only about a quarter of respondents believes that their updated NDC is not aligned to long-term targets. This is an improvement compared to last year's survey results in which half of respondents indicated that their updated NDC was not aligned to a long-term target. A reason for this improvement may be that more long-term targets and, in some cases, also strategies to align NDCs with exist.

Figure 4 Improvements in updated NDCs

How is the new NDC an improvement from its previous one? (n=60)



2.3 BARRIERS TO RAISING CLIMATE AMBITION

An analysis of already submitted updated NDCs suggests that the first NDC update cycle may not deliver sufficient progress with regards to the collective ambition of emission reduction targets. To understand what is behind countries' decisions for enhancing (or not) the level of ambition of their NDCs, we asked what key barriers countries face to increase the ambition level of their NDC (Figure 5).

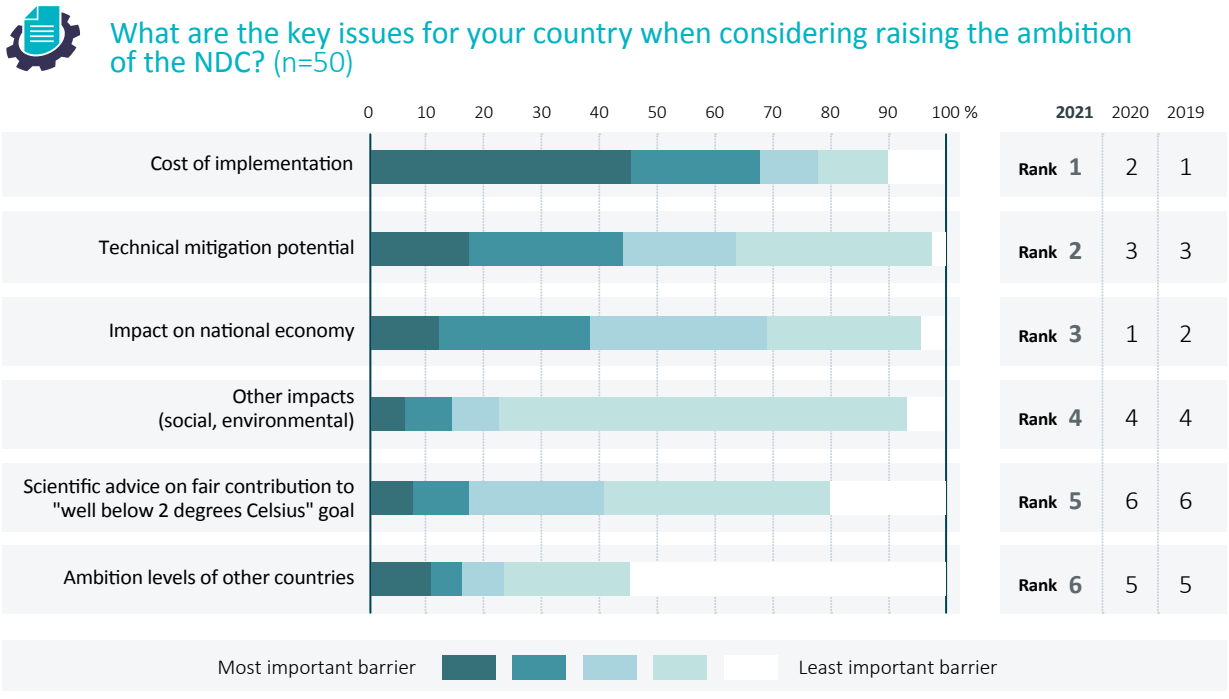
Financial constraints are continuously ranked as high barriers to raise ambition.

In 2021, as in previous years, most survey respondents rated financial barriers as impeding their country to enhance ambition: the highest perceived barrier is the "cost of implementation" and the third is "impact on the national economy". Despite a growing understanding of investment needs to reduce emissions, international agreements on support, and the costs of delayed action[2], it still proves difficult to mobilise public spending to scale. Most developing countries and emerging economies simply do not have the means to invest and have no access to low-interest loans. Even in wealthier countries, it is often hard for politicians to justify spending large sums of money on preventing future losses, while there are legitimate short-term issues that need urgent attention. Moreover, the sums of money involved are so large that it can be hard to see them in perspective. As we will see in chapter 4 below, even if there are clear co-benefits, it is still not straightforward to make the case for raising climate ambition and associated public spending.

Technical mitigation potential impedes ambition raising but other countries' ambition level barely has an influence.

Surprisingly, technical mitigation potential remains one of the highest rated barriers to enhance ambition, despite a multitude of evidence that sectoral transitions are largely based on already-available technologies. Because close to 90% of survey respondents represent non-OECD countries, the perceived technical barrier may imply a need for more technical assistance provisioned by developed countries. Finally, survey respondents rank the ambition level of other countries as the least relevant barrier for raising their own ambition, which is a cornerstone of the design concept for the Paris Agreement's ratchet mechanism.

Figure 5 Barriers to raising ambition in NDCs.



2 Swiss Re estimates that if no further action is taken global GDP loss will be in the order of 18% by 2050; even limiting warming to 2°C still shaves off 4% of global GDP due to the impacts of climate change (Swiss Re Institute, 2021).

2.4 NET ZERO PLEDGES

When asked about their country's written commitment to net zero emissions, 37 survey respondents indicated that their country had committed to reaching net zero emissions by 2050 and two after 2050. Several respondents indicated that their country is currently in the course of planning processes to set a net zero target.

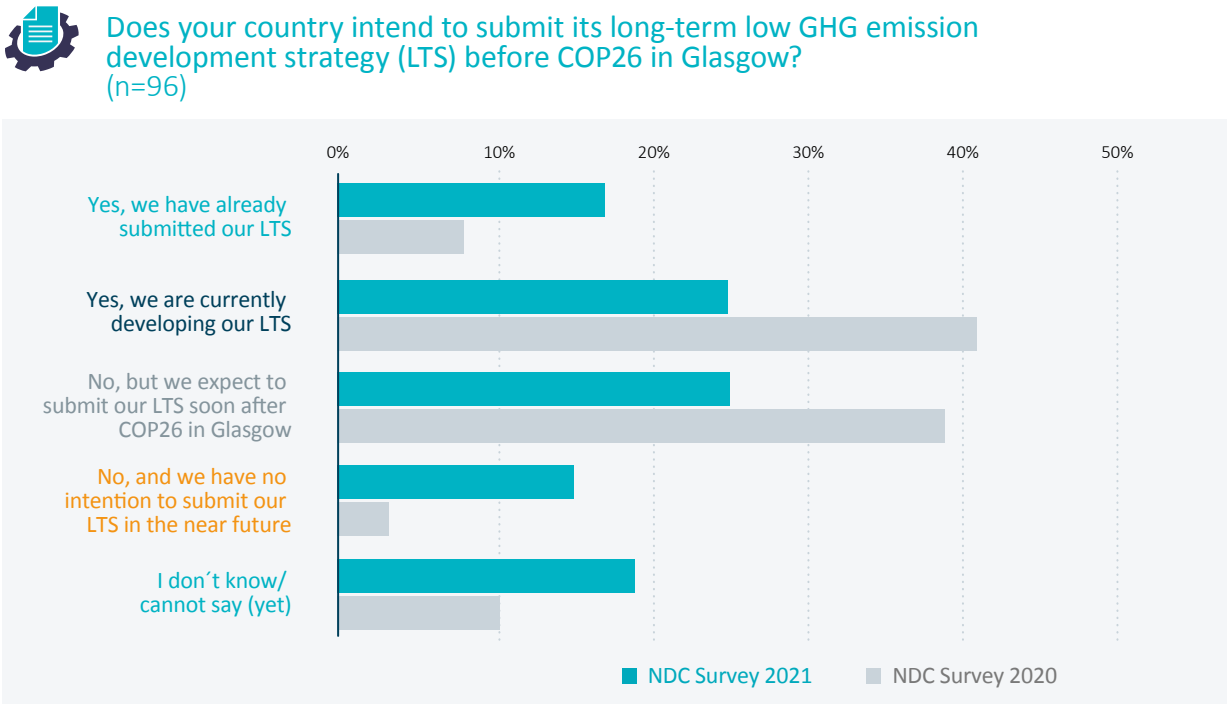
> *A wave of net zero pledges can be observed but comprehensive plans to support the pledges are lacking.*

As of October 2021, over 60 countries have put forward a target to reach net zero emissions in written form, while another 80 countries have announced or are currently discussing a net zero target (Energy & Climate Intelligence Unit, 2020). Scientific evidence suggests that globally, countries need to reach net zero emissions by 2050 to keep temperature increases to 1.5°C. Thus, most countries are pledging net zero targets by 2050, with only a few that proposed more ambitious dates and some that aim for a later date (Energy & Climate Intelligence Unit, 2020).

To enable the credible and predictable progression of NDCs towards net zero pledges countries should back their net zero pledges with concrete, transparent, fair and rigorous plans, strategies and policies (NewClimate Institute & Data-Driven EnviroLab, 2020; Rogelj *et al.*, 2021a). The long-term low greenhouse gas emission development strategies (LTS) Parties are invited to submit under the Paris Agreement are an opportunity to concretely outline how net zero pledges are intended to be met. To understand countries' progress in the development of their LTSs, we asked respondents whether their country has submitted or is developing an LTS and, in the latter case, when they expect their country to submit it (Figure 6).

Only close to 20% of survey respondents state that their country has already submitted an LTS. This is an increase compared to previous years, but still very few when considering that the Paris Agreement "invites Parties to communicate LTSs by 2020" (UNFCCC, 2015). As of October 2021, only 33 countries have submitted an LTS to the UNFCCC (UNFCCC, 2021a). Moreover, only a quarter of the survey respondents indicate that their countries are currently in the process of developing an LTS, which is a significant drop to the 40% in the 2020 NDC Survey.

Figure 6 Status of LTS development.



The low level of LTS submissions contrasts with the expectations of survey respondents in previous years. Since 2017, a large majority of respondents (80 – 95%) stated that they are either developing an LTS or about to start developing one. This indicates that countries have faced severe delays in the development of these strategies. Furthermore, the share of survey respondents that do not know about the status of their country's LTS and respondents of countries that have no intention of submitting an LTS has increased in 2021, suggesting that several countries have no imminent plans to develop an LTS.

Of those countries that are currently developing an LTS or expect to begin soon, we asked respondents to estimate the submission date of their country's LTS (Figure 7). Close to 40 respondents expect their country to submit their LTS by the end of 2021 or 2022 and some respondents (8) expect it in the following years.

LTS development seems to have disappeared from many countries' climate agenda but a few dozen LTSs can be expected in the next two years.

Figure 7 Expected LTS submission.

Defining a desirable future helps to raise the ambition of short and medium-term pledges.

The backcasting[3] of long-term goals to short to medium-term climate targets is important to ensure that long-term targets remain within reach. In the absence of concrete long-term GHG emissions pathways and underlining strategies to back net zero targets, these targets are not anchored and cannot inform short to medium-term actions. Therefore, countries that have no long-term plans may prepare NDCs that do not represent the level of ambition required to ensure that long-term goals can be met.

What can be observed from the first round of updated NDCs is that countries with long-term net zero pledges also put forward more ambitious updated NDCs. The 86 updated NDCs assessed in the NDC Synthesis Report collectively result in an emissions decrease of 12% by 2030 compared to 2010 levels (UNFCCC Secretariat, 2021). The subset of 70 Parties that have put forward net zero targets in their NDCs have submitted more ambitious NDCs that collectively aim to decrease emissions by 26% by 2030 compared to 2010 levels.

Long-term commitments to fully decarbonise economies are essential to provide a vision for the pathway countries aim to take and important guidance for achieving overarching climate goals. However, these commitments should not divert nor distract from the pressing need for immediate ambitious climate action, and will only be fulfilled if backed by "rapid and large reductions in CO_2; additional deep reductions in non-CO_2 greenhouse gases; and a ramping up of strategies to remove CO_2 from the air" (Rogelj *et al.*, 2021b).

Long-term pledges should not distract from the urgent need to act now.

3 Backcasting is a planning method that starts with defining a desirable future and then works backwards to identify policies and programmes that will connect that specified future to the present.

2.5 NDC IMPLEMENTATION: TIME TO PULL THE BRAKE

We observe significant progress on the planning and submission of updated NDCs and, to a lesser extent, the development of LTSs. Setting clear targets and plans is an important step, but only the beginning of the journey towards net zero emissions. In the end, it all comes down to the implementation of targets and plans.

To get a better understanding of the current state of the implementation of NDCs, we asked respondents to reflect on the actual progress and future expectations related to a number of NDC implementation aspects (Figure 8 and Figure 9).

Each sector's transition to zero emissions takes a different path and requires a different technology roadmap and policies. Breaking down economy-wide NDC targets into strategies and measures at the sector level is a key step for the identification and selection of actions to implement the NDC and the alignment of sectoral plans with the NDC. Close to 80% of survey respondents state that their country has made good or very good progress on these aspects. Progress at the sectoral level communicated in the 2021 NDC Survey likely relates to progress on the development of (sectoral) NDC implementation road maps and action plans, specific policy instruments to facilitate NDC implementation and improved institutional arrangements (UNFCCC Secretariat, 2021).

Progress in the implementation of NDCs can be observed at the sector level but securing funding and securing support from private actors seem to be significant bottlenecks.

