

# **Workshop on Prioritizing Adaptation Knowledge Gaps in the Andean Subregion: Pilot of the Adaptation Knowledge Initiative**

**24 - 26 September 2014, Bogotá, Colombia**

## **Workshop Report**

**20 October 2014**



## Table of Contents

<b>Introduction.....</b>	<b>4</b>
<b>Objectives.....</b>	<b>4</b>
<b>The Multidisciplinary Stakeholders Group (MSG).....</b>	<b>5</b>
<b>Prioritizing Adaptation Knowledge Gaps in the Andean Subregion.....</b>	<b>5</b>
1. Identifying a pool of adaptation knowledge gaps for the subregion.....	5
2. Identifying criteria for prioritization.....	6
3. Evaluating and prioritizing knowledge gaps.....	9
4. Identifying potential responses to the prioritized gaps .....	10
4.1. <i>Climate research and observation</i> .....	10
4.2. <i>Socio-economic and sectorial aspects</i> .....	13
4.3. <i>Land use and planning</i> .....	14
5. Contributions of participating organizations towards closing the priority gaps.....	16
6. Participants' evaluation of the methodology .....	18
7. Recommendations for the next steps .....	19
<b>Conclusions.....</b>	<b>20</b>

## Acronyms

CATIE	Centro Agronómico Tropical de Investigación y Enseñanza, Costa Rica
CIAT	International Center for Tropical Agriculture
CIMMYT	International Maize and Wheat Improvement Center
CIP	International Potato Center
CONDESAN	Consortium for the Sustainable Development of the Andean Ecoregion
COP	Conference of the Parties (of UNFCCC)
DNP	National Planning Department, Colombia
ECLAC	Economic Commission for Latin America and the Caribbean (of UN)
FAO	Food and Agriculture Organization (of UN)
GAN	Global Adaptation Network (of UNEP)
GIZ	German Federal Enterprise for International Cooperation
MSG	Multidisciplinary stakeholder group
IAI	Inter-American Institute for Global Change Research
IAvH	Alexander von Humboldt Biological Resources Research Institute, Colombia
IDB	Inter-American Development Bank
IDEAM	Institute of Hydrology, Meteorology and Environmental Studies, Colombia
IFAD	International Fund for Agricultural Development
IGAC	Agustín Codazzi Institute of Geography, Colombia
IICA	Inter-American Institute for Cooperation on Agriculture
INVEMAR	José Benito Vives de Andrés Marine and Coastal Research Institute, Colombia
IPCC	Intergovernmental Panel on Climate Change
MAE	Ministry of Environment of Ecuador
MINAM	Ministry of Environment of Peru
MinAmbiente	Ministry of Environment and Sustainable Development of Colombia
NAP-GSP	National Adaptation Plan–Global Support Programme
NASA	National Aeronautics and Space Administration, USA
NWP	Nairobi work programme on impacts, vulnerability and adaptation to climate change (of UNFCCC)
PAHO	Pan American Health Organization
PlanCC	Planning for Climate Change, Peru
SENPLADES	National Secretariat for Planning and Development , Ecuador
SERNANP	Servicio Nacional de Áreas Naturales Protegidas por el Estado, Peru
SUBDERE	Subsecretaría de Desarrollo Regional y Administrativo, Chile
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
UPRA	Unidad de Planificación Rural Agropecuaria, Colombia
WCMC	World Conservation Monitoring Centre (of UNEP)
WHO	World Health Organization
WRI	World Resources Institute
WWF	World Wide Fund for the Nature

## Introduction

This report presents the results of the workshop on *Prioritizing Adaptation Knowledge Gaps in the Andean Subregion* (Bolivia, Chile, Colombia, Ecuador and Peru), which was held in Bogotá, Colombia, from 24 to 26 September 2014. The workshop was conducted as part of the Adaptation Knowledge Initiative - an action pledge made by the United Nations Environment Programme (UNEP) to the Nairobi work programme on impacts, vulnerability and adaptation to climate change (NWP). The workshop was carried out by UNEP through its Global Adaptation Network (GAN) in implementation of the action pledge to the NWP. The workshop was organized and conducted with the support of the International Center for Tropical Agriculture (CIAT).

Participants at the workshop included representatives of national organizations of Colombia, Ecuador, Peru and Chile, and of regional organizations engaged in research on and implementation of actions for adaptation to climate change in the Andean subregion. The workshop was designed with the aim of facilitating the prioritization of existing adaptation knowledge gaps.

The report has four sections: the first section describes the background of the Initiative and the workshop's context and objectives. The second section describes the multidisciplinary stakeholder group (MSG) composed of the participants in the workshop. The third section reports on the outcomes of the work of the MSG, whose task was to identify and prioritize the knowledge gaps, identify actions of response and potential actors to implement response actions. Recommendations resulting from discussions corresponding to each stage of identifying and prioritizing gaps and the appropriate response actions are listed at the end of each section. The final section presents the conclusions resulting from the workshop.

Participating organizations were able to share what is being done in the subregion in terms of generating knowledge on adaptation during the workshop.

## Objectives

Knowledge gaps constitute bottlenecks in identifying and implementing successful measures for adaptation to climate change. In view of this, the UNEP, through the GAN, made an action pledge to the NWP to develop and implement an "Adaptation Knowledge Initiative" (*the Initiative*).

The Initiative's objective is to prioritize adaptation knowledge gaps and catalyze responses to the needs for strategic knowledge on adaptation at the subregional or thematic level. The Initiative seeks to fill in knowledge gaps that impede the implementation of adaptation measures. That is, it adopts a reiterative process of prioritization of knowledge gaps and implementation of actions in response to these gaps.

The prioritization of knowledge gaps is the principal activity that differentiates this Initiative from other evaluations that had previously identified adaptation knowledge gaps. The Initiative therefore aims to develop a rigorous methodology for classifying gaps, using transparent and weighted criteria agreed upon by experts.

