

IGES Working Paper

Empowering the Ratchet-up Mechanism under the Paris Agreement:

Roles of Linkage between Five-year Cycle of NDCs and Long-term Strategies, Transparency Framework and Global Stocktake

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Abstract

At the heart of the successful implementation of the Paris Agreement is whether and how effectively a ratchet-up mechanism through which Parties will increase ambition over time can work. This paper aims to examine the three elements of the ratchet-up mechanism: (1) a linkage between a five-year cycle of nationally determined contributions and long-term low greenhouse gas emission development strategies; (2) an enhanced transparency framework; and (3) a global stocktake. In particular, it will discuss what role each element should play and how these elements relate to each other. By considering the important factors of each element in terms of encouraging Parties to raise ambition, and also by identifying associated challenges, the paper makes proposals regarding the interlinkage of the three elements as well as specific proposals dedicated to each element.

Proposals

01 Main proposals regarding the interlinkage of the three elements of a ratchet-up mechanism: (1) a linkage between a five-year cycle of nationally determined contributions (NDCs) and long-term low greenhouse gas emission development strategies (hereafter “long-term strategies”); (2) an enhanced transparency framework; and (3) a global stocktake.

1. Parties should develop, update as necessary, and regularly communicate their long-term strategies with clear goals, their NDCs as short-term action plans, and their progresses towards the goals in a spirit of mutual learning and support among Parties in order to collectively achieve the global 1.5 degrees Celsius (°C)/2°C goal. As these sets of information are critical for the global stocktake, a communication process should be established for long-term strategies, along with NDCs, under a transparency framework.
2. An enhanced transparency framework should be built in such a way that a sufficient amount of data and information is collected as accurately as possible from countries on their long-term goals, NDCs as short-term actions, and their progress achieved in order to feed them into the global stocktake. In addition, the transparency framework should be designed to be a mutual learning process which enables developing countries to provide “quantifiable” information on their NDCs, which is essential for the global stocktake, over time.
3. The global stocktake of countries’ mitigation actions should not only inform the current global progress towards the global goal but also accumulate and share the best practices of Parties on both the development and implementation of long-term strategies and NDCs so that it can provide actionable recommendations for Parties to update their successive long-term strategies and NDCs. It is worth considering to organise a special session on best practices of long-term strategy formulation during a facilitative dialogue in 2018 as well as the global stocktake.

02 Specific proposals dedicated to each element

Long-term Strategies and Linkage with the Global Goal and NDCs

1. Long-term strategies should address **both climate and the sustainable development agenda** to encourage **all countries** to develop their own such strategies.
2. **Long-term strategies should act as a bridge** between the global goal and NDCs by translating the global goal into a national goal and developing NDCs as stepping stones to achieve the national goal. **A global workshop** should be organised to further articulate, encourage, and support the linking process of the global goal, long-term strategies, and NDCs.
3. Parties should consider the process of **developing and updating long-term strategies as an opportunity to build a nation-wide platform** to further engage relevant stakeholders.

4. **Major economies should show leadership** on linking the global goal, national long-term strategies, and NDCs.
5. **The scientific community should play a role in catalysing** relevant stakeholders and closing the gap between global scientific findings and the national political process, business and, social reality.

Transparency Framework

1. Further guidance on features of NDCs as well as common modalities, procedures and guidelines for the transparency framework should be developed with the aim of **improving the reliability of the information of NDCs and the comparability of individual NDCs**.
2. An **expert review process** should be designed as a **learning process**, by identifying areas for improvement and making technical suggestions, **to enable Parties (developing country Parties in particular) to provide “quantifiable” information on their NDCs over time**.
3. **Facilitative, multilateral consideration of progress** should provide Parties and stakeholders with **better understanding about the level of ambition of each NDC and how one NDC compares with others**. To this end, multilateral consideration should be conducted through **grouping discussions based on the type of mitigation goal**.
4. Collaborative arrangements among various **capacity building initiatives** are necessary **to accumulate and share the latest knowledge** among Parties.
5. **The research community** should play a key role in **providing supplementary information** to the transparency framework.

Global Stocktake

1. The global stocktake should first clearly **recognise the necessity of reducing net global CO₂ emissions to zero to stabilise global temperatures at warming thresholds of 1.5°C and 2°C** above pre-industrial levels. Following this, the global emissions trend, the speed of emissions reduction, and the status of structural changes in key sectors should be examined in terms of **whether these parameters are heading to net zero-emissions as soon as possible in the second half of the 21st century**.
2. The global stocktake should comprise two phases: a) **technical dialogue phase**; and then b) **political decision-making phase**, with an aim to facilitating mutual learning and promote political momentum toward climate action.
3. The technical dialogue should be conducted **to translate the best available information and science into actionable knowledge for Parties**, with a view to informing Parties when they plan their successive NDCs.
4. The political decision-making phase should be at the ministerial level and **develop political decisions on actions based on technical work**. This will contribute to ensuring the level of political attention and political will in raising ambition in NDCs as well as the global response based on the outcome of the global stocktake.

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01 Introduction

The Paris Agreement sets the goal of holding the increase in the global average temperature to well below 2 degrees Celsius (°C) above the pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5°C. On the other hand, the agreement also reflects political reality: i.e. an international agreement can never “force” countries to reduce emissions. The agreement lets each country determine its “contribution” (i.e. in a nationally determined manner). This approach is a basis for “nationally determined contributions (NDCs).”

