Progress Report of the GGA Indicators Refinement and Development Work Under the UAE-Belem Work Program on GGA Indicators

Target 9f - Substantially reducing the adverse effects of climate change on poverty eradication and livelihoods, in particular by promoting the use of adaptive social protection measures for all

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Executive Summary

Target 9f of the Global Goal on Adaptation (GGA) aims to "substantially reduce the adverse effects of climate change on poverty eradication and livelihoods, in particular by promoting the use of adaptive social protection (ASP) measures for all." This progress report outlines the systematic refinement and development of indicators under the UAE–Belém work programme, with a focus on strengthening conceptual clarity, improving measurability, and enhancing alignment with CMA.6 guidance.

Drawing on the Common Approach developed during the SLYCAN Trust workshop, the expert group—comprising specialists in poverty, livelihoods, and adaptive social protection—undertook a five-step process of indicator selection, consolidation, and classification. The resulting indicator set comprises 24 refined indicators that reflect diverse dimensions of vulnerability, resilience, and institutional capacity. These indicators span three interlinked domains: (i) poverty reduction under climate risk, (ii) sustainable and resilient livelihoods, and (iii) the design and reach of adaptive social protection systems.

The indicator set integrates existing global metrics—such as SDG 1.3.1 on social protection coverage and SDG 8.3.1 on informal employment—while also incorporating modified or novel indicators that respond to context-specific adaptation challenges. Emphasis is placed on output- and outcome-oriented indicators, with careful attention to disaggregation by gender, age, disability, and sector. Several indicators have been adapted to better reflect climate attribution, despite acknowledged data limitations. A tiered classification based on metadata availability and methodological maturity was initiated but requires further validation.

Significant attention was devoted to reducing redundancies and resolving overlaps with indicators under other targets, particularly those linked to displacement, livelihoods diversification, and climate insurance. Moreover, a clear distinction was maintained between vulnerability indicators (reflecting exposure and systemic disadvantage) and adaptation outcome indicators (capturing realised gains in resilience or poverty reduction).

Despite notable progress, key gaps remain. These include the underdevelopment of means of implementation (MoI) indicators, insufficient cross-target harmonisation, and the limited availability of standardised climate attribution data for climate-specific indicators. Addressing these gaps will require coordinated efforts across thematic expert groups, closer engagement with statistical agencies, and iterative refinement based on empirical validation and country feedback.

This report offers a structured foundation for informed deliberations at the upcoming workshop under the UAE–Belém work programme and provides a coherent basis for enhancing the coherence, robustness, and usability of adaptation-related indicators within the GGA framework.

BACKGROUND

In July 2024, parties and observers were invited to submit indicators across the seven thematic targets and the four dimensional targets under the Global Goal on Adaptation (target 9f being one of the seven thematic targets). A group of seven experts were tasked with selecting, refining and where necessary, developing indicators that measure progress towards all aspects of the target 9f. In a first step, mandated experts for this target assessed all 391 non-duplicate indicators submitted by 34 parties/countries, Adaptation Committee at UNFCCC and observer organizations against criteria of relevance to the target and to adaptation theme. This resulted in a short-list of 318 indicators assessed as relevant to the target and adaptation which were prioritised for further assessment.

1. DESCRIPTION OF THE APPROACH

The refining and development of the GGA thematic target indicators was conducted based on an approach informed by a series of guidance provided by parties through decisions reached at COPs, meetings of Subsidiary bodies (SBs), and a number of expert group consultations held since the start of the work program.

1.1 Guidance from Relevant COPs and SBs Meetings

The task of the GGA indicators refinement and development has been primarily informed by COP28, which established the basis for the Work Program and modalities for implementation. Subsidiary Body Meeting (SB60) provided 11 criteria for indicator mapping including the criteria for indicators - relevance to adaptation (Fig. 1). Following that, the CoP29 (CMA.6) provided five additional criteria for possible consideration by experts mandated to execute the task. More to that a series of expert group meetings organized by both UNFCCC secretariat and partner agencies refined the specific approach towards this task. In particular, the expert group meetings organized by a partner organization SLYCAN Trust held from 24 to 25 February 2025 in Bonn on Common approaches and Cross-cutting issues defined a five-step structured approach (later suggested as a guide to Common approach) for this particular task (details see section 3.4).

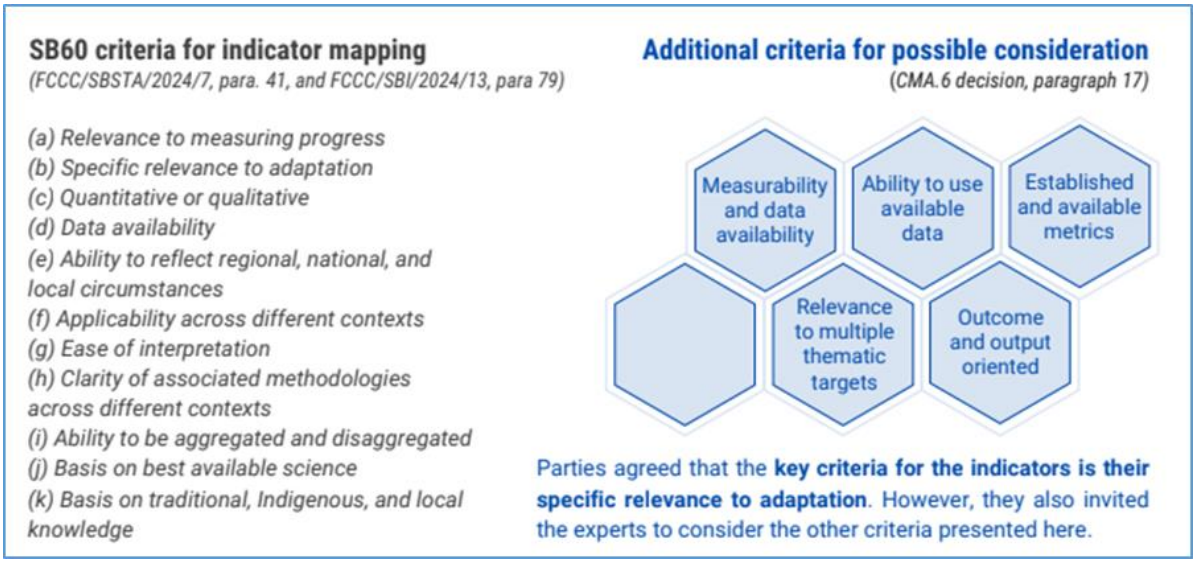

Figure 1. Set of criteria for the refinement of GGA indicators

1.2 Key steps taken to refine existing and developing new indicators

The indicator refinement and development work adopted a five-step approach which was adopted as a framework for refining our work. The agreed upon five steps are - i) Unpacking the thematic target; ii) Clustering indicators across identified components of the target; iii) Identifying gaps between target components and indicators; iv) Refining the list by prioritizing, scoring, and developing indicators, and v) Compiling, documenting, and validating list of indicators. Accordingly, the expert group of thematic target 9f followed the five steps as follows:

i) Unpacking the thematic target - The thematic expert group started the actual work of indicator refining and development work by unpacking the thematic target into sub-targets. Accordingly, the expert group clustered the thematic target into three sub-targets (logical components or result areas). These identified sub-targets are:

- reducing the adverse effects of climate change on **poverty eradication** (with focus on poverty rates, poverty means of implementation and vulnerabilities)

- reducing the adverse effects of climate change on **livelihoods** (focusing on capabilities, assets, livelihood activities and resilience, and climate-related losses); and
- promoting the use of **adaptive social protection measures** for all (social protection coverage, social protection means of implementation and social protection system adaptiveness).

ii) Clustering indicators across identified components of the target - The proposed indicators under the thematic group were then clustered or mapped to the three identified sub-targets or result areas of the thematic target identified in step 1. This resulted in mapping of proposed indicators – 164 to cluster 1, 62 cluster 2 and 29 cluster 3. 32 indicators were classified as non-specific, missing information, or as not directly relevant to this target.

Table 1: Summary of Indicator Clustering by Category

Cluster Category	**Description and sub-themes**	**Number of Indicators**
Livelihoods	Includes indicators related to assets, capabilities, structure and resilience of livelihoods and other aspects of livelihoods	164
Poverty	Indicators measuring the drivers and prevalence of poverty	62
Social Protection	Indicators reflecting access to, coverage or adequacy of social protection systems	29
Non-Specific / Missing Info / Other Targets	Indicators lacking specificity and clarity or more relevant to other targets	32

Within each cluster, some sub-themes were also identified and indicators were tagged to each of these themes. These themes included:

Cluster 1: reducing adverse effects of climate change on poverty eradication

- Poverty prevalence
- Poverty drivers/vulnerabilities
- Poverty eradication: means of implementation

Cluster 2: reducing adverse effects of climate change on livelihoods

- Capabilities (skills, training, knowledge, education, etc)
- Assets (financial resources and inclusion, physical and natural assets, social capital)

- Structure of livelihoods vulnerabilities and dynamics (climate-resilience of livelihoods, livelihoods diversification)

Cluster 3: adaptive social protection for all

- Coverage of social protection (among general population and specific (climate-affected) groups)
- Level of adaptiveness / climate-resilience of social protection systems
- Social protection: means of implementation

The sub-themes helped to further group and prioritise indicators. First of all, it allowed the expert team to identify indicator priorities for each cluster. For example, out of the 164 livelihood indicators almost 40 indicators were related in some way to capabilities covering topics such as education, training and skills. Another 20 indicators were variations of indicators aimed at capturing the diversification of livelihoods. This indicates that the inclusion of indicators capturing skills and training, as well as indicators capturing the resilience/vulnerability and diversification of livelihoods as a priority for many parties and observers.

At the same time, further grouping the indicators helped to identify further overlaps or opportunities for combining indicators into a smaller number of indicators. For instance, there were at least four separate indicators aimed at measuring the coverage of climate risk insurances for different types of climate risks and among different kinds of population groups. Of course, this is important for livelihoods resilience as insurance helps protect people's asset base (whether this is their crops, livestock or other types of property). This information then helped us to identify an indicator, applicable across a range of climate risks and types of insurances, capturing the coverage of climate risk insurances across the whole population.

iii) Identifying gaps between target components and indicators - the gap identification was concurrently carried out during the clustering and evaluation of the indicators against the relevance criteria. These gaps were categorized into thematic topics and elaborated further in section 4.

While the gaps were filled to some extent through significant modifications and merging of indicators, as well as the proposal of some new indicators, this step has not yet been fully and systematically completed. This step may require further development of a more detailed conceptual framework to ensure that all components of the target are covered (see sections 4 and 5). Following such an exercise, additional (new) indicators may need to be proposed.

iv) Refining the list by prioritizing, scoring, and developing indicators - Once a longlist of indicators across the three clusters and sub-themes was established, prioritization was conducted to reduce the list to more manageable size and robust indicators.

Relevance to adaptation and the theme continued to be the main criteria used. Within those that were assessed as relevant, further priority was given to those indicators that also complied with the criteria of measurability, availability of metadata and data (those that are part of established indicator frameworks) and applicability across contexts. Where none of the submitted indicators met these criteria, modifications were proposed that retain the conceptual relevance of the proposed indicators, but which align them with existing indicators with established measurement methodologies (see section 3).

Prioritization was done by every expert separately with the further validation and agreement by the group. The expert group held several meetings during which each individual indicator was discussed and indicators were prioritised based on consensus building. The provisional list of 24 indicators proposed for this target are agreed upon by all experts for target 9f.

v) **Compiling, documenting, and validating list of indicators -** Once the shortlist of indicators is established through prioritization, it was cleaned and compiled in a way that as much as possible information accompany the list of indicators is put in place. For this purpose, the group followed the indicator reporting template provided by the health group.

2. EXPERIENCES FROM THE PROCESS

The first step of the process of developing and organizing the indicators was complex. One of the key steps involved clustering indicators into smaller thematic groups to facilitate analysis and prioritization. While useful, this step was not always straightforward, as some indicators could logically fall under multiple clusters, creating overlaps and making organization more difficult. It was also not quite clear how to deal with indicators that could be both outcome and vulnerability indicators. For example, the proportion of people living in poverty is both a potential outcome/impact of successful adaptation (i.e., reducing the impact of climate change on poverty eradication), but at the same time high levels of poverty are significant drivers of vulnerability to climate risks.

Another major challenge was that not all elements presented were actual indicators—some were phrased as general statements or questions, requiring reformulation into measurable indicators. Additionally, a large number of indicators lacked clear definitions, leading to the risk of divergent interpretations. Many indicators did not seem to be backed by a feasible methodology and sometimes it was difficult to balance ambition for relevance with pragmatism required for measurability. This highlighted the importance of strong metadata and possibly the need for a standardized template to guide the formulation.

Some indicators were not directly related to adaptation, making it difficult to track progress towards the Global Goal on Adaptation (GGA). These required reworking, which in turn would place them in Tier II or III categories, indicating the need for further methodological development (see above reflection on balance between ambition and pragmatism).