In this context, the workshop on *Prioritizing Adaptation Knowledge Gaps in the Andean Subregion* was held between 24 and 26 September 2014 in Bogotá, Colombia. Its objectives were to:

- Prioritize knowledge gaps for decision-making on adaptation to climate change in a way that they approximate the most efficient approach (in terms of optimizing human and economic resources) for responding to those gaps.
- Identify responses that would address these prioritized knowledge gaps in adaptation, both in the subregion and in the context of diverse thematic domains.

## **The Multidisciplinary Stakeholders Group (MSG)**

The prioritization of knowledge gaps was carried out by the workshop participants, who were invited to become part of a “multidisciplinary stakeholders group” (MSG). The MSG members who participated in the identification of criteria and the evaluation of knowledge gaps are listed in Appendix 2.

Within the workshop’s framework, a discussion was carried out on the potential interest of the organizations, represented by the workshop participants, in continuing to participate actively in the follow up activities in responding to the prioritized knowledge gaps.<sup>1</sup>

This report has been shared with the MSG members for their review.

## **Prioritizing Adaptation Knowledge Gaps in the Andean Subregion**

This section describes the results of the participatory process for identification and prioritization of adaptation knowledge gaps, through the following steps:

1. Identifying a pool of adaptation knowledge gaps for the subregion
2. Identifying criteria for prioritization
3. Evaluating and prioritizing knowledge gaps

The methodology for prioritization is included as Appendix 3.

Both the results of each work session as well as the recommendations devised by the workshop participants are presented below (see boxes).

### **1. Identifying a pool of adaptation knowledge gaps for the subregion**

The following document was developed as an input to the workshop: *Analysis of Knowledge Gaps in Adaptation: Scoping paper for the Workshop on Prioritizing Adaptation Knowledge Gaps in the Andean Subregion* (Appendix 4).

The scoping paper identified 37 gaps on the basis of a literature review. The review included recent national communications from countries of the Andean mountainous subregion (Bolivia, Chile, Colombia, Ecuador and Peru), the IPCC’s Fifth Assessment Report, documents from regional workshops under the NWP and various regional studies published in international and regional scientific publications. The identified adaptation knowledge gaps were grouped in the following themes:

- Scientific research and climate observation (17 gaps)
- Impacts on production sectors (6 gaps)
- Capacity building and participation (5 gaps)
- Land use, planning and risk management (5 gaps)
- Public policies and institutions (4 gaps)

The scoping paper was shared with all participants 4 days prior to the workshop along with the request for comments, expansion of details on identified knowledge gaps and addition of new gaps.

---

<sup>1</sup> Throughout this report “workshop participants”, “participants” and “MSG members” are used interchangeably.

The revised compilation of gaps was presented to participants on the first day of the workshop, after which participants were invited to discuss the suggested gaps and identify new gaps where necessary.

As a result of this exercise, the participants came up with proposals to integrate new gaps into the original list. The participants agreed to work with a total of 50 gaps, including the 37 gaps contained in the scoping paper, 5 gaps suggested by the participants before the workshop and 8 gaps resulting from discussions at the workshop. The 13 additional gaps, agreed on by the participants, are presented in Appendix 5.

### ***Evaluation by participants***

*Most participants expressed their satisfaction with the scoping paper (see above and Appendix 4). MSG members discussed the document in detail and made the following recommendations:*

#### ***Recommendations:***

- *Participants should receive the paper well in advance before the workshop so that they can carefully study and validate the gaps.*
- *The bibliographic sources need to be expanded to include relevant studies from ongoing projects or from the “grey literature” of recognized institutions. If participants are involved in the preparation of the scoping paper, they may also contribute information and relevant bibliographic sources.*
- *To achieve a greater in-depth analysis, gaps must also be grouped by sectors.*

## **2. Identifying criteria for prioritization**

### ***Identifying and weighting basic criteria***

According to the prioritization methodology (Appendix 3), on the first day of the workshop, a group exercise was carried out aiming to identify criteria to be used for prioritizing the identified gaps. The proposals generated by each group were discussed in plenary session. In line with the methodology, five criteria were suggested as a starting point. They were analyzed and redefined by the participants. The participants agreed to a set of 10 criteria with their respective descriptions (Table 1).

**Table 1.** Criteria identified and described by workshop participants for prioritizing gaps.

<b>Criterion</b>	<b>Description</b>
Urgency (rapidity of determining actions over the short term)	Closing the gap would generate immediate benefits or address urgent adaptation needs
Positive effects on populations, goods, and public services with no major negative effect	Closing the gap would generate positive effects on people, communities, and populations, as well as on goods and public services. This includes the notion that closing the gap would generate positive impacts whilst minimizing negative externalities.
Potential to support ecosystem resilience	Filling the knowledge gap would help increase ecosystem resilience.
Cross-sectorial nature of the gap	Closing the gap would positively affect other sectors (associated with development) in a multi-sectorial way and at different scales.
Long-term sustainability of benefits	Solving the gap would achieve benefits and sustainability over the long term.

Potential to reduce uncertainty	Closing the gap would help reduce uncertainty (the more uncertainty there is to reduce, the higher the gap's priority).
Scale of impact on closing the gap	Relevance for closing a critical gap of a thematic, national, or regional character.
Ease of filling the gap	Existing capacities (human, economic, and institutional resources) for closing the gap.
Co-benefits for closing other gaps (conditioning for closing other gaps)	Closing the gap leads to the elimination of other gaps.
Efficacy for influencing policy-making and management processes (over time)	Filling the gap affects policy-making and management processes at the local and sectorial levels, amongst others.

### *First scoring round*

Once the criteria for prioritizing the gaps were agreed upon, the participants were invited to rank those criteria. In the first Delphi round, ranking was devised through a 1-5 scoring system, where 1 signified that the criterion was “not important” for evaluating gaps whilst a 5 meant the criterion was considered “very important”. Fourteen participants scored the criteria, using the given scale. The workshop facilitator compiled the data, making calculations in an Excel matrix.