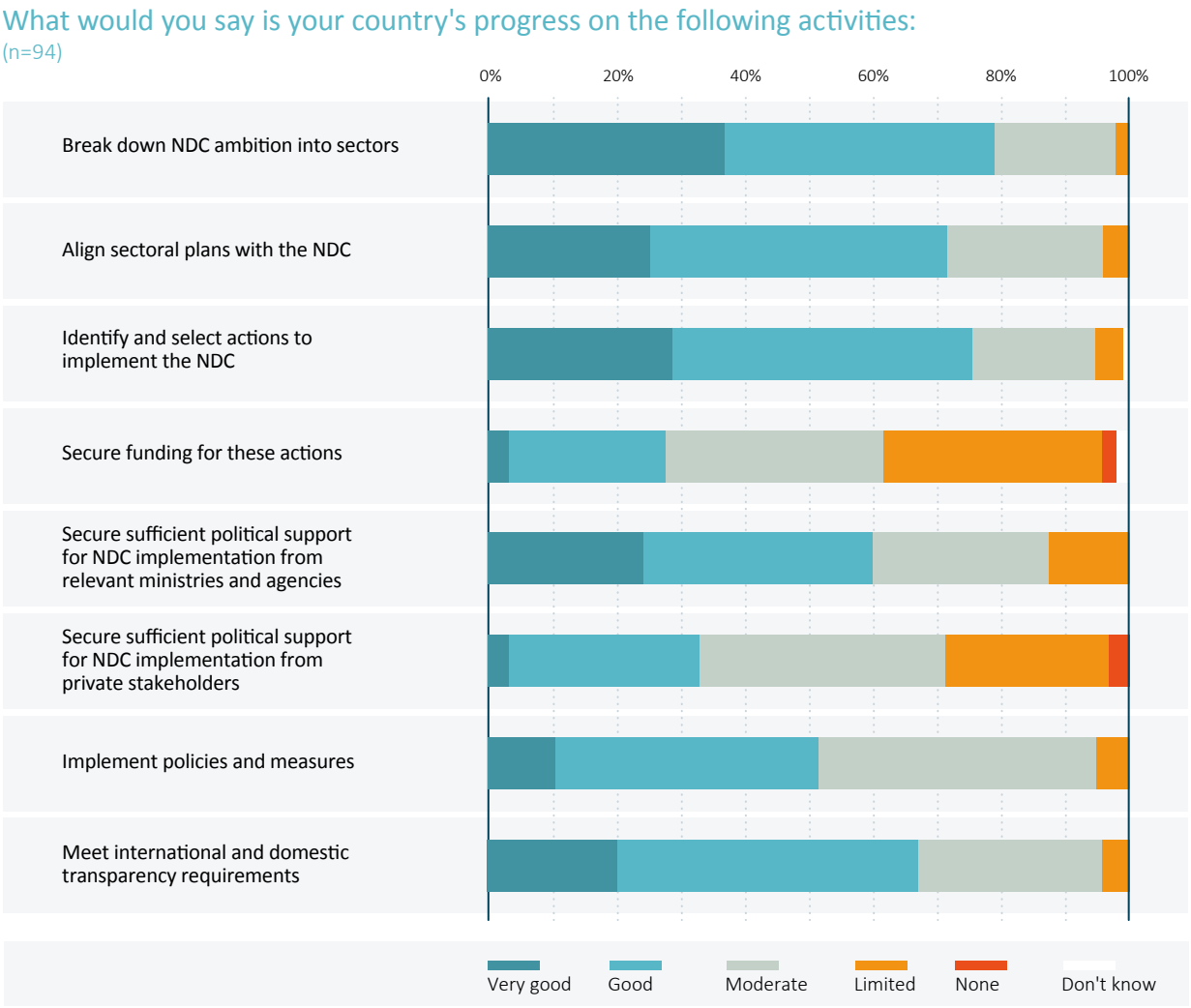
The identification of sector-level targets and measures is usually an iterative process that requires the participation of and extensive consultation with the key governing bodies of relevant sectors. It is therefore understandable that respondents indicate that their NDC has gained "sufficient political support from ministries and governmental agencies" (60% indicate very good to good progress) and that countries have "identified and selected actions to implement the NDC" as well as "aligned sectoral plans with the NDC", with roughly 75% of respondents indicating very good to good progress on these activities.

Respondents indicate less progress on the "securing of funding" and the "securing of sufficient political support by private actors". The lack of progress on these two activities may explain why only roughly half of survey respondents communicate very good or good progress on their ability to "implement policies and measures". The lack of funding also relates to the barriers to raising climate ambition; countries that did not catalyse or receive the necessary financial support to implement measures of their conditional NDCs are likely not further raising their climate pledges in updated NDCs.

The alignment of policies and corporate goals and actions can create a positive feedback ambition loop in which government policies and private sector leadership reinforce each other to raise current climate ambition (Dickerson *et al.*, 2018). More and more companies are releasing net zero pledges and pursuing climate action. It is therefore surprising that only roughly a third of respondents perceive positive progress on securing support from private sector actors. A reason for this may be that that the recent wave of pledges has not yet materialised in concrete actions – or that policy-makers and experts close to national NDC processes and private sector actors are disconnected. Another explanation may be that corporate climate pledges do not unfold at the same pace in all countries.

The perceived lack of support from the private sector is surprising in light of the rapid roll-out of corporate pledges.

Figure 8 Respondents' perceived progress in implementing the NDC



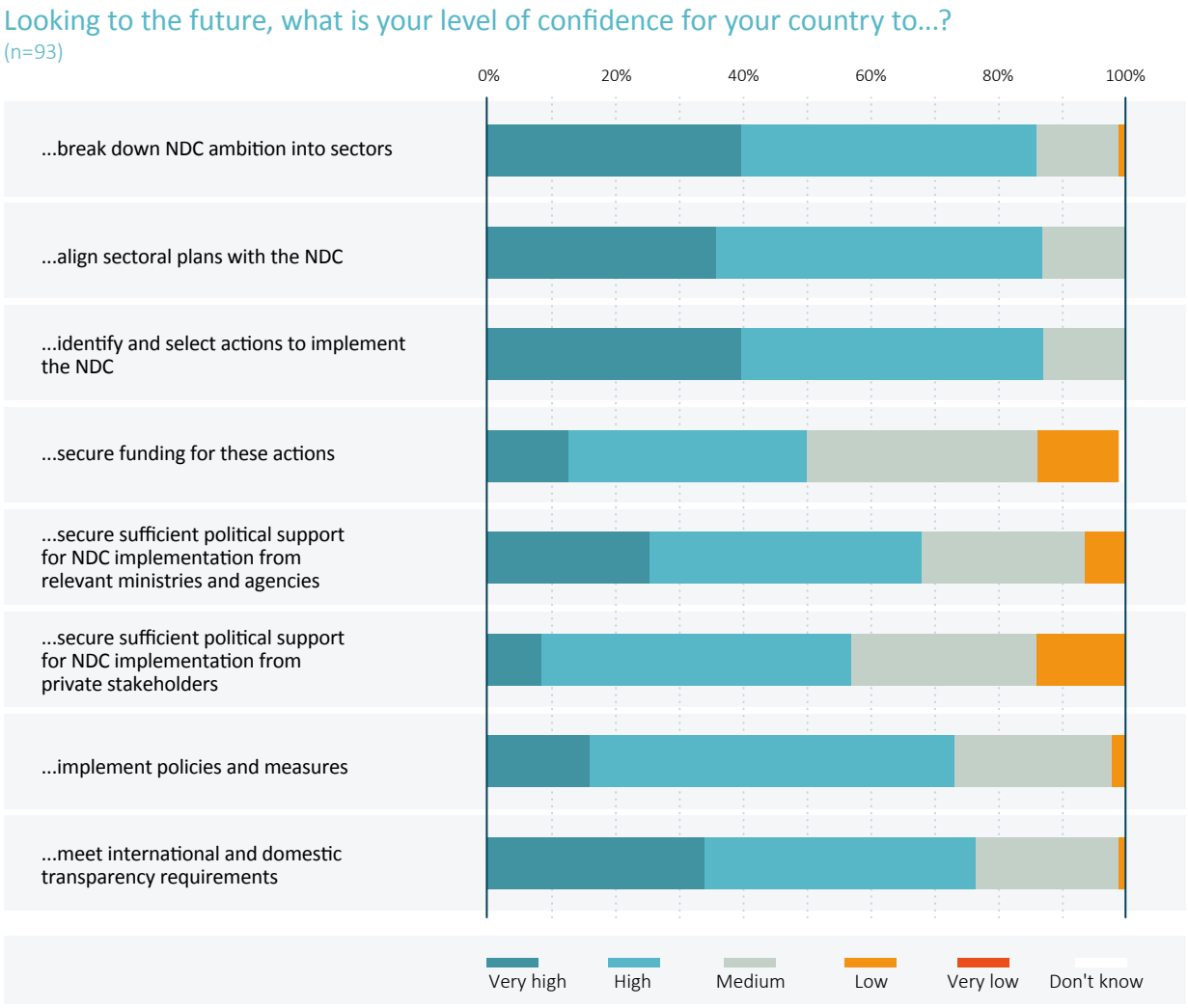
Confidence with regards to future progress to implement NDCs is more optimistic than past progress.

Aside from a perceived lack of support from the private sector and the securing of finance, confidence on expected future progress for NDC implementation has been consistently optimistic each year. Compared to previous years, actual progress at the sectoral level has been reported. It is therefore comprehensible that respondents feel more confident of future progress in these aspects.

Limiting global warming to 1.5°C is still achievable but the window of opportunity is closing fast. Bold climate policies and actions are needed to implement and go beyond current NDCs and ensure that emissions can be curved down as soon as possible.

Respondents' confidence and optimism should be matched with bold and rapid climate action.

Figure 9 Respondents' confidence of future progress to implement the NDC



Governments need to respond to call-outs from civil society actors, bank on increasingly affordable and widely available technological solutions and ride the wave of climate pledges from the private sector to create an ambition loop. NDCs provide common goals and a clear path to follow, but need to be backed with transparent, actionable and inclusive plans and policies.

Countries need to prepare for deep transformations in all sectors and by all actors – this includes understanding the fall outs of these transformations. Business as usual pathways will be costly in the long-run and will lead to significant stranded assets. Limiting the risks and realising the opportunities of deep transformations by, for example, preparing just transition plans and policies will help countries effectively roll-out climate action. Local actors, such as subnational and private actors, need to be mobilised to ensure that large-scale and rapid sectoral transitions unfold.

Rapid and successful NDC implementation requires all stakeholders on board.

3. MULTI-LEVEL CLIMATE ACTION AND THE ROLE OF SUBNATIONAL ACTORS

The years 2020 and 2021 have witnessed a wave of new commitments to full decarbonisation by a number of different actors, including national governments, subnational governments, and non-state actors. Even amid the COVID-19 crisis, the momentum has continued to grow. The goal seems to be clear: net zero emissions must be achieved by mid-century at the latest. In this context, the present challenge is twofold: all actors need to continuously update their targets and iteratively support each other to increase their ambition in accordance with the Paris Agreement, while existing ambition needs to be translated into action and impact on the ground. The most recent IPCC report has emphasised, once again, that there is no time to lose (IPCC, 2021).

The role subnational actors can play in NDC planning and implementation depends on governance structures and requires the localisation of the NDC process.

The aggregate GHG emissions reduction potential of subnational action is likely to be significant.

Considering these developments, particular attention has recently been given to subnational action and the role of local and regional governments in mitigating climate change and adapting to its consequences (Hsu *et al.*, 2019, 2020; Kuramochi *et al.*, 2020; NewClimate Institute *et al.*, 2021). The aggregate GHG emissions reduction potential of subnational climate action is likely to be significant, even if exact figures remain vague due to limited data availability. The fact that over half of the world's population lives in urban areas which are responsible for three quarters of global energy-related carbon emissions, suggests that structural change needs to be driven and implemented at subnational governance levels (Colenbrander *et al.*, 2019).

Governance structures differ considerably around the globe, and subnational governments in different countries have varied levels of powers and capacities to implement enhanced climate action. In some countries, climate action is driven at the national level and follows a top-down approach, while in other countries, subnational governments have the power to go beyond national legislation in their ambition and action. The different powers and capacities partly define the ability of local and regional governments to engage in the development, planning, and implementation of countries' Nationally Determined Contributions (NDCs). However, successful engagement of subnational actors in NDC planning and implementation also requires clear rules governing the implementation of the Paris Agreement, including frameworks and methods to adequately account for subnational actions and achievements. First ideas around a localisation of the NDC process and Regionally and Locally Defined Contributions (RLDCs) point in that direction, but need further concretisation to ensure the full potential of subnational climate action is leveraged.

3.1 SUBNATIONAL ACTION IN THE UNFCCC PROCESS

WHO ARE THE SUBNATIONAL ACTORS?

The term "subnational governments" is used as an umbrella term that comprises both local and regional governments. Subnational governments are administrative units of a specific geographical territory, with "local governments" including smaller urban areas such as cities, towns, urban communities, districts, and counties, while "regional governments" are generally broader in population and in scope, and often are the first administrative level below the national government, such as regions, states, or provinces.

Engaging subnational actors and realising their potential to contribute to climate change mitigation and adaptation action implies that representatives in local and regional governance bodies, for example, council members of regional parliaments or city mayors, need to actively engage in planning and decision making around climate change to help national governments get on track to deliver on their countries' commitments. Various international networks and initiatives of local and regional governments have emerged in the last decades, such as the Global Covenant of Mayors, C40 Cities, United Cities and Local Governments (UCLG), ICLEI – Local Governments for Sustainability, Under2 Coalition, Coalition for Urban Transitions (CUT), to name but a few. Their continued efforts show that all levels of government and subnational actors are ready and willing to contribute to raising national and global climate ambition through multi-level collaboration.

The foundations for global climate action were set by the Lima-Paris Action Agenda.

The need for different actors at different levels of governance to engage in climate action was recognised early on in the UNFCCC process and is more recently reflected in an increasing number of networks and initiatives formed by subnational governments and other non-state actors to build momentum for collaborative climate action (Figure 10). A milestone for subnational climate action was reached in 2014, when Parties established the Lima-Paris Action Agenda (LPAA) at the Climate Summit held in New York, in preparation of COP20 in Lima. The LPAA aims to mobilise a range of public and private actors, including subnational governments, businesses, and civil society organisations, to set their own climate targets and launch immediate actions (UNFCCC, 2021b).

At COP21 in Paris in 2015, the participation of subnational and other non-state actors was unprecedented. More than 70 international coalitions were launched, and a large number of individual commitments were made by cities, regions, businesses, civil society organisations and other actors. It is not surprising that the adoption of the Paris Agreement marked an important shift in international climate governance: instead of determining mandatory targets top-down for participating countries, as enacted in the Kyoto Protocol or the Montreal Protocol, the Paris Agreement follows a bottom-up, "pledge and review" approach, relying on countries to determine their own contributions and levels of ambition in their NDCs. Developments at the subnational levels in many countries had been key to this shift, as in the years before more and more companies had invested in low-carbon business opportunities and adopted corporate social responsibility approaches; institutional investors demanded greater transparency on climate risks in business operations; and subnational authorities set themselves climate targets (Falkner, 2016). In line with a strengthening of domestic climate change commitments, the Paris Agreement recognises in its preamble "the importance of the engagement of all levels of government and various actors [...] in addressing climate change" (UNFCCC, 2015).

The Paris Agreement's architecture marked a new era of international climate governance.

The momentum for global climate action continued to build up and was further encouraged and facilitated in 2016 through the Marrakech Partnership for Global Climate Action, agreed on at COP22 in Morocco. The Marrakech Partnership seeks to catalyse and support climate action and voluntary collaboration between state and non-state actors, and to build the confidence that is required to increase ambition during 2017-2020. As such, it consolidates the foundations of the Global Climate Action Agenda (GCAA) in which cities, regions, businesses and others can present their climate actions and enter into direct dialogue with policy makers on how to accelerate the transition to a low-carbon economy (WBCSD, 2016).