Measuring success in reducing climate-related impacts on poverty and livelihood dimensions is also a significant challenge, which led to the submission and selection of various ‘proxy indicators’. It is often not clear how indicators can feasibly capture ‘climate-attribution’. For example, while we can measure the prevalence of poverty in a given country, capturing exactly the climate-related portion of poverty increase (or decreases that would have happened in the absence of climate change) is extremely challenging and would require complex modelling that goes beyond what can be feasibly monitored and reported on, in regular intervals. In some instances, indicators were modified to specify ‘climate-related disasters’ instead of disaster but even such a modification would need to rely on the availability of attribution studies which ascertain the role that climate change played in the likelihood and intensity of the disaster. Such studies may not always be available or feasible to incorporate in the methodology. Finally, ensuring proper and standardised disaggregation of indicators by factors such as gender, age, disability status, migration status, and other relevant factors was also difficult. Harmonizing these aspects across different working groups would be essential.

Another issue was the lack of a clear end objective, which made prioritization more ambiguous. For instance, some submitted indicators were more related to monitoring and evaluating the outputs, outcomes and impacts of specific adaptation projects or plans, implemented in selected communities or among a selected target population, while others related to more national-level indicators that provide statistical information of the general level of resilience at the country-level. There is a certain ambiguity about which ones of these should be prioritised which is important to resolve as this has implications for who is responsible for collecting and reporting the indicators, which in turn has implications for the development of the indicator. Furthermore, there were identifiable gaps in the list of indicators—such as limited reference to access to basic healthcare services.

Despite these challenges, the decision to move toward a concise and positively framed list of indicators proved more manageable within expert groups, especially after the thematic unpacking exercise. This unpacking allowed for a more balanced prioritization across dimensions. However, it also revealed that some dimensions were easier to cover with robust indicators (e.g., poverty and social protection) than others (e.g., livelihoods, which are more complex and less straightforward to measure).

The existence of multiple reference frameworks was found to be helpful in shaping a comprehensive and coherent approach. The reference to these multiple frameworks helped prevent gaps in the indicator list without imposing at this stage the constraints of adhering to a single framework and more rigid approach.

Finally, the ways of working could be improved. The development of indicators and their metadata (especially, working with the large number of them) is a technical, long and complex process that benefits from clearly defined methodological procedures, timelines, final objectives, roles, and strong leadership. Relying on the informal self-organisation of a large group of experts, without established responsibilities, standardised methodology or coordination mechanisms, has unfortunately resulted in delays, and potential inconsistencies and differing levels of quality. A more structured and clear process would help ensure the timely, effective, and sustainable development of these important indicators.

3. FURTHER DETAILS ON INDIVIDUAL INDICATORS

A total of 24 indicators were selected for target 9f. The majority of the selected indicators are linked to the livelihoods cluster of the target (56.5%), followed by the poverty eradication cluster (20%) and social protection (13%). Two indicators (8.7%) relate to both livelihoods and poverty eradication, as they capture climate risk exposure and displacement aspects.

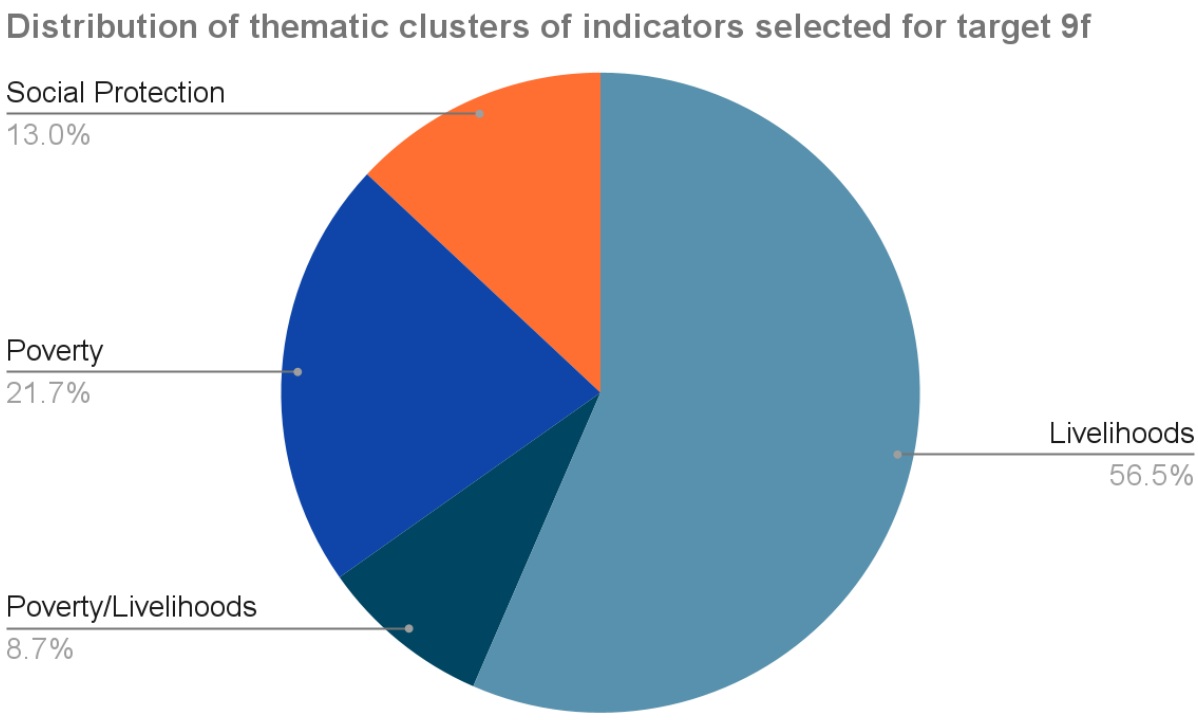

Figure 2: Distribution of thematic clusters of indicators selected for target 9f

Indicator modifications

The majority of final indicators were either moderately/slightly modified (27%) or significantly modified (35%) compared to the original indicator(s) submitted. Moderate modifications usually involved the addition or removal of a small number of words to enhance the adaptation relevance of the indicator (e.g., 'climate-related disasters' instead of 'disasters') or its applicability to a wider range of contexts or across the general population (e.g., 'population' instead of 'targeted population' or 'children'). Moderate modification often also involved adding or specifying (additional) layers of disaggregating variables.

Significant modifications often involved developing proposals for indicators to capture the meaning of a group of indicators submitted (sometimes large clusters of indicators related to the same theme were submitted - e.g., indicators aiming to capture the diversification of livelihoods, capabilities/skills or financial inclusion and access to credit). Other significant modifications involved the grouping of several indicators into one, particularly when they were targeted at the same core concept but applied to specific sub-population groups or themes. For example, several indicators were submitted which aim at capturing coverage of climate risk insurances, such as "Percentage of agricultural population covered by climate risk insurance mechanisms" (ID: 38); "% of target population with insurance" (ID: 7626) or "Percentage of small and medium-sized farmers/livestock farmers/fishermen insured against the effects of extreme events" (ID: 7664). A significantly modified version of these indicators was proposed: Proportion of population covered by climate risk insurance, by gender, sector and type of risk. Such a modification is more efficient as it combines several indicators into one and allows for the applicability of the indicators across contexts and risks. By specifying different levels of disaggregation, e.g., gender or sector, the indicator allows to capture the intended objective of the originally submitted indicators.