This hybrid of two different approaches, however, allows a significant gap between the level of emission reduction which the science suggests to stay within 2°C of warming, and the aggregate of emission reduction which countries can politically promise at this moment. The current aggregated efforts of the Parties’ INDCs would result in a 2.7 to 3.7 °C increase (WRI 2015). Even more tellingly, Climate Action Tracker (2015) evaluates major emitters’ INDCs, which collectively cover about 81% of global emissions, on the basis of their efforts towards 2°C goal. Out of 32 INDCs assessed, only five are rated as “sufficient”. At least another 26 countries which are rated as or lower than “medium” in their definition, essentially need to raise the level of ambition in their long-term strategies and NDCs by 2020.

To fill the gap, the Paris Agreement crafted a “ratchet-up mechanism” through which Parties will increase ambition over time. At the heart of the successful implementation of the Paris Agreement is therefore whether and how effectively the ratchet-up mechanism can work (IGES 2015). This mechanism consists of three elements: (1) a linkage between a five-year cycle of NDCs and long-term low greenhouse gas emission development strategies (hereafter “long-term strategies” for the rest of the document); (2) an enhanced transparency framework; and (3) a global stocktake. Figure 1 shows how these three elements are expected to work and interact with each other.

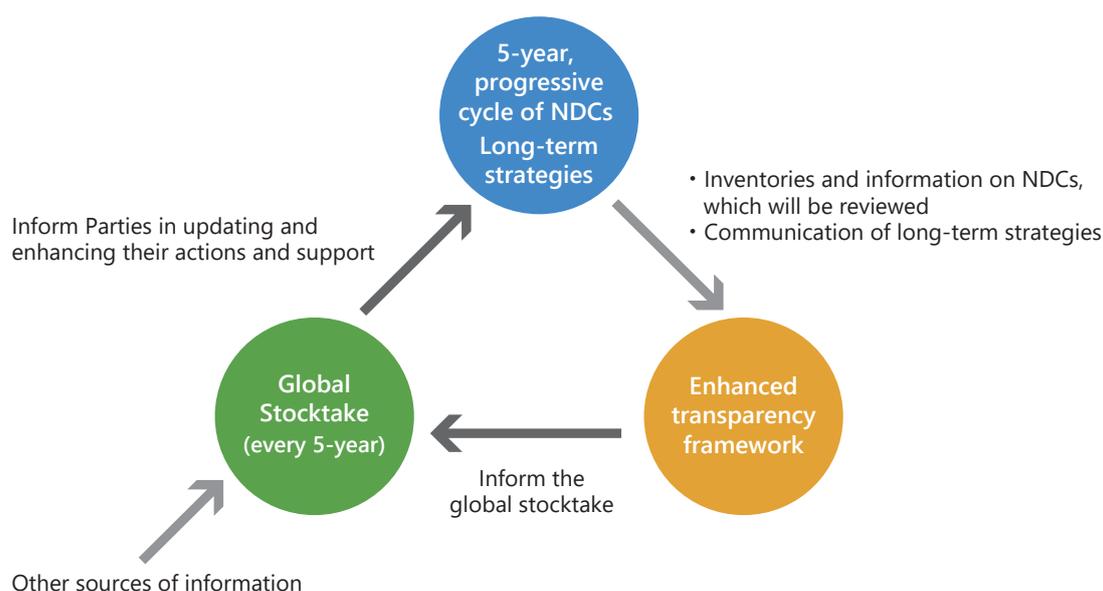


Figure 1: Three Elements of the Ratchet-up Mechanism

Every country has a legal obligation to communicate its NDC every five years, and successive NDC will represent a progression beyond the current NDC. All countries are also requested to formulate and communicate long-term strategies, mindful of the 1.5°C/2°C goal. Formulation of such long-term strategies could help each Party to develop its short-term NDC, which can be consistent with the emissions trajectory leading to the 2°C goal.

Given the diversity in intended NDCs submitted so far, each Party is requested to improve the transparency and clarity of NDCs. Under an enhanced transparency framework, in principle, each Party will also regularly provide: (1) a national inventory; and (2) information needed to track progress made in implementing and achieving its NDCs. Such information will be subject to a review process. In this way, everyone knows what others are doing. This process is expected to generate peer pressure for implementing and enhancing mutual actions.

The transparency framework also informs the global stocktake. The global stocktake periodically checks how far current emissions projections diverge from 1.5°C/2°C pathways. The global stocktake will be conducted every five years (two years before Parties have to communicate their successive NDCs) and its outcome shall inform Parties in updating and enhancing their actions and support.

These three elements are key to empowering the ratchet-up mechanism, but further discussion is necessary regarding what role each element can play and how each element relates to the others. The following sections will present important factors of each element in terms of encouraging Parties to raise ambition over time, and identify issues which need further discussion. It is recognised that the ratchet-up mechanism under the Paris Agreement is comprehensive, covering not only mitigation but also adaptation and means of implementation. However, this paper examines mitigation only because our focus is on what role can be played by the different elements of the mitigation ratchet-up mechanism, and how each element is related to the others.

02 Long-term Strategies and Linkage with the Global Goal and NDCs

2.1 What is stated in the Paris Agreement?

The Paris Agreement includes top-down global goal setting but relies heavily on bottom-up governance as explained in more detail in the previous section.

The agreement sets the global goal to hold the temperature increase to well below 2 °C while pursuing efforts for 1.5 °C above pre-industrial levels: the 1.5°C/2°C global goal (Article 2, para. 1). In order to achieve this goal, the agreement states that it is necessary for Parties to achieve net zero emissions in the second half of this century (Article 4, para.1). It also requires Parties to develop and submit NDCs every five years in a progressive manner (Article 4, paras. 2,3,9) and, together with COP21 decisions, invites them to “formulate and communicate, by 2020, ‘mid-century (Decision 1/CP.21, para. 36),’ long-term low greenhouse gas emission development strategies, mindful of Article 2” (Article 4, para. 19).