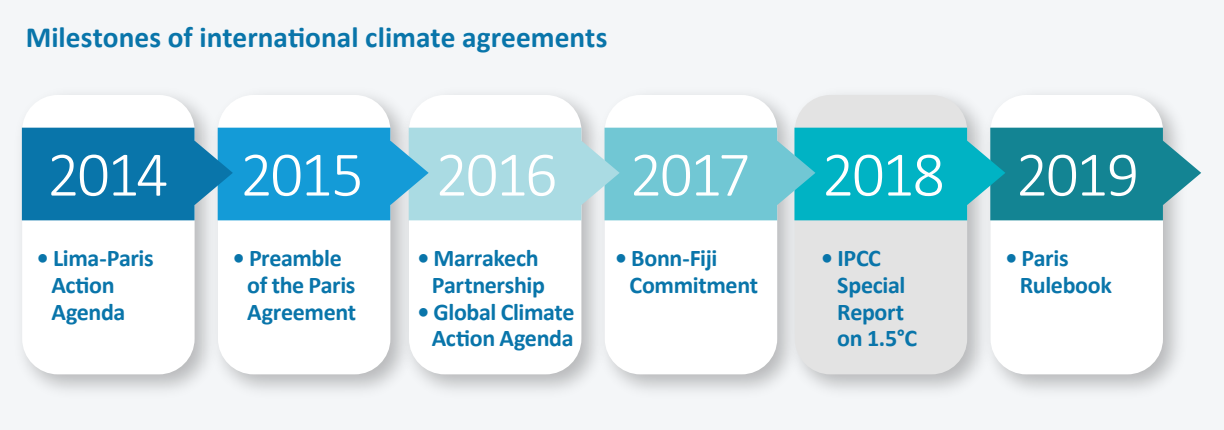
In 2017, local and regional governments gathered at the Climate Summit of Local and Regional Leaders at COP23 in Bonn and issued the Bonn-Fiji Commitment to Deliver the Paris Agreement at All Levels, a pledge that signals their commitment to support a critical shift in global development. One year later, subnational governments engaged in the Cities and Regions Talanoa Dialogues and pushed for concerted efforts to make multi-level climate action a standard part of national climate planning and implementation.

The Marrakech Partnership consolidated the foundations of the Global Climate Action Agenda.

The relevance of subnational climate action is increasingly being highlighted in science and politics.

Given that commitments made by national governments are, on aggregate, insufficient to achieve the global goals of the Paris Agreement, the IPCC emphasised in 2018 that "strengthening the capacities for climate action of national and subnational authorities, civil society, the private sector, indigenous peoples and local communities can support the implementation of ambitious actions implied by limiting global warming to 1.5°C" (IPCC, 2018). More recently, this has also been recognised in the Paris Rulebook[4] which stresses "the key role of a broad range of stakeholders, including regions, cities, the private sector, intergovernmental organisations, non-governmental organisations, decision makers, scientists, youth, women and indigenous peoples" for effective climate action (UN-Habitat, 2020).

Figure 10 Milestones of international climate agreements.



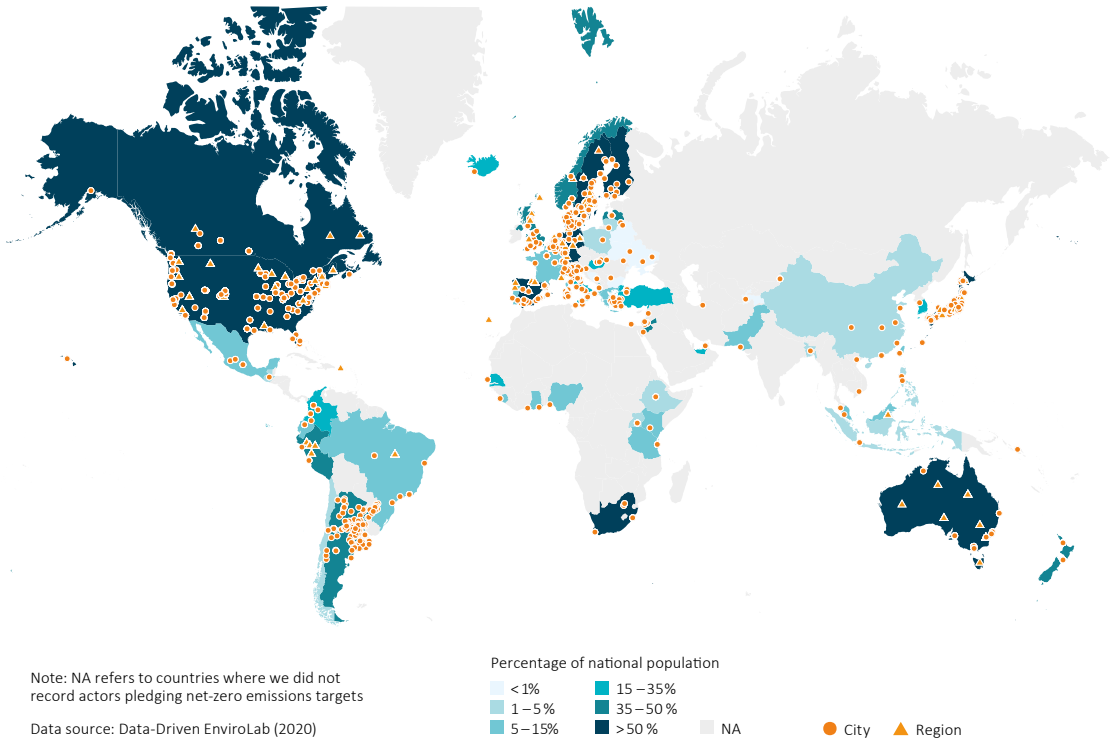
4 The IPCC Special Report on 1.5°C was a request of the Parties to the Paris Agreement. It is not an international climate agreement by itself, however, it represents a joint effort to provide science-based guidance of needed action to "pursue efforts to limit global temperature rise to 1.5°C. The "Paris Rulebook" is alsow know as the Katowice Climate Package and comprises a set of decisions from Katowice COP24, made by the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement (CMA). The Rulebook provides guidelines for the implementation and monitoring of the Paris Agreement, including guidance on inclusions in NDCs (UN-Habitat, 2020).

3.2 ESTIMATED SUBNATIONAL MITIGATION AND ADAPTATION POTENTIAL

Subnational climate action can help close the global emissions gap and plays a crucial role in boosting the adaptation agenda and strengthening local resilience.

Recent research shows that the mitigation potential of subnational actors is likely to be significant. A study assessing the potential GHG emissions impact of climate change commitments made by regions, cities and businesses finds that full implementation of the GHG emissions reduction targets set by subnational actors could lead to additional emissions reductions of 2.0 to 2.5 $GtCO_2e$ per year, compared to a baseline scenario in 2030 (NewClimate Institute *et al.*, 2021). This means that if fully implemented, this additional action could reduce the current emissions gap of 15-32 $GtCO_2e$ (for a 2°C and 1.5°C emissions pathway, respectively) by 8-17% (UNEP, 2020). Equally important, the mitigation potential of international cooperative initiatives (ICIs), in which subnational and non-state actors cooperate with national governments and international organisations to pursue common climate goals, is estimated to be high. If all ICIs' aspirational goals were fully implemented, this could lead to a reduction of 16 $GtCO_2e$ per year. This would, in turn, result in total emission levels that come close to the necessary range for a 2°C emissions pathway (NewClimate Institute *et al.*, 2021). While the collective ambition of national governments is slowly building up as well, the increasing number of initiatives involving subnational and non-state actors shows that international efforts toward global net zero emissions are strengthening and broadening in all sectors, including "hard to abate" sectors such as heavy industries, international aviation and shipping, freight transport and buildings and construction (NewClimate Institute *et al.*, 2021). The full potential of regional and local governments to realise deep emission reductions across all sectors, going beyond self-imposed targets and commitments, remains under-explored and requires additional research.

Figure 11 Map of cities and geographical regions pursuing net-zero emissions



Note: NA refers to countries where we did not record actors pledging net-zero emissions targets

Data source: Data-Driven EnviroLab (2020)

Beyond their undisputed relevance for climate change mitigation, subnational governments play a crucial role in advancing adaptation action and increasing the resilience of populations and ecosystems throughout their jurisdictions. Adaptation is typically location-specific, and respective strategies need to consider the territories where adaptation challenges occur. In many cases, national governments rely on subnational governments to develop policies and measures that help the population cope with floods, droughts, storms, or sea level rise (Sainz de Murieta & Setzer, 2019). National level adaptation policies and strategies, including National Adaptation Plans (NAPs), should ideally reflect the central role of subnational authorities and local organisations in implementing adaptation action on the ground.

3.3 CONSIDERATION OF SUBNATIONAL ACTION IN NDCS

The role of subnational actors in climate change mitigation and adaptation action is critical to achieve the global goals of the Paris Agreement (Kuramochi *et al.*, 2020). While current NDCs are not ambitious enough to hold global warming to below 1.5°C, the mobilisation of subnational climate actors can harness additional mitigation potential needed to strengthen and complement existing NDCs.

The latest NDC Synthesis Report highlights that only a few Parties mentioned the Marrakech Partnership for Global Climate Action in their updated NDCs, and rather scarcely referenced collaboration between national governments, subnational governments, businesses and other non-state actors. Yet, many Parties mentioned to have formal arrangements in place for multi-stakeholder consultations to guide the NDC planning and implementation process, showing a trend towards more inclusive and participatory NDC practices (UNFCCC Secretariat, 2021).

The consideration of subnational action can reinforce current NDCs which present an insufficient level of ambition.

Subnational actors and non-state actors play an important role in the NDC process.

The findings of the NDC Synthesis Report are largely reflected in this year's NDC Survey. Results of the survey suggest that the topic of subnational action is being recognised by national governments and plays an increasingly significant role in NDC planning and implementation (Figure 12).

Three quarters of all respondents (75%) agree or even strongly agree that subnational governments are involved in the NDC planning process, suggesting that domestic institutional arrangements have been put in place to allow for subnational engagement, for example, through formalised consultations. Even more respondents (81%) state that subnational governments play an important role in NDC implementation. This is in line with the general understanding that local and regional governments are crucial to implement national policies through measures and actions on the ground. Very few, only around 10% of all respondents, claim that subnational governments do not play a role in either planning or implementation of NDCs. This may be rooted in the political system of the respective countries and the absence of multiple tiers of government, or in the lack of capacity in both national and subnational governments to actively engage in multi-level collaboration.

Mirroring the trend of an increasing number of local and regional governments setting their own climate targets, slightly more than half of all survey respondents (60%) state that subnational governments have made commitments in support of NDC implementation. This may cover a range of pledges, including economy-wide and sector-specific targets as well as voluntary commitments. While this is an encouraging development, there is still room for improvement, as around 40% of respondents declare that subnational governments in their respective countries have not (yet) established climate targets, or they do not know.

Since the boundaries between subnational action and other non-state action (such as businesses, civil society, academia) are sometimes blurred – several initiatives involve both subnational governments and non-state actors – the survey included a similar set of questions on non-state action (Figure 13). While the picture is largely similar, it seems that there is slightly more confidence on the role and relevance of non-state actors for NDC planning and implementation compared with subnational actors, with slightly higher affirmative numbers. Interestingly, non-state actors seem to be particularly relevant for NDC *planning*, while subnational actors play a slightly stronger role in NDC *implementation*.

Figure 12 Rating of climate action by subnational governments.

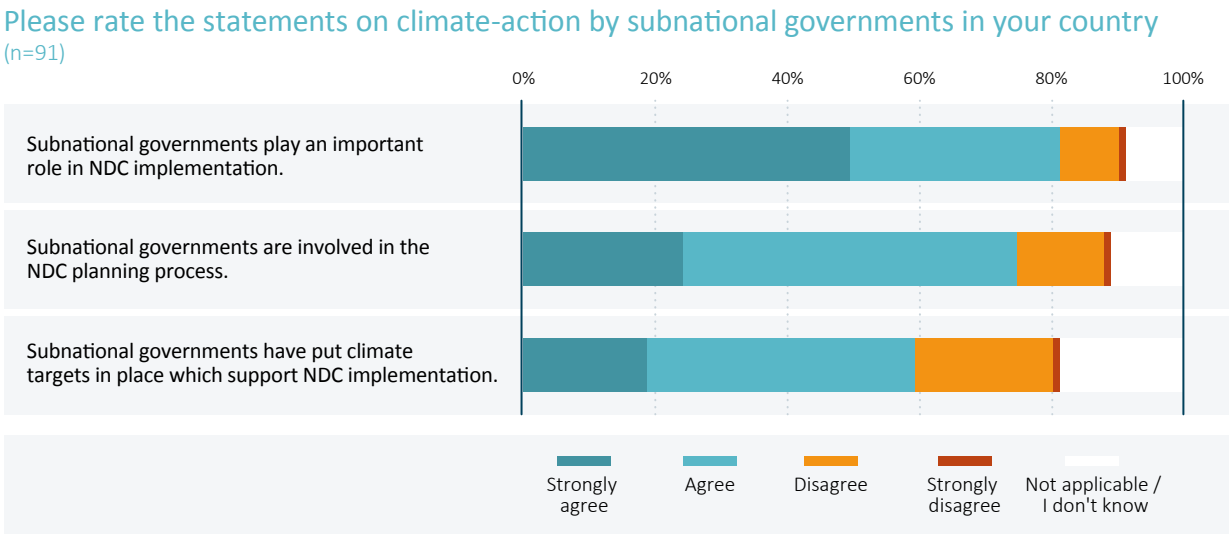
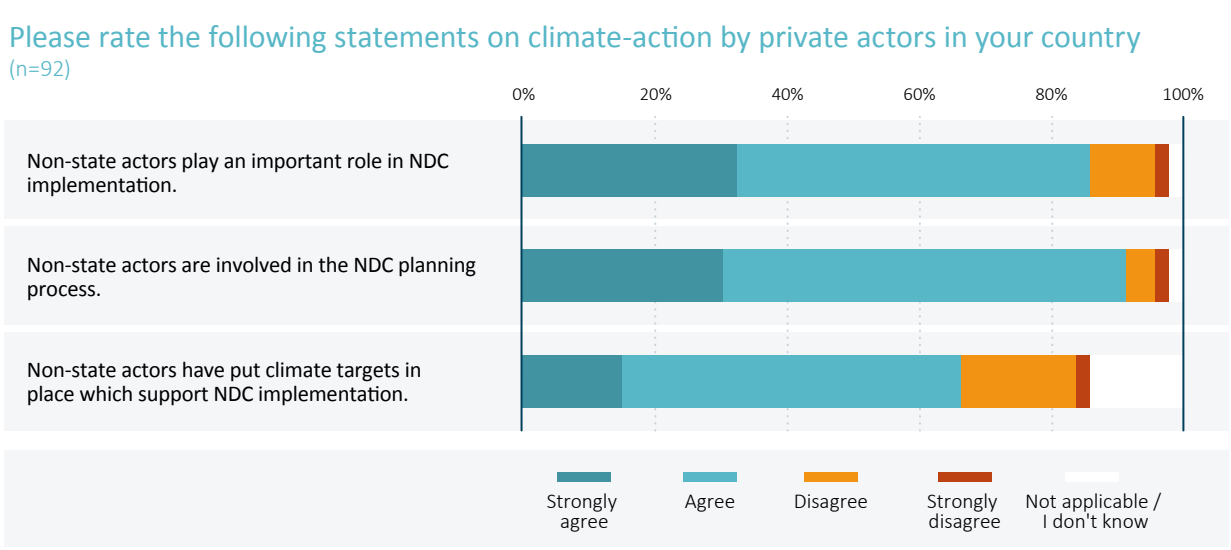


Figure 13 Rating of climate action by non-state actors.