The proposed significant modifications were usually anchored in considerations of measurability, availability of existing methodologies and ability to use existing data. In this sense, significant modifications usually involve technical improvements of indicators for core themes that are of marked importance to parties and observers given the large number of submitted indicators related to that theme, some of which were not always measurable in their original form. It was noted that often submitted indicators were in fact not existing indicators, but rather the expression of what parties and observers felt would be important to measure, thus requiring expert inputs and modifications. Sometimes this was even expressed explicitly in the original indicator name itself, e.g.: "Indicators for adaptive social protection that include climate risk factors" (ID. 3367).

A list of significant indicator modifications, including the group of indicators it covers, the rationale for inclusion of the indicator (i.e., its relevance to adaptation and the target), as well as its measurability can be found in the annex.

A limited number of new indicators was also proposed, although the line between "significantly modified" and "new" is not always clear. All 'new' indicators also respond in some way or another to aspects of indicators that have been submitted by parties or observer organisations. For example, several submissions relate to capturing migration and displacement specific aspects, but were assessed as difficult to measure. In such a case an alternative, and measurable indicator was proposed which captures the preparedness of countries in managing displacement impacts of climate-related disasters. However, as noted earlier additional new indicators might need to be developed to date, not all gaps have been assessed systematically.

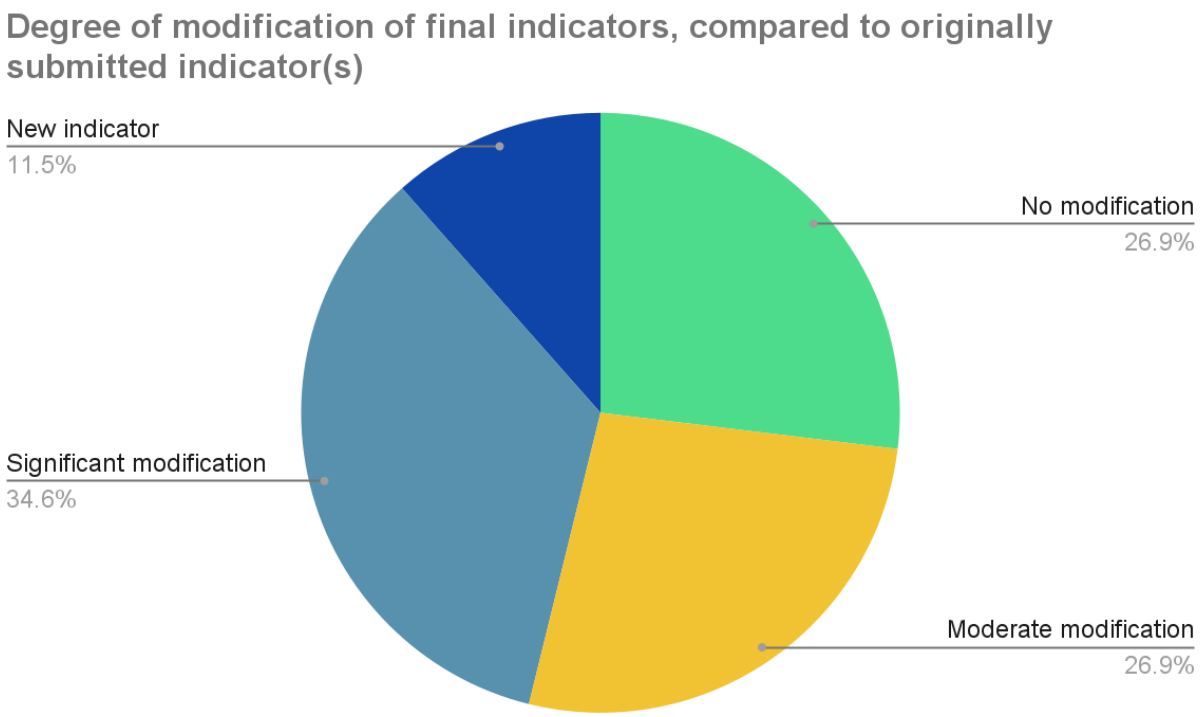

Figure 3: Degree of modification of final indicators, compared to originally submitted indicators

Relationship with existing global indicator frameworks

Many parties and observer organisations submitted established indicators from existing indicator frameworks. Several of these submissions were assessed to be highly relevant for both the target and climate change adaptation goals. As a result, 9 out of the 24 selected indicators (37%) for target 9f are either modified or unmodified versions of indicators from existing global indicator frameworks, with 7 out of 24 indicators (29%) being adapted from the SDGs and 2 out of 24 indicators (8%) being adapted from the Sendai Framework.

Availability of metadata

As a result of the significant modifications already done to some indicators, taking measurability and the existence of an established methodology into account, a high proportion of selected indicators already have metadata available (63%). However, it must be noted that in some instances, this metadata may need to be updated or adjusted to align with some of the moderate modifications that were done to the indicator (see above). For example, one selected indicator is SDG 1.3.1 on the proportion of the population covered by social protection systems. However, to enhance the climate relevance of the indicator (and to capture a range of other submitted indicators), additional (slight) modifications are proposed in terms of adding disaggregating variables and factors. While metadata for SDG 1.3.1 is available, this would need to be updated to capture the modifications to the indicator.

For six out of the 24 proposed indicators (25%) no metadata is available and needs to be developed. For a further three indicators (13%), it still needs to be confirmed whether metadata is available or not.

MoI indicators

A very limited number of Means of implementation (MoI) indicators is included in the proposed list of indicators, specifically linked to finance:

- SDG 1.a.1: Total official development assistance grants from all donors that focus on poverty reduction as a share of the recipient country's gross national income.

- Public expenditure on social protection, by function, as % of GDP

Therefore, this constitutes a gap which may still need to be filled systematically through the identification or development of additional indicators. The group recognises the importance in means of implementation, consisting of finance, capacity-building, technology transfer and enabling policy environments for the reduction of the impacts of climate change on poverty eradication and livelihoods. However, time constraints meant that these were not explored in detail.