The submission is mandatory for NDCs, but not for the long-term low greenhouse gas (GHG) emission development strategies (hereafter, long-term strategies), and these contributions and strategies will be developed by each Party at the national level.

2.2 Importance of long-term strategies and their linkage to 1.5°C/2°C and NDCs

The importance of developing long-term strategies officially appeared for the first time in the climate negotiation arena at COP15 in Copenhagen. At COP16, the Cancun Agreements signalled that developed countries “should” develop Low Emission Development Strategies and Plans (LEDS) while the developing countries are “encouraged” to do so (Decision 1/CP.16, paras. 45 and 65). However, there was no common understanding established on the definition, the target, or the submission deadline of the LEDS. The Paris Agreement advances this situation by inviting all Parties to develop and communicate “mid-century” long-term strategies “by 2020” “mindful of Article 2”.

This provides a significant opportunity for countries to start aligning the three key elements: (1) the 1.5°C/2°C global goal; (2) national long-term strategy; and (3) national short-term actions in their domestic climate policies so that the world can stand together and take steps forward in the direction of a zero-carbon future.

The inclusion of the long-term strategies in the Paris Agreement is particularly important for the following three reasons.

First, developing long-term strategies at the national level, against the backdrop of the 1.5°C/2°C goal, would provide opportunities to set a country-specific goal consistent with the global goal and contribute to develop more ambitious and concrete short-term NDCs.

Second, by setting the final destinations of countries’ long-term strategies with a view to achieving net-zero emissions in the second half of this century, and by clarifying how their NDCs are associated with those strategies, countries are encouraged to make gradual progress including by striving to achieve NDCs. This also makes it possible for countries to have concrete ideas about what “progression” of NDCs

means in their own context.

Third, and perhaps most importantly, this strategy-making process helps countries take a broad-range and long-term perspective in planning and implementing, strategic, more cost-effective, and sound NDCs with concrete climate policies and tools by enabling wider policy coordination and minimising carbon lock-in effect. Delays in action, short-sighted and poorly coordinated policies only increase future costs both to mitigate and adapt to the dangerous effects of climate change (See, for example, NCE 2014, White House 2014, and Riahi et al. 2015). Fossil fuel divestment is one example of avoiding such future risks, and another is developing new infrastructure or upgrading the old to the climate-resilient, taking into account the long-term demography and desirable socioeconomic development of a country. In addition, developing and sharing this long-term vision of a country sends a great signal to businesses and investors to strengthen their investment portfolio towards the realisation of net-zero emissions in the latter half of this century.

2.3 Challenges

First and foremost, the biggest challenge lies in how to translate the common global temperature goal into country-specific long-term strategies and NDCs¹. Various interpretations are possible and numerous emissions pathways and policy options are available. Although the Paris Agreement, together with COP21 decisions, does imply the need to be “mindful of Article 2” as a desirable relationship between the global goal and national long-term strategies, it is up to each country to decide what would be a “mindful” contribution to the 1.5°C/2°C goal. Moreover, there is no common understanding on the definition of the strategies nor on their scope or contents. Furthermore, the agreement does not provide any information about a desirable relationship between the long-term strategies and NDCs, which may result in countries producing incoherent strategies and actions. In other words, there is no clear linkage between the 1.5°C/2°C global goal, long-term strategies and NDCs: a broad association of the three key elements is crafted in the Paris Agreement, yet it is not forged strong enough to encourage all Parties to have a common understanding on the importance of linking them.

The second challenge is how to encourage “all” Parties to actively participate in developing the long-term strategies in a coherent manner both with the 1.5°C/2°C global goal and NDCs. The Paris Agreement is the outcome of long years of negotiations and numerous efforts to unite countries in placing effective measures against climate change. Parties now stand united on the foundation created by the agreement and it is time to start taking a step forward together in the direction of a net-zero emissions future.

The third challenge is how to implement and accelerate more ambitious yet practical actions in each country. In this regard, it is important to engage multiple stakeholders including businesses, local governments, the scientific community, NGOs, and the general public in the process of developing national long-term strategies and NDCs, and encourage them to actively pursue necessary transformations. Taking a path to realise a fully decarbonised world by the second half of this century inevitably calls for rapid and dramatic transitions from the current political, institutional, social, and economic systems. This dynamic transformation inevitably brings innovative disruptions and requires all actors in society to change.

¹ One possible solution, at least at the scientific level, is to estimate and display a country-specific range for a carbon budget to achieve the global goal based upon various equity and other indicators to which Parties are encouraged to refer when setting and justifying a country-specific long-term goal (Tamura et al. 2013).

2.4 Proposals

1) Long-term strategies should address both climate and sustainable development agenda to encourage all countries to develop their own such strategies

In order to empower the ratchet-up mechanism, all Parties should develop and communicate long-term strategies. To reduce the global emissions by half in 2050, aiming to achieve net-zero GHG emissions in the second half of this century, the average global CO₂ emissions per capita need to be reduced to around 2 tons. However, not only emerging economies but also many developing countries have already passed this 2-ton emissions line (for example, China emitted approximately 7.6 tons per capita and Thailand 4.5 tons in 2013), with many others reaching that level (World Bank 2016). Therefore, developing a long-term strategy is important for all countries regardless of their level of economic development or the amount of emissions at the national level. In this regard, it is meaningful to develop the strategy as an overall compass for sustainable growth, aiming to achieve both climate and the sustainable development agenda including its social and economic pillars. In this way, developing such a strategy would be in the vital interests of all Parties including those who emit only a fraction of GHG and therefore would not necessarily benefit from transitioning into a net-zero carbon society.