Once the results were tabulated (Table 2), they were discussed by the group. The participants agreed not to eliminate any of the 10 criteria identified in the first scoring round, even though they had discussed the possibility of eliminating criterion 4, given it overlapping with criterion 10 and both having scored well below the overall average (criteria 6 and 8).

Criterion	First round		
	Rank	Total	Weight
Urgency (rapidity of determining actions over the short term)	1	64	14%
Positive effects on populations, goods, and public services with no major negative effect	2	61	13%
Potential to support ecosystem resilience	4	57	12%
Cross-sectorial nature of the gap	8	50	11%
Long-term sustainability of benefits	6	54	11%
Potential to reduce uncertainty	10	39	8%
Scale of impact on closing the gap	3	59	13%
Ease of filling the gap	9	42	9%
Co-benefits for closing other gaps (conditioning for closing other gaps)	7	52	11%
Efficacy for influencing policy-making and management processes (over time)	5	56	12%

### *Second scoring round*

In the second scoring round, the participants used the same 1 to 5 scale used in the first round to determine the final criteria to be used to evaluate the knowledge gaps. The same procedure of individual scoring and tabulating the results in an Excel matrix was followed, before participants discussed the results.

The second scoring round produced different criteria ranking compared to the first scoring round, with criteria 1, 10, and 3 obtaining the highest scores whilst criteria 4, 8, and 6 obtained the lowest. The lowest-scoring criteria (6 and 8) were evaluated again before the participants agreed to keep them,

whilst criterion 4 (*Cross-sectorial nature of the gap*) was combined with criterion 10 (*Influences policy-making and management procedures*). Table 3 shows the final results concerning the criteria, their definitions and the corresponding weights.

**Table 3.** Agreed criteria for prioritizing the knowledge gaps

<b>Criterion</b>	<b>Definition</b>	<b>Weight</b>
C1 Urgency (rapidity of determining actions over the short term)	Closing the gap would generate immediate benefits or address urgent adaptation needs	14%
C2 Efficacy for influencing policy-making and management processes (over time)	Filling the gap affects policy-making and management processes at the local and sectorial levels, amongst others.	13%
C3 Potential to support ecosystem resilience	Filling the knowledge gap would help increase ecosystem resilience.	12%
C4 Long-term sustainability of benefits	Solving the gap would achieve benefits and sustainability over the long term.	12%
C5 Positive effects on populations, goods, and public services with no major negative effect	Closing the gap would generate positive effects on people, communities, and populations, as well as on goods and public services. This includes the notion that closing the gap would generate positive impacts whilst minimizing negative externalities.	12%
C6 Scale of impact on closing the gap	Relevance for closing a critical gap of a thematic, national, or regional character.	11%
C7 Co-benefits for closing other gaps (conditioning for closing other gaps)	Closing the gap leads to the elimination of other gaps.	11%
C8 Ease of filling the gap	Existing capacities (human, economic, and institutional resources) for closing the gap.	8%
C9 Potential to reduce uncertainty	Closing the gap would help reduce uncertainty (the more uncertainty there is to reduce, the higher the gap's priority).	7%

### ***Evaluation by participants***

*Most participants regarded the method of identifying and ranking criteria as either good or regular<sup>2</sup>. The MSG members discussed the method in detail and made the following recommendations for future improvement:*

### ***Recommendations***

- *The process is very long and the time involved could be better used to evaluate gaps.*
- *A second Delphi round for scoring criteria is not needed.*
- *It will be beneficial to assess whether the number of criteria can be reduced without affecting the quality of evaluation.*

<sup>2</sup> The evaluations of the methodology mentioned in this report are based on rankings given by the participants according to a scale of 1 to 5 for each of the methodology's steps. The score 4 corresponded to "Good" and 3 to "Regular".

### 3. Evaluating and prioritizing knowledge gaps

Once the criteria for prioritization were agreed upon, the work proceeded with a session on prioritizing knowledge gaps. At the beginning of the session, the methodology to be applied was explained and the participants were invited to score each gap on a scale of 1 to 5, in respect of the influence each criterion may have in tackling each gap. For example, “Urgency” (criterion 1) was evaluated from 1 to 5 in respect of each gap, where a score of 1 signified “closing the gaps is not urgent” and a score of 5 signified that “closing the gaps is very urgent”.

The participants received matrices for ranking and evaluated the gaps. This activity took about 2 hours to complete<sup>3</sup>. The facilitator compiled the data and tabulated it in an Excel matrix programmed to carry out calculations, taking into account the weighted values of each criterion.

The results were presented to the group in the plenary session, when they analyzed each gap. The participants agreed to consider the first 11 gaps having the highest scores. The participants emphasized the importance that the prioritization should include at least one gap from each of the five groups in the scoping paper. Upon review of the list of priority gaps, participants found that the first 11 gaps did not include any gaps belonging to either of the following two groups – *Capacity building at the local level and participation*, and *Public policies and institutions*. Given this, the participants agreed to include the highest scoring gap from each of these two groups. Thus, gaps ranked 22 and 25 were added to the list of priority gaps. Table 4 presents the 13 priority gaps, with their respective scores and ranks. Appendix 6 contains the scores for all the 50 evaluated gaps.

