August 2021

Preparing for the first global stocktake: How to shift collective climate action into high gear and achieve equitable outcomes

Policy Brief[1]

Harald Winkler and Andrew Marquard

[1] The policy brief has been revised based on discussions at a workshop held virtually between 7th and 9th July 2021.

Table of Contents

List of Figures

List of Tables

Background and Acknowledgements

This policy brief was written for a workshop on 'Preparing for the First Global Stocktake in Africa'. The workshop was held virtually from 7-9 July 2021. It was initially planned as an in-person meeting in Cape Town. About 40 thinkers and negotiators, mainly from African and other developing countries, accepted an invitation from the team at the University of Cape Town (UCT), working with the Institut du Développement Durable et des Relations Internationals (IDDRI). The latter invited some participants from Latin America and Asian countries. Comments by Marta Torres-Gunfaus of IDDRI on an earlier draft of this brief were very helpful. Any remaining errors and views expressed are the responsibility of the authors. The policy brief has been lightly revised, including some but not all the many creative and innovative ideas from the workshop. Support by Konrad-Adenauer-Stiftung is gratefully acknowledged

1.Introduction

The global stocktake (GST) under the Paris Agreement is a critical opportunity to shift climate action into a higher gear. The science is clear that we are fast running out of time to avoid dangerous climate change. Some impacts are unavoidable. We have used up so much of the global carbon budget that keeping temperature increases below 1.5°C may soon be out of reach. Youth activists put it more plainly – climate is an emergency. The response requires systems change.

The GST is designed to increase action. Countries must consider what everyone else is doing before they determine their next contribution. All countries should find new forms of international cooperation – asking how we can do things together more than the sum of the parts. The GST can link a collective response to a global commons problem (climate change) and action, which is increasingly at a national and local scale. It needs to generate a step-change.

We already know that the sum of mitigation targets in nationally determined contributions (NDCs) is not keeping us on track to remain well below 2°C (Rogelj et al. 2016; UNEP 2020). There is, therefore, an adaptation gap, including financing adaptation (UNEP 2015), an implementation gap between targets and policy measures that reduce emissions or avoid impacts and a finance gap. How large these depends on how you count (Roberts et al. 2021a). The pace, scale and breadth of climate actions and support are obviously inadequate to the task of limiting temperature increase and avoiding even worse impacts. What global enabling conditions can be put in place to bridge these gaps?

How can the GST address these challenges? The degree to which the GST succeeds (or fails) will significantly influence future GSTs, and possibly the role of multi-lateral processes to drive climate action. It is a tall order, but how would we know what is possible unless we try the first time? This policy brief was written to stimulate discussion at a virtual workshop, in which participants had creative and constructive discussions on how to prepare well for the first GST. The brief has been revised based on some inputs without claiming to summarise the full range of excellent ideas. A visual record of the workshop is available at https://doi.org/10.25375/uct.15028962.v2

1.1 What is the GST

The Paris Agreement established a global stocktake in Article 14 (UNFCCC 2015a). The global stocktake (GST) is known informally as a 'ratcheting mechanism' – countries get together to raise ambition and do more collectively. More formally, the GST is a process to take stock of the implementation of the agreement and collective progress in achieving its purpose and assessing progress towards its long-term goals. The outcome of the GST will inform countries as they formulate their next NDCs and innovations in international cooperation.

After Paris, negotiations on the Paris Rule Book included the sources of inputs and modalities for the GST under the ad hoc Working Group on the Paris Agreement. The APA concluded most of the Paris rule book (except Article 6) (December 2018). Decision 19/CMA.1 agreed on the GST (UNFCCC 2018a).

The Paris Rule Book included agreement on sources of inputs and modalities for the GST (UNFCCC 2018a). The GST has three components or phases:

1) information collection and preparation;
2) technical assessment; and
3) (political) consideration of outputs.

Much information will flow into the GST. A long list of information sources has been negotiated. Initial preparations for the GST are underway in 2021, notably the Chairs of the Subsidiary Bodies issued a non-paper in May 2021 (SB Chairs 2021); see section 4.3.1 below. A joint contact group is expected to meet for the first time at COP26 in Glasgow in November 2021. The first GST will commence more fully in 2022 and conclude in 2023.

The COP tends to rotate among the five recognised UN regions. There is no strict sequence, but it generally follows Africa, Asia, Central and Eastern Europe, Latin America and the Caribbean and Western Europe and others.2 If this holds, then in 2022, when the technical assessment would start, COP27 would be in Africa; and when the first GST ends in 2023, COP28 will likely be held in Asia.

1.2 What the GST is not

The global stocktake is not a review of the Agreement; the Paris Agreement will not be revised based on the GST.

The GST is not a review at an individual level. Technical reviews of individual NDCs –strictly mitigation and finance provided - occur under the enhanced transparency framework. However, the processes can be thought of as 'distinct but related'. Information on NDCs, long-term low emissions development strategies, adaptation communications, reports on finance and much else are inputs to the GST. Biennial transparency reports will become important inputs to the second GST, but as BTRs are due by 2024 (UNFCCC 2018b), they are not expected to be available for the first GST (SB Chairs 2021). Individual NDCs will not be reviewed in the GST, only the aggregate effects. The outcome of the GST is intended to inform the next round of NDCs; that is, once the first GST concludes in 2023, parties have two years to prepare their second NDCs, to be communicated in 2025.

The GST is not a review of adequacy – this has a particular history and meaning under the Convention. For example, the GST will review progress against the global temperature goal – well below 2°C and pursuing efforts to 1.5°C – but will not consider whether the temperature goal is adequate or should be changed.

The GST is not the periodic review under the Convention (UNFCCC 2014), which does review the adequacy of the global temperature goal.3 The periodic review includes a Structured Expert Dialogue, which some see as similar to the GST's technical assessment, while others point to the broader scope of the GST.

1.3 Long-term goals and themes in summary

The substantive focus of the GST is shaped by the purpose and six long-term global goals of the Paris Agreement: temperature, capacity, financial flows, mitigation, adaptation and mobilisation of finance (see 0 below).

Negotiations on the modalities for the GST agreed on themes and efforts. The three thematic areas are mitigation, adaptation and means of implementation (MOI) and support (support and MOI refer to the same issues – finance, technology and capacity). The G77&LChina argued strongly for the inclusion of

[2] https://unfccc.int/process/bodies/supreme-bodies/conference-of-the-parties-cop?bodies_documents[0]=topic:58&bodies_documents[1]=topic:2196

[3] The temperature goal in the Lima decision 1/CP.16 referred to 2°C, with 1.5 in context of best available science; in Paris, well below 2°C and 1.5°C were agreed, and para 4 of decision 10/CP.21 aligned the goal to be assessed in the periodic review to be consistent with the language in Paris Art 2.1(a).

loss and damage (L&D) and response measures (RM), and there were included – though with softer language – the GST: "may take into account, as appropriate, efforts related to its work" on L&D and RM. Consequently, the approach in this paper is to consider L&D under adaptation and RM under mitigation. While some may feel that L&D and RM deserve the same treatment, that was not capable of agreement.