2) Long-term strategies should act as a bridge between the global goal and NDCs by translating the global goal into a national goal and developing NDCs as stepping stones to achieve the national goal. A global workshop should be organised to further articulate, encourage, and support the linking process of the global goal, long-term strategies, and NDCs.

It is important that countries develop long-term strategies and NDCs in a coherent manner, aiming to collectively achieve the global goal. In this way, long-term strategies represent the potential routes and NDCs are the stepping stones to reach a net-zero carbon future. In other words, it is the expected role of long-term strategies to act as a bridge between the top-down global goal setting and the bottom-up planning and implementation of national short-term actions.

On the one hand, developing international guidelines to establish common requirements for long-term strategies might go against the spirit of the Paris Agreement, which encourages a bottom-up approach and respects the freedom of national determination. On the other hand, countries are now facing a wide range of challenges among which the hardest is to take into account future uncertainties in a limited time when developing both long-term strategies and short-term actions. In this regard, it would be beneficial if a global workshop is organised that addresses the need to: (1) further clarify the definition of “long-term low GHG emission development strategies” while emphasising the importance of addressing sustainable development; (2) further articulate the relationship between long-term strategies, the purpose of the Paris Agreement and the NDCs (establishing these links is particularly important) while paying attention to the lock-in effects of short-term actions on long-term goals; and perhaps most importantly; (3) accelerate international collaboration by sharing challenges and best practices of developing long-term strategies and linking to the global goal and short-term national actions. These experiences and knowledge should be accumulated and be publically accessible.

It is worth considering to allocate some time for discussion on this topic during a facilitative dialogue in 2018 as well as the global stocktake.

3) Parties should consider the process of developing and updating long-term strategies as an opportunity to build a nation-wide platform to engage relevant stakeholders.

Given the magnitude of the decarbonising transformation, inclusive multi-stakeholder engagement

processes are required to discuss the final destination of the long-term strategies, keeping mind the importance of achieving net-zero emissions in the second half of this century, to generate common understanding about how to achieve this transformation, and, more fundamentally, to promote the social acceptance of long-term decarbonisation and take necessary actions towards it.

Facing this challenge, Parties can utilise the process of developing the long-term strategies as an opportunity to build a nation-wide policy platform for all relevant stakeholders including businesses, local governments, the scientific community, and the general public to discuss and share views on the long-term strategy as their national climate and sustainable development strategy. This will help develop a sense of ownership of such strategies among citizens, which is critical to carry out actions accordingly by responsible stakeholders.

As in the case of NDCs, the long-term strategies should not be considered as set in stone, but rather as a living document that should be maintained and updated in a regular basis, reflecting the most recent national conditions such as improvement in capacity and availability of technologies.

4) Major economies should show leadership in linking the global goal, national long-term strategies and NDCs.

Developed nations have earned the capacity and expertise on measurement, reporting and verification (MRV) running models and developing scenarios, and implementing low-carbon policies and practices, which can be all applied to both develop and implement long-term strategies while linking them to the 1.5°C/2°C global goal and NDCs. Spearheading this linking process and sharing their experiences will build a foundation for the universal participation in developing long-term strategies, and for mutual capacity building and support between countries with different circumstances. Emerging economies such as China and India are also expected to share experiences and practical advice with other developing nations. For example, China underscored the importance of formulating and making mid-century strategies available for the transition to a low-carbon economy, mindful of the below 2°C global goal under the 2015 U.S.-China Joint Presidential Statement on Climate Change (White House 2015). As such, China is expected to take the lead in developing long-term strategies consistent with the 1.5°C/2°C global goal and to show that climate and sustainable development objectives are mutually reinforcing.

Through the linking process, NDCs should be considered as stepping-stones to achieve long-term strategies. Parties may consider explaining these steps for the years 2025/2030, 2035, 2040, 2045 as future “intended” NDCs within their long-term strategies. By doing so, Parties can effectively update their NDCs to achieve their long-term targets, illustrated by the strategies. Developed nations, once again utilising their accumulated capacity and expertise, should be role models and spearhead this effort.

5) The scientific community should play the role of catalysing relevant stakeholders and closing the gap between global scientific findings and national political, business and societal reality.

Researchers play a vital role in catalysing relevant stakeholders such as policymakers, businesses, non-state actors, and the public, and closing the gap between global scientific findings and national political, business and societal reality. Reflecting domestic circumstances is critical when developing a national long-term climate and sustainable development strategy to encourage its ownership among the stakeholders. Furthermore, international cooperation among researchers with different disciplines is important to collaboratively anchor the global process towards achieving of the global goal set by the Paris Agreement.

03

Enhanced transparency framework

3.1 What is an enhanced transparency framework?

The Paris Agreement establishes an “enhanced transparency framework for action and support, with built-in flexibility which takes into account Parties’ different capacities” (Article 13, para. 1). The purpose of the framework for transparency of mitigation action is to “provide a clear understanding” of action, to “track progress towards achieving Parties’ individual NDCs” and to “inform the global stocktake” (Article 13, para. 5). This new framework is to build on the current measurement, reporting and verification (MRV) system but will eventually supersede the MRV system established under the Cancun Agreements and subsequent decisions (Decision 1/CP.21 para. 99).

