THEMATIC TARGETS AND INDICATORS FOR THE GLOBAL GOAL ON ADAPTATION (GGA): PERSPECTIVES FROM THE INTERNATIONAL PLATFORM ON ADAPTATION METRICS (IPAM)

This International Platform on Adaptation Metrics (IPAM) policy paper reflects inputs from across the three IPAM thematic committees: Water, Agriculture, and Cities.

This policy paper was conceived, assembled and edited by the IMAL Initiative for Climate and Development, an independent non-profit think-tank based in Morocco, as a member organization of IPAM — specifically Iskander Erzini Vernoit, Widad Sadok, and Imane Saidi. This was done with the support of the IPAM Secretariat—Karim Anegay.

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- Marta Olazabal and Samraj Sahay on the Cities chapter
- Driss Ouazar and Ousmane Seidou on the Water chapter
- Bertrand Reysset, Widad Sadok, Andreea Nowak and Lucy Njuguma on the Agriculture chapter
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1. INTRODUCTION

At COP27 at Sharm el-Sheikh in 2022, countries agreed to develop a framework to help achieve and review progress toward the global goal on adaptation (informally abbreviated "GGA"). The GGA was originally agreed in non-specific terms as a pillar of the Paris Agreement at COP21 in 2015. The decision to develop a framework to assess the GGA followed extensive technical meetings across 2022 under the Glasgow-Sharm el-Sheikh work programme on the GGA, launched at COP26 in 2021. The new framework, according to the COP27 decision, is meant to be adopted at COP28 in Dubai.

The COP27 text goes into new levels of detail for a COP decision, suggesting that the framework for the GGA might consider, inter alia different *dimensions* (different stages or parts of the adaptation policy process), *themes* (different sectors or topic areas for adaptation), *cross-cutting considerations* (naming different approaches, principles, and values), and *sources of information* (including reports from international organizations and official documents from Parties).

In terms of themes, the COP27 text specifically suggests explicit consideration of the following topics in the development of the GGA framework: *water; food and agriculture; cities, settlements and key infrastructure; health; poverty and livelihoods; terrestrial and freshwater ecosystems; and oceans and coastal ecosystems; tangible cultural heritage; mountain regions; and biodiversity.*

Over the course of 2023, there have been extensive technical meetings that served as a continuation of the Glasgow-Sharm el Sheikh work programme. Here, there has been convergence in some areas, including convergence on the notion of defining targets around the adaptation policy cycle, but more divergence around the notion of defining targets for specific themes.

The International Platform on Adaptation Metrics (IPAM) was established in 2020, bringing together international experts in adaptation metrics alongside relevant organizations, following conferences on the topic organized by Morocco's COP22 Presidency. IPAM includes sectoral committees for Cities, Agriculture, and Water — corresponding to three of the themes for the GGA framework indicated in the COP27 decision.

As part of a wider effort to engage IPAM's expertise in the development of the GGA framework, this particular policy paper attempts to bring IPAM's sectoral expertise from its three Committees (Cities, Agriculture, and Water) to bear in the elaboration of the GGA's thematic targets and indicators.

It is generally understood that while COP28 may see the adoption of a general framework of the GGA, some follow up work will be required following its adoption. This might include, inter alia, appointment of an expert group or taskforce to develop specific indicators and methodologies for their

operationalization.[1] On this basis, this policy paper is intended to provide further basis for such a forward trajectory of work.

2. "Cities, Settlements, and Key Infrastructure": Insights from the IPAM Cities Committee

Based on inputs from Marta Olazabal, Samraj Sahay

The identification of methodologies, indicators, and metrics for measuring adaptation of cities and urban settlements is a key step to advance toward the development of a shared operational assessment framework for the Global Goal on Adaptation (GGA).

As a theme, cities and urban settlements of course intersect with various other themes identified in the COP27 decision text, including but not limited to water as well as food and agriculture. While "key infrastructure" is included alongside cities and settlements as one theme in the decision text, it may be advisable to disaggregate, considering the distinction between urban and non-urban infrastructure.