2. GST themes and efforts related to work of GST

The overall task of the GST is to: "take stock of the implementation of this Agreement to assess the collective progress towards achieving the purpose of this Agreement and its long-term goals" (UNFCCC, 2015: Article 14.1). This section considers each goal, in turn, also taking into account the themes of the GST, as identified for the technical assessment and agreed in decision 19/CMA.1, paragraph 6(b) (UNFCCC 2018a). However, we start with the purpose of the agreement, against which progress should be assessed – is the Paris Agreement achieving its purpose?

2.1 Achieving the purpose of the Paris Agreement and its long-term goals

The purpose of the Paris Agreement is set out in Article 2 (UNFCCC 2015a). The aim is to strengthen the global response to climate change in the context of sustainable development and poverty eradication. The purpose refers to the objective of the Convention in Article 2 (UNFCCC 1992). The Paris Agreement sets six long-term global goals to guide this purpose, three of them in Article 2.1 and three others set concerning the thematic areas in decision 19/CMA.1. To repeat the list of six (as others may count differently): temperature, capacity, financial flows, mitigation, adaptation and mobilisation of finance.

Article 2.1 sets out three of the long-term goals:

a) temperature (well below 2°C and pursuing efforts to 1.5°C),
b) capacity to adapt and mitigate and
c) financial flows for climate resilient and low emissions development.

The long-term goal on temperature is further codified in terms of global goals for mitigation (Art 4.1) and adaptation (Article 7.1). The long-term goal for finance is set in Article 9.3 and quantified in paragraph 53 of the Paris decision.

The six goals are interrelated and not mutually exclusive. For example, both the mitigation and adaptation goals refer to temperature, and finance has a goal for mobilisation in Art 9.3 and financial flows in Art 2.1 (c), with the latter relating to climate resilience and low emissions, in other words, mitigation and adaptation.

The negotiations on the modalities of the GST were characterised by divergence on two issues, treatment of equity and scope.

Article 2.2 makes clear that implementation of the agreement and achieving its purpose must reflect equity and common but differentiated responsibilities and respective capabilities (CBDR&RC) in the light of different national circumstances. The last clause is new in the Paris Agreement, making CBDR&RC a dynamic concept (Rajamani 2017). Equity and fairness are ways to connect the purpose of the agreement and its long-term goals. In the negotiations of the modalities of the GST, the G77&China argued for the inclusion of equity in several ways. At the same time, developed countries resisted including indicators of equity and references to historical responsibility. The agreed modalities included

equity and science as cross-cutting topics in the GST but did not refer to specific indicators (UNFCCC 2018: paragraph 2). Considerations of equity will be part of the information collected, considered by experts during technical assessment and captured in outputs; it applies to all components and themes of the GST (Winkler 2020).

On themes, the divergence whether to stick with those identified in Article 14.1 or include others was resolved in Katowice, with the agreement that the technical dialogue will:

> *b) Organize its work in line with taking stock of the implementation of the Paris Agreement to assess the collective progress towards achieving its purpose and long-term goals, including under Article 2, paragraph 1(a–c), in the thematic areas of mitigation, adaptation and means of implementation and support, noting, in this context, that the global stocktake may take into account, as appropriate, efforts related to its work that:*
> *(i) Address the social and economic consequences and impacts of response measures;*
> *(ii) Avert, minimize and address loss and damage associated with the adverse effects of climate change; (UNFCCC 2018: paragraph 6 b).*

This policy brief includes response measures under mitigation and loss and damage under adaptation. This is consistent with the agreed structure – including two new elements, but at a 'level lower' than the themes specified in the Agreement.

The overall purpose is of the Paris Agreement is stated in the chapeau of Article 2.1, to: "strengthen the global response to the threat of climate change, in the context of sustainable development and efforts to eradicate poverty" (UNFCCC 2015a). The context of climate action is important and introduces three goals on temperature, capacity, and financial flows together with the aim. Figure 1 shows a simple concept of arranging the GST goals, themes, and topics for this policy brief.

Figure 1: Goals, themes and topics in the GST

A yellow font is used in Figure 1 to show the six goals, noting that the long-term goal for finance in Article 9.3 is about mobilisation, while financial flows are to be made consistent with adaptation and mitigation under Article 2.1 (c). Mitigation signals the long-term goal in Article 4.1; mitigation is a thematic area – explicit in Article 14.1 and identified in decision 19/CMA.1. Similarly, adaptation in the figure means the global goal for adaptation in Article 7.1 and the thematic areas. The third thematic area is referenced by the shorthand 'support' rather than the longer means of implementation. Capacity is a form of support in Article 11 of the Paris Agreement, and Article 2.1 b is an important goal, strengthening capacity to adapt and mitigate.

Questions for the GST

1. Are we achieving the purpose of the Paris Agreement?

The question above might be understood as a meta-question, in the sense that any answers on whether we are strengthening the global response to climate change in the context of poverty and sustainable development would emerge from the consideration of the more detailed questions on each long-term goal. Another way of saying this is that the assessment of any detailed element is against the purpose.

The task of the GST is not to redefine the purpose but to see whether implementation is achieving the agreed purpose. This raises further questions.

2. What is working? What could work better – within the process but short of renegotiating Paris? What signals can the GST process send to the world?

The last two questions suggest that the GST might lead to action within the formal process under the Paris Agreement and send important signals beyond. The extent to which the GST leads to more effective climate action depends significantly on the process of looking 'within the bubble' of the UNFCCC and beyond.

2.2 Temperature

A global temperature goal is outlined in the first sub-bullet of Article 2.1. The agreement aims to strengthen the global response in the context of sustainable development and efforts to eradicate poverty, including by:

> *holding the increase in the global average temperature to well below 2°C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5°C above pre-industrial levels, recognizing that this would significantly reduce the risks and impacts of climate change (UNFCCC 2015b: Article 2.1 a).*

Does this text mean one or two goals? Eminent international climate lawyers frame it elegantly as: "a single goal consisting of two textually linked elements—the 1.5°C goal and the 'well below 2°C' goal" (Rajamani & Werksman 2018). They indicate that the 'well below 2°C' goal arguably has stronger normative force, given its greater prominence and the more aspirational 'pursue' applied to 1.5 °C. Another study says that "the goal is well below 2°C, with the long-term goal of limiting the temperature increase to 1.5°C" (Mace 2016). One could say simply that there is one goal with two limits.

What does "well below" mean? It is perhaps best understood as constructive ambiguity, a phrase that is capable of different interpretations. Some researchers and single papers may put a number to 'well below 2°C' (Peters 2017). The IPCC seems unlikely to set a precise number, although possibly a range of scenarios will be identified as 2°C or below 2°C. Efforts to pursue 1.5°C imply more action than 'just' well below 2°C; so that there is a direction of travel – from above 2 to well below and on to 1.5°C. One might think that 2°C > well below 2°C > 1.5°C.