3.4 CHALLENGES AND OPPORTUNITIES FOR MULTI-LEVEL NDC PLANNING AND IMPLEMENTATION

The NDC Survey results show that governments are, by large, aware of the potential that subnational actors hold and that it is important to consider their role and responsibilities in the NDC process. Yet, there are several governance- and NDC-related challenges that national and subnational actors may face when engaging in multi-level driven development and implementation of NDCs. Many of these challenges, however, have the potential to be turned into opportunities if managed adequately and effectively. Reinforcing the collaboration between different governance levels plays just as important a role in this as does improved guidance at the international level for NDC preparation.

GOVERNANCE ASPECTS

Effective coordination of climate action between multiple actors at national and subnational levels is a highly complex process which heavily depends on political systems and governance structures. Climate governance systems differ widely across countries with regards to the powers and capacities that are devolved from national to subnational governance levels. In some countries, the constitution assigns strategic powers and capacities to regional and local governments that allow them to act authoritatively in climate-related policy areas. In other countries, subnational governments lack legal competencies and financial capacity and largely depend on support from the national government to effectively implement climate action. Thus, while the active inclusion of subnational governance levels in climate policy making may promote climate action in some contexts, other regional or local governments may lack the resources to take a structured approach towards climate action planning and implementation. It is important to take these differences in governance structures into account and discover, on an individual country-level, what type of international and domestic support is needed to leverage the full climate action potential across all levels of governance.

Different levels of a climate governance system are inter-dependent and can lead to an ambition loop.

In a multi-level governance setting, opportunities to enhance climate action exist at all governance levels and in both directions, top-down and bottom-up. Subnational governments depend on a conducive framework set by the national government that empowers them to act through the devolution of powers and capacities (top-down), while national governments rely on subnational actors to inform national climate policies and implement climate action on the ground (bottom up). This also shows that climate action by subnational governments is no substitute for national level climate policies but can complement them and drive implementation: local and regional governments are much closer to the people and the actions that ultimately enable a transition, while national governments provide overarching rules and regulations. If coordinated well, both can reinforce each other.

There is potential for different levels of government to build “ambition loops” in which increasingly progressive policies and targets enable each governance level to go further and faster. This means that national and subnational climate targets can iteratively support each other to ratchet up. If, for example, a province sets itself an ambitious emissions reduction target, this may prompt the national government to strengthen the national level climate target in support of and to exceed provincial climate ambition. Stronger climate policies and a more ambitious target at the national level may then enable the provincial government to go even further.

AMBITION LOOP TOWARDS NET ZERO: A CASE OF JAPAN

In October 2020, then-prime minister Yoshihide Suga announced that Japan would aim for net zero GHG emissions by 2050 (Prime Minister of Japan and His Cabinet, 2020). This 2050 net zero goal has since been enshrined in national legislation (MOEJ, 2021).

While Japan's 2050 net zero goal may have in part been triggered by similar announcements of other major emitters, notably China's declaration to reach carbon neutrality by 2060 one month before, there was already strong momentum for net zero built up domestically, driven by subnational governments and non-state actors (Kameyama, 2021). By the time the national net zero goal was announced, most local and regional governments - that collectively account for about two-thirds of the total population – had some kind of net zero carbon emission pledges in place (MOEJ, 2021). Various subnational and non-state movements, including the Japan Climate Initiative, and a wave of climate emergency declarations by subnational governments have evidently affected Japan's national policymakers in bottom-up manner (Kameyama, 2021). This led not only to the announcement of a net zero goal in the long term, but to an update of Japan's NDC target, from 26% emissions reduction in the country's first NDC to 46% in the updated NDC (Climate Action Tracker, 2021b). The updated NDC is now likely to trigger subnational governments top-down to strengthen their interim targets for 2030 to stay in line with national level policies.

Governance structures ultimately determine opportunities and limitations of subnational action within and across sectors.

Based on their powers and capacities, the sphere of influence of subnational actors varies across sectors but is agreed to be comparatively strong in the electricity supply, buildings, transport, and waste sectors as well as in land-use planning (Lydén, 2021). City councils, for example, often have the power to implement climate policies in the transport sector, such as citywide speed limits (Paris), fees to avoid congestion (London) or a ban of diesel cars (Berlin). Furthermore, many subnational governments have a mandate for spatial planning. This allows them to enhance regional territorial development, such as the strengthening of cooperation between metropolitan regions and rural areas, while protecting the climate and increasing local resilience. Yet, there may be important areas that subnational governments have a general interest in and the necessary know-how to act but lack the official competency, such as grid infrastructure development or highway planning. However, even where subnational governments do not have the competency to take independent action, they may still have the capacity to influence national level policy making, including through agenda setting and making sure that local needs, priorities, and challenges are adequately reflected in national plans and strategies.

NDC-RELATED CHALLENGES AND OPPORTUNITIES

The success of harnessing the full mitigation and adaptation potential of subnational actors depends, to a degree, on the extent to which NDCs envisage a role for subnational action. Analysis of the first round of NDCs has shown that links between national climate strategies and subnational action in first NDCs are weak (Hsu *et al.*, 2019). While several developing countries' NDCs refer to subnational governance levels, mostly in the context of adaptation action, only a few NDCs of developed countries show links to subnational actors or initiatives. A reason may be the limited NDC guidance provided to countries and that while several documents and agendas (e.g., Paris Agreement, GCAA, Paris Rulebook) highlight the relevance to engage subnational actors in the national climate policy process, they do not specify how this is to be achieved nor do they require the inclusion of subnational action in countries' NDCs. This suggests that there is huge potential for national governments to explicitly incorporate subnational action in their updated NDCs to further catalyse engagement.

Limited NDC guidance may prevent the inclusion of subnational action into countries' NDCs.

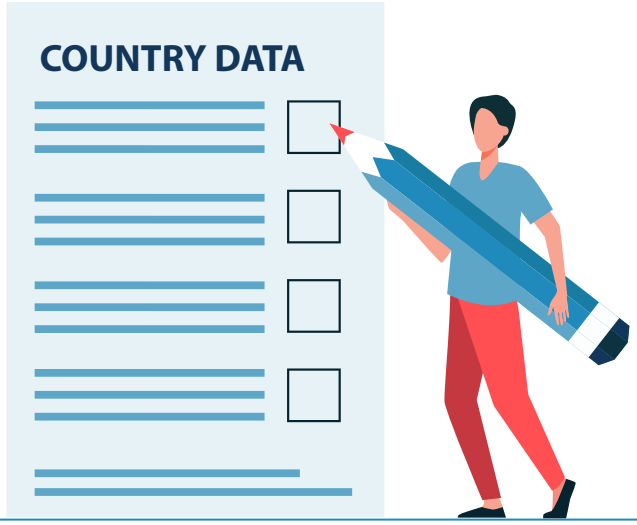
THE DUTCH CLIMATE ACCORD AND REGIONAL ENERGY STRATEGIES

The 2019 Dutch Climate Accord ('Klimaatakkoord') is a statement of intent between several public institutions, civil society organisations, and large emitters in the Netherlands, with the aim of reducing CO_2 emissions with 49% below 1990s by 2030 (Klimaatakkoord, 2019). It is the result of a carefully managed multistakeholder process and contains over 600 concrete, albeit non-binding agreements to take action on emission reduction. As a uniquely Dutch exercise in 'polderen', a method of consensus decision-making, it has been successful in putting local climate ambition and action in the spotlight – whether this approach is well-suited to drive the transition to full decarbonization remains to be seen.

As part of the implementation of the Climate Accord, 30 regions have been tasked with the formulation and submission of a 'regional energy strategy' (RES). These local strategies comprise an inventory of local initiatives and restrictions on ambitious climate action. They will form the basis for discussions between national and local governments, and are expected to go through a process of regular revision and updating. At the time of writing this report, the first round of RES submissions has been submitted and is under evaluation by the Dutch Environmental Assessment Agency (PBL). For more information, see https://www.klimaatakkoord.nl/ (in Dutch).

Closely linked to the challenge of defining a concrete role for subnational action within NDCs is the lack of harmonised methods and reporting frameworks at regional and local governance levels to assess the full potential of subnational climate action and ensure robust emissions accounting. Harmonised approaches provide the foundation for developing comprehensive and transparent data sets, identifying mitigation potentials, assessing resource needs, and measuring progress of climate action within and across sectors. Increased transparency and comparability of data can drive subnational climate action and strengthen the credibility of local and regional commitments. Furthermore, inventories and reports compiled at a subnational level can inform the development of national level NDCs and their implementation planning and can be used for the preparation of national reporting materials under the Paris Agreement's Enhanced Transparency Framework. Hence, the provision of harmonised approaches that ensure greater transparency, comparability and accountability of subnational climate action, together with support for their implementation, may drive additional action and contribute to raising NDC ambition.

Greater transparency and accountability for subnational action can help unveil the full potential in the NDC process and help drive ambition and dynamism.



3.5 OUTLOOK: TOWARDS A LOCALISATION OF THE NDC PROCESS

To date, the NDC process has had a strong focus on national governments and has been largely detached from action and effect at local and regional governance levels. Against this background, options for a "localisation" of the NDC process have recently entered the debate. The concept of localisation has traditionally been used with reference to the 2030 Agenda and the implementation of the SDGs, but has recently been applied to the climate context and the NDCs. Lydén (2021) understands the localisation of NDCs as a process in which subnational governments translate, internalise, and ideally go beyond the national NDC targets to develop and implement corresponding policies and measures. Successful localisation of NDCs thus requires active engagement of subnational governance levels in the NDC development, planning, and implementation phases.

The inclusion of subnational levels in the formulation of NDCs is a major opportunity to enhance climate action within and across countries. Evidence from different country case studies has shown that a bottom-up, participatory process for the development of an NDC, involving all levels of government as well as the private sector and civil society, can help harness the additional potential for climate action beyond the national level (GIZ/ UN-Habitat/ ICLEI, 2017; NDC Partnership, 2019, 2020). Multi-stakeholder consultations can facilitate the collection of local and regional information on emission sources, mitigation potentials and climate impacts, as well as on the specific challenges faced by subnational governments. This can inform national NDC planning and ensure alignment of strategies and policies across governance levels. At the same time, such consultations can promote buy-in from a wide range of local and regional stakeholders and encourage them to take ownership and actively engage in NDC implementation. Importantly, the involvement of subnational governance levels in the NDC process can make sure that the government does not lose contact with the population in the country. In fact, the closeness of subnational governments to citizens and communities can be seen as a major opportunity to engage and build broad support for ambitious climate policies among the wider population. Thus, through ensuring that people and local contexts, as well as their respective needs and priorities, inform national climate commitments, the prospects for effective implementation of the NDC can be increased.

The debate around integrating subnational contributions into national climate commitments such as the NDC is gaining momentum. In 2018, the European Committee of the Regions (CoR) presented and formally endorsed the concept of Regionally and Locally Determined Contributions (RLDCs). According to the proposal, RLDCs could contain a set of targets and measures to reduce GHG emissions brought forward by subnational governments. Ideally, RLDCs would be included in the NDCs so that the commitments and achievements of subnational governments would be officially measured and acknowledged (Cooper, 2018). The intention of this concept is to counterbalance the lack of formal accounting and reporting methods for subnational climate action in the Paris Agreement. Based on the RLDCs, the national inventory reports prepared under the Enhanced Transparency Framework could include a section on actions and emission reductions from subnational governments. This would urge national governments to involve regional and local authorities in the development and planning of national commitments and throughout their implementation.

Localisation of the NDC process can help further align the climate and sustainable development agendas.

The localisation of the SDGs and a multi-level governance approach towards respective policymaking has been gaining momentum in recent years, and can offer suitable entry points to better align climate action with sustainable development (Climate Chance, 2021). Local and regional governments take a critical role in managing the socio-economic impacts or "co-benefits" of countries' transitions towards a low-carbon economy. Their competencies and closeness to the population make them the most suitable actors to consider the needs and priorities on the ground. In this role, they must ensure and credibly demonstrate that climate action is not carried out at the expense of essential sustainable development objectives, such as employment, health, gender, or education, but ideally supports them or at least involves effective management of trade-offs. Concepts like "just transition" or "leave no one behind" are gaining traction in this context as they call for national policies to consider local realities in the transition process. A successful localisation of the NDC process may therefore help establish structures that further strengthen the link between the two agendas and ensure that synergies and trade-offs identified at subnational levels are appropriately reflected in national frameworks.

4. BEYOND THE SMOKESCREEN: CO-BENEFITS AND TRADE-OFFS TO SUPPORT AMBITIOUS CLIMATE ACTION

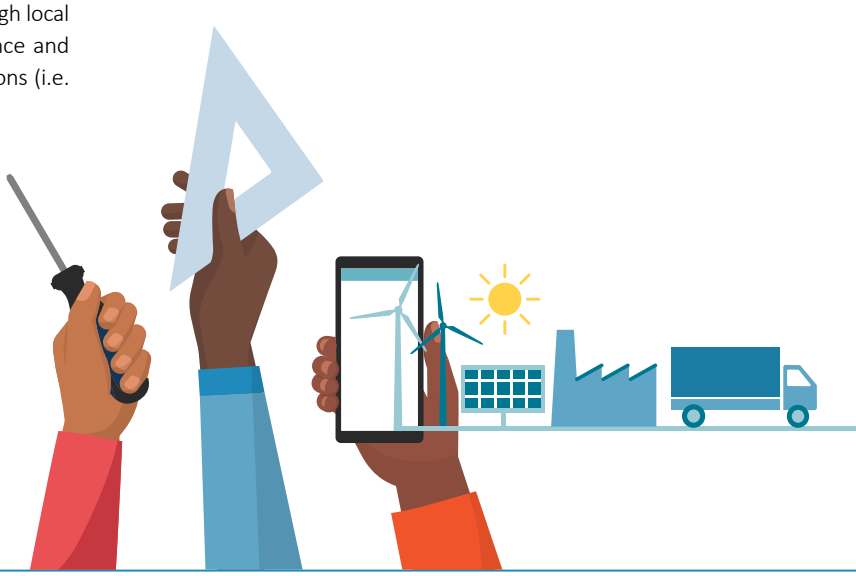
Reaching net-zero by 2050 will require all countries to step up climate action across all sectors and levels of governance. It is reasonable to expect that climate action is most effective and climate ambition is highest if it also shows positive contributions to (non-climate) development priorities such as employment and business opportunities, health improvements, and improvements in energy security. Co-benefits narratives are used as underpinnings for inclusive transition and green recovery strategies and can be powerful in arguing for increased climate ambition and decisive action within and across government levels.