4. REMAINING GAPS

Gap 1: Incomplete conceptual articulation of poverty and livelihoods

The initial conceptual framing developed to guide the refinement of indicators under Target 9f was instrumental in establishing broad thematic coherence. However, it remains insufficiently nuanced to capture all aspects related to poverty and livelihoods in the context of climate change adaptation. The lack of conceptual differentiation between output, outcome, and impact, as well as the insufficient engagement with temporal and spatial scales of adaptation, may have resulted in certain gaps in the submitted list of indicators. A more refined conceptual foundation could help to ensure that all dimensions and aspects of target 9f are sufficiently covered by the set of indicators which would also support their interpretability and policy utility.

Gap 2: Under-representation of economic vulnerability and macro-level stressors

The current indicator set may not sufficiently reflect all economic dimensions of vulnerability, such as employment precarity, asset loss, income volatility, and macroeconomic exposure to climate change impacts. While economic indicators are not exhaustive proxies for resilience, they provide essential insights into structural constraints that shape livelihood sustainability. The absence of such metrics reduces the capacity of the indicator set to capture systemic stressors and inform macro-level policy responses, particularly in contexts of fiscal instability, inflation, or trade disruptions linked to climate variability.

Gap 3: Lack of standardised application of disaggregating variables and intersectional vulnerability

Many indicators specify a range of disaggregation, often covering factors such as gender, age, or migration status, and sometimes also sector, formal/informal employment or income group. However, these disaggregating variables have not been chosen systematically and there may be certain factors that have been omitted (for example disability). The absence of such standardised granularity risks reinforcing universalist framings that obscure structural inequalities. At the same time, it may not be possible/feasible to obtain disaggregated data for all desired levels of disaggregation across all indicators. Furthermore, existing indicators are not systematically assessed against localised knowledge systems, thereby not fully capturing Indigenous, traditional, and experiential insights that could be critical for context-sensitive adaptation planning.

Gap 4: Incomplete and uneven metadata documentation

The absence of standardised and comprehensive metadata for several indicators impairs their operational utility. Even for those indicators that have metadata, modifications to the indicator to enhance its relevance to adaptation may mean

that existing metadata is incomplete. Without clear definitions, methodologies, data sources, and update frequencies, indicators remain abstract constructs rather than actionable metrics. This also limits cross-context comparability, consistency in application, and the ability to track changes over time.

Gap 5: Fragmented treatment of Means of Implementation (MoI)

While a limited number of MoI indicators has been submitted, we could not engage systematically with MOI indicators due to time constraints. Yet, the delivery of adaptive outcomes in poverty and livelihoods depends significantly on enabling conditions such as finance, institutional capacity, technology access, and inclusive governance. More work needs to be done to systematically ensure all MoI gaps related to target 9f are filled.

Gap 6: Ensuring comprehensive sectoral representation in livelihood indicators

Many indicators submitted with regards to the livelihoods cluster pertain to sectors such as agriculture, aquaculture, ecotourism, and artisanal production, among others. A much more limited number of indicators related to urban livelihoods, the service sector, manufacturing, or the gig economies were submitted even though these constitute a significant portion of employment in many regions. In the process of modifying indicators, care was already taken to ensure the applicability of the indicators across a full range of sectors. Generally, the group avoided selecting very sector-specific indicators, or where these were selected they were modified. However, there has not been a comprehensive or systematic review to ensure that the selected indicators capture all relevant dimensions across the full spectrum of livelihood sectors which means that certain gaps might persist.

Gap 7: Balancing global applicability with local/national relevance

Generally, the applicability across different contexts was an important factor in selecting indicators. However, there is a need for further investigation to ensure that this has not resulted in unintentionally excluding potentially valuable indicators for certain parties. An assessment of this nature would benefit from additional methodological guidance to support consistent and balanced evaluation. Potential solutions could relate to further breaking down selected indicators in nested indicators.

Gap 8: Lack of cross-referencing with related thematic and dimensional targets

Despite the conceptual interlinkages between 9f and other targets such as 9b (food and agriculture), 9c (health) or 9d (ecosystems), among others - as well as all dimensional targets, including 10a (vulnerability assessment) 10b (planning), 10c (implementation), and 10d (MEL), systematic cross-referencing has yet to be completed. For instance, the set of indicators submitted for 9f does currently not systematically include indicators to track the integration of poverty, livelihoods and social protection considerations in the adaptation cycle. General guidance for whether thematic targets should also include indicators for their thematic integration in the adaptation cycle would be useful. More detailed cross-referencing would avoid duplication, conceptual fragmentation, and missed opportunities for harmonisation. The absence of a shared matrix or cross-walk mechanism hinders coherence across the GGA indicator framework.

Gap 9: Climate attribution in indicator design

Several indicators imply rather than explicitly establish linkages to climate change. Others make a climate-specific reference but it is not clear to what extent it would be possible to establish climate attribution. For instance, a feasible climate specification may still be required to several of the indicators proposed for the poverty cluster. This weakens the climate adaptation relevance of the indicator set, but at the same time, it is not clear to what extent the inclusion of explicit attribution pathways is feasible.

Gap 10: Operationalisation constraints due to data system fragmentation

Even where indicators are conceptually sound and contextually relevant, their operationalisation is often limited by fragmented data systems, especially in low-capacity or crisis-affected contexts. Inadequate inter-sectoral coordination, absence of digital infrastructure, and limited data interoperability further impede timely data collection, validation, and reporting.

Gap 11: Static treatment of adaptation across time and scale

Finally, the indicator set does not sufficiently account for the temporal dynamics of adaptation processes. Most indicators reflect static or snapshot-based conditions rather than dynamic trajectories of adaptation, transformation, or maladaptation. Similarly, scale-sensitivity remains underdeveloped, limiting the ability to differentiate between household-level outcomes, community-scale resilience, and system-wide adaptation shifts.

5. RECOMMENDATIONS

5.1 Deepen and expand the conceptual framework

The refinement of indicators shall be grounded in a conceptually robust framework that captures the multi-scalar, multi-dimensional, and systemic nature of poverty, livelihoods, and adaptive social protection. Future work will integrate insights from critical development theory, poverty, livelihoods, systems thinking, and climate justice literature to ensure indicators reflect both structural conditions and transformative potential. Such a framework will provide a normative foundation for indicator clustering, sequencing, and validation.

5.2 Integrate economic vulnerability metrics

Indicator refinement shall incorporate economic metrics that capture employment precarity, asset erosion, and exposure to macroeconomic shocks. Drawing from established databases such as ILOSTAT, IMF, and World Bank repositories, this will ensure that systemic economic stressors linked to climate change are adequately represented and inform macro-policy design.

5.3 Embed intersectionality and knowledge plurality in disaggregation

Future indicator development should adopt disaggregation protocols that go beyond demographic variables to incorporate intersectional social identities. This may include integrating Indigenous and local knowledge systems as legitimate epistemologies, allowing for greater contextual relevance, narrative pluralism, and inclusion of communities historically marginalised in climate policy processes.