The temperature goal and its limits will not be renegotiated in the GST. The point is to assess progress. There will be scientific observations of temperature increase already at 1.2°C, and projections assessed by IPCC as to when we might breach 1.5 and 2°C. Furthermore, it is clear that mitigation efforts are insufficient for either limit, which means some adaptation is already unavoidable and that support will be needed for developing countries.

While the Periodic Review mentioned above is under the Convention and has a different scope, its Structured Expert Dialogue has considered the Paris temperature goal and its two limits (see footnote 3). Synthesis of information on the temperature goal in the SED might be a useful input to the technical assessment under the GST.

3. What is observed temperature increase?
4. Is it important to define what "well below" 2°C means?

2.3 Mitigation, including response measures

2.3.1 Long-term goal for mitigation

The long-term goal for mitigation is often referred to as 'net-zero' but contains far more and is worth citing in full:

> *In order to achieve the long-term temperature goal set out in Article 2, Parties aim to reach global peaking of greenhouse gas emissions as soon as possible, recognizing that peaking will take longer for developing country Parties, and to undertake rapid reductions thereafter in accordance with best available science, so as to achieve a balance between anthropogenic emissions by sources and removals by sinks of greenhouse gases in the second half of this century, on the basis of equity, and in the context of sustainable development and efforts to eradicate poverty (UNFCCC 2015b: Article 4.1)*

What might the GST then say about 'net-zero'? On a global scale, the IPCC AR6 will likely reconfirm the finding of the special report that net-zero CO_2 "around 2050" is necessary for 1.5°C. How do individual pathways add up to net-zero? They may be politically pushed for such adding up and resistance. Analytically, it would be worth considering the advice by Rogelj and co-authors (Rogelj et al. 2021) to reduce vagueness by fixing three things – scope, roadmaps and fairness. On the last point, just transitions to net-zero are essential to allow space for different sustainable development paths to the same goals, including net-zero (which gases?) and those SDGs that seem relevant in a particular context (Dubash et al. 2021). The GST would do well to frame net-zero in a way that increases the chance of real action, not the unintentional consequence of diverting attention. One framing discussed in the workshop was 'just transitions to net-zero CO_2' (Dubash et al. 2021), consistent with important elements in Article 4.1: later peaking in developing countries, equity and sustainable development. These are illustrated in Figure 2.

Figure 2: Net-zero CO_2, equity and sustainable development, shown in an excerpt from the visual record of the workshop: Mitigation, including Response Measures

Source: drawn for the workshop by TofuCreatives.com

The reference to the balance of emissions and removals is a scientific way of saying zero; if sources emit +X tons and sinks remove X tons, then +X -X = 0. Yet, scientists have parsed this language. What is anthropogenic (both sources and sinks, or only the former); does "emissions" mean all GHG (not only CO_2), but what common metric is used, if not GWP100, concluding that "the way in which balance is interpreted, achieved and maintained influences temperature outcomes" (Fuglestvedt et al. 2018). Underlying the debate are different views on whether to focus on the near-term, long-term, whether and how much to take into account historical emissions, and whether to prioritise mitigation of energy CO_2 or rather methane and other short-lived climate forcers. It would be helpful if uncertainties around the framing could be reduced, possibly in interactions with the IPCC, workshops, or both as part of the Technical Dialogue in the GST.

2.3.2 State of emissions and removals, past trends and future projections

The GST may start from a foundation of GHG inventories, assessing the state of emissions and removals, listed first in paragraph 36 of the decision on the GST. GHG inventories provide a fundamental basis for mitigation; reporting on GHG-I has long been required under the convention. Information on tracking progress will become available for the second GST, as biennial transparency reports will only be required from 2024 (UNFCCC 2018b). The first GST will have to rely on biennial reports and biennial update reports, the latter not being available for all developing countries. Future GSTs may also be able to refer to structured summaries, drawing together information on accountable emissions (GHG inventories ± land ± ITMOs), although this is still being negotiated.

The secretariat assessed the aggregate effects of INDCs before Paris (UNFCCC 2015b), and again afterwards, including assessment for the sum of NDCs against pathways consistent with 1.5°C (UNFCCC 2016) as had been included in the Agreement. With updating of the first NDCs spread across 2020 and 2021 due to Covid-19, the secretariat issued a synthesis report in February (UNFCCC 2021), to be updated before COP26. Even with updated mitigation targets, gaps remain.

Similar to summing up the effect of NDCs (UNFCCC, 2021), the GST may consider the sum of long-term low greenhouse gas emission development strategies (LEDS) submitted in response to Article 4.19. LEDS, if done appropriately, could constitute the backbone for international adequacy assessment, namely by revealing the consequences of short-term actions on long-term trajectories and the impact of global conditions on domestic transformations (Torres Gunfaus and Waisman 2021).

Another aspect of mitigation that the GST may assess is peaking. Firstly, peaking of global emissions, which is explicit in Article 4.1, recognising that this will take longer in developing countries. Secondly, the timing of peak warming or, more accurately, the time of peak global mean temperature (or time of temperature stabilisation, much later), combined with the levels of peak warming (or stabilisation). Thirdly, the post-peak rate of temperature change defines a 'new scenario logic' being used to assess the long-term temperature goal (Rogelj et al. 2019). It turns out that peak warming is reached around the time global CO_2 emissions reach net-zero, and non-CO_2 emissions have been limited so that their warming contribution stabilises or declines (*ibid*).

Critical assessments of mitigation pathways do not accurately represent the land sector, which is a gap of 5.5 Gt CO2 per year in estimates of net emissions in GHG inventories and those in Integrated Assessment Models (IAMs) (Grassi et al. 2021). The authors indicate three possible reasons for the difference but only really examine the third:

(a) simplified/incomplete representations of land-use in global models;
(b) inaccurate/incomplete estimation of land fluxes in NGHGIs;
(c) conceptual inconsistencies IAMs vs NGHGIs in defining 'anthropogenic' CO2 sink

Questions for the GST

5. What would make the GST assessment a useful exercise to inform the next round of NDCs, long-term LEDS and international cooperation on mitigation?
6. How might just transitions to net-zero CO_2 be assessed in the GST and beyond?
7. Could the IPCC develop a method to factor out direct *vs* indirect effects for LULUCF?

2.3.3 Response measures

In Katowice, Parties agreed that: "the globalstocktake may take into account, as appropriate, efforts related to its work that (i) address the social and economic consequences and impacts of response measures" (UNFCCC 2018b: paragraph 6b). While the issue of response measures has been associated with oil interests at times, the fundamental concern underlying this theme in the GST is that countries do not want to be affected negatively by the mitigation actions of others.