In this chapter we argue that narratives can be powerful, but should not be used as a smokescreen to cover up inaction or delay; it's actions that matter. There are many opportunities for climate and development goals to align, but we are running out of time and no longer have the luxury to focus only on win-win propositions or postpone decisions on climate action until innovation brings down the costs of climate action. Our survey results show that alignment of SDGs and NDCs is stronger than in the 2018 edition (van Tilburg *et al.*, 2018). However, despite mounting evidence of co-benefits, it is not straightforward to turn this evidence into higher ambition and faster action (Rawlins, 2019). Looking ahead, we expect co-benefits analyses to be especially relevant for NDC implementation through local climate action, for assessing interactions with resilience and adaptation, and for planning inclusive and fair transitions (i.e. climate justice).

4.1 NARRATIVES CAN BE POWERFUL, BUT IT'S ACTIONS THAT MATTER

Since the start of the COVID-19 pandemic forced countries into various degrees of lockdown starting in spring of 2020, governments have responded with policies to buffer the impacts. Short-term crisis responses were mainly aimed at protecting capital and labour. Over time, the focus shifted to recovery measures to get economies back on track as quickly as possible and with minimal structural damage. Given that huge amounts of money were to be spent, the co-benefits narrative suggested an overwhelmingly strong case for a green recovery, and in April 2020, G20 Finance Ministers committed to "support an environmentally sustainable and inclusive recovery" (G20, 2020). This ambition is increasingly referred to as building back better and moves forward a number of urgent decisions with long-term effects. The OECD argued that building back better calls for a people-centred recovery that "focuses on wellbeing, improves inclusiveness, and reduces inequality" (OECD, 2020),

A strong case for green recovery and building back better?



Climate and development meet, but it's not always positive and we are running out of time.

But are co-benefits narratives really that powerful in practice? Or are they merely cleverly worded smokescreens in an attempt to obfuscate delays and non-action? Greta Thunberg voiced the frustration of many people, young and old, when she addressed government leaders in her pre-COP26 keynote speech in Milan (Thunberg, 2021): "build back better blah blah blah, green economy blah blah blah … our hopes and dreams drown in their empty words and promises".

Almost two years after the start of the COVID-19 crisis, it is hard to be optimistic about how the good intentions on green recovery and building back better are working out. The Greenness of Stimulus Index (Vivid Economics, 2021) finds in July 2021 that the announced stimuli will have a net negative impact in 15 of the G20 countries and the economic response to COVID-19 will reinforce negative environmental trends. The IEA Global Sustainable Recovery Tracker (IEA, 2021) observed in October 2021 that while governments have mobilised 16 trillion USD in fiscal support throughout the COVID-19 pandemic, most of it focused on emergency financial relief for households and firms. With only 2% of governments' recovery spending going to clean energy transitions, global emissions are set to surge to an all-time high. Based on its Green Recovery Database, the OECD found in October 2021 that its members spend only around 20% on green recovery and, hence, the rest on restoring the existing, unsustainable modes of production and consumption (OECD, 2021).

Be aware that, however compelling they may sound, narratives about win-win opportunities, green jobs, and other development impacts driving ambition are all too often used by politicians as a smokescreen to cover up for inaction and delaying difficult decisions. It is mitigation action that reduces emissions, and not greenwashing or greenwishing.[5]

To put the world on a pathway towards sustainable and climate-compatible development, in 2015, world leaders agreed on the top-down Agenda 2030 on the Sustainable Development Goals (SDGs) and the bottom-up Paris Agreement on limiting global warming to well below 2°C with its nationally determined contributions (NDCs). These international UN-led frameworks for achieving climate and development objectives are separate, but not independent. There is an obvious, but sometimes uneasy relationship between climate and development objectives because actions taken to reduce GHG emissions are likely to impact development priorities in other sectors.

Many linkages between climate actions and development outcomes can be positive, in which case objectives are mutually reinforcing, but the two are not always neatly aligned and they may involve difficult trade-offs or unrecoverable costs. Moreover, even in cases that the net impact of climate action is neutral or positive, this could very well hide trade-offs across aspects of development (*i.e.* SDGs), between groups of stakeholders, or across current and future generations.

In recent years, it has become clear that we are running out of time in our quest to stay well below 2 degrees. The 2018 IPCC report on 1.5 degrees was a wake-up call in that regard and set the timeline for decarbonisation from "somewhere in the second half of the century" to 2050 or shortly thereafter, while global emissions need to halve in 2030 to keep that option open. Further emphasising the urgency of action and the potential gravity of the consequences of inaction, the 2021 IPCC report AR6 has a bleak message: climate change is real, it's caused by our current modes of consumption and production, and the consequences are bad.

As a result, we no longer have the luxury to focus only on co-benefits as win-win propositions or wait until innovation and technological improvements bring down the costs of climate action. Instead, we must recognize that some of the (very) urgent climate actions come with trade-offs, costs, and/or disruptive changes in behaviour and consumption patterns.

5 In contrast to greenwashing, which is harmful marketing spin, greenwishing is "the earnest hope that well-intended efforts to make the world more sustainable are much closer to achieving the necessary change than they really are" (Austin, 2019).

4.2 ALIGNMENT OF NDCS WITH SDGS IS GETTING STRONGER

When asked about synergies between climate action and development priorities, many respondents to our survey report that co-benefits have been identified and considered in the process of updating their NDC (42% agree, 40% strongly agree), and the survey results suggest that many countries have started quantifying development impacts of climate action in one way or another (44% agree, 22% strongly agree, but 26% either disagree or are not sure). Most respondents indicate that their NDC is closely aligned with the SDGs and their country's sustainable development agenda (41% agrees and 57% strongly agrees).

These results show increased attention to co-benefits in climate ambition and action planning. No matter the specific reasons, the results of the 2021 survey present a real shift from previous editions. For example, in the 2018 NDC Survey only half[6] of the respondents stated that the benefits of mitigation action were 'clear and well-articulated'. We believe that these results are consistent with the observations that 1) compared to the period before the first round of (I)NDCs, in 2014-2016, there is now much more pressure on governments to show ambitious climate action, either because of increased urgency or more political and societal pressure, and 2) the recent NDC update processes coincided with governments' urgent need to respond to the COVID-19 crisis and plan their subsequent recovery. The aforementioned calls for governments to push for a 'green recovery' and take the opportunity to 'build back better' may have resulted in strong focus on the development impacts of climate action.

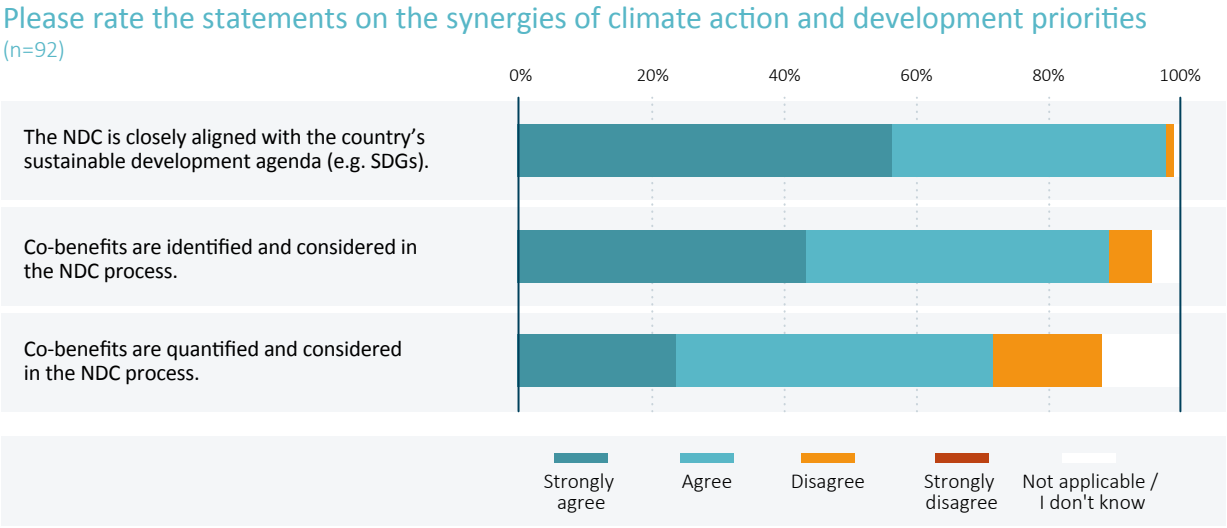
The final questions in the survey asked respondents to reflect on inspiring examples of cases where climate and development co-benefits go hand-in-hand in their own country and where they see potential for learning from others. Most of the cases mentioned that supporting national climate and development ambition have significant local impacts such as preventing forest degradation and protecting ecosystems (12 cases), reducing pollution and increasing health for communities (8 cases), and increasing job creation, energy security, productivity, and economic diversification (13 cases).

The potential for learning from other countries highlights three areas of interest: 1) implementing complex and economy-wide policies (*e.g.* carbon taxes in the EU) and showing how these can be implemented without compromising growth or exacerbating inequality; 2) city-level planning of clean(er) transport systems and infrastructure resilience (*e.g.* Copenhagen, Malmö); and 3) practical experiences with large scale ecosystem protection initiatives (*e.g.* Ethiopia's Green Legacy Initiative) and integration of gender considerations into climate action planning (*e.g.* Ecuador).

What do you find inspiring? Local impacts and learning from peer-countries.

6 Back then, this survey result was considered 'optimistic' and not in line with what the Ambition to Action project observed in its on-the-ground support activities, nor with the evidence from exchanges with international experts (van Tilburg et al., 2018).

Figure 14 Rating on the synergies of climate action and development priorities (co-benefits)



4.3 CO-BENEFITS EVIDENCE AND ITS USE IN DRIVING AMBITIOUS CLIMATE POLICY

Before the onset of COVID-19, an analysis conducted as part of the A2A project, (2019) finds that the evidence base of co-benefits of climate action is now well-established and continues to grow. With early publications dating back as far as the early 1990s, co-benefits feature prominently in several recent reviews, including the 2018 IPCC Special Report on 1.5°C, where chapter 5 explores the linkages between climate action across many sectors and the 17 SDGs. In general, the findings show that the impact on pollution and health is predominantly positive, with mixed evidence for positive economic impacts, and a combination of positive and negative impacts in areas such as water, biodiversity, and food security. Overall, the number of positive impacts is often large. This is a hopeful sign in support of increased climate ambition and action.

On the question of co-benefits evidence use in policy making, findings are less conclusive. Despite the growing evidence base, co-benefits are often not included in climate action cost-benefit assessments and do not play a prominent role in the policy narrative. Experts interviewed for the study identified a range of challenges that prevent the uptake of co-benefits in policy decision making. These include, among others: lack of specific data and large effort required for assessments, tendency for climate policy to focus on 'efficiency' and cost minimization, institutional separation between policy communities – along with a preference for policies that target one issue at the time, misalignment of impact timescales and policy decision making timescales, and misinformation and lobbying from vested interests (*i.e.* incumbents that stand to lose from change).

The evidence base on co-benefits is well established and growing but often not used in policy decision making.

Health impacts of phasing out fossil fuels are typically large and overwhelmingly positive, but not acted on accordingly. Climate change can pose a real and direct risk to human health, and so do most fossil fuel-based technologies that climate mitigation actions are trying to replace. A changing climate can have various negative effects on health and mortality. For example, through exposure to hot and cold weather extremes, floods, and storms, and increases in vector-borne diseases such as malaria, dengue fever, and several others (IPCC, 2014) Similarly, burning fossil fuels in power plants, machinery, and vehicles can cause a variety of diseases through air pollution; not because of CO_2 emissions, but rather through the impacts of emissions of particulate matter (PM2.5), NO_x, and SO_2. Despite a large and convincing body of literature describing these risks and associated (quantified) increases in illness and mortality, "evidence suggests that human health has remained elusive in its influence on the development of ambitious climate change mitigation policies for many national governments" (Workman *et al*, 2018, quoted in Rawlins, 2019). In other words, health co-benefits of phasing out fossil fuel are positive and large, but in most cases not compelling enough to trigger action.

Among co-benefits, those related to energy security have a special position[7]. Energy security can be a driver for ambitious climate policy, but more importantly, ambitious climate policy needs to come with energy security guarantees to be politically feasible and sustainable. Energy security is so directly linked to economic progress and development, that disturbances can quickly lead to social discontent and economic stagnation. This means that understanding the energy security impacts of the transition, who they affect specifically, and where they can be influenced, is crucial to a smooth transition.

> *Health benefits don't seem compelling enough and energy security can be a deal breaker.*

4.4 DEVELOPMENT IMPACTS IN PRACTICE

As part of the Ambition to Action project, the team has developed a number of tools to help policy makers with the task of identifying co-benefits of mitigation actions and NDC ambition raising across a range of sectors and themes. Three of these tools[8] have been applied to evaluate national level integrated low-carbon pathways (Argentina, 2019; Mongolia, 2019; Thailand, 2019), but also to assess the impacts of actions in specific sectors such as solar PV development and coal replacement (Indonesia, 2019; 2021) and of pathways for clean cooking solutions (Kenya, 2021).

- The SDG Climate Action Nexus tool (**SCAN-tool**) is a visual aid to help policymakers understand whether the climate actions they are considering for their NDC targets are likely to reinforce or undermine the SDGs. It is based on existing literature studies and offers a high-level starting point that can be followed up by more context specific and detailed analyses.
- The **AIRPOLIM-ES** is a spreadsheet-based model that uses an accessible methodology for quantifying the health impacts of emissions of particulate matter (PM2.5), NO_x, and SO_2 from different sources of electricity generation and other fuel combustion. It distinguishes between mortality from four adulthood diseases: lung cancer, chronic obstructive pulmonary disease, ischemic heart disease, and strokes, the prevalence of which is increased through exposure to air pollution.
- The **EIM-ES** is a spreadsheet-based economic model used to estimate the domestic employment impacts of investments in new electricity generation capacity within a country. Direct employment creation over time is the key focus of the model (*e.g.* for manufacturing equipment, construction of plants, professional services, etc.). In addition, the tool calculates indirect and induced employment impacts by drawing on input-output tables for the economy.