In 2022, a Systematic Review Task Group[2] was established by the IPAM Cities Committee. The objective of the ongoing work by this Systematic Review Task Group is to characterize the current state of indicators and metrics proposed by the academic community to measure urban adaptation to climate change — while also acknowledging that other kinds of documents and grey literature have very relevant contributions. Furthermore, the Task Group also identified as a key challenge the definition of appropriate frameworks for such characterization of adaptation indicators and metrics, a field that is now emerging (Arnott et al., 2016; Goonesekera & Olazabal, 2022).

This task group decided to, firstly, develop a documenting protocol for scientific publications and indicators and metrics based on emergent literature on urban adaptation and, secondly, to test the feasibility and validity of the methodological approach with a preliminary focus on the scientific literature. More than 130 publications have been reviewed and more than 900 indicators and metrics (including indices) have been extracted from these publications. Both the publications as well as the indicators and metrics have been characterized.

Preliminary findings of this assessment of the current state of metrics and indicators for urban adaptation (subject to changes as analyses remain underway) suggest:

- a strong focus of empirical work in European and Asian geographies, relative to geographies in other continents such as Africa or Latin America;
- flooding and heat waves continue to be the climate impacts most addressed when developing urban adaptation indicators and metrics;
- a general lack of theoretical foundations and a widespread range of disciplines contributing to the field;

[1] https://unfccc.int/sites/default/files/resource/FINAL%2025.10%20WS8%20Summary%20Report%20SB%20Chair%20edits%20approved%20and%20attributions%20deleted.pdf

[2] For correspondence regarding this group's study, please reach out to Marta Olazabal: marta.olazabal@bc3research.org

- identified indicators tend to be defined in generalist or ambiguous ways and lack units of measurement, consistent with the findings of previous reviews of local adaptation policy practice (Goonesekera & Olazabal, 2022);
- indicators tend to focus on process rather than on outcomes and results (see Goonesekera & Olazabal, 2022; Hale et al., 2021; Hallegatte & Engle, 2019);
- a persistent focus on addressing formative aspects of adaptation (i.e. diagnoses and identification of needs and capacities) as opposed to summative aspects (i.e. what happens during or after implementation);
- generally, preliminary findings point to a field in the early stages of development, lacking standardized frameworks, and, again, a need to move beyond outputs toward outcomes.

3. "WATER": INSIGHTS FROM THE IPAM WATER COMMITTEE

By: Iskander Erzini Vernoit, Widad Sadok, Driss Ouazar, Ousmane Seidou

The identification of methodologies, indicators, and metrics for measuring water-related adaptation is a key step to advance toward the development of a shared framework for operationalizing the Global Goal on Adaptation.

A wide sample of indicators for water-related adaptation is provided below by experts in the IPAM Water Committee, spanning the four stages of the adaptation policy cycle as captured in the COP27 decision text, plus Means of Implementation as well as Outcomes — illustrating the very broad range of options. (As may be noted, metrics for Water do overlap with metrics for various other themes, such as Cities and Settlements as well as Food and Agriculture.) Nevertheless, it should be noted that this table is provided for indicative purposes only, and is in no sense presented as being exhaustive. The indicators are provided without prejudice to their arguable significance or feasibility of widespread usage within the GGA.

Stage of policy cycle (Inputs plus Outputs), and Outcomes	**Indicators**
Assessment of vulnerability and risk	Potential indicators include existence of assessments and/or data on: • Water quality monitoring • Water availability • Reservoir levels • Rainfall pattern • Drought severity and frequency • Flood severity and frequency index • Water use efficiency • Long term trends • Innovation and technology adoption • Percentage of population exposed to droughts • Extent of vulnerability zones (floods and droughts) • Percentage of population exposed to floods