There will be inputs on response measures to the GST. It was decided that the "forum on the impact of the implementation of response measures will summarize its outcome" (UNFCCC 2018b: paragraph 32). Furthermore, sources of inputs include reports from constituted bodies and forums and other institutional arrangements (*ibid*, para 36d). The Katowice Committee of Experts on the Impacts of the Implementation of Response Measures (KCI), established as a newly constituted body at the same meeting, will guide the forum's work and thus is likely to play a vital role in providing inputs on response measures.

Response measures are not limited to oil or fossil fuels. A newer perspective on response measures may be considered by the EU of carbon border adjustment measures (CBAM). EU leaders requested the commission investigate a CBAM and the revision of the EU ETS, with a view to implementation from 2023. The CBAM would apply primarily to basic materials such as steel and cement, aiming to reduce carbon leakage. It is seen internally as part of the EU Green Deal.

The impacts of the CBAM as a response measure depend on its detailed design. There are various models:

1) importers surrendering carbon allowances based on a product benchmark;
2) also applying adjustment for exports, thus symmetrically for imports and exports; and
3) complementing the EU emission trading system (ETS) with a climate contribution for materials sold in the European Union (EU) at the product benchmark level related to the carbon intensity of each material and modifying free allowances (Ismer et al. 2020).

The impact of CBAM on other countries is a sensitive political issue – particularly as the EU had earlier sought to impose a levy on airlines, perceived by China, India and others as unilateral. The third model may be considered undifferentiated but may be challenged by countries who feel negatively affected or unfairly treated. Such countries might seek reasons to question the CBAM, whether under the Paris Agreement or as a matter of trade, under the General Agreement on Tariffs and Trade. The issue of response measures raises bigger questions about the relationship between climate and trade negotiations.

2.3.4 Cross-cutting issues and implications

By no means least is the question of how equity, sustainable development and efforts to eradicate poverty will be assessed concerning mitigation. Just transitions are one element identified concerning net-zero, above. There is extensive literature dividing up atmospheric space (or a total global carbon budget) by an allocation rule, based on equity principles operationalised by some parameters, assessed in AR5 (Fleurbaey et al. 2014) and with literature since then. On the other hand, important efforts have been made to expand capacities at a national level to examine how economies can transform to meet the climate and development objectives. Where these country-driven visions would be capable of directing national and international efforts, a better understanding of fair shares would be guaranteed, complementing simplified burden-sharing approaches. The GST is a collective assessment and is unlikely to indicate that individual countries exceed their fair share. Civil society will very likely continue to undertake an equity review, as it has in the past, including specific reference to the 'ratchet mechanism' (Civil society review 2017). Emerging literature on references to fairness in NDCs finds that these apply mostly to mitigation and sometimes to finance (Mbeva and Pauw 2016; Winkler et al. 2018; Cunliffe et al. 2019).

Questions for the GST

8. Given the vision of a world that keeps temperature well below 2°C and pursues 1.5°C, and meets the SDGs, what steps and milestones will get us there?
9. What needs to be done by national governments, non-state actors, businesses, labour unions, civil society and other actors?
10. Which actions are sector-specific, and where are systemic changes necessary?

2.4 Adaptation and beyond to include loss and damage

2.4.1 Global goal for adaptation

The Paris Agreement established a global goal on adaptation (GGA). Generalising, the history of negotiations has seen developed countries seeking to frame the issue as cutting emissions only, with adaptation being a local issue. Developing countries sought to include adaptation, pointing out that climate impacts are a consequence of global emissions and seeking funding to adapt. So having a GGA, while also acknowledging that adaptation operates at smaller scales, is a significant advance in the Paris Agreement. The GGA reads as follows:

> *Parties hereby establish the global goal on adaptation of enhancing adaptive capacity, strengthening resilience and reducing vulnerability to climate change, with a view to contributing to sustainable development and ensuring an adequate adaptation response in the context of the temperature goal referred to in Article 2 (UNFCCC 2015b: Article 7.1).*

One challenge in assessing progress towards the GGA is that there is no simple metric. There is no equivalent of adding up tons of CO_2-eq. It may be more useful to think of the GGA as a composite goal. A composite might be more like a mosaic, with different information across the entire picture, distinct from an aggregate, in which one adds up parts to assess against a total.

A Global Adaptation Mapping Initiative (GAMI) gathers literature on adaptation, seeking to answer the question: Are we adapting?

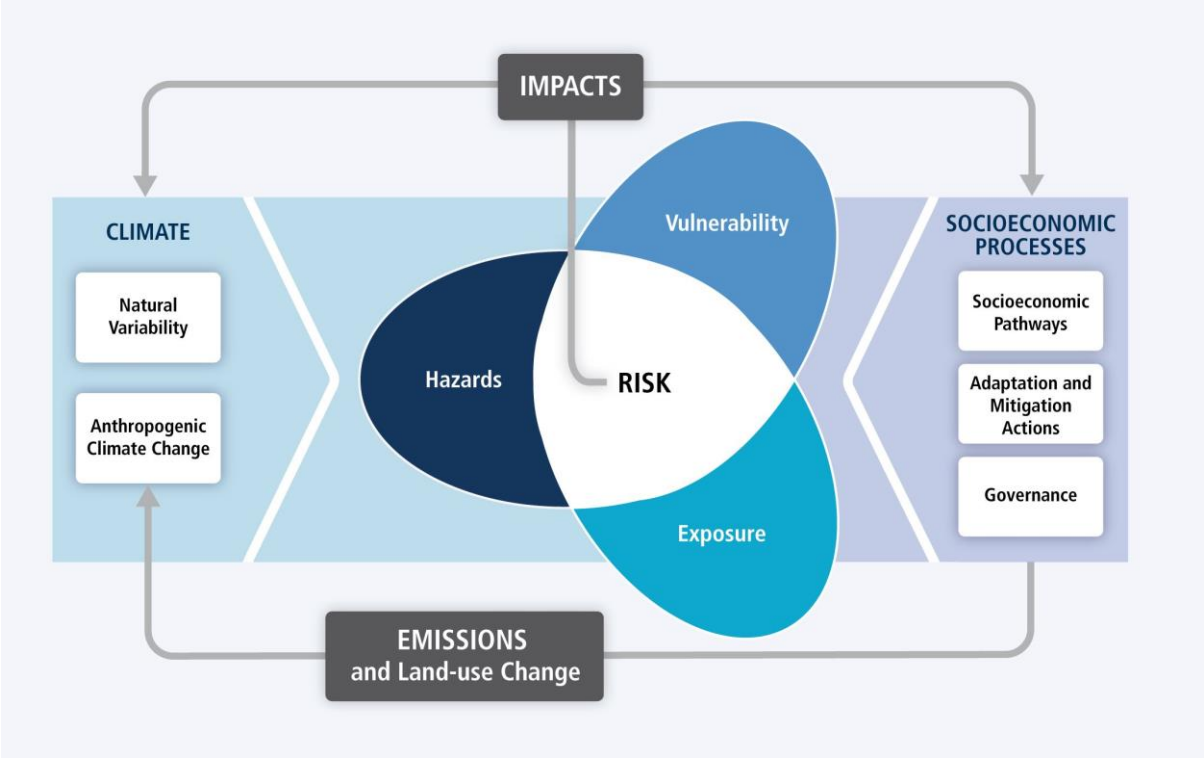
> *GAMI is in the process of reviewing thousands of peer-reviewed articles in order to develop the first systematic global assessment of empirical evidence on adaptation progress. This initiative was developed to provide synthesis results to inform the ongoing Intergovernmental Panel on Climate Change (IPCC) 6th Assessment Report (AR6)*[4].