7 For a more in-depth look at energy security co-benefits, see the A2A working paper 'Co-benefits on the interface between energy security and ambitious climate policy' (van Tilburg et al., 2019).

8 All the tools developed by the A2A project, as well as the country analyses, are available for download on the project website (https://ambitiontoaction.net/). Note that some of the country analyses are work in progress and the results may not yet be available.

CASE STUDY: ALTERNATIVE ENERGY PATHWAYS FOR THAILAND

Our 2019 analysis of alternative energy pathways for **Thailand**, which is increasingly dependent on imports for its gas-based power supply, shows that if the country follows a high renewables pathway it can significantly reduce GHG emissions beyond its current NDC ambition without causing net job losses in the power sector (WWF, 2016). In fact, the analysis shows that investments in the local economy double. Since most of the investments in the renewables scenario are in capital goods instead of fuel, they are more likely to support development of a knowledge economy and increase local industrial capability in modern technologies.

CASE STUDY: FUTURE PROOF JOBS FOR ARGENTINA

Our 2018 analysis for the energy sector in **Argentina** paints a similar picture, in that scenarios with a higher share of renewables are expected to have supported at least as many jobs as the more conventional scenarios with higher fossil fuel shares. The important difference that clean energy jobs are future-proof, while jobs associated with fossil fuels will need to be phased out sooner rather than later (in order to honour the Paris Agreement). The renewable energy sector will require new skills and provide higher quality, future-proof jobs compared to the fossil fuel sector. In contrast, communities which currently rely on fossil-based industries may need to be compensated and accompanied by policy interventions to ensure a socially just transition (Hagemann *et al.*, 2020).

CASE STUDY: COAL PHASE-OUT FOR INDONESIA

Our 2020 and 2021 our analyses for **Indonesia** take a closer look at solar photovoltaic (PV) as a clean alternative to coal-powered grid-connected electricity supply. Despite a very low uptake in 2019 of only 19 MWp, to facilitate the imagination, we analysed the prospects and impacts of rapidly replacing the 3.4 GW Suralaya coal power plant near Jakarta with 10-15 GW of solar PV and find that this could come with substantial development benefits: up to 15,000 premature deaths can be avoided in the greater Jakarta area and it would avoid up to 270 million tons of GHG emissions. Moreover, it can contribute to a more a resilient and decentralised power system without the need for costly backup power, and deliver over 100,000 jobs in construction, manufacturing, and professional service sectors, offering a trajectory for building future-proof capacity and skills in the Indonesian workforce.

CASE STUDY: RESIDENTIAL COOKING IN KENYA

Our 2021 **Kenya** analysis provides some new and additional insights on the specific link between residential cooking solutions, climate change, and health impacts. Based on the modelling of different possible development pathways for the Kenyan residential cooking sector, we quantify GHG emissions and mitigation potentials of each pathway, estimate the fuel mix and energy demand, evaluate the type and level of exposure to household air pollutants and assess the respective impact on human health. Notably, the results show that even small improvements in the fuel and technology used by households to prepare their food can have significant impacts on human health. If Kenya implemented its updated NDC with respective measures in the cooking sector, this could avoid up to 145,000 premature deaths over the timeframe of 30 years. If the country brought the sector on a net zero pathway, this could save up to half a million lives until 2050.

4.5 BEYOND THE SMOKESCREEN

While using synergies with development priorities as an argument to raise national climate ambition has seen only limited success, the challenges mentioned earlier may not be as pronounced in a subnational context for a number of reasons. Rawlins (2019) suggests that subnational level analyses could be the sweet spot for effective co-benefits-based narratives for a number of reasons. Linkages between SDGs are easier to see and exploit when city or province-level departments have multiple agendas to serve at the same time instead of national decision makers in siloed ministries that deliver on specific topics only (*e.g.* spatial planning, transport, electricity, agriculture, housing, health). And while national commitments can be abstract and generic, local options are often much easier to recognise and communicate because they are realistic and appeal to constituents of a specific region, city, or neighbourhood.

Cities across the globe face the twin challenges of reducing their greenhouse gas emissions and increasing resilience to the impacts of climate change at the same time. This typically requires an integrated approach to city climate action planning, which means that all sectors and their interactions are considered, both in their present configuration and in the future. This integrated approach is relatively new, and the IPCC in its fifth assessment report notes about climate-resilient pathways that they are 'development trajectories that combine adaptation and mitigation to realize the goal of sustainable development' but that "the amount of supporting evidence is relatively limited because so many aspects have yet to be experienced and studied empirically" (IPCC, 2014). In their updated NDC, several countries consider that their adaptation actions have 'mitigation co-benefits' which are sometimes included in their mitigation pledges (UNFCCC Secretariat, 2021).

Mitigation as co-benefit of increased resilience, or the other way around?

The transition to net-zero will be relatively fast and it will involve large-scale upgrading of capital goods, reshuffling of businesses and profitability of entire sectors, and fundamental changes in behaviour. Choices around technologies, as well as speed of implementation, inevitably create (and sustain) winners and losers. So, in preparing for such change, it is critical to keep an eye on equity and fairness. Here too we find that the subnational level has an advantage: winners and losers are more easily identifiable and don't get lost in 'net impact calculations' and aggregates. The analysis of impacts is critical to enable government to create just transition frameworks, identify climate policy related risks and, in particular, transition opportunities for the economy (and sectors).

Climate justice: identifying winners and losers.

5 PERSPECTIVES: THE ROLE OF SUBNATIONAL ACTORS IN DRIVING AMBITIOUS CLIMATE ACTION

There is broad awareness in the international community as well as within national governments that subnational actors play an important role in NDC planning and implementation. Yet, the full mitigation potential of subnational governments, governance-related powers to act on climate and their respective role in the NDC process still need to be better understood. We ask institutions to share their views from different perspectives on the same question: *"Looking at challenges and opportunities of NDC implementation, what is the role of subnational actors in driving ambitious climate action?".*

5.1 MOVING FROM NET ZERO TARGETS TO IMPLEMENTATION

WRI comments on the wave of net zero pledges that cities are putting forward and discusses key factors required to put words into deeds. First, transparency and robustness of targets and underlying actions are necessary to ensure that the targets can be met. Second, innovation and the upscaling of proven models, notably in front-running cities, pave a way for ambitious climate action.

5.2 TECHNICAL ASSISTANCE TO LOCALISE UPDATED NDCS

The **NDC Partnership** shares insights of technical assistance projects provided to its member countries to integrate subnational and non-state actors in national NDC planning processes. The NDC Partnership also argues that more inclusive NDC processes may enhance the ambition of national commitments.

5.3 TIME FOR MULTILEVEL ACTION: WHAT GOVERNMENTS CAN DO TO SUPPORT LOCAL ACTORS

The **ICLEI World Secretariat** discusses the impact of subnational networks to enhance multilevel exchange and climate action. It provides key insights from these networks on how governments can support climate action at the subnational level.

5.4 TOGETHER, NATIONAL AND STATE GOVERNMENTS CAN AIM HIGHER

The **Under2 Coalition** showcases ambitious climate action at the level of regional and state governments and argues for the need of better exchange between national and subnational actors to raise climate ambition.

5.5 WHEN CITIES AND CIVIL SOCIETY MOVE FASTER THAN THE NATIONAL LEVEL

BUND discusses the front-running role that several cities and civil society have taken in the last decades, such as by declaring climate emergency. BUND argues that the closeness of cities to many stakeholders provides them with a strategic role in climate action implementation and that governments need to support subnational actors to jointly increase ambition.

5.6 ACCELERATING INVESTMENTS FOR LOW-CARBON CITIES

Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH provides insights from the Financing Energy for Low-Carbon Investment – Cities Advisory Facility, in short FELICITY, in which it cooperates with the European Investment Bank to support city-level climate measures. GIZ highlights the many opportunities in a city context that can be triggered through sufficient financing.

5.1 MOVING FROM NET ZERO TARGETS TO IMPLEMENTATION

Authors: *Tom Cyrs and Cynthia Elliott (WRI)*

State and city governments are often in the vanguard of ambitious policy adoption, driving virtuous cycles to unlock action in critical sectors of the economy (Elliott et al., 2018). Together, they can leverage their collective weight to send strong market signals to national governments and the private sector. Examples of this phenomenon abound, such as the rollout of more comprehensive national rules to phasedown hydrofluorocarbon (HFC) emissions in the U.S.A. led by the efforts of state governments, or by state-led landscape restoration commitments that enabled the federal government of Brazil to pledge to restore 12 million hectares of deforested land by 2030 (EPA, 2021; Steer & Horn-Phathanothai, 2019). Subnational actors are also at the frontlines of implementation, ensuring not only that national targets are achieved, but that benefits are equitably shared with vulnerable and disadvantaged constituencies.

An increasingly prominent example of the collective weight of subnational actors has been a recent surge of net-zero emissions targets. A 2021 survey from Oxford found that 19% of the world's largest countries, cities, regional governments, and businesses have now adopted net-zero targets (including 73 regional governments and 155 cities) (Black *et al.,* 2021). This momentum is striking, given a net-zero target at the national government level was only first adopted in 2017 (Climate Watch, 2021).

MOVING FROM TARGET-SETTING TO IMPLEMENTATION

The growth in net-zero targets demonstrates increasing alignment between the world's largest regions, cities, and other government entities and what the science tells us is necessary to stave off the worst impacts of the climate crisis. Of course, targets on their own are only the first step, and as subnational governments move from target-setting to implementation, the following factors will be critical to their ability to truly drive emissions reductions:

TRANSPARENCY AND ROBUSTNESS:

Net-zero targets must be backed up by clear monitoring and reporting along with science-based planning for specific emissions sectors. Adhering to basic guiding principles can also help avoid the risk of greenwashing, whether real or perceived. These include: prioritizing emissions reductions over the use of "offsets" from outside jurisdictions; prioritizing emissions abatement over removals; and complementing net-zero targets with near-term investments and policies, rather than using them as a pretext for delayed action (Levin *et al.*, 2020).

National platforms play a role in driving improved transparency, and subnational governments can report targets and progress through national registries or as a part of a government's NDC process. Global platforms for subnational climate leaders, such as the Global Covenant of Mayors and Under2 Coalition, can play a role in establishing common methodologies and standards. Finally, civil society can play a critical role in holding local governments to account as they move to make good on their commitments.

INNOVATION AND SCALING UP PROVEN MODELS:

Cities are already demonstrating how net zero targets can be practicable and guide transformational shifts in policy for example in the electricity, transport and buildings sectors.

Decarbonization challenges for buildings are significant, yet four major trends are contributing to a shift toward zero carbon buildings: decarbonization of the electric power grid; electrification of building space heating; energy efficiency improvements; and digitalization (Nesler, 2020). City governments and subnational institutions can reinforce these trends in several ways, for example, by setting municipal building performance requirements, energy codes, or clean electricity targets (Bayraktar & Stewart, 2019; Schelenz, 2018; Stewart *et al.*, 2018).

Transport systems are prime targets not only to reduce GHG emissions but also to manage urban air pollution. Some cities are incentivizing electrification of vehicles through zero-emission zones which can regulate or ban entirely fossil fuel-powered vehicles, or electric vehicle purchase subsidies (Fried & Jackson, 2020; Xue, 2021). These kinds of policies can have an outsized impact beyond the immediate jurisdiction, for example, when freight vehicles travel over a larger region but need to meet the requirements of a specific city.

Subnational authorities have always been critical for climate action and their innovation can inspire further policy change and accelerate the realization of countries' NDCs. However, only a few ambitious local governments will not be sufficient, nor will the setting of targets that aren't backed by clear accountability mechanisms. Moving forward, it's imperative that more subnational actors adopt net-zero targets and take serious, immediate action to achieve them.

5.2 TECHNICAL ASSISTANCE TO LOCALISE UPDATED NDCS

Authors: *Amanda McKee and Jesus Alvarado (NDC Partnership Support Unit)*

Through the NDC Partnership, countries demonstrate how NDC enhancement and implementation can be mutually reinforcing. Countries receiving NDC Partnership support are presenting NDCs to the UNFCCC with higher ambition, enhanced quality, and strengthened processes. At the same time, countries are taking the necessary actions to ensure they can quickly and credibly implement NDCs by improving their underlying data and reporting systems, putting in place realistic implementation and financing plans, and strengthening engagement with key stakeholders, including finance and sectoral ministries, local and regional governments, private sector, gender and youth groups, and academia.

CLIMATE AMBITION BEYOND THE STATE

By integrating subnational and non-state actors into national climate action, NDC Partnership members are paving the way for enhanced country-ownership in line with the whole-of-society approach to NDC update and implementation. Looking specifically at the 67 countries receiving support through the Partnership's Climate Action Enhancement Package (CAEP), several key trends illustrate challenges and opportunities. As of August 2021, 37 member countries have submitted new or updated NDCs. Of these:

33 countries demonstrated enhancement in NDC process inclusivity. Saint Lucia received support from providers of technical assistance such as the Global Green Growth Institute (GGGI), Climate Analytics, and the Organisation of Eastern Caribbean States (OECS), for stakeholder consultations in the context of the NDC, including feedback from ministries, private sector, civil society, and youth. In Malawi, the network of local stakeholders, ICLEI, and the climate consultancy, Carbon Counts, supported the development of an ambitious NDC implementation plan and mainstreaming guidelines to ensure their integration into national and subnational planning.

32 countries integrated gender-relevant considerations in their NDCs. Burkina Faso, with support from GGGI, approved sectoral action plans to mitigate negative climate impacts and to support positive change with a gender dimension, across different social groups. Sectoral plans revolve around three main themes: strengthening adaptive capacities and resilience; reducing GHG emissions in the given sector; and strengthening gender equity in addressing climate change. Thus far, ten sectoral plans include strong gender mainstreaming elements.

Countries are enhancing ambition and moving into implementation by deepening subnational engagement, illustrating how regions or cities can contribute to national targets. While only 8 of the 37 countries have set specific subnational NDC targets, countries are implementing other actions. Nepal, for instance — with support from UNDP, Climate Analytics, and WWF — convened seven multi-stakeholder provincial-level consultations to inform subnational actors about NDC priority actions and gather inputs to inform the process and mechanisms for localizing the NDC implementation approach. The stakeholders involved included provincial governments, private sector, academia, and civil society organizations.

As countries move towards implementation, subnational and non-state actors are engaged in a multitude of ways:

- **Financing increased NDC mitigation commitments:** the Dominican Republic is receiving World Bank support to mobilise national private sector finance and actions through involving business associations in NDC processes. ICLEI raised awareness across nine municipalities on how to finance their low-emission and climate-resilient development plans.
- **Implementing ambitious NDC targets:** Vietnam is receiving support from the Netherlands Development Organisation (SNV) and the World Resource Institute (WRI to assess the socioeconomic impacts of mitigation policies, better prepare for implementation, and train provincial governments in developing gender-responsive climate change interventions to achieve NDC targets at the local level.
- **Encouraging private sector engagement in adaptation and mitigation measures:** Peru is receiving support from the United Nations Capital Development Fund (UNCDF) to design a guarantee fund directed at Indigenous Communities to finance climate change-related investments.