Stage of policy cycle (Inputs plus Outputs), and Outcomes	Indicators
Planning	• Number of climate-responsive tools identified for water resource management • Number of community-based water management plans developed • Number of training programs planned to enhance institutional capacity for decision-making in the presence of climate uncertainty
Implementation	• Stakeholders engaged • Policies in place • Number of water infrastructure projects implemented with climate resilience features • Adoption (percentage) of water-saving technologies and practices in agriculture and industry • Percentage of population protected by an EWS drought regime risk assessment • Amount of investment in water-related infrastructure to enhance adaptive capacity
Monitoring and Evaluation	• Assessment of the effectiveness of emergency response and management systems during extreme weather events. • Evaluation of changes in water availability and quality based on monitoring data
Means of Implementation	• % of adaptation financed needs covered in the Water sector (Grants, Public, Private) • Total sum of investments in programs (e.g. for the adoption of new technologies…) • Efforts to strengthen institutional and regulatory systems for climate-sensitive planning and development • Institutional capacity for decision-making in the presence of climate uncertainty • Existence of government budget-lines on Early warning and response systems including social safety nets • International climate finance for water-related adaptation

Outcomes	The following outcome indicators are cross-cutting or may be done in different ways depending on the nature of loss measured (human, economic, ecosystem…)
	● Reduction in annual average losses due to floods
	● Reduction in annual average losses due to droughts
	● Social and human impact, health and wellbeing metrics
	  ● Reduction in the percentage of the population exposed to floods
	  ● Reduction in the percentage of population exposed to droughts
	● Economic impact
	● Ecosystem impact and health
	● Policy and governance effectiveness
	● Community Resilience
	● Water Security
	● Compliance with international agreements, e.g. relevant SDG targets

The IPAM Water Committee, unlike the IPAM Cities Committee, has not undertaken an extensive systematic review of the state of adaptation metrics in the scientific literature with respect to the theme of water. Such an extensive study could be undertaken in due course. Nevertheless, based on an understanding of the literature, the IPAM Water Committee provides the following as an indicative basis for categorizing and understanding water-related adaptation metrics and indicators — with accompanying commentary for some with an African perspective on water-related adaptation efforts:

- **Scale of measurement**: Water adaptation indicators cover a range of scales, from local (e.g. plot of land) to national-level management to regional (e.g. watershed). This variety of scales is essential to cover the full spectrum of water management. For the purposes of the GGA, high-level indicators will be important, but aggregations should not mask important distributional considerations.
- **Type of risks addressed**: The main risks addressed by water adaptation indicators are water scarcity, droughts, floods, water quality, and impact on aquatic ecosystems. It is essential to continue and expand monitoring of these risks, while considering the inclusion of other potential risks as well.
- **Mode of adaptation intervention**: The most commonly assessed types of water adaptation are programmes such as flood management, water harvesting/storage, source protection, land use planning, water use efficiency and infrastructure protection. Other aspects, however, such as human health protection, technological innovation, means of implementation (governance, finance, capacity building, technology transfer), must also be taken into account.
    - In Africa in particular, modes of water-related adaptation may relate to aspects such as increased storage to address climate variability, access to renewable energy/resources to reduce economical water scarcity, technological innovation in irrigation techniques, community management of water resources, and protection of aquatic ecosystems for livelihoods. Water use efficiency in agriculture is a particular focus, given the importance of agriculture to many African economies and populations.
- **Economic and governance criteria**: Economic indicators, focusing on the profitability of essential investments in water management and infrastructure, as well as governance indicators measuring the effective implementation of adaptation measures in the water sector.
    - In Africa, given that many governments are facing budgetary constraints, there is still a lack of appropriate economic indicators as well as governance indicators.
- **Type of level of assessment**: In assessing water adaptation interventions, a distinction may be drawn between indicators at the level of (i) Inputs (including activities, labor, capacities and technical expertise, finance and funds, equipment and technology, i.e. enabling factors), (ii) Outputs (covering the products, capital goods and services which result from development interventions, per the OECD DAC), (iii) Outcomes (likely or achieved short-term and medium-term change and effects of intervention outputs, per the OECD DAC), and (iv) Impacts (positive and negative, primary and secondary, long-term effects produced by development interventions, per the OECD DAC). Adaptation indicators on water are often of the "input" and "output" type, but it is essential to develop more "outcome" type indicators for the impacts of water adaptation measures.
    - In Africa, water adaptation indicators of the "input" type are the most dominant. It is essential to improve measurement of long-term outcomes and impacts on livelihoods, food and water security and human health.