**Table 4.** Priority gaps resulting from the exercise on prioritizing adaptation knowledge gaps.

<b>Gap</b>	<b>Total score<sup>a</sup></b>	<b>Rank</b>
<b>G9</b> Gaps in integrated research on the effects of climate change on ecosystem services, and their relationship with the quality of life of populations	50.19	<b>1</b>
<b>G45</b> Scarcity of mechanisms for including adaptation in current planning tools	49.12	<b>2</b>
<b>G15</b> Lack of data and information on health and associated variables, and on the impact of climate change on health in the Andean subregion	48.66	<b>3</b>
<b>G20</b> Lack of economic information and cost-benefit analyses needs for adaptation	48.61	<b>4</b>
<b>G31</b> Gaps in methodologies for promoting processes that facilitate multi-sectoral adaptation	48.41	<b>5</b>
<b>G19</b> Gaps in socio-economic information for evaluating the impact of climate change	47.68	<b>6</b>
<b>G21</b> Scarcity of sectoral analyses on the costs of climate change and on the investment needs for adaptation	47.59	<b>7</b>
<b>G30</b> Gaps in information on tools for territorial planning and land use	47.31	<b>8</b>
<b>G17</b> Gaps in the analyses of social variables, and of supply and demand for water, associated with different climate change scenarios	46.56	<b>9</b>
<b>G24</b> Scarcity of information and of analyses relating to the impact of climate change on agricultural and livestock production systems	46.14	<b>10</b>
<b>G7</b> Gaps in research and the exchange of knowledge on techniques, and in the optimization of technologies for managing hydric resources and adapting to the effects of climate change	46.03	<b>11</b>

<sup>3</sup> Thirteen MSG members participated in prioritizing the knowledge gaps.

<b>G25</b>	Absence of mechanisms for the dissemination of knowledge on adaptation to local communities	43.55	<b>22</b>
<b>G35</b>	Lack of tools to enhance systematization of existing experiences on adaptation	42.52	<b>25</b>

a. Score of each gap after totaling the individual evaluations by the participants.

### ***Evaluation by participants***

*Most participants regarded the methodology for prioritizing gaps as either regular or good. The MSG members discussed the method in detail and made the following recommendations for future improvement:*

### ***Recommendations***

- *Dedicate time for the participants to analyze gaps in groups based on the nature of the gaps, using expert advice and thus identify those gaps that, in the participants' opinion, are redundant or could be combined. Some options are:*
  - *Validate the gaps with the participants prior to the workshop*
  - *Propose gaps of general character for a first prioritisation round. For a second prioritization round, select among specific gaps contained within the general gaps*
  - *Characterize the target group to ensure representativeness of sectors*
- *Ensure that priority gaps represent the relevant sectors.*
- *Establish clearer rules for scoring. During the exercise, some participants scored horizontally, that is, they evaluated each gap against the nine criteria. Other participants evaluated vertically, that is, they evaluated the importance of a criterion for the 50 gaps. This could generate differences in the evaluation. It was recommended that the evaluation be horizontal and, where possible, discover the total scoring for each gap.*
- *Thoroughly assess the gaps, bearing in mind causes, not consequences, that are associated with the gaps.*
- *Complement the evaluation with expert judgment from evaluators.*

## **4. Identifying potential responses to the prioritized gaps**

After completing the prioritization exercise, the participants proceeded with identification of potential actions for response to the prioritized gaps, possible users of these responses and potential actors for implementing these responses in respect of each priority knowledge gap. The facilitator explained the dynamics of the work and the expected results prior to the exercise. Three thematic groups were formed:

- Group 1. Climate research and observation - Gaps 7, 9, 15, 17 and 25
- Group 2. Socio-economic and sectorial aspects - Gaps 19, 20, 21 and 24
- Group 3. Land use and planning - Gaps 30, 31, 35 and 45

### ***4.1. Climate research and observation***

The group for climate research and observation tackled Gaps 7, 9, 15, 17, and 25. Given the similarity of some gaps, the group decided to tackle Gaps 9 and 17 together. These gaps relate to research on the effects of climate change on ecosystem services and their relationship with the quality of life for

populations. The approach would be integrated, focusing on gaps in analyses of social variables and of supply and demand for water in different climate change scenarios. Other gaps were tackled on an individual basis, as included in the scoping paper.

**Gap 7:** *Gaps in research and the exchange of knowledge on technologies, and in the optimization of technologies for managing hydric resources and adapting to the effects of climate change on these.*<sup>a</sup>

<b>Actions for response</b>	<b>Actors</b>
Conduct research on technologies for rainwater harvesting and storage	Ministry of Agriculture, Peru IICA Practical Solutions
Evaluate, systematize and disseminate technologies for efficient use of water	IICA Practical Solutions
Develop knowledge for designing infrastructure to capture, store and distribute water	IICA
Conduct research on the hydric dynamics of high-altitude Andean ecosystems (e.g. alpine moors and high-altitude wetlands)	CONDESAN National University of Tucumán, Argentina NASA WWF (alpine moors and high-altitude wetlands) Universidad Nacional Agraria La Molina– Pastures Laboratory, Peru

a. For this gap, the group did not define the users of the response actions.

**Gaps 9 and 17:** *Gaps in integrated research on the effects of climate change on ecosystem services and their relationship with the quality of life of populations.*

The group decided to combine Gaps 9 and 17 because of their similarity and that the actions for response could be connected. In addition, the group suggested changing the formulation of the gap to include not only natural systems but also agro-ecosystems and others such as irrigation, human consumption, water, and hydro-electricity.

<b>Actions for response</b>	<b>Users of the response</b>	<b>Actors</b>
Generate information on the supply of ecosystem services: <ul style="list-style-type: none"> <li>- Water</li> <li>- Biodiversity</li> <li>- Carbon sequestration</li> </ul>	<ul style="list-style-type: none"> <li>- Authorities and ministries for water and irrigation</li> <li>- Human consumption</li> <li>- Enterprises for drinking water and hydro-energy</li> <li>- Ministries and agencies for planning</li> <li>- Authorities for the environment: carbon markets</li> <li>- Authorities for the environment: plant breeders</li> </ul>	<ul style="list-style-type: none"> <li>- National Service for Natural Areas Protected by the State (SERNANP of MINAM, Peru) (themes: biological diversity and climate change)</li> <li>- Water authorities</li> <li>- Water funds</li> <li>- Research centers and universities</li> </ul>
Generate information on the demand for ecosystem services: <ul style="list-style-type: none"> <li>- Water</li> <li>- Biodiversity</li> <li>- Carbon sequestration</li> </ul>		<ul style="list-style-type: none"> <li>- CIAT</li> <li>- World Resources Institute (WRI)</li> <li>- CONDESAN</li> <li>- CATIE</li> <li>- WWF</li> <li>- Amberg Corp.</li> <li>- Inter-American Institute for Global Change Research (IAI)</li> </ul>
Conduct research on practices for restoring degraded lands and providing ecosystem services		<ul style="list-style-type: none"> <li>- IAI</li> <li>- IDB</li> <li>- CATIE</li> </ul>
Conduct research on the combined		

effects of changes in land use and climate on the provision of ecosystem services		<ul style="list-style-type: none"> <li>- Universidad Nacional de Colombia (INC)</li> <li>- CONDESAN</li> <li>- IAvH, Colombia</li> <li>- Conservation International (CI)</li> <li>- WCMC</li> <li>- CIAT</li> </ul>
Analyze historical trends of demand and supply of ecosystem services		
Analyze impact of extreme events on demand and supply of ecosystem services		