There have been efforts to develop vulnerability indices, including reducing all climate impacts to a single index. One approach is the University of Notre Dame Global Adaptation Index (ND-GAIN) (Chen et al. 2015), which has been applied at a country level (Mendes et al. 2020). However, questions arise whether a single index can capture a wide range of climate impacts or whether a single number obscures more information than it reveals. The GST might lead to a mandated work on metrics.

Discussions in the GST can use the framing of risk developed by the IPCC's Working Group II. The risks of climate impacts result from the interaction of climate-related hazards with the vulnerability and exposure of human and natural systems, as shown in Figure 3. The figure suggests that both the climate system and socio-economic development drive hazards, exposure and vulnerability.

[4] https://globaladaptation.github.io/index.html#

Figure 3: Core concepts of hazards, exposure and vulnerability in IPCC WGII



The first GST could request the IPCC to develop a special report on the global goal for adaptation (Dagnet et al. 2020), possibly including work on multiple qualitative and quantitative indicators and tools to track progress towards that goal. A work programme could be initiated at COP26 in Glasgow (November 2021) to develop a more shared understanding of the global goal for adaptation and aspects related to it. There is a 'methodology gap' between the maturity of methodologies for mitigation behind far ahead of adaptation. On mitigation, for example, there is an IPCC Task Force on GHG Inventories, with detailed guidelines and tools for countries to report emissions, laying a firm foundation for mitigation. An outcome of the GST could be for developed countries to provide support for Task Forces on Impacts, Vulnerability and Adaptation. Such TFIVAs would be needed in each country to consider adaptation specific in different contexts. Reporting by TFIVAs would provide information into the GST, with a composite global view of progress towards the global goal for adaptation, as illustrated in Figure 4 from the visual record of the workshop.

Figure 4: Global goal for adaptation and metrics, shown in an excerpt from the visual record of the workshop: Adaptation including loss and damage

Source: drawn for the workshop by TofuCreatives.com

Questions for the GST

11. What progress has been made towards the global goal for adaptation (GGA)?
12. How can Parties enhance ambition on adaptation, both of actions to take and support needed?
13. What work on metrics would be needed to understand progress towards the GGA better?

2.4.2 Loss and damage

Loss and damage are what happen beyond adaptation. Definitions refer to the unavoidable residual impacts of human-induced climate change. Although some strip out inevitable changes due to natural geographical vulnerabilities, others do not. Yet others add unavoided impacts (those poorly managed or unmanaged) (Paul and Singh, 2021, two-pager). The science of attributing events to climate change is advancing but not attribution on tipping points yet. One view is that L&D might lie beyond such tipping points, but it is also possible that there may be loss and damage without crossing tipping points or specific thresholds.

Whatever the definition, the recognition of loss and damage (L&D) in its own Article 8 was a significant advance for vulnerable countries. However, the inclusion of an article in a treaty was with concessions – the language is not very strong, and the Paris decision explicitly excludes Article 8 involving or providing "a basis for any liability or compensation" (UNFCCC 2015b: paragraph 51). It is important to note that not all funding for L&D amounts to compensation or liability. However, donor countries are reluctant to open a 'third' stream of funding, mitigation, adaptation and L&D. L&D is a political and economic issue.

The Katowice decision included L&D – together with responses measures not explicitly named as a "thematic area", but agreeing that "the globalstocktake may take into account, as appropriate, efforts related to its work that … (ii) Avert, minimize and address loss and damage associated with the adverse effects of climate change" (UNFCCC 2018b: paragraph 6b). Sources of inputs also include reference to L&D in paragraph 36(e), although, again, there is much qualifying language. The Warsaw International Mechanism (WIM) is a constituted body and can thus make input. An expert group on action and

support has been created under the WIM ExCo, which had the power to create such a group under decision 2/CP.20 (UNFCCC 2018a)

It is unclear whether the Adaptation Committee or WIM ExCo will prepare synthesis reports on L&D. Developed countries have been arguing in the WIM that the synthesis report should be limited to the activities of the mechanism and its expert groups rather than actual action on L&D. The non-paper by the SB Chairs raises the possibility of constituted bodies interacting, so one option is for interaction between the AC and WIM ExCo to strengthen inputs on L&D to the GST.
Workshop participants pointed to a broader strengthening of institutional arrangements. Ideas include bringing in reflections on L&D seen by developing countries. Concrete action should go beyond risk insurance or technical assistance. The Santiago Network has been established but is currently defined around "catalysing technical assistance on loss and damage"[5]. It is doubtful whether this is adequate to prevent loss and damage. Civil society advocates voice and agency be given to frontline communities, those affected by loss and damage. This could take the form of a core of national, regional, international, and sectoral organisations (across academia, civil society, private sector, public sector and research entities) (Paul & Singh 2021). An advisory board would include countries, constituted bodies, technology and finance institutions, and civil society representatives. In the GST itself, L&D could be brought into the GST through workshops and roundtables as part of sessions on adaptation in the Technical Dialogue phase.

A very creative idea emerging from the workshop was for an 'L&D hackathon', bringing together the best thinkers to develop solutions, as shown in Figure 5 below.

Figure 5: Idea of an L&D 'hackathon', shown in an excerpt from a visual record of the workshop: adaptation including loss & damage

Source: drawn for the workshop by TofuCreatives.com

This went with a sense that developing countries need to take the lead in closing the gap between what is known and done on L&D and the needs that loss and damage will bring.

Questions for the GST

[5] https://unfccc.int/santiago-network

One approach is to formulate questions that create as much action on and support for L&D as possible – considering what can be addressed within the GST and beyond. The following draw on questions developed by Höhne et al. (2019), Paul and Singh (2021) and CAN International:

14. How much L&D is implied by scenarios consistent with the global temperature goal (well below 2°C and pursuing an effort to 1.5°C), and scenarios consistent with the aggregate effect of NDCs?
15. What action and support are being provided for L&D, and what are the remaining needs?
16. What policies and institutions are available to reduce the risk of loss and damage?
17. What support do developing country Parties need to assess and report on current and future loss and damage?

2.4.3 Cross-cutting issues and implications

On adaptation, it is a matter of profound injustice that those least responsible for climate change are most vulnerable to its impacts (Massawa et al. 2009; Chancel and Pikkety 2015), yet studies find the least mature analysis of equity in adaptation components of NDCs.