The need for more transparency first of all relates to NDCs themselves, i.e. the transparency and clarity of NDCs. Regarding this, all Parties have a legal obligation to account for their NDCs (Article 4, para. 13). A five-year cycle of NDCs is established, and each Party shall communicate each successive NDC to “represent a progression” from the one before. When they communicate their successive NDCs, they shall also provide the information necessary for clarity, transparency and understanding (Article 4, para. 8). However, as in previous COPs, at COP21 it was again not possible to agree on specific information requirements for the NDCs that allow to easily understand and evaluate them (Oberghassel et al 2016). Instead, Parties could agree on optional contents of information in the same way as a COP20 decision (Decision 1/CP20, para. 14). That is to say, such information may include, as appropriate, *inter alia*, quantifiable information on the reference point, timeframe for implementation, scope and coverage, planning processes, assumptions and methods, and how the NDC is fair, ambitious and contributes toward the objective of the Convention (Decision 1/CP21, para. 27). Further guidance is needed on (1) features of NDCs; (2) information needed to understand NDCs and to track their implementation; and (3) accounting for NDCs to be developed in the coming years (Decision 1/CP21, paras 26, 28, 31).

In terms of transparency on the implementation of NDCs, the Paris Agreement for the first time establishes a universal system. Although currently there are separate reporting and review systems for Annex I Parties and non-Annex I Parties, the enhanced transparency framework under the Paris Agreement will be applied to all Parties, with flexibility in terms of the scope and frequency of reporting and the scope of reviewing. Namely, each Party shall regularly provide: (1) a national inventory; and (2) information needed to track progress made in implementing and achieving its NDCs (Article 13, para. 7), and all Parties except LDCs and SIDS shall submit this information at least every two years (Decision 1/CP21, para. 90).

Common modalities, procedures and guidelines for the transparency framework shall be adopted by the first session of the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement (CMA1) (Article 13, para. 13). When developing the modalities, procedures and guidelines, Parties are requested to consider, *inter alia*, “the need to promote transparency, accuracy, completeness, consistency, and comparability” together with the importance of gradual improvement in reporting and transparency, and the need for flexibility of those countries in light of capacity and to avoid duplication and undue burden on Parties and so on (Decision 1/CP21, para. 93).

A two-step review and consideration process, which applies to all the Parties, has also been agreed (Article 13, para. 11). As the first step, information submitted by each Party shall go through a “technical expert review,” which will identify areas of improvement for the Parties, review consistency with the modalities and guidelines to be developed and assist developing country Parties to identify capacity-building needs (for those that need it). The second step is that each Party shall participate in a “facilitative, multilateral consideration of progress” on implementation and achievement of NDCs.

Although Parties agreed to establish a universal system, there is no convergence of views on what the built-in flexibility will look like in practice. Flexibility is provided to developing countries that need it in light of their capacities. Indeed, the first session of the Ad Hoc Working Group on the Paris Agreement (APA1) revealed different positions on this matter among Parties on this topic.

3.2 Why does transparency matter?

The transparency framework can encourage Parties to increase the ambition level of NDCs through two different mechanisms. First, as clearly mentioned in Article 13 of the Paris Agreement, the transparency framework aims to provide clear understanding of action and track progress towards achieving Parties’ individual NDCs. The clarity about action and progress can build mutual trust and confidence among Parties, which are essential parts of any international cooperation including collective action toward combating climate change.

Second, by letting every Party know what others are doing, the transparency framework aims to not only build mutual trust and confidence, but also allow peer pressure to be generated. Transparency is expected to form the basis of the so-called “reciprocity” in which a country adjusts its actions reflecting others’ (Axlerod 1984). Reflecting on the division of the Marshall Plan aid among European countries and the “burden-sharing exercise” of NATO, Thomas Scheling, a Nobel economics prize laureate, attributed their success to the process of reciprocal scrutiny and cross-examination, and proposed that a climate regime should take on a similar process in which actions committed by nations would be observed, compared and examined by each other (Scheling 2002). According to this line of thought, by improving mutual understanding about NDCs and their implementation, the transparency framework can provide a foundation for collective action to increase the ambition level of NDCs.

The transparency framework is to provide important inputs to the global stocktake, another key element of the ratchet-up mechanism. Such inputs could include GHG inventories and projections of anticipated GHG trajectories. Currently, estimating the aggregate effects of INDCs is challenging, since INDCs vary considerably in types and metrics (UNFCCC 2016). Having common modalities, procedures and guidelines for accounting and reporting, developing further guidance on features of NDCs and agreeing upon common time frames for NDCs could therefore facilitate the global stocktake (Briner 2016).

In addition, a strong transparency framework (and accountability rules) has significant implications for the corporate sector (Dagnet 2016). If businesses are confident that governments are taking serious actions toward the long-term achievement of decarbonisation, they will accordingly accelerate long-term climate-compatible investment, which is indispensable to such transformation. Thus, a strong transparency framework can contribute to the ratchet-up mechanism by sending a policy signal to and building confidence in the corporate sector.

3.3 Challenges

Given the fact that the INDCs submitted to date vary in terms of, for example, their base years, target years, types of mitigation goal (e.g. base year emissions target, base year intensity target, baseline target, peak-year target, and policies or measures), it is necessary to establish a common framework in order to improve comparability of the NDCs. In particular, it is difficult to quantify the emission reductions of some types of mitigation goals such as the baseline target and peak-year target, based upon the current set of information provided by INDCs. On the other hand, a certain level of flexibility needs to be given in light of diverse capabilities. Therefore, a key challenge is how to improve the comparability of NDCs, while allowing a certain level of flexibility to accommodate diverse capacities.