**Gap 15:** *Lack of data and information on health and associated variables, and on the impact of climate change on health in the Andean subregion.*

<b>Actions for response</b>	<b>Users of the response</b>	<b>Actors</b>
Conduct research on the effects of climatic variables on the impacts of vector diseases associated with climate change	National and subnational governments	<ul style="list-style-type: none"> <li>- IAI</li> <li>- PAHO</li> <li>- Ministry of Health and MINAM (Peru)</li> <li>- WHO</li> <li>- International Research Institute for Climate and Society (IRI) of Columbia University, New York</li> <li>- Colombia: <ul style="list-style-type: none"> <li>· Universidad Nacional– Medellín</li> <li>· Universidad del Valle</li> </ul> </li> <li>- National Institute for Public Health (INSP), Mexico</li> <li>- Fiocruz, Brazil</li> </ul>
Provide education on epidemiology and climatic variability	Universities NGOs	
Conduct research on climatic variability and the impacts of water diseases		
Strengthen statistical information systems on health and climate, and incorporate them in the decision-making processes		

**Gap 25:** *Absence of mechanisms for dissemination of knowledge on adaptations among local communities.*

<b>Actions for response</b>	<b>Users of the response</b>	<b>Actors</b>
Identify existing networks and structures (mapping of networks, actors and institutions) working with territorial planning and land use associations in local communities, NGOs, institutes, ministries of the interior and local governments (indigenous councils and reserves, parishes, and their boards)	<ul style="list-style-type: none"> <li>- Local communities</li> <li>- UNEP</li> <li>- Research institutes</li> <li>- Governments</li> </ul>	<ul style="list-style-type: none"> <li>- Local leaders</li> <li>- NGOs for local development</li> <li>- Departments for the environment of municipalities and/or local governments</li> <li>- Ministry of the Interior, Colombia</li> <li>- Local media</li> </ul>
Aligning with the development agenda of local communities		
Guarantee mutual understanding between communities and national and international entities, including through streamlined language		
Systematize, share, and transfer perceptions, practices, and local knowledge on adaptation between local communities and national and international entities		

Promote continuity of communication and interaction, and maintain consistency		
---	--	--

#### 4.2. Socio-economic and sectorial aspects

This group analyzed Gaps 19, 20, 21 and 24. As they were closely related, Gaps 20 and 21 were combined (*Lack of economic information and cost-benefit analyses of needs for adaptation and Scarcity of sectorial analyses on the costs of climate change and requirements for investment in adaptation* respectively). The group also included Gap 50 in their analysis (*Insufficient information on access to finance for climate change*).

**Gap 19:** *Gaps in socio-economic information for evaluating the impact of climate change.*

Actions for response	Users of the response	Actors
<p>Create a platform to store national socio-economic information for key sectors. This information would be freely accessible for evaluating impacts of climate change</p> <p><b>Activities:</b> Analyze information:</p> <ul style="list-style-type: none"> <li>- Identify the information and variables needed to conduct studies for evaluating impacts of climate change</li> <li>- Identify existing information and its sources</li> <li>- Identify information that is still missing, with the possible national institutions that could generate it</li> </ul>	<ul style="list-style-type: none"> <li>- National and local governments</li> <li>- Academia: universities and relevant research centers</li> <li>- Private sector: trades and associations</li> <li>- Civil society, including NGOs</li> <li>- Organizations for cooperation</li> </ul>	<ul style="list-style-type: none"> <li>- ECLAC</li> <li>- UNDP</li> <li>- Relevant institutions of national governments</li> <li>- Organizations for cooperation</li> <li>- NGO (WWF)</li> </ul>

**Gaps 20, 21, and 50:** *Gaps in analyses of the impact of climate change on sectorial and national economies, cost-benefit analysis of adaptation measures, and funding sources for the analysis.*

Participants decided to analyze Gaps 20 and 21 together as they considered them similar. They also included Gap 50, even though it was not prioritized, because its formulation was similar to that of Gaps 20 and 21.

Actions for response	Users of the response	Actors
<ul style="list-style-type: none"> <li>- Study the impact of climate change on sectorial and national economies (ECLAC studies)</li> <li>- Conduct a cost-benefit analysis of adaptation measures on the basis of the countries' national, sectorial, and subnational plans for adaptation</li> <li>- Analyze sources of finance for climate change and the means for accessing them</li> </ul>	<p>National and local governments</p>	<ul style="list-style-type: none"> <li>- ECLAC</li> <li>- UNEP</li> <li>- IDB</li> <li>- Relevant institutions of national governments</li> <li>- Relevant institutions of local governments</li> <li>- Academia: universities, centers for research on socio-economics</li> <li>- Organizations for cooperation</li> <li>- NGO (WWF)</li> <li>- CATIE</li> </ul>

		- IAI
--	--	-------

**Gap 24:** *Scarcity of information and analyses on the impact of climate change on agricultural and livestock production systems.*