The theme of loss and damage perhaps epitomises the risks of injustice – that poor communities and countries might suffer such severe impacts of climate change that it goes beyond their capacity to adapt (Roberts and Pelling 2018; Roberts et al. 2017; Sharma 2017).

2.5 Support: Finance, technology and capacity

Support is not the same as finance. Sometimes the terms are used interchangeably, but support is broader than finance and frames the issue differently to a focus on finance flows. There are contested interpretations, drawing on Article 9 and Article 2.1(c) – some focusing on the need to provide more support, including finance, consistent with obligations particularly of public funds; and others focusing on finance flows, tending to focus on a national scale and private flows (Zamarioli et al. 2021).

Article 14.1 refers to "support and means of implementation", both taken to refer to the same three elements: finance, technology and capacity. We consider each in turn.

2.5.1 Finance, including long-term goals and financial flows

In relation to finance, it is essential to distinguish finance provided and mobilised from financial flows. Developed countries must provide finance to developing countries for mitigation and adaptation, explicitly "in continuation of their existing obligations under the Convention" (UNFCCC 2015b: Article 9.1). So, provision means a legal obligation that continues under the Paris Agreement.

Framing is essential, as are operational ways of addressing finance. A finance working group in the independent GST network has proposed seven ways to address finance in the GST (FWG 2021).

During the workshop, thinking emerged that it might be useful to frame climate finance in the GST as being a discussion of both the implementation of existing financing obligations under Article 9 of the Paris Agreement and Article 4.3 of the UNFCCC, and using broader financial flows outside the UNFCCC regime to achieve Art 2.1c of the Paris Agreement. This would frame both Article 9 and 2.1c as important elements in the overall discussion of framing further international cooperation on climate change under the UNFCCC and the Paris Agreement.

2.5.1.1 Long-term goal for finance

The Paris Agreement reaffirms the continuing obligations of developed countries to provide finance to developing countries for mitigation and adaptation (Art 9.1) while encouraging other Parties to provide

support voluntarily (Art 9.2). However, the Convention obligations were not quantified to specific amounts, though in the Copenhagen Accord, developed countries came to a political agreement to jointly mobilise $100 billion per year starting in 2020.

The long-term goal for finance is to mobilise, in Article 9.3:

> *As part of a global effort, developed country Parties should continue to take the lead in mobilizing climate finance from a wide variety of sources, instruments and channels, noting the significant role of public funds, through a variety of actions, including supporting country-driven strategies, and taking into account the needs and priorities of developing country Parties. Such mobilization of climate finance should represent a progression beyond previous efforts (UNFCCC 2015a).*

The goal is quantified in paragraph 53 of the Paris decision, which recalls language from the Copenhagen Accord (linking to mitigation actions and transparency). It indicates that, before 2025, "Parties to the Paris Agreement shall set a new collective quantified goal from a floor of USD 100 billion per year, taking into account the needs and priorities of developing countries" (UNFCCC 2015c). Negotiations on a new, higher long-term goal for finance, to be set before 2025, are underway.

Understanding progress towards the $100 billion per year depends on accounting. Analyses differ widely, depending on what finance is assumed to count and other methodological issues, leading one study to conclude that "indeterminacy and questionable claims make it impossible to know if developed nations have delivered" (Roberts et al. 2021b).

2.5.1.2 Financial flows

Article 2.1 c does not refer to either provision or mobilisation, but rather is about "making finance flows consistent with a pathway towards low greenhouse gas emissions and climate-resilient development" (UNFCCC 2018a). Financial flows, then, are related to mitigation and adaptation, low emissions and climate-resilient development. Financial flows could be public and private, international and domestic.

The SB Chairs, in their non-paper, treated the issue of financial flows as cross-cutting. They included the following questions:

> *17. What is the state of current global climate finance flows, trends and data gaps? What information is available on efforts to make the financial flows consistent with the pathways towards low GHG emissions and climate-resilient development, and what are the knowledge gaps (Article 2.1(c), (§36(d))? (SB Chairs 2021).*

The independent global stocktake (iGST) finance working group proposes seven ways in which the GST can strengthen climate finance.

> *1. The Global Stocktake is a core and dynamic element of the 2015 Paris Agreement, and a key opportunity to seek greater ambition for finance*
> *2. The GST outcome must demonstrate the shortfalls of poorly defined climate finance goals*
> *3. The GST is an opportunity to regularly assess progress on climate finance effectiveness*
> *4. The GST should oblige the global community to take a closer look at equity in financing climate action*
> *5. The GST should bring loss and damage into the climate finance agenda*
> *6. The climate finance community should capitalise on the GST as an opportunity to explore innovative climate finance instruments*

7. *The GST must accelerate the climate consistency of all finance flows in a post-2020 climate finance architecture* (FWG 2021).

Questions for the GST

18. How to achieve a breakthrough on finance?
19. How does provision and mobilisation of finance under Article 9 relate to consistency of financial flows under Article 2.1(c)?
20. How can a balance of funding for mitigation and adaptation be achieved in practice?
21. How might loss and damage be funded, short of compensation or liability?
22. What methods might be used to account for progress towards the long-term goal on finance?

2.5.1 Technology

Technology development and transfer are crucial to implementing the Paris Agreement and achieving its purpose. While there is no specific long-term goal on technology, implementing the Agreement to achieve its purpose will certainly require technology. Technology is critical for both adaptation and mitigation, and finance is needed for technology development and transfer. Technologies should be understood to include not only hardware but also social systems for rapid transitions. Skilled human and institutional capacity are critical for technological development.

> *What is the overall progress made towards achieving the long-term vision on the importance of fully realizing technology development and transfer in order to improve resilience to climate change and to reduce greenhouse gas emissions referred to in Article 10.1? What is the state of cooperative action on technology development and transfer (Article 10.2)? (SB Chairs 2021).*

The outcome of the GST is expected to inform the next round of NDCs, "as well as in enhancing international cooperation for climate action" (UNFCCC 2015b: Article 14.3). New forms of international cooperation on technology should be explored.

2.5.2 Capacity goal

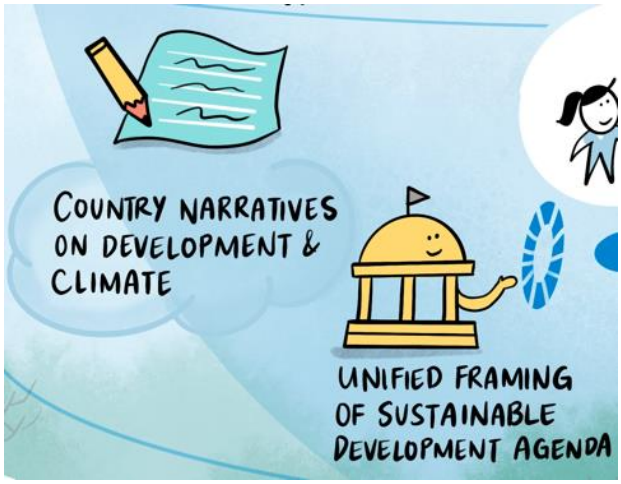
Article 2.1b is perhaps the least often cited goal of the Paris Agreement. This is somewhat surprising, as the goal elaborates the purpose: "Increasing the ability to adapt to the adverse impacts of climate change and foster climate resilience and low greenhouse gas emissions development, in a manner that does not threaten food production" (UNFCCC 2015b; Article 2.1b). Capacity is foundational to any action.