To strike a balance between comparability and flexibility, there are three approaches²:

- Convergence approach: This option would result in a common framework as all Parties converge over time toward the same MRV requirements.
- Capacity-based, tiered approach: This option would result in one system with different tiers based upon capabilities of Parties.
- Commitment-type-based approach: This option would build an MRV system with different requirements for different types of commitments

These options are not necessarily mutually exclusive. Still, further discussion is necessary on how to combine some elements of these three approaches.

In addition, the issue of capacity poses a serious challenge, especially to developing countries. As mentioned above, under the enhanced transparency framework all Parties are required to provide: (1) a national inventory; and (2) information needed to track progress made in implementing and achieving its NDCs. As to the former, developing countries have experience in formulating inventories to a varying degree. However, most of them have not yet established institutional capabilities for regularly developing inventories. In addition, the latter requirement (information needed to track progress made in “implementing” and “achieving” NDCs) is new and challenging for most developing countries.

Since COP21, various initiatives for transparency capacity-building have been established. Examples include the Capacity Building Initiative for Transparency (CBIT) established under the Paris Agreement, the Initiative for Climate Action Transparency (ICAT) and Coalition on Paris Agreement Capacity Building. However, these initiatives have been established with different specific purposes, and their activities have not necessarily been coordinated. Thus, it is important to have coordination and build synergies among these various initiatives.

Finally, there are also issues which are currently outside of the negotiation mandates, but worth exploring. For example, in order to have a better understanding about what others are doing, it would be helpful if a common understanding can be reached regarding issues such as, the expected cumulative impact of NDCs and how to assess “progression” of NDCs. These issues need to be addressed in the context of each Party’s long-term low GHG emission development strategy. The formulation of long-term strategies provides Parties with opportunities to clarify what kind of emission pathways are expected toward their national long-term goals via NDCs, implying their expected cumulative impact of NDCs, and to develop concrete ideas about what “progression” of NDCs means in their own context. Currently, a date has been set by which Parties are invited to communicate their long-term strategies, but no further details are provided.

² See Dagnet et al. (2014) regarding the first and the third options. The second option is based upon the statement made by Prof. Teng Fei at the Japan-China Policy Research Workshop on Climate Change (23 June 2016, Beijing, China).

3.4 Proposals

1) Further guidance on the features of NDCs as well as common modalities, procedures and guidelines for the transparency framework should be developed with an aim to improving the reliability of the information of NDCs and the comparability of individual NDCs.

Certain levels of comparison are needed to enable Parties to understand where, when, and how they can improve their NDCs respectively. Comparability of NDCs can constructively generate peer pressure, while lack of comparability tends to result in finger-pointing with distrust. Table 1 shows information which could improve comparability of NDCs.

Table 1: Information for Improving Comparability

Information elements from Lima Call for Climate Action	Specific information for improving comparability
Reference point (including, as appropriate, a base year)	<ul style="list-style-type: none"> • Base year/period • Base year/period emissions, base year emission intensity, or projected baseline scenario emissions
Timeframe for implementation	<ul style="list-style-type: none"> • Target year/period • Timeframe of action
Scope and coverage	<ul style="list-style-type: none"> • Sector covered • GHG covered • Geographical coverage • Percentage of national emissions covered
Planning processes	—
Assumptions and methodological approaches including those for estimating and accounting for anthropogenic GHG and, as appropriate, removals	<ul style="list-style-type: none"> • IPCC inventory methodologies and global warming potential (GWP) values • Use of and accounting assumptions for international market mechanisms • Accounting assumptions for removals from the land sector • For baseline scenario targets: <ul style="list-style-type: none"> - Projection method - Emissions drivers included and assumptions and data sources for key drivers
How the NDC is fair, how the Party consider that its INDC is fair and ambitious and how it contributes toward the objective of the Convention	<ul style="list-style-type: none"> • Comparison of NDC to multiple fairness/equity indicators

Source: Adopted from Levin, et al. 2016.

2) Collaborative arrangements among various capacity building initiatives are necessary to accumulate and share the latest knowledge among Parties.

National inventories are a key instrument to understand the aggregate level of emissions. Indeed, various capacity building initiatives have been done to support developing countries to formulate their inventories, but many developing countries are still facing a lack of capacity. In particular, a biennial submission of inventories is challenging to developing countries. Capacity building should focus on a mid-term institutional development including the setup of MRV infrastructure and appropriate institutional arrangements.

Furthermore, the requirement to provide information to track progress in implementing and achieving NDCs poses new challenges to developing countries. Capacity building should also be focused on this new requirement. Compared with inventory development, knowledge about how to track progress in achieving NDCs is limited. CBIT will play a central role, but collaborative arrangements among various capacity building initiatives would be necessary to accumulate and share the latest knowledge among Parties. Further efforts by policy research community are required in this area.

3) An expert review process should be designed as a learning process to enable Parties to provide “quantifiable” information on their NDCs over time.

An expert review process should be designed as a learning process, by identifying areas for improvement and making technical suggestions, to enable Parties (developing country Parties in particular) to provide “quantifiable” information on their NDCs over time. Such “quantifiable” information is essential for the global stocktake, which will check the aggregate effects of NDCs on global GHG emissions.

4) Facilitative, multilateral consideration of progress should be conducted through grouping discussions based upon the type of mitigation goal, with a view to providing Parties and stakeholders with better understanding about the level of ambition of each NDC and how one NDC compares with others.