<b>Actions for response</b>	<b>Users of the response</b>	<b>Actors</b>
<ul style="list-style-type: none"> <li>- Analyze the risk levels of agricultural and livestock production systems in coastal, mountain and jungle areas, including the occurrence of extreme climatic phenomena and their impact on vulnerable populations and agro-food chains</li> <li>- Study the occurrence, distribution, and existence of genetic diversity of <i>in situ</i> Andean crops and landraces</li> <li>- Study the impact of climate change on Andean crops and animals, and on the populations depending on them</li> <li>- Document and systematize local and traditional knowledge on the adaptive management and use of water and agro-biodiversity under climatic uncertainty</li> </ul>	<ul style="list-style-type: none"> <li>- Local governments</li> <li>- Academia: universities</li> <li>- Private sector: farmer associations</li> <li>- Civil society, including NGOs</li> </ul>	<ul style="list-style-type: none"> <li>- CIAT</li> <li>- CIP</li> <li>- IICA</li> <li>- CATIE</li> <li>- Universities</li> <li>- Biodiversity International</li> <li>- WWF</li> <li>- FAO</li> <li>- IFAD</li> <li>- CIMMYT</li> <li>- National germplasm banks</li> <li>- MINAGRI and MINAM, Peru</li> <li>- IAI</li> </ul>

### 4.3. Land use and planning

The group for land use and planning analyzed Gaps 30, 31, 35 and 45.

**Gap 30:** *Gaps in information on tools for territorial planning and land use.*

<b>Actions for response</b>	<b>Users of the response</b>	<b>Actors</b>
Systematize experiences and exchange results	<ul style="list-style-type: none"> <li>- Regional governments</li> <li>- National government (different parts of the government and different ministries)</li> <li>- Local governments</li> <li>- Public institutions</li> <li>- Academia</li> <li>- Civil society, including NGOs</li> </ul>	<ul style="list-style-type: none"> <li>- Regional, national, and local governments</li> <li>- Governments of other countries</li> </ul>

**Gap 31:** *Absence of mechanisms for promoting multi-sectoral adaptation.*

<b>Actions for response</b>	<b>Users of the response</b>	<b>Actors<sup>a</sup></b>
Identify legitimate spaces for dialogue	- National government (different parts of the government and different ministries)	National and local governments Public institutions
Create legitimate spaces for dialogue		National and local governments Public institutions

	<ul style="list-style-type: none"> <li>- Local governments</li> <li>- Public institutions</li> <li>- Academia</li> <li>- Civil society, including NGOs</li> </ul>	External actors
Create legitimate spaces for dialogue		National and local governments External actors Civil society and communities
Capacity, scope, and operability		National and local governments Public institutions External actors
Identify resources and critical meeting points between sectors		National and local governments Public institutions External actors
Establish alternatives that foster actions for scaling up adaptation at critical points		National and local governments Public institutions External actors

- a. All the actors and beneficiaries need to be more specific, depending on the country and local context. For example:
- Colombia: Ministries for the Environment and Sustainable Development; Mines and Energy; Agriculture and Rural Development; Health and Social Protection; Trade, Industry and Tourism; trade chambers and associations; National Department of Planning (DNP); Agricultural and Livestock Planning Unit (UPRA); research institutions (e.g., IDEAM, INVEMAR, and IAvH); and the Agustín Codazzi Geographic Institute (IGAC)
  - Ecuador: National Secretariat of Planning and Development (SENPLADES)
  - Peru: Planning for Climate Change (PlanCC)
  - Chile: Sub-Secretariat for Regional and Administrative Development (SUBDERE) and the Ministry for Social Development
  - Bolivia: Ministry of Rural Development and Land

The external actors are identified as CATIE, CIAT, GIZ, and the NAP–Global Support Programme of UNDP and UNEP.

**Gap 35:** *Lack of tools to help systematize procedures and existing mechanisms for adaptation.*

<b>Actions for response</b>	<b>Users of the response</b>	<b>Actors</b>
<ul style="list-style-type: none"> <li>- Identify and classify procedures for reactive and preventive mobilization</li> <li>- In the context of experiences of adaptation, identify factors influencing successes and failures</li> <li>- Map legitimate institutional spaces where the results of the systematization would be used</li> <li>- Create a freely accessible repository for disseminating and systematizing new experiences with minimum standards and/or criteria</li> </ul>	Funding organizations	<ul style="list-style-type: none"> <li>- CATIE</li> <li>- GIZ</li> <li>- NAPs</li> <li>- UNPD–UNEP</li> <li>- CIAT</li> <li>- Adaptation financing entities (AFEs)</li> <li>- GAN–UNEP</li> </ul>

**Gap 45:** *Mechanisms for including adaptation in current planning tools; and gaps in information on planning tools.*

<b>Actions for response</b>	<b>Users of the response</b>	<b>Actors</b>
Explore the availability of sectorial planning tools	<ul style="list-style-type: none"> <li>- National government (different parts of the government and different ministries)</li> <li>- Local governments</li> <li>- Public institutions</li> <li>- Academia</li> <li>- Civil society</li> </ul>	<ul style="list-style-type: none"> <li>- National and local governments</li> <li>- Public institutions</li> <li>- Private sector</li> <li>- International organizations and NGOs</li> <li>- Min. for the Planning of Development (Bolivia)</li> <li>- SENPLADES (Ecuador)</li> <li>- PlanCC (Peru)</li> </ul>
Explore the availability of planning	- National government	- National and local governments