5.4 Standardise metadata development

Each indicator shall be accompanied by complete and harmonised metadata. This should include precise definitions, methods, data sources, update cycles, custodianship arrangements, and links to SDG or Sendai indicators. Metadata standardisation will enhance transparency, interoperability, and comparability across countries and thematic areas. A template should be developed to be used across all groups and targets and which should guide the development of the metadata.

5.5 Systematically develop MoI indicators for 9f

Dedicated efforts shall be launched post-SB62 to elaborate MoI indicators that support livelihood resilience and poverty reduction. These could include metrics on climate finance mobilisation for social protection, access to vocational training and inclusive infrastructure, and coverage of climate-resilient employment schemes.

5.6 Reassess and diversify livelihood sector coverage

The current indicator pool should be reviewed to capture underrepresented livelihood sectors, including urban informal economies and gig work. This diversification is essential for reflecting the heterogeneity of climate risks and adaptation capacities across employment systems, especially in transitional economies and peri-urban settings.

5.7 Conduct contextual applicability assessments

A structured feasibility analysis could be conducted to assess indicator adaptability across contexts. This may include validating interpretability, data readiness, institutional capacity, and cultural relevance through stakeholder consultations. Findings should inform the creation of regionally differentiated implementation pathways.

5.8 Complete cross-referencing across GGA targets

A formal cross-walk exercise could be undertaken to map and harmonise indicators across and between the thematic and dimensional targets. Shared indicators should be annotated with context-specific variations to avoid duplication while preserving thematic coherence. Guidance should be developed to establish whether thematic target indicators should also include indicators linking the thematic target to the targets of the adaptation cycle.

5.9 Provide guidance about feasibility to strengthen climate attribution of indicators

Ideally, indicators should establish explicit linkages to climate stressors through attribution methods, causal pathway diagrams, or scenario-based modelling. Climate attribution protocols should distinguish between adaptation outcomes and development gains, ensuring analytical clarity and policy accountability. However, in practice this may be very difficult, if not impossible to implement. As this is a gap that is likely common across thematic targets, more general guidance on addressing this would be required.

5.10 Address systemic data infrastructure constraints

Investment should be directed toward strengthening national data systems, with particular emphasis on digital interoperability, inter-ministerial coordination, and climate-socioeconomic data integration. Where needed, technical support should be extended to LDCs and crisis-affected countries to build institutional scaffolding for indicator generation and reporting.

5.11 Consider the feasibility of developing temporally and spatially dynamic indicators

Where feasible, new indicators could be developed or adapted to reflect the temporal dimensions of adaptation, including progressions, regressions, and tipping points. Scale-sensitivity could also be enhanced to differentiate household, community, and system-level impacts and responses. These improvements would strengthen the capacity of the indicator framework to track adaptation as a dynamic, contested, and iterative process.

Annex: Significant modifications to selected indicator groups for target 9f (full list of indicators is submitted in the excel file)

Livelihoods resilience and diversification

No	Proposed by	Indicator (original)	Proposed final indicator (s)	Rationale for inclusion	Measurability
2296	LDC Group	% of targeted population (women/men) adopting one or more climate-resilient livelihood practices	Proportion of employment in sectors vulnerable to climate change impacts, by sex and formal/informal emplyoment Proportion of employment in sectors vulnerable to climate change impacts **with diversified income sources**, by sex and formal/informal emplyoment	The larger the share of employment in climate vulnerable sectors, the more vulnerable the country's livelihoods are likely to be. A disaggregation by formality further completes the picture. A large proportion of employment in informal activities in climate vulnerable sectors indicates high risks of adverse impacts of climate change on livelihoods. The inverse is also true – the lower the share of employment in vulnerable sectors (and the higher the rate of formal employment), the more climate-resilient livelihoods are. For adaptation, a transition of livelihoods to less climate-vulnerable sectors, more formal activities is important. Another important element is the diversification of livelihoods within the sector. The more diversified income sources of those working in climate vulnerable sectors (e.g.,	Employment per sector is available through standard Labour Force Survey data, available via ILOSTAT. Each country will have to identify which sectors it considers vulnerable given its climate risk context. While natural resource-based sectors such as agriculture, water or forestry are likely to be vulnerable across a range of contexts, other sectors such as construction or manufacturing may only be considered vulnerable in contexts already very hot or prone to flooding. For proportion of workers with diversified income sources (including income from labour but also remittances, government transfers, informal activities and agriculture), it will be necessary to draw on household income and expenditure surveys or
3368	REAP	Create metrics for the diversification of livelihoods to reduce climate vulnerability.			
3836	AGN	Number of households whose incomes have increased due to the development and pro			
2864	UNF	*6.2 Percentage of targeted population with sustained climate-resilient alternative livelihoods (Source: Adaptation Fund Strategic Results Framework)*			
3296	TNC	Diversified income sources that support climate resilience (%, $, #, disaggregated)			
3297	TNC	*Income from climate resilient livelihoods or nature-based jobs*			
1856	LDC Group	Number of economic activities (tourism, port-related, etc.) that have been protected, adapted, and developed in response to the impacts of climate change			
2282	LDC Group	% of targeted vulnerable people (women/men) benefiting from livelihood diversification			

1145	Pakistan	*Number of households supported with alternative livelihoods*		agriculture), the more climate-resilient they are.	living standards measurement surveys.
7649	AC	*Number of livelihood options designed*			
3196	YOUNGO	Number of support programs to develop youth entrepreneurship for climate action			
7595	AC	*Income from alternative sources*			
7596	AC	Farming income from alternative sources			
7598	AC	Income of livestock farmers and fishers from alternative sources			
7600	AC	Encouragement of entrepreneurship for women and youth through organic farming, nursery, etc.			
410	US	Is the community's economic base diversified?			
1140	Pakistan	Volume of production per labor unit by classes of farming/pastoral/forestry enterprise type			
7605	AC	Number of people with diversified income			
7671	AC	Diversificación de las fuentes de ingreso agropecuario (Diversification of agricultural income sources)			

Access to financial services (financial capital dimension of adaptive capacity)