4. "Food and Agriculture": Insights from the IPAM Agriculture Committee

By: Bertand Reysset, Widad Sadok, Andreea Nowak, Lucy Njuguma, Riad Balaghi

The identification of methodologies, indicators, and metrics for measuring agriculture adaptation progress and effectiveness is a key step to advance toward the development of a shared framework for operationalizing the Global Goal on Adaptation.

A wide sample of indicators for agriculture-related adaptation is provided below by experts in the IPAM Agriculture Committee, spanning the four stages of the adaptation policy cycle as captured in the COP27 decision text, plus Means of Implementation as well as Outcomes — illustrating the very broad range of options. As may be noted, metrics for food and agriculture do overlap with metrics for various other themes, such as Cities and Settlements as well as Water. Nevertheless, it should be noted that this table is provided for indicative purposes only, and is in no sense presented as being exhaustive. The indicators are provided without prejudice to their arguable significance or feasibility of usage within the GGA.

Stage of policy cycle (Inputs plus Outputs), and Outcomes	Indicator
Assessment of vulnerability and risk	Potential indicators include existence of assessments and/or data on: ● Change in annual temperature ● Mean monthly temperature ● Number of hot days ● Change in annual precipitation ● Monthly precipitation ● Extreme precipitation events ● Number of households affected by drought ● Number of surface water areas subject to declining water quality due to extreme temperatures ● Number of hectares of productive land lost to soil erosion ● Areas covered by vegetation affected by plagues or fires ● Shift of agrophenological phases of cultivated plants ● Percentage of total livestock killed by drought ● Losses of GDP in percentage per year due to extreme rainfall
Planning	● Number of policies and coordination mechanisms explicitly addressing climate change and resilience ● Existence of finance/investment planning, detailed costing of finance needs/flows towards adaptation in the Ag sector ● Existence of adaptation planning in relevant agricultural value chains ● % of agricultural policy including adaptation actions ● Degree of integration of climate change into agricultural planning ● Existence of policies and strategies regarding disaster preparedness and risk management ● Number of financial mechanisms identified to support climate change adaptation
Implementation	● Number of climate-responsive tools developed and tested ● Number of communication tools that incorporate climate change adaptation ● Number of policies and coordination mechanisms explicitly addressing climate change and resilience

Stage of policy cycle (Inputs plus Outputs), and Outcomes	Indicator
	● Number of policies, plans, or programs introduced or adjusted that mainstream climate risks ● Number of climate-responsive tools developed and tested ● Number of communication tools that incorporate climate change adaptation ● Specific physical materials, e.g. additional fodder for grazing livestock ● Total sum of investments in programs for the protection of livestock
Monitoring and evaluation	● Increase in the percentage of climate-resilient crops being used ● Percentage of cultivated surface cultivated with drought-resistant varieties ● Household resilience capacity index ● Number/existence of inventories of climate change impacts on biodiversity[3]
Means of Implementation	● % of adaptation financed needs covered in the Agricultural sector (Grants, Public, Private) ● Total sum of investments in programs (e.g. for the protection of livestock…) ● Efforts to strengthen institutional and regulatory systems for climate-sensitive planning and development ● Institutional capacity for decision-making in the presence of climate uncertainty ● Existence of government budget-lines on Early warning and response systems including social safety nets ● International climate finance for adaptation
Outcomes	● National ranking trajectory on Agriculture, e.g. using ND Gain[4] ● Household resilience ● Proportion of households covered by weather-based index insurance and/or social protection schemes (%), ● Number of households covered by weather-based index insurance or social protection schemes(#s), ● Total number of vulnerable households and households at risk(#s), ● Number of farmers involved in pilot irrigation messaging projects ● Number of women involved in agricultural cooperatives, e.g. in terms of wages ● Percentage of poor people in drought-prone areas with access to safe and reliable water ● Uptake of soil conservation measures ● Percentage increase of cultivated surface cultivated with drought-resistant varieties ● Increase in agricultural productivity (e.g. through irrigation of harvested land) ● Percentage of agricultural land with improved irrigation[5] ● Increase in the percentage of climate-resilient crops being used ● Percentage increase of livestock insured against death due to extreme and slow-onset weather events ● Percentage increase of treated wastewater ● Percentage increase of farmland covered by crop insurance ● Increased turnover generated by agricultural cooperatives, resulting from intervention