The SB Chairs pose a basic question: "14. To what extent has progress been made on enhancing the capacity of developing country Parties to implement the Paris Agreement (Article 11.3)?" (SB Chairs 2021) However, broader considerations may be needed.

Based on 40 years of experience, Youba Sokona has argued that "capacity is not the ability to implement someone else's agenda but the ability to set and pursue your own agenda and, in that sense, it should be a core element of any development narrative" (Sokona 2021). He proposes four key elements that are central to build capacity for development. (1) the will and ability to create and pursue long-term development narratives; (2) problem-solving institutions; (3) resources; (4) navigating short- and long-term needs (Sokona 2021). During the workshop, the importance of countries and communities framing their own narratives was widely endorsed.

Figure 6: Developing countries own narratives and shared SDGs shown in an excerpt from the visual record of the workshop: Support

Source: drawn for the workshop by TofuCreatives.com



The SDGs can be seen as a useful lens of shared aspirations, given some unified framing of goals (Figure 6. Participants elaborated further, indicating that developing countries have existing institutions. Sometimes, these are not working on climate change, but the challenge is to strengthen institutional capacity, including by bringing existing institutions into the work on climate change. There may be cases where new, dedicated institutions are needed – for example, national Task Forces on Impacts, Vulnerability and Adaptation (see 0 above).

Others have called for more attention on the capacity to support "transformative adaptation", suggesting that knowledge creation at the community level is central to capacity building (Ziervogel et al. 2021). Yet adaptation policy and support can enable such transformative adaptation.

Questions for the GST

23. How can countries develop their development and climate narrative as a foundation to enhancing their skilled human and institutional capacity?
24. How can problem-solving institutions be further developed in developing countries?
25. How could the international community support capacity for transformative adaptation?

2.6 Equity, science and ambition: Cross-cutting topics

What is fair, science-based and ambitious? Equity, science and ambition can be understood as three topics to be considered in a cross-cutting manner in the GST.

The GST is to be undertaken "in the light of equity and the best available science" (UNFCCC, 2015: Article 14.1). Equity is a cross-cutting topic, included in several places of the modalities.

2 6.1 Equity and science

A specific matter on process design relates to the cross-cutting issue of equity. While the substantive relevance of equity has been included in the subsections in 2 above, it is worth considering questions to guide consideration, examples of relevant inputs and ways of discussing such questions and inputs.

Table 1 indicates initial ideas on how equity could be considered in the GST. Two elements not covered in Table 1 are 1) procedural equity, including how participation in the GST process could be made more equitable, and 2) how the GST might lead to equitable outcomes. Table 1 could be used as starting point for discussion and further thinking about the treatment of equity in the GST.

Table 1: Equity across themes of the GST, with overarching question/issues, examples of relevant inputs and possible modalities

Source: Winkler (2020)

	Mitigation	Adaptation	Means of implementation and support	Response measures	Loss and damage
Overarching question/ issue	How can efforts be shared fairly?	Injustice of impacts on poor communities	Who pays?	Avoid impacts on others	Deep injustice of L&D beyond adaptation
Examples of relevant inputs	Fairness in NDCs Party submissions on equity Synthesis report on aggregate effects IPCC AR6, WGIII IPCC special report on 1.5°C, Ch. 5	Fairness in NDCs Party submissions on equity Report from Adaptation Committee IPCC AR6, WGII	Fairness in NDCs Party submissions on equity SCF Biannual Assessment and report to GST IPCC AR6, WGII and WGIII	Fairness in NDCs Party submissions on equity Report by Forum IPCC AR6, WGIII	Fairness in NDCs Party submissions on equity Report by WIM IPCC AR6, WGI and WGII
Possible modalities	Workshops on mitigation, for example, workshop on aggregate effects of NDCs	Workshops on adaptation, for example, workshop state of adaptation efforts and relation to Art 7.14	Workshops on support	In workshop on mitigation	In workshop on adaptation

[#] Workshops is used as shorthand for "workshops, round tables and other activities" in para 6 (a). These are not limited to single events; Technical Assessment will be conducted over at least two sessions.

2.6.2 Ambition

Ambition is a very common term in public debates but is not mentioned in Article 14 or any of the long-term goals. In a decision in 19/CMA.1, ambition is mentioned only in a preambular paragraph (not an operative one), recognising that the GST "is crucial for enhancing the collective ambition of action and support towards achieving the purpose and long-term goals of the Paris Agreement"; ambition is applied to both action and support.

That said, whether the sum of NDCs is ambitious enough to keep the temperature well below 2°C and even 1.5°C will undoubtedly be part of the technical assessment in the GST. Mitigation ambition is not limited to NDCs, with non-state action being recognised in the Paris decision and increasingly receiving attention in the literature. Scientific information will inform the GST. Perhaps the most obvious way is to include the latest reports by the Intergovernmental Panel on Climate Change (IPCC) as a critical source of inputs, with IPCC reports listed second only to reports and communications by Parties.

Questions for the GST

26. Given that the best available science indicates that the sum of mitigation efforts in NDCs is insufficient to put us on global mitigation pathways consistent with well below 2°C and 1.5°C, what more can be done on mitigation? And what are the implications for unavoidable adaptation?
27. How can efforts be shared fairly? What quantitative and qualitative ways are there of understanding fair shares – of efforts to mitigate and adapt?
28. How would fair and ambitious contributions to climate finance look?

3. Workshop questions: Preparing for the first GST

The workshop discussed different kinds of questions:

1. many questions on substantive matters, raised in this policy briefs and other (non-) papers;
2. meta-questions: whether it is helpful to have a much shorter set of questions for the GST and beyond; and
3. questions of process, notably how to prepare for and intervene in the first GST and beyond.