No	Proposed by	Indicator (original)	Proposed final indicator (s)	Rationale for inclusion	Measurability
7604	AC	Percentage of farmers and fisher folk with access to financial services	Share of population with access to financial services (account ownership and access to credit), by sex, age, rural/urban and occupation Proportion of enterprises, including producers' enterprises with a loan or line of credit, by size of enterprise (% of firms)	Access to financial services and credit is an important element of adaptive capacity which helps MSMEs, farmers and other entrepreneurs/self-employed workers adapt or diversify their livelihoods.	The World Bank's Global Findex data is collected every three years (2011, 2014, 2017, and 2021 – latest available), with established methodologies for indicators related to access to financial services. It covers about 120 countries per round with each sample being nationally representative. Enterprise surveys are conducted by the World Bank in countries every 4-5 years. However, they only cover private formal firms, hence this indicator would need to be complemented with data also capturing informal enterprises, especially producers' enterprises.
4346	AGN	Rate of credits granted to women			
7650	AC	Number of women accessing credits/loans			
36	FAO	Percent of rural population covered under microcredit schemes			
7613	AC	Nombre de petits producteurs paysans ayant bénéficié des subventions (Number of small peasant producers who benefited from subsidies)			

Coverage of climate risk insurances (financial capital and resilience)

No	Proposed by	Indicator (original)	Proposed final indicator (s)	Rationale for inclusion	Measurability
38	FAO	Percent of agricultural population covered by climate risk insurance mechanisms	Proportion of population covered by climate risk insurance, by gender, sector and type of risk	Climate risk insurances are crucial for the resilience of the population, including but not limited to MSMEs, (smallholder) farmers, and other self-employed workers, as well as home owners. Where people do	There is no globally agreed / established indicator and reporting mechanism for measuring insurance coverage. However, the proposed indicator is based on the InsuResilience M&E and
3070	ICIMOD	% households living in vulnerable mountain areas to climatic risk covered by the crop insurance scheme			

7626	AC	% of target population (women/ men) with insurance		not have access to such solutions, any losses related to extreme events will negatively impact their livelihoods (or the livelihoods of their workers in the case of MSMEs), which constitutes a poverty risk.	impact framework which sets out global standards for impact measurement and monitoring of Climate and Disaster Risk Finance Instruments. The population coverage indicator is therefore based on the number of climate risk insurance policies sold * the average household size (for micro insurances).
1268	Canada	Total direct payments to agriculture producers under business risk management programs for protection against income and production losses			
7664	AC	Percentage of small and medium-sized farmers/livestock farmers/fishermen insured against the effects of extreme events			

Green jobs / climate adaptation related occupations

No	Proposed by	Indicator (original)	Proposed final indicator (s)	Rationale for inclusion	Measurability
1358	UNDESA	Proportion of employed population engaged in green jobs, by sex	Proportion of employed population engaged in climate change adaptation related occupations, disaggregated by gender and formal/informal employment	The suggested indicator measures how well employment systems are aligning with adaptation goals and supporting resilient livelihoods. It reflects the extent to which workers are engaged in occupations (which is often used as proxy for skills) that contribute directly to climate resilience and adaptation activities. A higher participation rate indicates progress toward building adaptive capacity and transitioning to a climate-resilient economy, while also supporting livelihoods. This indicator can help promote inclusive employment aligned with national adaptation plans.	The ILO is currently developing a green skills dictionary, adapted from the World Bank's green terms dictionary, which offers a foundation for identifying and assessing the "greenness" of occupations. This work can be further explored and expanded to distinguish between mitigation- and adaptation-related occupations—or those that involve both, given the frequent overlap—providing a potential basis for tracking labour force participation in climate adaptation-related roles. However, this work will depend on the availability of resources and will require a substantial time to complete.

Capabilities, skills and training (human capital dimension of adaptive capacity)

No	Proposed by	Indicator (original)	Proposed final indicator (s)	Rationale for inclusion	Measurability
4316	AGN	Availability of training programs and manuals on CC inconcerned institutions	Proportion of adult learning (ALE) curricula that integrate climate adaptation contents	Adult Learning and Education (GRALE) survey is a self-reporting survey which has been developed over five cycles and is administered by UIL in consultation with the UNESCO Institute for Statistics (UIS). The percentage of Adult Learning and Education (ALE) curricula that integrate climate adaptation content serves as a valuable proxy of how well education systems are supporting national adaptation goals and resilient livelihoods. By embedding climate adaptation into ALE, countries can equip adults with practical skills and knowledge to anticipate and respond to climate risks.	According to the fifth global report on GRALE 5 under global citizenship education, it captures adult learning education on sustainability, looking at whether the ALE curricula integrate environmental sustainability (e.g. environmental protection, conservation, biodiversity) Since the questionnaire for the survey is not publicly available online, it would be important to consult directly with the UNESCO Institute for Lifelong Learning. Given that the survey combines closed and open-ended questions, it may capture elements of how climate adaptation is integrated into curricula in certain countries—likely through the open-ended responses. However, this should be verified, and there may be an opportunity to more explicitly reflect climate adaptation in the next survey cycle.
4321	AGN	Number of capacity building workshops organized			
1144	Pakistan	Number of people having been upskilled for the green and/or blue economy	Participation rate of youth and adults (15-64 years) in formal and non-formal education and training in the previous 12 months, by sex (SDG4.3.1)	Access to skilling, reskilling, upskilling and lifelong learning empowers individuals and communities to build resilience, diversify income sources, and support climate-smart livelihoods and eventually to support	The SDG 4.3.1 indicator is calculated by the UIS based on the household-based survey data compiled by the Department of Statistics of the International Labour Organisation (ILO). SDG Indicator 4.3.1 does not explicitly capture training programs focused on adaptation
4347	AGN	Number of women trained and supported			

2090	LDC Group	No. of people trained on climate change disaggregated by gender		adaptation goals. Increased access to training, particularly in climate-resilient agriculture, sustainable land and water management, and disaster preparedness enhances adaptive capacity across sectors and communities. By disaggregating data by sex and region, this indicator also helps identify and address inequalities in access to training (particularly for women and youth in rural area), ensuring that those at risk of climate impacts are not left behind in the transition to climate-resilient economies.	activities, although it does encompass broader training initiatives that may include adaptation topics. To address this issue, an additional module could be introduced to specifically capture data on training programmes focused on adaptation measures under this SDG indicator. Implementing such a module would require additional resources, which could be mobilized either at the global level or through voluntary national initiatives. Consultation with UNESCO Institute for Statistics (UNESCO-UIS) would be also required as they collect the data.
4165	AGN	Number of people trained on climate change disaggregated by gender			
2564	UNICEF	Number of young people engaged in climate-resilient projects or learning activities that prepare them for sustainable livelihoods, disaggregated by age, gender, and poverty			

Social protection

No	Proposed by	Indicator (original)	Proposed final indicator (s)	Rationale for inclusion	Measurability
40	FAO	Share of hazard affected population reached by social protection schemes	SDG 1.3.1: Proportion of population covered by social protection floors/systems, by sex, age, ***nationals/non-nationals***, and ***those living in areas exposed***	Many countries submitted indicators on social protection coverage, based on SDG1.3.1. This indicator measures coverage across the full	SDG1.3.1 is easily measurable and is already reported on every 3 years across over 214 countries and territories.
360	Mauritius	Total number of beneficiaries of social protection;			