Given the need to avoid redundancies and learn lessons from existing efforts, targets and indicators to be set in the context of the GGA should draw upon existing frameworks and data systems. There are numerous resources on indicators already in use or to be used by stakeholders promoting adaptation

[3] This is an example of an indicator that many developing countries in particular have not been able to afford.
[4] See: https://gain.nd.edu/
[5] Noting caveats about maladaptation that may arise from increased irrigation leading to depletion of water resources, e.g. aquifers.

in the agriculture sector. Notable examples include, among others, the *Technical guidelines for NAPs* (UNFCCC LDC EG, 2012), the guidance on *Tracking Adaptation in the Agricultural Sector* (FAO, 2017), the *Vulnerability Sourcebook* (GIZ, 2014).

While dozens of frameworks and methodologies have been developed to assess adaptation at different scales, including in the context of the GGA, there is no comprehensive review of the state of adaptation metrics in the agriculture sector. A recent systematic review of African NDCs and NAPs revealed more than 200 indicators suggested for measuring adaptation in the agriculture sector at national scales, which offers clear indications of ongoing efforts to contemplate and develop methods for sectoral adaptation tracking[6,7].

So far, metrics formally documented likely represent a fraction of the metrics currently in use by development partners, project implementers, public institutions, private sector partners, and the scientific community. Moreover, the challenge lies in the incomplete understanding of metrics' purposes and applications to specific contexts and scales, hindering their effective utilization and limiting their potential for creative integration within the GGA framework.

Consequently, the IPAM Agriculture Committee would recommend the development of such a study in the near-term future, to offer a thorough understanding of current practices, opportunities and gaps for metrics in the agriculture sector. Such a more detailed understanding is critical for informed decision-making on what should be measured, when, how, and by whom, as well as what aspects and experiences can be leveraged in the context of building the framework for the operationalization of the GGA.

In the context of discussions on suitable targets for the GGA, the IPAM Agriculture Committee notes the different axes for categorizing of indicators for agricultural adaptation and underscores the significance of adhering to key principles in designing agriculture-focused adaptation frameworks and metrics, particularly crucial in the broader context of national and global adaptation tracking. Many of these principles, acknowledged in scientific literature and the adaptation community of practice, carry substantial value for agricultural conversations, providing a robust foundation for effective and comprehensive adaptation strategies — noting the different axes by which indicators may be categorized:

- **Scale of Measurement:** Agricultural indicators span a wide range of scales, from the individual field or local farm or household to the regional, sectoral or national level. This diversity of scales is essential to account for the various dimensions of agriculture, whether it be crop management at the farm level or the planning of agricultural policies at the national or regional scale. Adaptation in agriculture must be relevant at all these scales to be effective. Nevertheless, since most countries will not be in a capacity to report comprehensively micro-level indicators even though they are relevant, further progress is needed to select a set of aggregatable indicators which can inform the GGA process.