The facilitative, multilateral consideration of progress should provide Parties and stakeholders with a better understanding about the level of ambition of each NDC, how one NDC compares with others, and the aggregate effects of NDCs on global GHG emissions. To this end, multilateral consideration should be conducted through grouping discussions based on the type of mitigation goal. Different mitigation goals have their own features, so such grouping discussion can facilitate better understanding among Parties and stakeholders. Since each goal has its own challenges in terms of formulating, implementing and reporting, such grouping can also provide a mutual learning process.

A grouping based upon different mitigation goals can ensure flexibility or differentiation under the transparency framework. Types of NDCs generally reflect national, social and economic circumstances as well as capacity. Thus, such grouping is relevant in terms of the reflection of national circumstances.

5) The research community should play a key role in providing supplementary information to the transparency framework.

As the history of climate negotiations indicates, Parties have not been able to agree on a set of detailed information to be communicated, which allow a direct “like to like” comparison between their mitigation targets and actions. Therefore, if Parties cannot reach such an agreement, it is worth exploring whether the research community can provide such a data set. A consortium of climate policy research institutions with good regional representation should play a key role in such a process. The Deep Decarbonization Pathways Project (DDPP), the Modelling and Informing Low-Emission Strategies (MILES) project and International Research Network for Low-carbon Societies (LSC-RNet) could be models for such a consortium.

04 Global Stocktake

4.1 What is the global stocktake?

The objective of the global stocktake is to take stock of the overall progress towards the purpose and long-term goals of the Paris Agreement. By doing this every five years, Parties as well as the world as a whole will be able to check whether collective efforts are being made in the right direction and at the right speed. Successfully conducting the global stocktake will be crucial to achieve the 1.5°C/2°C goal through enhancing ambitions of Parties' NDCs.

4.2 What is already decided?

Article 14 of the Paris Agreement sets out that Parties take stock of the implementation of the Agreement to assess the collective progress towards achieving the purpose of the Agreement and its long-term goals.

The purpose of the Agreement is to "strengthen the global response to the threat of climate change, in the context of sustainable development and poverty eradication" (Article 2) by:

- a) holding the increase in the global average temperature to well below 2 °C and pursuing efforts to limit the temperature increase to 1.5 °C above pre-industrial levels;
- b) increasing the ability to adapt to the adverse impacts of climate change and foster climate resilience and low GHG development, in a manner that does not threaten food production; and,
- c) making finance flows consistent with a pathway towards low GHG emissions and climate-resilient development.

It has been decided that the global stocktake will take place every five years starting in 2023 (Article 14, para 2). Parties also agreed that the outcome of the global stocktake shall inform Parties in updating and enhancing their actions and support, and in enhancing international cooperation (Article 4, para 9 and Article 14, para 3). A short list of sources of inputs have been decided, including: (a) information on the overall effect of the NDCs; (b) the latest reports of the IPCC; and (c) reports of the SBs (Decision 1/CP.21, para. 99).

The Agreement also requires Parties to submit their NDCs by 2020 and every five years thereafter (Article 4, para. 9 and Decision 1/CP.21 para. 23). As the global stocktake takes place two years ahead of the deadline for Parties to update or communicate their NDCs in 2025, it gives Parties sufficient time to decide a way to reflect the outcome of the global stocktake into their successive NDCs.

As a precursor to the global stocktake, a "facilitative dialogue" will be held in 2018 to "take stock of the collective efforts of Parties" in relation to progress towards the long-term mitigation goal (Decision 1/CP.21 para. 20).

4.3 Challenges

Modalities

Only the purpose of the global stocktake has been decided so far. Everything else including the details of the modalities are supposed to be developed by the first CMA (1/CP.21, para 101). Parties need to decide on elements of the modalities including: timeline of process (e.g. when the first meeting will take place, and how many meetings should be conducted); who will conduct the global stocktake (e.g. committee or open participation); how to organise (e.g. how to input various information, presentations, workshops, closed meetings or open discussions); how to report the outcome (e.g. who will prepare reports in what form, whether the Parties will review the report or not, and how to communicate); how to act based on the outcome (e.g. how will the outcome be communicated, who will take what actions, and how will the actions be reviewed).

From the preliminary discussion that took place in May, some Parties pointed out that lessons can be learned from the experience of the structured expert dialogue of the 2013–2015 review on the long-term global goal (IISD, 2016). Due to its openness and balanced approach, for example inviting both IPCC and non-IPCC experts and listening to Parties' views carefully etc., the final report of the review received considerable acceptance by Parties. The outcome of the review led to setting the 1.5°C/2°C global goal. Therefore, the modalities of the global stocktake should also be designed to ensure acceptability and ownership of Parties on its outcome. This is essential to encourage Parties to take further actions based on the outcome of the global stocktake.

Sources of input

Discussion on the sources of input also began in May 2016. Some sources are already listed in the decision (1/CP.21, para 99). However, due to time limitations, Parties did not go into a substantial discussion and therefore could not come to a notable outcome. The meeting ended by requesting a submission on sources of inputs as well as on modalities from Parties and observers ahead of COP22 in Marrakesh (UNFCCC, 2016a).

In their submissions, most Parties agree that the IPCC assessments provide a scientific basis for the global stocktake, along with other authoritative inputs. Yet some have mentioned that any specific findings from the IPCC are subject to agreement by Parties before being introduced to the global stocktake (UNFCCC, 2016c). This negotiation could potentially lead to cherry-picking of information and challenging negotiations before the actual analysis starts in the global stocktake process.