Subnational and non-state climate actions are helping countries increase NDC ambition beyond the first generation NDCs. This includes mobilising international and national private investors for financing ambitious NDC targets, localising NDC implementation, or leveraging the expertise and networks of gender equality advocates and civil society to scale up NDC impact across all segments of society. Countries are finding new ways to leverage climate ambition by joining efforts with subnational and non-state actors with the will and potential to support the Paris Agreement implementation.

5.3 TIME FOR MULTILEVEL ACTION: WHAT GOVERNMENTS CAN DO TO SUPPORT LOCAL ACTORS

Authors: *Maryke van Staden (ICLEI World Secretariat)*

With the world facing a climate emergency, a global pandemic and the need to urgently progress on sustainable development, leaders at all levels are under pressure to deliver. Opportunities abound to provide impactful solutions, not only aiming at economic and environmental impacts, but also to address those societal inequities that have been exposed so glaringly by the pandemic.

Zooming in on a few positive elements: there is a visible shift in better understanding demand-driven opportunities for climate change mitigation from renewable energy and energy efficiency, while the greater involvement of non-state actors – including subnational governments- in NDC planning and implementation is a breath of fresh air.

The voice of local and regional governments around the globe in the international climate debate – through the Local Government and Municipal Authorities (LGMA) Constituency at the UNFCC led by ICLEI- is loud and clear. Now is the Time4Multilevel Action as the new normal in the 2nd phase of the Paris Agreement. Effective multilevel governance, collaboration and coordination are essential game changers, needed now, when the necessary level of ambition is being redefined and action is accelerated.

Exploring some of the modalities of the Time4Multilevel Action, a few key elements are outlined:

- Optimize in-country governance model by co-design and the inclusion of all tiers/levels of government (merging top-down and bottom-up), as a unique model for joint decision making by all jurisdictions. This requires clarity on allocated and clearly inter-connected mandates, responsibilities and associated budgets, to act efficiently and in a well-coordinated manner;
- Include the Regional and Local Contributions (RLCs), as defined by regional and local governments for their respective territories, into the NDC, to ensure the overall level of ambition is raised and well informed by local priorities and investment needs, thereby also contributing to the transparency and credibility of vertically integrated NDC implementation and investment plans;
- Revise existing and adopt new legislation, as needed, to ensure pro-active support and enabling of NDC planning and implementation at the necessary scale and tempo, across all sectors.
- Enhance regulation and use sustainable public procurement as a government tool to embed climate resilience and net-zero impacts into actions, while providing confidence to the private sector that innovation and impact are supported in a stable policy environment;
- Use stimulus funds allocated to the green recovery to actively support decentralised renewable energy, the roll-out of existing clean technologies and nature-based solutions to reduce pollutants and emissions, while building resilience of systems and structures across all sectors.

The above are but a few actions where national governments can showcase their leadership. In the meantime non-state actors are also taking up their responsibilities, among others by responding to the climate champions' Race to Zero and Race to Resilience, calling for more ambitious commitments and action. These global initiatives help to point the way and mobilize on a global scale. As local action moves the world, ICLEI is a partner to both races, and guides local and regional governments around the globe on their journey through the GreenClimateCitiesTM (GCC) Program and the Climate Neutrality Framework. Through integrated climate action - climate resilience, climate change adaptation and mitigation – and embracing nature-based, equitable, and circular development, subnational governments can stimulate multiple co-benefits while tackling climate change in a coherent manner.

A new report from CDP and ICLEI – Local Governments for Sustainability, entitled 'Working Together to Beat the Climate Crisis', finds that 80% of cities are not yet 1.5°C-aligned, and more government support is needed for local climate action.. From the cities, towns and regions reporting to the CDP-ICLEI Unified Reporting System, it is clear that more support is needed from national/federal governments to deliver on local climate change adaptation plans as well as on decarbonisation, requiring new incentives, mandates and funding to scale up local action.

The NDCs are at the heart of the Paris Agreement. As national mechanisms they should also be at the heart of national policies, bridging and bringing together societal, economic, and environmental transformation into a sustainable, secure future. Multilevel action and collaboration must be at the heart of a just, inclusive, holistic and nature-friendly transition towards climate neutrality and a sustainable future for cities, towns and regions around the world. Opportunities abound! The time to act is now.

5.4 TOGETHER, NATIONAL AND REGIONAL GOVERNMENTS CAN AIM HIGHER

Authors: *Libby Ferguson and Sarah Clark (Under2 Coalition)*

The past six years, since the signing of the Paris Agreement, have been the warmest on record. Now, more than ever, the world needs enhanced climate commitments – with the action plans to match – that will lead us towards a net zero emissions economy through a just, equitable transition for both people and planet. By COP26, all national governments must strive to close the ambition gap between current climate action and what is needed to limit global warming to 1.5°C. A recent report revealed that if all G20 countries developed 1.5°C-aligned NDCs for 2030 and reached net zero emissions by 2050, global temperature rise at the end of the century could be limited to 1.7°C, keeping the 1.5°C goal in reach.

But, while all eyes are on national governments; states, provinces, and regions are increasingly stepping in and stepping up - showing leadership in the face of adversity. They are proving that subnational governments (state and regional governments in this context) are important to the international climate process and that action at this level is crucial if we are to avoid a climate catastrophe.

In fact, subnational governments are a driving force behind significant GHG emissions reductions and resilience measures worldwide. Not only do they have unique powers to develop and implement climate laws – with effects on air quality, transport, energy, buildings, and land-use – but they play an important role in aligning national and city policymaking to deliver on our collective climate goals.

The Under2 Coalition is the world's largest network of state and regional governments committed to reducing emissions in line with the Paris Agreement. With over 260 members, representing 50% of the global economy and 1.75 billion people, we are using our collective voice to drive ambitious subnational climate action, deliver the changes that we need to see, and support national governments to step up and act.

As it currently stands, 39 members of the Under2 Coalition have set targets to reach net zero emissions by or before 2050, and that number is growing. The ambition set by these governments should give national governments the confidence to raise their climate targets and catalyse broader action.

In countries where national leadership on climate change is lacking, states and regions have continued to enact innovative policies to reduce emissions regionally. Even in countries with stronger national leadership on climate, the role of states and regions is increasingly relevant for the achievement of Paris Agreement goals and implementation of NDCs.

So often, states and regions are leading the way – a force national governments must leverage. For instance, Jämtland in Sweden plans to reduce emissions by 10% each year this decade to reach net zero by 2030, and Yucatán, Mexico, has set three targets to increase forest protection and sustainable management by 2030. Similarly, Cross River State, Nigeria, intends to plant 160,000 trees in degraded forest reserves, community forests and marginal land by 2030, and Hawai'i, United States, is committed to achieve net-negative emissions by 2045.

As we make our way through this crucial decade of climate action, we work to see greater collaboration between national governments and their state and regional counterparts for a successful transition to a net zero world of equity and resilience.

Together, national governments and states and regions can aim higher.

5.5 WHEN CITIES AND CIVIL SOCIETY MOVE FASTER THAN THE NATIONAL LEVEL

Authors: *Martin Baumann and Celia Zoe Wicher (BUND)*

While many trends and patterns are global in scale, the consequences of the climate crisis differ significantly at the local level: rising sea levels affect some people and ecosystems more than others, as do melting glaciers, thawing permafrost, or burning forests. It is therefore of uttermost importance that decision-makers at the local level come up with solutions to adapt to these imminent risks. Just as important is their contribution to global mitigation efforts. Since all politics is local, this of course is a huge challenge in those communities whose economy is built on the exploitation of fossil fuels, or in cities that for too long have neglected their public transport system. Nonetheless, there are countless successful examples from around the world to draw from, where mayors and local councils have been engaging with civil society, constantly pushing the envelope of climate ambition.

One important reason why so many subnational decision-makers surpass their national counterparts in terms of climate ambition is that they are much closer to their constituencies, hence engaging much more often with civil society organisations (CSOs) and other stakeholders at the local level. This enables them to come up with solutions that respond to specific local circumstances, rather than trying to find "one size fits all" blueprints for a whole country. It also leads to higher levels of mutual trust between stakeholders, which is crucial for the acceptance and swift implementation of policies.

Over the last few decades, thousands of cities and municipalities have been setting their own climate targets and forming a wide range of alliances to exchange their experiences and push for regulatory or financial support at the national and international level. Already in 1990, a group of European cities and municipalities formed the so-called Klima-Bündnis and committed themselves to continuous reductions in their GHG emissions. This alliance now has over 1800 members from 27 European countries and cooperates with several indigenous groups in the Amazon, highlighting the importance of local action to solve a global crisis.

By declaring a climate emergency in their jurisdiction, hundreds of cities and municipalities added to the political momentum for more climate action at the national level over the past years. In most cases, this step was not symbolic only, but accompanied by additional resources and concrete actions to fight the climate crisis. For example, the climate emergency declaration of the Colombian capital Bogotá in December 2020 followed an intense deliberation process with CSOs and laid out a whole range of mitigation and adaptation measures, as well as specific strategies to improve climate awareness, education and governance. It also directed the creation of an advisory panel with members from civil society and academia who will oversee the mandates of the declaration, for example, that all new public buses will be electric from 2022 onwards, or that Bogotá's GHG emissions are cut in half from 2020 until 2030 (i.e., considerably surpassing the NDC that envisions a reduction of approximately 42% in the same period).

The active engagement of CSOs and scientists is particularly important in smaller jurisdictions, where the administration is not differentiated enough or lacks the necessary expertise to address specific climate change issues. In Ukraine, for instance, several city councils like the one of Chornomorsk, are working closely with CSOs to draft and implement local climate action plans. Following the proposals of local CSOs, three Ukrainian cities are now considering - and the city of Zhytomyr has already adopted - a local net zero goal by 2050, which is ten years earlier than the current national target.

Such achievements at the local level not only require a trustful working relationship between stakeholders, but also adequate resources and capacities for them to engage – something that needs to be addressed by national governments and international donors alike. To close the wide ambition gap between the Paris goals and the NDCs presented so far, national governments should have a closer look at local solutions, provide the regulatory and fiscal framework to scale them up and aim for the same levels of stakeholder engagement at the (inter)national level that enabled most of these local success stories.

5.6 ACCELERATING INVESTMENTS FOR LOW-CARBON CITIES

Authors: *Margot Eichinger and Alexandra Linden (Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH)*

By 2050, the urban population will have increased by an estimated two billion people. Already today, cities account for 75% of energy consumption and generate 80% of a country's Gross Domestic Product. At the same time, many climate change risks directly impact urban areas. This requires ambitious action and investments in climate-relevant sectors, which often lie within the immediate mandate of municipalities' decision-making power: local governments have primary authority over almost a third of urban mitigation potential, such as waste and wastewater. Another third of the mitigation potential depends on collaborative climate action of national, regional and local governments, such as decentralized renewables, mass transit infrastructure or building codes.

Subnational climate action is thus of special significance to achieving national commitments and objectives. However, the development of urban low-carbon infrastructure proves challenging in cities, especially in emerging and developing countries. For local climate action to take off, low-carbon projects need to become a priority for national governments and local investment planning. In partnership with the European Investment Bank (EIB), GIZ runs the Financing Energy for Low-Carbon Investment – Cities Advisory Facility (FELICITY) financed by the German Federal Ministry for the Environment, Nature Conversation and Nuclear Safety under the International Climate Initiative. FELICITY 's experience in Brazil, Ecuador, Indonesia and Mexico shows that important factors for a prioritisation of climate action are the consideration of their wider benefits for the community as well as the availability of attractive financing options.

In addition to reducing greenhouse gas emissions, climate action can bring multiple social, environmental, and economic improvements or "co-benefits", which are often perceived as particularly important by cities and local communities. In Ecuador, FELICITY supports wastewater projects which aim to improve access to sanitation services and public health, reduce environmental pollution, and contribute to economic activities by creating a more favourable environment for the fishery and tourism sector in coastal Ecuador. Additionally, wastewater treatment reduces methane emissions – a fact unknown by many city officials.

The aspect of co-benefits became even more important in the wake of COVID-19 – creating jobs and opportunities in dire times. With support from FELICITY, the Mexican city Naucalpan is leveraging wider benefits of their waste-to-energy-project. Beyond targeting an emission reduction of 77 $MtCO_2eq$ per year through municipal solid waste separation and treatment, the project will hire local waste-pickers to operate the new plant, more than half of them female workers. The project will also improve air quality and reduce environmental degradation. In 2020, the project was included into the national economic reactivation package – not primarily due to its emission reduction potential but rather for its wider benefits to a sustainable economic recovery. It will receive a grant by the national infrastructure fund FONADIN and is currently preparing the involvement of a private partner.

This hints to the second important factor which is guaranteeing the availability of attractive financing options for cities. Being aware of the climate potential of a project also helps to tap into international climate finance. National or subnational development banks play a pivotal role in this regard: they act as intermediary for multilateral development banks and thereby unlock attractive international finance for cities. Banks can establish credit lines with international partners, develop pipelines of eligible urban projects and support cities in project development. In Brazil, the framework loan between the regional development bank BRDE and the European Investment Bank finances urban energy projects. The project supported by FELICITY in Porto Alegre will install solar PV panels and improve energy efficiency in up to 99 public schools. The project will not only reduce greenhouse gas emissions, but lead to energy cost savings of up to 60% per year and provide better learning conditions for about 50.000 students.

Action by city governments is crucial, but it cannot achieve ambitious climate goals on its own. Using the critical decade ahead of us requires holistic and ambitious effort by cities, national governments and financiers. Recognising the wider benefits of climate action helps to push low-carbon planning of local governments and communities as well as at the national level overarching climate and development objectives; it can further attract the climate finance necessary to realise these changes.

REFERENCES

Austin, D. (2019) *Greenwish: The Wishful Thinking Undermining the Ambition of Sustainable Business, Real-World Economics Review.* Available at: https://preventablesurprises.com/wp-content/uploads/2019/07/2019-07-19-Greenwish-Essay.pdf.

Bayraktar, M. and Stewart, E. (2019) 'Eskisehir, Turkey Leads on Energy-Efficient Buildings'. Available at: https://www.wri.org/insights/eskisehir-turkey-leads-energy-efficient-buildings (Accessed: 18 October 2021).

Black, R. *et al.* (2021) *Taking Stock: a global assessment of net zero targets.* Energy & Climate Intelligence Unit and Oxford Net Zero. Available at: https://ec.europa.eu/clima/policies/strategies/2050_en.