[6] Nowak, Andreea; Njuguna, Lucy; Crumpler, Krystal. How can governments engage in adaptation tracking? A protocol for assessing national adaptation policies, 17 November 2023, PROTOCOL (Version 1) available at Protocol Exchange [https://doi.org/10.21203/rs.3.pex-2399/v1]

[7] Nowak, Andreea; Njuguna, Lucy; Crumpler, Krystal, 2023, "Adaptation elements in African Nationally Determined Contributions (NDCs) and National Adaptation Plans (NAPs)", https://doi.org/10.7910/DVN/VK3CP9, Harvard Dataverse)

- **Type of Hazard Addressed**: The primary hazards relevant to agriculture adaptation indicators include heavy rainfall, heat stress, droughts, floods, crop/animal diseases, disruptions in plant phenological cycles, as well as food insecurity. Assessment of these hazards/risks is important to better understand how agricultural practices can be adapted to face these challenges.
- **Modes of Adaptation Intervention:** Types of agricultural adaptation interventions include technical efforts at improving crop resistance to climatic conditions, developing more efficient irrigation techniques, soil management for water conservation, and promoting crop diversity to enhance food security. However, it is also necessary to include adaptation interventions targeted at unblocking means of implementation such as access to financial services (grants, funds, loans, insurance) for farmers, technological innovation and transfer to improve agricultural productivity, and capacity building and coordination among stakeholders in the agricultural sector.
- **Types of level of assessment:** There is a predominance of input and output indicators relative to outcome indicators in the agricultural space, which can be explained by the need to assess the initial situation and immediate results of adaptation interventions. All types of indicators are crucial for a comprehensive assessment of adaptation efforts, covering different aspects of a process. However, there is a need to further develop outcome and impact indicators to assess the medium- to long-term impacts of adaptation actions, particularly on farmers' wider wellbeing and resilience and the sustainability of the agricultural sector as a whole. As in other sectors, emphasis in the agricultural sector is often put on inputs/outputs as indicators to measure progress; outcome indicators for adaptation, in many cases, can only be informed while/after the stress is occurring, and therefore (given year-to-year climate variability of stress) do not offer the opportunity for consistent annual reporting.

5. CONCLUSIONS: CROSS-CUTTING RECOMMENDATIONS

Measuring progress towards the GGA at thematic levels is feasible yet fundamentally challenging and unprecedented in practice, since indicators related to adaptation action are neither universally nor uniformly measured around the world.

Clearly, as illustrated by each of the theme-based sectoral deep-dives above (noting the extended non-exhaustive lists of indicators non-prescriptively provided), there is no shortage of potential targets and indicators that may be considered within different themes, with significant areas of overlap between themes, and a lack of standardized frameworks for categorizing such thematic metrics.

In this context of the profusion of potential thematic targets and indicators, therefore, there is a need for further work to be done to narrow down to priority targets and indicators. The challenge, for the GGA, is not identifying potential targets and indicators, but determining how to prioritize among them.

This prioritization process, IPAM recommends, should be done on the basis of the best available information — information on existing monitoring practice, on cost and feasibility, as well as on significance and impact — and in light of core adaptation principles derived from scholarship and practice:

- In terms of existing monitoring practice, there is now common acceptance among scientists, practitioners, and policy-makers that effective targets and indicators to be set in the context

of the GGA should be rooted in existing frameworks and data systems. This not only taps into valuable insights gained so far from their application, but also discourages the creation of redundant structures.

- In terms of cost and feasibility, since most countries will not be in a capacity to report comprehensively micro-level indicators even though they are relevant, further progress is needed to select a set of aggregatable indicators which can inform the GGA process.
- In terms of significance and impact, agricultural adaptation interventions must be gauged through outcome indicators that measure improvements in lives, livelihoods, and economic security. At the country level, adaptations may need to be tailored, focusing on the most climate- sensitive sub-sectors or vulnerable households to address specific variations. Outcomes serve as powerful signals of effectiveness, providing valuable insights that guide the ongoing refinement of adaptation strategies. Essential outcome metrics, such as preservation of agricultural incomes following climate shocks, are crucial for assessing whether implemented measures genuinely translate into tangible gains over time. By closely monitoring and assessing outcomes, the impact of adaptation interventions may be maximized over time.
- In terms of core adaptation principles, one such key principle is context-specificity. For instance, adaptation may mean rainfed agriculture infrastructure in some areas versus drought-tolerant seeds and advisory structures in others. Metrics should allow such localization yet enable appropriate aggregation. Regional participation in indicator selection and transparency also improves accountability. National focal points coordinating with local technical and practitioner partners can lead this crucial bottom-up effort — ensuring resonance of selected indicators and targets with each jurisdiction.