Regarding how the inputs from IPCC could inform the global stocktake, IPCC announced that they would develop a special report on the 1.5°C goal by 2018. It also decided to adjust its 6th assessment cycle to align with the timing of the first global stocktake. Although many Parties welcomed this information, they did not reach a consensus on this agenda, and again concluded by requesting Parties and observers to make another submission ahead of Marrakesh (UNFCCC, 2016b). In the meantime, at its 44th session in October 2016, IPCC adopted the outline of the special report on 1.5°C to be published in September 2018³.

³ The 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, sustainable development, and efforts to eradicate poverty

Uncertainty in climate science per se poses significant challenges. Management of cumulative global emissions of GHG or a carbon budget is key to long-term climate change mitigation policy, if we want to stabilise the climate system at any level of warming. However, one obstacle to the use of the global carbon budget in policy is uncertainty about the size of the budget consistent with any specific temperature-based goal such as limiting warming to 2°C (Millar, et al., 2016). For example, according to the latest study, carbon budgets left beyond 2015 with a 66% chance of staying below 2°C, have a range between 590 and 1,240 GtCO₂ (Rogelj, et al., 2016).

In conclusion, it is still very unclear how and what kind of outcomes the global stocktake aims to generate with what information, and how Parties will act on its outcome. However, the CMA1 is to be held in conjunction with COP22 in 2016, and the facilitative dialogue of 2018, which could play as a precursor to the global stocktake, will take place in only two years. As such, Parties need to go straight into concrete discussions on identifying the sources of input and the modalities so as to inform the stakeholders necessary in making the global stocktake work as part of the ratcheting up mechanism.

4.4 Proposals

The global stocktake should be designed to: a) be comprehensive, covering mitigation, adaptation and support; b) clarify where progress has been made and where challenges exist; c) identify gaps and ways to address them; and d) display opportunities for Parties on where they can work collectively and individually. In order to achieve these points, the following factors of the global stocktake are essentially important to empower the ratchet-up mechanism.

1) The global stocktake should first clearly recognise the necessity of reducing net global CO₂ emissions to zero to stabilise global temperatures at warming thresholds of 1.5°C and 2°C above pre-industrial levels. Following this, the global emissions trend, the speed of emissions reduction, and the status of structural changes in key sectors should be examined in terms of whether these parameters are heading to net zero-emissions as soon as possible in the second half of the century.

To cope with scientific uncertainties in the size of a global carbon budget consistent with the long-term goal of the Paris Agreement, the global stocktake should first clearly recognise the necessity of reducing net global CO₂ emissions to zero to stabilise global temperatures⁴. Then, the global emissions trend, the speed of emissions reduction, and the status of structural changes in key sectors (e.g. power sector, steel sector, cement sector, transportation sector and building sector) should be examined in terms of whether these parameters are heading to net zero emissions in the second half of the century. Specific timing of net zero emissions should be determined and adjusted to evolving climate change.

This highlights the importance of synthesising of not only NDCs but also long-term low GHG emission development strategies as key inputs to the global stocktake. For adequately aggregate effects of NDCs, Parties should communicate NDCs with enhanced clarity and transparency. In addition, a communication process should be established for long-term strategies. COP should also consider asking the secretariat to compile the communicated long-term strategies. Further consideration is required on how various information should be aggregated.

⁴ See Haites, et al. (2013) and Millar, et al. (2016) for the importance of committing to net zero emissions.

Regarding sectoral data, it would be desirable to make collaborative arrangements with international industrial associations. This participatory approach could help industrial associations have a better understanding of the importance of zero emissions or decarbonisation in the second half of the century. Engagement of such private-sector associations is also essential for the acceptability of the global stocktake by a wide range of stakeholders.

2) The global stocktake should comprise two phases: a) a technical dialogue phase; and then b) a political decision-making phase, with an aim to facilitating mutual learning and promote political momentum toward climate action.

In considering the modalities, it is important to ensure that the global stocktake has facilitative nature, ownership and political attention. These factors are critical for the global stocktake to empower the ratchet-up mechanism. Drawing upon experience from the 2013-2015 review of the long-term global goal, one way of conducting the global stocktake is to divide the process into two phases: a) a technical dialogue phase; and subsequently b) a political decision-making phase.

A technical dialogue could be organised and conducted in a facilitative manner, as an exchange between experts and Parties, **aiming to translate the best available information and science into actionable knowledge for Parties**. As the global stocktake has a role to inform Parties when they plan their successive NDCs, this translation function would be essential. Key topics are gaps in emission reduction, areas of mitigation potentials including potential sectors and available technology, international cooperation, how to fill gaps, and information gaps to improve the process of the global stocktake. The global stocktake can be an opportunity for sharing best practices and to encourage Parties to take ambitious enhanced actions.

The political decision-making phase could involve participation at the ministerial-level and develop political decisions on actions based on the technical work. For the outcomes of the global stocktake, Parties have so far indicated their broad views in their submissions. They range from no mention of the outcome to CMA decisions. Other options mentioned include a reflection note from a high-level event, a recommendation to improve the mechanisms for means of implementation, a summary of the discussion, as well as challenges and opportunities identified to enhance the global response to climate change (UNFCCC, 2016c & 2016d). However, the political decision-making phase proposed here can contribute to **ensuring the level of political attention** and political will in raising ambition in NDCs following the global stocktake.

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About IGES

The Institute for Global Environmental Strategies (IGES), established under an initiative of the Government of Japan in 1998, is an international research institute conducting practical and innovative research for realizing sustainable development in the Asia-Pacific region. IGES research focuses on three issues of critical importance: climate change, natural resource management, and sustainable consumption and production. IGES also serves as the secretariat for various international initiatives and research networks, actively contributing to policy formulation in the form of information sharing and policy proposals.

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