Climate Action Tracker (2019) *Warming projections global update: December 2019. Governments still showing little sign of acting on climate crisis.* Climate Analytics, NewClimate Institute. Available at: https://climateactiontracker.org/documents/698/CAT_2019-12-10_BriefingCOP25_WarmingProjectionsGlobalUpdate_Dec2019.pdf.

Climate Action Tracker (2020) 'Global update: Paris Agreement Turning Point'. Climate Analytics, NewClimate Institute. Available at: https://climateactiontracker.org/publications/global-update-paris-agreement-turning-point/.

Climate Action Tracker (2021a) *CAT Emissions Gap.* Available at: https://climateactiontracker.org/global/cat-emissions-gaps/ (Accessed: 9 October 2021).

Climate Action Tracker (2021b) 'Japan's new target a significant step, but more needed', *Climate Target Update Tracker.* Climate Analytics, NewClimate Institute. Available at: https://climateactiontracker.org/climate-target-update-tracker/japan/.

Climate Chance (2021) *Global Synthesis Report On Local Climate Action. Assessing Climate Action Led By Local And Subnational Governments.* Available at: https://www.climate-chance.org/wp-content/uploads/2021/04/local-action-report-2021-eng_vdef-2.pdf.

Climate Watch (2021) *Net-zero Tracker.* Available at: https://www.climatewatchdata.org/net-zero-tracker (Accessed: 18 October 2021).

Colenbrander, S. *et al.* (2019) *Climate Emergency, Urban Opportunity: How national governments can secure economic prosperity and avert climate catastrophe by transforming cities.* Coalition for Urban Transitions.

Cooper, A. (2018) 'Regionally and Locally Determined Contributions (RLDCs)'. Available at: https://cor.europa.eu/en/news/Documents/3894-leaflet-Cooper-v3-LR.PDF.

Data-Driven EnviroLab and NewClimate Institute (2020) *Accelerating net-zero: Exploring Cities, Regions, and Companies' Pledges to Decarbonise*. Available at: https://newclimate.org/2020/09/21/accelerating-net-zero-exploring-cities-regions-and-companies-pledges-to-decarbonise/ (Accessed: 6 November 2020).

Dickerson, A. *et al.* (2018) *The Ambition Loop.* Washington DC, USA: United Nations Global Compact, We Mean Business coalition, World Resources Institute. Available at: https://static1.squarespace.com/static/5bbe243651f4d40801af46d5/t/5c00266c0e2e728a28cee091/1543513751309/The-Ambition-Loop.pdf%0A.

Elliott, C. *et al.* (2018) 'Unlocking Climate Action: When Nations, States and Cities Reinforce Each Other, Everybody Wins'. Available at: https://www.wri.org/insights/unlocking-climate-action-when-nations-states-and-cities-reinforce-each-other-everybody (Accessed: 18 October 2021).

Energy & Climate Intelligence Unit (2021) *Net Zero Tracker.* Energy & Climate Intelligence Unit. Available at: https://eciu.net/netzerotracker (Accessed: 18 October 2021).

EPA (2021) *U.S. Will Dramatically Cut Climate-Damaging Greenhouse Gases with New Program Aimed at Chemicals Used in Air Conditioning, Refrigeration, Environmental Protection Agency.* Available at: https://www.epa.gov/newsreleases/us-will-dramatically-cut-climate-damaging-greenhouse-gases-new-program-aimed-chemicals (Accessed: 18 October 2021).

Falkner, R. (2016) 'The Paris Agreement and the new logic of international climate politics', International Affairs, 92(5), pp. 1107–1125. doi: https://doi.org/10.1111/1468-2346.12708.

Fried, T. and Jackson, E. (2020) *The Road to Zero-Emission Cities Goes Through Freight, TheCityFix.* Available at: https://thecityfix.com/blog/the-road-to-zero-emission-cities-goes-through-freight/ (Accessed: 18 October 2021).

G20 (2020) *Communiqué - Virtual meeting of the G20 finance ministers and central bank governors - April 15, 2020.* Riyadh, Saudi Arabia. Available at: http://www.g20.utoronto.ca/2020/2020-g20-finance-0415.html.

GIZ/UN-Habitat/ICLEI (2017) *Enabling subnational climate action through multi-level governance.* Available at: http://elib.iclei.org/wp-content/uploads/2017/11/GIZ-ICLEI-UNHabitat_2017_EN_Enabling-subnational-climate-action.pdf.

Gurría, A. (2020) 'Opening Remarks Ministerial Council Meeting by Secretary-General Angel Gurría, 28 October 2020', in *2020 Ministerial Council Meeting: The Path to Recovery: Strong, Resilient, Green and Inclusive*. OECD- Organization for Economic Cooperation & Development. Available at: https://www.oecd.org/about/secretary-general/2020-ministerial-council-meeting-the-path-to-recovery-strong-resilient-green-and-inclusive.htm.

Hagemann, M. *et al.* (2020) *A roadmap for the power supply sector in Argentina: Implications of ambitious climate action for policy and investment.* Available at: https://ambitiontoaction.net/wp-content/uploads/2020/02/AmbitionToAction_Argentina-Synthesis-Report.pdf.

Hsu, A. et al. (2019) 'Exploring links between national climate strategies and non-state and subnational climate action in nationally determined contributions (NDCs)', Climate Policy, 0(0), pp. 1–15. doi: 10.1080/14693062.2019.1624252.

Hsu, A. et al. (2020) 'Beyond states: Harnessing sub-national actors for the deep decarbonisation of cities, regions, and businesses', Energy Research and Social Science, 70 (May), p. 101738. doi: 10.1016/j.erss.2020.101738.

IEA (2021) *Sustainable Recovery Tracker.* Paris. Available at: https://www.iea.org/reports/sustainable-recovery-tracker (Accessed: 5 October 2021).

IPCC (2014) 'AR5 Climate Change 2014: Impacts, Adaptation, and Vulnerability'. New York: Cambridge University Press. Available at: https://www.ipcc.ch/report/ar5/wg2/.

IPCC (2018) *IPCC special report on the impacts of global warming of 1.5°C - Summary for policy makers.* Global Warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change: Intergovernmental Panel on Climate Change (IPCC).

IPCC (2021) 'Summary for Policymakers', in *Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change.* Cambridge University Press. Available at: https://www.ipcc.ch/report/ar6/wg1/.

Kameyama, Y. (2021) 'Climate Change Policy: Can New Actors Affect Japan's Policy-Making in the Paris Agreement Era?', *Social Science Japan Journal*, 24(1), pp. 67–84. doi: 10.1093/ssjj/jyaa051.

Kuramochi, T. *et al.* (2020) 'Beyond national climate action: the impact of region, city, and business commitments on global greenhouse gas emissions', *Climate Policy*, 20(3), pp. 275–291. doi: 10.1080/14693062.2020.1740150.

Levin, K. *et al.* (2020) *Designing and Communicating Net-Zero Targets. Working Paper.* Washington DC, USA: World Resources Institute. Available at: www.wri.org/design-net-zero.

Lydén, P. (2021) *Localising NDCs with inspiration from the 2030 Agenda. A closer look at Voluntary Local Reviews (VLRs) and Voluntary National Reviews (VNRs)*. Available at: https://collaborative-climate-action.org/localising-ndcs/.

MOEJ (2021) *Kaisei Chikyuu Ondanka Taisaku Suishinhou Seiritsu [Adoption of the amended Global Warming Countermeasures Promotion Act]. In Japanese.* Ministry of the Environment, Japan. Available at: https://ondankataisaku.env.go.jp/carbon_neutral/topics/20210604-topic-03.html (Accessed: 10 June 2021).

NDC Partnership (2019) *Dialoguemos NDC: A Participatory Process For NDC Implementation In Peru.* Available at: https://ndcpartnership.org/case-study/dialoguemos-ndc-participatory-process-ndc-implementation-peru.

NDC Partnership (2020) *Insight Brief: Engaging Subnational Governments in Climate Action. Lessons Learned from the NDC Partnership Support Unit.* Available at: https://ndcpartnership.org/sites/default/files/Local Mainstreaming Final March 2020.pdf.

Nesler, C. (2020) *Zero-carbon buildings are possible following these four steps, World Economic Forum*. Available at: https://www.weforum.org/agenda/2020/01/zero-carbon-buildings-climate/ (Accessed: 18 October 2021).

NewClimate Institute *et al.* (2021) *Global climate action from cities, regions and businesses. 2021 edition.* Available at: https://newclimate.org/wp-content/uploads/2021/06/NewClimate_GCC_June21_2.pdf.

NewClimate Institute and Data-Driven EnviroLab (2020) *Navigating the nuances of net-zero targets.* Thomas Day, Silke Mooldijk and Takeshi Kuramochi (NewClimate Institute) and Angel Hsu, Zhi Yi Yeo, Amy Weinfurter, Yin Xi Tan, Ian French, Vasu Namdeo, Odele Tan, Sowmya Raghavan, Elwin Lim, and Ajay Nair (Data-Driven EnviroLab). Available at: https://newclimate.org/2020/10/22/navigating-the-nuances-of-net-zero-targets/.

OECD (2021) *How green can we go?* Available at: https://www.oecd.org/coronavirus/en/themes/green-recovery#green-recoverydatabase (Accessed: 20 October 2021).

Prime Minister of Japan and His Cabinet (2020) *Policy Speech by the Prime Minister to the 203rd Session of the Diet. October 28, 2020.* Prime Minister of Japan and His Cabinet. Available at: https://japan.kantei.go.jp/99_suga/statement/202010/_00006.html (Accessed: 21 January 2021).

Rawlins, J. (2019) *When the stars align - Investigating the influence of the co-benefits narrative on climate policy ambition.* Available at: https://ambitiontoaction.net/wp-content/uploads/2019/09/The-influence-of-the-co-benefits-narrative-on-climate-policy-ambition_June-2019.pdf (Accessed: 20 October 2021).

Rogelj, J. *et al.* (2021a) 'Net-zero emissions targets are vague: three ways to fix', *Nature* 2021 591:7850, 591(7850), pp. 365–368. doi: 10.1038/d41586-021-00662-3.

Rogelj, J. *et al.* (2021b) 'Net-zero emissions targets are vague: three ways to fix', *Nature* 2021 591:7850, 591(7850), pp. 365–368. doi: 10.1038/d41586-021-00662-3.

Sainz de Murieta, E. and Setzer, J. (2019) *Climate Change Adaptation in a Multi-Level Governance Context: A Perspective from Subnational Governments.*

Schelenz, R. (2018) *UC makes bold commitment to 100 percent clean electricity, University of California.* Available at: https://www.universityofcalifornia.edu/news/100-percent-clean-electricity?_sm_au_=iVVDR4sD20s42ZSHkpQ8jKtB7ckcW (Accessed: 18 October 2021).

Steer, A. and Horn-Phathanothai, L. (2019) 'For a 1.5 C World, Cities Must Go Carbon Neutral. They Can't Do It Alone.' Available at: https://www.wri.org/insights/15-c-world-cities-must-go-carbon-neutral-they-cant-do-it-alone (Accessed: 18 October 2021).

Stewart, E., Choy, S. H. and Gamboa, C. (2018) 'Unlocking Climate Action: From Bogota City Hall to the President's Desk and Back Again'. Available at: https://www.wri.org/insights/unlocking-climate-action-bogota-city-hall-presidents-desk-and-back-again (Accessed: 18 October 2021).

Thunberg, G. (2021) 'Greta Thunberg at Youth4Climate Summit 2021 in Milan- full speech'.

van Tilburg, X. *et al.* (2018) *NDC Update Report. Ambition: Taking a long-term perspective.* Available at: http://ambitiontoaction.net/wp-content/uploads/2019/01/NDC-Update-Report_Nov_2018.pdf.

van Tilburg, X., Donker, J. and Lamboo, S. (2019) *Co-benefits on the interface between energy security and ambitious climate policy.* Available at: https://energy.nl/en/publication/co-benefits-on-the-interface-between-energy-security-and-ambitious-climatepolicy/ (Accessed: 20 October 2021).

UN-Habitat (2020) *Enhancing Nationally Determined Contribution through Urban Climate Action.* Nairobi. Available at: https://unhabitat.org/enhancing-nationally-determined-contributions-ndcs-through-urban-climate-action.

UNEP (2020) 'Emissions Gap Report 2020'. United Nations Environment Programme. Available at: https://www.unep.org/resources/emissions-gap-report-2019.

UNFCCC (2015) *Report of the Conference of the Parties on its twenty-first session, held in Paris from 30 November to 13 December 2015*, Addendum-Part two: action taken by the Conference of the Parties. Available at: http://unfccc.int/resource/docs/2015/cop21/eng/10a01.pdf [accessed on 9 October 2017].

UNFCCC (2021a) *Communication of long-term strategies.* United Nations Framework Convention on Climate Change. Available at: https://unfccc.int/process/the-paris-agreement/long-term-strategies (Accessed: 10 October 2021).

UNFCCC (2021b) *History of Non-Party Stakeholder Engagement.* Available at: https://unfccc.int/climate-action/introduction-climate-action/history-non-party-stakeholder-engagement (Accessed: 5 October 2021).

UNFCCC Secretariat (2021) *NDC Synthesis Report*. Available at: https://unfccc.int/process-and-meetings/the-paris-agreement/nationally-determined-contributions-ndcs/nationally-determined-contributions-ndcs/ndc-synthesis-report (Accessed: 28 April 2021).

Vivid Economics (2021) *Green of Stimulus Index – 6th edition. An assessment of COVID-19 stimulus by G20 countries and other major economies in relation to climate action and biodiversity goals.* London. Available at: https://www.vivideconomics.com/casestudy/greenness-for-stimulus-index/.

WBCSD (2016) *Global Climate Action Agenda moves towards the implementation of the Paris Agreement.* Available at: https://www.wbcsd.org/Programs/Climate-and-Energy/Climate/News/Global-Climate-Action-Agenda-moves-towards-the-implementation-of-the-Paris-Agreement (Accessed: 11 October 2021).

WWF (2016) *Thailand Power Sector Vision 2050: toward 100% renewable energy by 2050.* Available at: https://d2ouvy59p0dg6k.cloudfront.net/downloads/thailand_power_sector_vision_full.pdf.

Xue, L. (2021) *Lessons from Shenzhen's Green Logistic Zones: Fast-Tracking Zero-Emissions Freight, TheCityFix.* Available at: https://thecityfix.com/blog/shenzhens-green-logistic-zones-fast-tracking-zero-emission-freight/ (Accessed: 18 October 2021).

This project is part of the International Climate Initiative (IKI). The Federal Ministry for the Environment, Nature Conservation, and Nuclear Safety (BMU) supports this initiative on the basis of a decision adopted by the German Bundestag

Ambition to Action

NEW CLIMATE INSTITUTE