In this context, IPAM suggests that GGA targets and indicators should offer universal global relevance as well as space for bespoke adaptability to local circumstances, noting examples of global tracking efforts such as the GAP-Track framework[8]. In the absence of comprehensive quantitative datasets of existing adaptation progress, this type of approach has the capacity to provide global indicative results. However, (i) it needs to be repeated on a regular basis to measure any change toward increasing adaptation in target countries, and (ii) they require a rather short but intensive mobilization of expertise, which makes these tools dependent upon sustained financial support at a global scale.

As IPAM, we recognize the strong value of semi-qualitative independent expertise approaches, although we believe they still require greater global consensus on best approaches and sustained financial support, which cannot be realistically expected in the very short term in the absence of very strong commitments at high political level. We note there is wide use of the ND-Gain dataset and rankings in investment work, not only because of its relevance but also because it is one of the rare global and transparent adaptation indicator datasets that is easily accessible. ND-Gain is largely building on the aggregation of adaptation and resilience proxies (e.g. km of paved road), allowing development of global coverage for adaptation indicators, with limited monitoring costs.

[8] See: https://www.iddri.org/en/publications-and-events/report/global-adaptation-progress-tracker-gap-track-pilot-study-report-2021

As an interim measure for assessing progress in delivering the GGA, IPAM therefore suggests the inclusion of a few simple and affordable metrics which we consider to have significant potential to gain early consensus in the post-COP28 technical process, without prejudice to the development of more refined metrics and systems that may be developed in parallel. Such indicators, though imperfect, would either draw on existing and recognized adaptation and resilience metrics of global coverage or require very simple efforts at very low cost feasible in any country Party to the UNFCCC.[9]

Hence there is a need for a balanced, sequenced approach. Initial input-output measures leverage existing datasets to kickstart systematic progress measurement, building consensus. In parallel, multi-stakeholder dialogues can advance context-specific outcome measurement methodologies. This combined approach reconciles the urgent accountability imperative with ground realities on data readiness, reviewing progress over time. It calls for collective action that ensures early measurement successes while laying the foundation for enhanced results frameworks towards truly resilient futures.

6. ACKNOWLEDGEMENTS

Iskander Erzini Vernoit currently works full-time as a founding director at the Imal Initiative for Climate & Development, a non-profit climate think-tank with an African and Arab outlook, launched at COP27 and based in Morocco. As part of his work, Iskander advises a range of governments, civil society and non-state actors on issues relating to climate change and finance. Iskander began his career as a climate negotiator for the Kingdom of Morocco on the COP22 Presidency, and more recently worked for several years at the London headquarters of the climate think-tank E3G.

Widad Sadok is an agricultural engineer and a senior researcher in climate resilience at the Imal Initiative for Climate and Development. She has significant experience in agricultural and environmental project management and planning. In addition, she has had the privilege of working with Moroccan civil society organizations to establish constructive dialogues with public authorities for the implementation of policies and measures leading to sustainable adaptation to climate change.

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[9] Preliminary suggestions of cross-cutting indicators that could be used, either across or within particular themes, could include:

- A country's adaptation ranking on a 3-year average (on the assumption that a country increasing its ND-Gain ranking is progressing towards the GGA), with its evolution over time
- Percentage of national sectoral policies that explicitly require climate adaptation and resilience of investments or activities (on the assumption that the GGA cannot achieved without having all national policies being adaptation-informed)
- Percentage of building codes or maintenance norms integrating climate change adaptation in their requirements (on the assumption that GGA cannot be achieved without having all new built infrastructures and maintenance works being adaptation-informed)
- Existence of disaster management mechanisms for climate shocks (potentially as a percentage of the climate-related disaster categories identified by a country as nationally relevant)

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