During the workshop, many participants felt strongly that the GST needed to be forward-looking, in the sense of not getting stuck in patterns of the past or ways of (not) doing things in the negotiations. And others suggested that we start with understanding what has not worked to make progress, suggesting we might distinguish between

A. Backwards-looking questions (what is agreed; ex-post evaluation; implementation)
B. Forward-looking questions (what more is needed, ex-ante, science, equity, ambition)

3.1 Detailed questions on substantive matters

Many questions on the thematic areas, elements of work and cross-cutting topics have been raised in this policy brief, under various sub-headings in section 2. The Chairs of the SBI and SBSTA were mandated in 19/CMA.1, paragraph 7, to develop questions – and included 23 questions in their non-paper, organised under mitigation, adaptation, support and cross-cutting (SB Chairs 2021). The SB Chairs reference virtually every question to an article in the Paris Agreement or paragraph in decision 19/CMA.1. While understandable as an approach in negotiations, will such questions set up a technical assessment that delivers fair, ambitious and science-based outcomes of the first GST? More broadly, workshop participants might discuss:

- **What questions would set up a process that leads to the desired outcomes of the GST?**

3.2 Meta-questions

What indeed is the desired outcome of the GST? Reading Article 14.3, the GST informs countries as they consider the next round of NDCs, to be communicated in 2025 – and international cooperation. But the GST need not be limited by what is already agreed. If climate action is to be more effective and not undermine prospects of sustainable development, then the GST needs to be a 'ratchet mechanism'. The outcomes need to be, as a normative statement, fair and ambitious. And climate action needs to take place both within the formal process and beyond. Some possible examples include:

- **The three overarching questions used in the 2018 Talanoa Dialogue:[6] Where are we? Where do we want to go? How do we get there?**
- **Holz and Ngwadla (2016) proposed a state-benchmark-gap approach for the GST across different time-frames. Would it be useful to turn these three elements into meta-questions: What is the *state* of climate action? What is the *benchmark* of climate action that should be ideally achieved? How do we bridge the *gap* between the current state and the ideal benchmark?**
- **Are short meta-questions helpful to guide the GST?**

3.3 Process questions: How to prepare and intervene

There are important questions of process. An SB Chair's non-paper (see below) has proposed several ideas, yet this is informal and still open for discussion. A vision of the GST makes the good point that "a successful GST that facilitates transformational change is thus one that is conceived as a process, rather than an event" (Dagnet et al. 2020). Yet, the first GST will set some precedent, so consideration of process is essential. A working assumption is that the first two phases of the GST are technical, followed by a political 'consideration of outputs' as the third and conclusive phase.

3.3.1 SB Chair's non-paper: View of process and questions

In decision 19/CMA.1, the Chairs of the Subsidiary Bodies (SBs) were requested "to organize the global stocktake in a flexible and appropriate manner, to work on identifying opportunities for learning-by-doing, including for assessing collective progress, and to take the necessary steps for the consideration of inputs as they become available" (ibid: paragraph 16). The current Chair of SBSTA, Mr Tosi Mpanu-Mpanu (Democratic Republic of Congo) and the Chair of the SBI, Ms Marianne Karlsen (Norway), issued a non-paper in May 2021, proposing significant further details (SB Chairs 2021). They undertook informal consultations during the June sessions (one hour) and indicated that they would issue a revised version.

Figure 7: Timelines of the first global stocktake and some of its inputs and mandated activities

Source: (SB Chairs 2021)

[6] https://unfccc.int/news/talanoa-dialogue-additional-guiding-questions

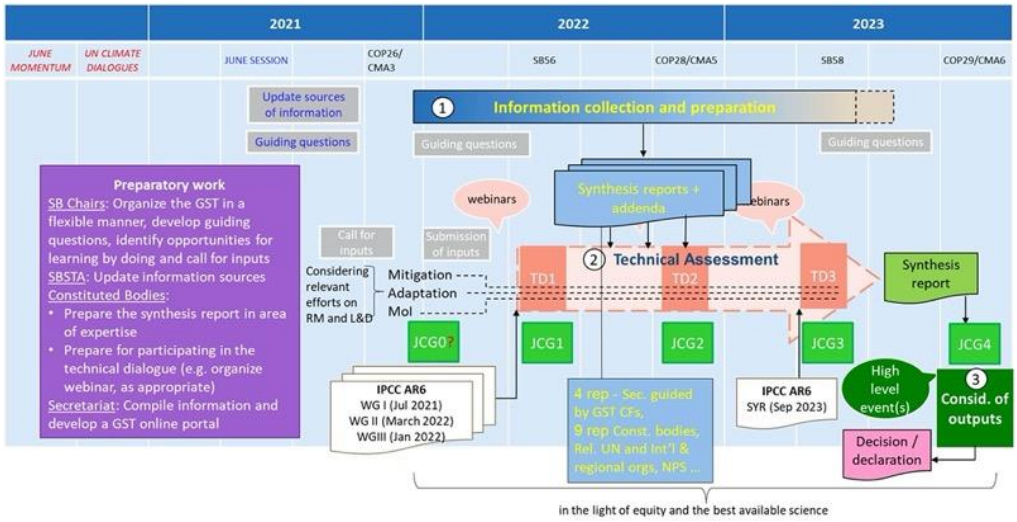


Figure Z gives an initial overview of the process. The non-paper also provides questions, some of which have been included in this policy brief but should also be read in their entirety.
In this context, we might ask:

- **In what ways can the first GST generate reflection and activity under the UNFCCC and its Paris Agreement and beyond?**
- **How can the information collection, preparation and technical assessment phases be made generative?**
- **How might the Joint Contact Group provide overall political guidance to the SB Chairs and co-facilitators? How might the Technical Dialogue be kept technical?**
- **The consideration of outputs will be political, that is, discussion among ministers. Being mindful that one cannot prescribe to ministers and that this phase will attract most public attention? Would a 'sherpa' type process prepare a political declaration? Ministerial round-tables?**

3.3.2 Homework as a process

Various actors will prepare for the first GST and take heed of its outcomes. Such actors include countries (Parties to the Paris Agreement), provincial and local authorities, firms in the private sector, labour unions, civil society organisations, intergovernmental organisations and more. Some regional groupings, such as the African group, countries in the Caribbean and elsewhere, may want to hold regional preparatory meetings. The constituted bodies under the Paris Agreement are specifically invited to provide inputs, some in synthesis reports. The SB Chair's non-paper suggests the possibility of coordination among these bodies.

Some questions to consider:

- **In the context of GST, what are key issues in your country, region and sphere of influence?**
- **How should preparatory processes at regional, national and local levels be organised? Do some constituencies need support to synthesise inputs?**
- **How to strike a balance between inputs by Parties and broader inputs? Mandated events and more informal workshops? Is there potential for this in the Technical Dialogue phase?**
- **What do Parties want to get out of the GST process? What would be most useful to them?**
- **Which constituted bodies need to make inputs? Are any processes missing?**

- **How do we imagine a "follow-up process" to support the uptake of the GST outcome at a national level?**
- **How can we help each other better? Work together better? What innovative forms of international cooperation can we imagine?**
- **Are there issues that cannot be addressed in the GST, and if so, could they be resolved elsewhere?**

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University of Cape Town
Faculty of Engineering and the Built Environment, and associate African Climate and Development Initiative and Policy Research in International Services and Manufacturing
Private Bag UCT, Rondebosch 7701, Cape Town, South Africa
Harald.Winkler@uct.ac.za

Konrad-Adenauer-Stiftung
Regional Programme Energy Security and Climate Change in Sub-Sahran Africa
P.O. Box 66471-00800 Nairobi, Kenya
Anja.berretta@kas.de