tools for scaling up	<ul style="list-style-type: none"> <li>(different ministries)</li> <li>- Local governments</li> <li>- Public institutions</li> <li>- Academia</li> <li>- Civil society</li> </ul>	<ul style="list-style-type: none"> <li>- Public institutions</li> <li>- Private sector</li> <li>- International organizations and NGOs</li> <li>- External actors who support planning processes</li> </ul>
Prioritize tools that include criteria	<ul style="list-style-type: none"> <li>- National government (different ministries)</li> <li>- Local governments</li> <li>- Public institutions</li> <li>- Academia</li> <li>- Civil society, including NGOs</li> </ul>	<ul style="list-style-type: none"> <li>- National and local governments</li> <li>- External actors</li> <li>- For Chile: SUBDERE and the Ministerio de Desarrollo Social</li> </ul>
Identify the components of each tool	<ul style="list-style-type: none"> <li>- National government (different ministries)</li> <li>- Local governments</li> <li>- Public institutions</li> <li>- Academia</li> <li>- Civil society, including NGOs</li> </ul>	<ul style="list-style-type: none"> <li>- National and local governments</li> <li>- External actors: ministries of the environment, mines, energy, agriculture, education, health, industry, and tourism</li> <li>- Chambers, and trades and associations</li> <li>- Colombian entities: DNP, UPRA, IDEAM, INVEMAR, IGAC, IAvH</li> </ul>
Systematize experiences and exchange results	<ul style="list-style-type: none"> <li>- National government (different ministries)</li> <li>- Local governments</li> <li>- Public institutions</li> <li>- Academia</li> <li>- Civil society, including NGOs</li> <li>- Andean regional entities</li> </ul>	<ul style="list-style-type: none"> <li>- National and local governments</li> <li>- External actors</li> <li>- SENPLADES, Ecuador</li> <li>- DNP, Colombia</li> <li>- UPRA, Colombia</li> <li>- PlanCC, Peru</li> <li>- Other national entities responsible for planning</li> </ul>

A wide range of ministries may be relevant with respect to this knowledge gap. Planning would be carried out at different levels and scales, in different sectors and between sectors, and in different places. Many actors may be both beneficiaries and facilitators for accessing information.

## 5. Contributions of participating organizations towards closing the priority gaps

Participants reflected on potential response actions and support activities of the institutions and organizations represented by the MSG members towards closing the priority gaps. Table 5 below summarizes the potential actions for response of the participating organizations.

Representatives of ministries indicated their interest in sharing their progress in terms of policies, planning and work with local governments. Research organizations (CATIE, CONDESAN, CIAT, and UNAL) indicated their willingness to collaborate on research activities and offered to open up spaces for the exchange and generation of information to support decision-making processes.

International organizations indicated their interest in continuing their support of this process: ECLAC from the viewpoint of the economic impact of climate change; IICA, with leadership on gaps related to the impact of climate change on agriculture and livestock production; and UNEP, generally related to facilitating the process and fostering contacts between actors to tackle priority gaps. This workshop activity is described in Appendix 7.

**Table 5.** Summary of possibilities for collaboration announced by representatives of participating organizations.

<b>Organization</b>	<b>Possibilities for collaboration</b>
Centro Agronómico Tropical de Investigación y Enseñanza (CATIE)	<p><i>Gaps in economic analyses:</i> Development of economic evaluations and the benefits associated with analyses of ecosystem services.</p> <p><i>Systematization:</i> Interest in strengthening the interface between science and policy oriented towards collective decisions on common resources.</p>
Economic Commission for Latin America and the Caribbean (ECLAC)	<p><i>Gaps in economic analyses:</i> Support for analytical studies on the economic impact of climate change in most countries of the Andean subregion, and the development of cost-benefit analyses of adaptation measures.</p> <p><i>Systematization:</i> Possibility to create space or platform that refers to other sources of information, thus helping improve access to data and information relevant to development studies.</p>
Centro Internacional de Agricultura Tropical (CIAT)	<p><i>Gaps in agricultural and livestock systems and planning:</i> Interest in continuing to support the process for the Andean subregion, impact analyses and decision-making by relevant sectors, and planning and other processes that facilitate sharing of knowledge for decision-making.</p>
Consortio para el Desarrollo Sostenible de la Ecorregión Andina (CONDESAN)	<p><i>Knowledge gaps:</i> Studies on the impact of climate change and its relationships with ecosystems, and on ecological regeneration and its role in adaptation to climate change.</p> <p><i>Gaps in networks and capacity strengthening:</i> CONDESAN is leading networks for monitoring and generating information on forests, biodiversity and carbon sequestration. Possibilities of supporting work processes in network and facilitating work processes with thematic groups at the Andean Region level.</p> <p><i>Planning gaps:</i> Generation of information at the local level for decision-making related to different research gaps, including the development of projects that include significant elements for planning, plans for managing territory and governance in Bolivia, Ecuador and Peru.</p>
Inter-American Institute for Cooperation on Agriculture (IICA)	<p><i>Gaps in agricultural and livestock systems:</i> Contribute to analyses of measures towards adaptation to climate change. Interest in taking the lead on Gap 25. Showed interest in supporting the identification of gaps in agriculture and livestock production.</p> <p><i>Gaps in hydric resources:</i> Studies on the management of water for agriculture.</p>
Intergovernmental Panel on Climate Change (IPCC)	<p><i>Research gaps:</i> Widely publishing the entity's findings, developing specific activities for the Andean subregion, and fostering greater participation of governments.</p>
Oficina de Cambio Climático, Ministerio del Medio Ambiente de Chile (MMA)	<p><i>Planning gaps:</i> Experiences in implementing plans for adaptation.</p> <p><i>Networks:</i> Link with IAI to invite the institute to participate in actions that help close identified gaps.</p>
Ministerio del Ambiente de	<p><i>Planning gaps:</i> Experience in developing guides for local</p>