612	Bhutan	Percentage of population (people in areas with difficult farming conditions, pastoralists, and livestock and bioprospecting dependent communities) in high altitude areas covered by social protection measures.	***to climate risks***, distinguishing children, unemployed persons, older persons, persons with disabilities, pregnant women, newborns, work injury victims and the poor and the vulnerable (**disaggregated by statutory and non-statutory programmes**) *(additional disaggregations in **bold**)*	range of contingencies and risks faced by people across their lives all of which are exacerbated by climate change impacts. For example, children face higher risks of deprivation and childhood poverty due to climate change, climate change drives unemployment and income loss, increases the risk of work injuries and sickness and places increased risks of deprivation for older persons, persons with disabilities and pregnant women, especially when they do not have access to any income security. Therefore, universal coverage of the full range of lifecycle risks is a fundamental indicator to measure resilience, adaptive capacity and reduced vulnerability. Without social protection coverage climate change risks increasing poverty among those already uncovered.	We propose certain modifications in terms of disaggregations (national/non-nationals) and coverage in exposed areas which address proposals from submissions to make the indicator more climate relevant. To collect and analyse data for these types of disaggregations further resources and efforts will be required. We also propose a modification for the SDG1.3.1 to measure non-statutory coverage in addition to statutory coverage which is important to show the degree to which populations are covered also by temporary investments, which despite unpredictable provide important support to people affected by climate shocks. Some submissions also propose the coverage of 'adaptive social protection' (or variations thereof). However, such an indicator is not possible measure, nor does it make conceptual sense. Adaptive social protection broadly requires two things: (i) coverage of all those affected or at risk of which SDG1.3.1 is the most comprehensive indicator and (ii) the degree to which the
1138	Pakistan	Coverage and adequacy of social protection systems in the context of climate risks, including looking at specific groups such as migrant workers			
1135	Pakistan	Proportion of population covered by social protection floors/systems, by sex, distinguishing children, unemployed persons, older persons, persons with disabilities, pregnant women with newborns, work-injury victims and the poor and the vulnerable (i.e. functions)			
455	Philippines	SDG 1.3.1: Proportion of population covered by social protection floors/systems, by sex, distinguishing children, unemployed persons, older persons, persons with disabilities, pregnant women, newborns, workinjury victims and the poor and the vulnerable.			

1117	Pakistan	Proportion of population covered by social protection floors/systems, by sex, distinguishing children, unemployed persons, older persons, persons with disabilities, pregnant women, newborns, work-injury victims and the poor and those living in areas impacted by climate risks/hazards			social protection system itself is adapted and resilient to address the impacts of climate change. It is not possible to say that a SP system is either adaptive or not adaptive – rather it is a continuum. Equally, it is not possible to say that x is an adaptive social protection programme and y is not. All social protection programmes play an important role in addressing the risks of climate change but they need to be underpinned by policies, legal frameworks, financing strategies, operations, etc. which take climate risks into account. Therefore, we propose two indicators (i) a coverage indicator with a range of climate specific modifications and disaggregations and (ii) a social protection systems level indicator measuring the degree of adaptiveness (see below)
2558	UNICEF	Proportion of child population covered by social protection floors/systems			
39	FAO	Percent of agricultural population covered by safety nets			
1541	Arab	Climate Adaptation Social Protection Coverage			
1379	UNCDF	Number of women, men, boys and girls benefiting from adaptive social protection or Number of females and males benefiting from the adoption of diversified, climate-resilient livelihood options			
1123	Pakistan	Number of people with access to climate-resilient social protection systems			
1119	Pakistan	Number of women, men, boys, and girls benefiting			

		from adaptive social protection			
366	Mauritius	Share of Government spending on social protection (proxy indicator).	Public expenditure on social protection, by function, as % of GDP	Low levels of public expenditure on social protection is one of the key reasons for coverage gaps. Increasing public expenditure in social protection directly tracks country's progress in building resilience by extending social protection coverage to people currently uncovered and as a result vulnerable to the impacts of climate change.	This indicator is already measured and regularly reported on for all countries through the ILO's World Social Protection Database, and a part of SDG framework: 1.a.2.
1285	ILO	Public expenditure on social protection, as % of GDP (excuding healthcare)			
1137	Pakistan	Total public expenditure on social protection, by function, as % of GDP			
		Number of countries with social protection systems informed by climate risks	Proportion of countries with social protection systems that have moderate/high levels of adaptive capacity and resilience against climate risks	Several submitted indicators aim to capture the systems-level adaptation of social protection systems or the degree to which they are 'climate-resilient'. In addition to having wide coverage, particularly among those at risk (see SDG1.3.1 and proposed modification), social protection systems need to be adapted to climate change. This means they need to be made resilient and responsive	This indicator does currently not exist but can be created. It will need to be an index / composite score based on a range of qualitative attributes of a social protection system in the context of climate change adaptation. Several such indicators exist for measuring the 'shock-responsiveness' of the social protection system, for example the World Bank's Adaptive Social Protection Stress Test. However, these need to be adapted for a climate context.
		Number of countries with social protection and climate change policies and legal frameworks			
2565	UNICEF	Number of countries with social protection and climate change policies, strategies and legal frameworks supporting the scale up of social protection programmes for children in anticipation			

2560 and 1121	UNICEF and Pakistan	Number of countries with social protection systems that are able to effectively and rapidly respond to humanitarian crises		to covariate shocks but also better linked with adaptation investments, particularly those linked to livelihoods and the transition of employment. Such adaptations require adjustments of policies and legal frameworks, enhanced coordination and governance, factoring climate into financing strategies, resilient operational and administrative processes, etc. Therefore, it is not possible to say – yes, a system is adaptive or no, it is not adaptive. Rather it is a continuum based on a range of qualitative observations about the attributes of the social protection system. The proportion of the population covered by adaptive social protection must be measured through two indicators: an indicator of social protection coverage with appropriate disaggregations (see modified SDG 1.3.1) and the level of adaptive capacity / resilience of the social protection system itself.	Once developed, the information for the indicator can be collected through the ILO's Social Security Inquiry which is also used to collect information on social protection coverage (SGD1.3.1) and other social protection statistics on a regular basis (every 3 years) for over 180 countries.
1118	Pakistan	Number of countries with social protection systems informed by climate risks i.e., adaptive social protection systems			
	Pakistan	Financial investments to strengthen social protection systems to better support adaptation to climate change			
2769	UNEP	Levels of adaptation of social protection systems			
2563	UNICEF	Number of countries with moderately strong or strong social-protection systems			
3367	REAP	Indicators for adaptive social protection that include climate risk factors.			