Ecuador (MAE)	governments to include the theme of climate change in their territorial and land use plans.
Dirección de Gestión Integral del Recurso Hídrico, Ministerio de Ambiente y Desarrollo Sostenible de Colombia (MinAmbiente)	<i>Gaps in research on hydric resources:</i> Interest in processes that improve knowledge on water resources. <i>Planning gaps:</i> Experience in the management of water resources.
Ministerio del Ambiente del Perú (MINAM)	<i>Gaps on policies, economy, and planning:</i> Share experiences on procedures and study of adaptation (e.g., cost-benefit studies for public investment, schematic guides for investment, and a framework for working with themes on risk management.
Pan American Health Organization (PAHO)	<i>Gap in climate change and health:</i> It is already facilitating working groups on climate and health to influence planning and development in sectorial plans for adaptation.
United Nations Environment Programme (UNEP)	<i>Gaps in planning and incorporating the adaptation variable:</i> Gaps 20, 21 and 50 indicate routes for action to help the countries from the subregion access funds for adaptation. <i>Climate research and observation gaps:</i> Making available work being developed at the global level for the <i>Adaptation Gap Report</i> and the UNEPLive platform on alerts and climatic data. <i>Gaps in the generation of local capacity and participation:</i> Interest in systematizing experiences with ecosystem-based adaptation.
Universidad Nacional de Colombia (UNAL)	<i>Research gaps:</i> Advances in studies on priorities for planning in the area of ecosystem services (water supplies and carbon sequestration), and for quantifying the impact on both biodiversity and ecosystem services. Experience in communications between academia and the more technical sectors to support decision- and policy-making processes.
World Wildlife Fund for Nature, Colombia (WWF–Colombia)	<i>Research gaps:</i> Experiences in ecosystem services and themes that cut across the conservation agenda. Facilitation of work with local actors.

## 6. Participants' evaluation of the methodology

During the workshop MSG members had the opportunity to evaluate the methodology for prioritization of gaps and make their recommendations for its improvement and they discussed appropriate conditions for replicating the exercise.

The MSG members found the scoping paper useful and enabling the identification of knowledge gaps which are important to the subregion. Likewise, they considered that the methodology for prioritizing gaps and identifying responses to these priority gaps is appropriate, and could be replicated for tackling gaps of a national scale and in different sectors, provided that the insufficiencies found are improved according to the recommendations made.

Most of the participants considered the methodology as a whole to be regular or good. The part on gap prioritization had the most aspects to improve, while the identification of responses received the highest scores.

### ***Evaluation by participants***

*The MSG members discussed the methodology in detail and made recommendations for the future iterations. These include the specific recommendations described in the text above for given sections of the methodology, and the general recommendations listed below:*

- *Group the gaps by sectors and, to match this classification, ensure a better representation of sectorial participants. Conduct a preliminary exercise before or during the workshop to attempt to classify the gaps into a smaller number (25 to 30) of sets.*
- *Determine if the gaps found for each theme or sector are relevant and then attempt to prioritize them for each theme or sector, thus identifying the highest priority ones by theme, and so ensuring greater representativeness of the sets of gaps.*
- *Consider domains of smaller scale than the regional (e.g., national, sectorial, or thematic) to prevent high variability in the nature of the gaps, which would otherwise lead the prioritization exercise to apply very different conditions to the gaps. To replicate, the advice is to evaluate the possibility of conducting exercises at national, sectorial, and thematic levels to tackle gaps on different scales and validate results.*
- *The selection of workshop participants created a certain degree of subjectivity, given that some sectors may not have been represented and that participants probably focused more on gaps relating to their area of experience. In this context, it is recommended that an inter-sectorial focus be given when preparing participants to ensure that the prioritization workshop remains useful.*
- *A study of gaps can lead to understanding of the demand for “actionable” information, that is, for information needed for decision-making in the short term at local scales and which would enable the development and execution of plans.*
- *Identify successful cases where gaps were filled, and determine how they became successful. Identify the best way of downscaling and determine how to relate them with national gaps.*
- *Gaps are not only of knowledge. Also useful would be to identify the mechanisms needed to influence structures for improving public management processes.*
- *Although themes on strengthening capacities are macro, it is necessary to determine if these are to be included as gaps or as cross-cutting theme in gap analysis.*
- *With respect to systematization, it is important to know and evaluate what is being done and what contributions are being made to close the gaps. This process would help discover, in greater detail, the gap’s size and the organizations that could collaborate in closing priority knowledge gaps.*
- *It is important to include, in the analyses, the component of awareness and analyze what is needed or demonstrate the mechanisms for generating changes in attitude.*

## **7. Recommendations for the next steps**

- **Forming a monitoring group for the Initiative with participants interested in being part of the process. The participants would first review and comment on this workshop report.**
- **Workshop participants will confirm the interest of their respective organizations in continuing to actively participate and the areas of interest or action they would develop to that end.**

- UNEP and the UNFCCC secretariat, in their role as the Initiative's co-convenors, will develop a proposal to catalyze the identified response actions, supporting, among other things, the actions proposed by the participants.
- UNEP will make efforts to contact users of the responses and the actors to initiate the tackling of gaps according to the MSG's recommendations.
- Support the production of a short informative document on the exercise of prioritizing gaps and identifying responses, publishing the results in time for the UNFCCC's next Conference of the Parties (COP).
- UNEP will help share the list of priority gaps as an input to the South-South cooperation program on climate change, the mandate of the forum of the ministers for the environment of Latin America and the Caribbean.
- The results of this Initiative will be shared with UNFCCC's Climate Technology Centre and Network (CTCN), the Convention's operative arm for technology transfer, as an input for the delivery of technical assistance.
- The results will be presented at the next Focal Point Forum of the NWP. A suggestion was made that some of the organizations who support the implementation of priority gaps become partner organizations of NWP.

## **Conclusions**

- The participants' acceptance of the methodology of prioritizing knowledge gaps demonstrated its viability; they showed that its importance lies in its focusing on action, fostering collaboration among institutions, and tackling themes relevant to regional interests. However, to achieve better results, the methodology needs to be adjusted and improved, using the numerous recommendations made by the MSG members. These recommendations need to be taken into account for the Initiative's future iterations.
- The importance of executing actions in response to priority knowledge gaps was seen as validating the practicality and usefulness of the methodology, as these responses could constitute a support for executing concrete actions of adaptation.
- Some participants expressed that their institutions may possibly be interested in collaborating on response actions proposed for closing knowledge gaps, as well as on enhancing the dissemination of existing information with a view to contributing to decision-making processes.
- The replication of this exercise at the national or sectorial level would help consolidate the methodological work initiated in this workshop. In this sense, it would be useful to evaluate opportunities for conducting national exercises, which would help validate the identified gaps and identify relevant gaps at other scales.