

# **Loss and Damage Associated with Climate Change Impacts and Adaptation: Stakeholder Perceptions for Shaping the Future Agenda of Asia Pacific**

**S.V.R.K. Prabhakar and M. Nakata**

**3/27/2014**

**Institute for Global Environmental Strategies and  
Asia Pacific Adaptation Network**



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APAN is a regional network connecting various stakeholders involved in climate change adaptation for realizing sustainable development in the Asia Pacific region.

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# Abbreviations

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APAN	Asia Pacific Adaptation Network
GHG	Greenhouse gas
IPCC	Intergovernmental Panel on Climate Change
L&D	Loss and damage associated with climate change impacts and adaptation
NGO	Non-governmental organization

# Preface and Acknowledgements

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Addressing loss and damage (L&D) associated with climate change impacts and adaptation has emerged as the linchpin of our collective efforts for effective adaptation to climate change in both short and long-term. To address this concern, the Conference of Parties (COP) 18 that met at Durban have clearly stressed the need to establish institutional arrangements helping the most vulnerable countries develop the capacity and implement appropriate measures. Keeping the importance of addressing L&D in view, this survey aims to understand the perspectives of different stakeholders engaged in climate change adaptation and L&D that could help in shaping the work of the Asia Pacific Adaptation Network. This survey could not have been possible without proactive support received from the institutional stakeholders from within and outside the Asia and the Pacific region. In specific, we would like to acknowledge Ms. Erin Roberts, International Centre for Climate Change and Development for the helpful comments and inputs in developing the survey and Mr. A. Hakimov for reviewing the pertinent literature and preliminary analysis of the data while working as intern at IGES. This work also benefits from the international conference on adaptation and L&D held in Bangkok, Thailand during 30-31st August 2013 which was organized by the adaptation stakeholders comprising of the Institute for Global Environmental Strategies, Asia Pacific Adaptation Network and other network stakeholders with funding support from the Ministry of Environment, Government of Japan. We are also thankful to Ms. Junko Watanabe for assisting with various logistics related to this work. We hope that this report provides useful insights into the stakeholder perceptions leading to better design of interventions for addressing L&D under the Asia Pacific Adaptation Network.

Authors

# Executive Summary

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The Asia Pacific Adaptation Network (APAN) was established in 2009 in response to the growing need for collaboration among different stakeholders engaged in climate change adaptation and related areas to build resilience of vulnerable human, ecosystems and economies to climate change. The network envisages achieving this through sharing knowledge and information on climate change adaptation among the relevant stakeholders, facilitating developing countries to access finance mechanisms and assist in adaptation planning and capacity building of stakeholders to achieve adaptation in major sectors at national and sub-national levels. With the growing importance of loss and damage associated with climate change impacts and adaptation (L&D) in various discourses at international and national levels, it bound upon the network to identify the pertinent issues and perceptions among the stakeholders it caters to so as to design its agenda in the years to come. With this objective in mind, an online survey was carried out in order to elicit responses from different stakeholders engaged in climate change adaptation and disaster risk reduction such that the network will be able to gauge the current level of understanding on the subject of L&D, existing capacities and gaps needs to be filled.

The survey was participated by 102 (n=102) respondents representing governmental departments, non-governmental organizations, universities and academic institutions, donor agencies and UN and intergovernmental agencies. Most respondents were from non-governmental developmental organizations (38%) followed by government departments (15%), independent think tanks (14%), universities (11%) and governmental think tanks (9%). Most respondents were in the age group of 30-50 (56%) followed by 50-60 (21%) and 18-30 (17%). 38% of the respondents have worked in climate change adaptation, 30% in environmental management and 12% in disaster risk reduction. For the purpose of analysis, the responses were grouped into those associated with APAN and those not associated with APAN, governmental and non-governmental respondents and respondents representing countries from Australia, Bangladesh, India, Philippines and Vietnam. Analysis was done for selected questions for the purpose of focus and the results were presented as % responses. Since no statistical significance test was carried out, only the numerical difference in percentage responses was used as criteria to delineate the differences in responses.

In general, the results have indicated differences in opinion among the analysis groups i.e. nature of association with the network, representing country and organizational affiliation while responses for few questions were uniform across the groups which is understandable in a survey of this nature. In terms of definition of L&D, most respondents preferred the definition to cover the entire actual and potential impacts rather than to limit the definition only to residual impacts after implementing adaptation and mitigation actions. Lack of sufficient modelling tools and insufficient understanding on the past and current climate change impacts appeared to be the most important bottlenecks in understanding the L&D associated with climate change. While most respondents felt the need for improved understanding and knowledge in all the key sectors relevant to adaptation, those not associated with APAN activities have preferred to focus on livelihoods and urban areas while those related to APAN thought that the knowledge gap is higher in the area of biodiversity and agriculture. Most governmental respondents (17%) thought there is significant dearth of knowledge to address L&D in agriculture sector while the most non-governmental respondents (11%) thought biodiversity needs more attention for understanding L&D.

All is not lost in terms of the institutional capacities. The survey has revealed that the current institutional capacities created to address climate change adaptation and disaster risk reduction could come handy in addressing the L&D. Most respondents felt that the experience from disaster risk reduction and indigenous knowledge could be helpful in addressing the L&D while the governmental respondents opined that only climate change adaptation specific experience will be helpful to address the L&D. Most respondents have opined that investing in capacity building and implementing mechanism for collection and dissemination of data would be most effective in addressing the L&D. The current institutional mechanisms though reported to be helpful, issues such as lack of coordination at the local governments and among non-environmental ministries appeared to pose major limitation.

Respondents also thought that the research and academic organizations constitute important stakeholder for working with national governments in effectively addressing the L&D which was followed by NGOs and other climate change adaptation related institutions. Others have felt that the existing institutions lacked access to grassroots level issues and thus there is a need for implementing local level climate change action plans which will enable putting in place concerted actions at the local level. Surprisingly, very few respondents, irrespective of group they belonged to, have selected the private sector as an important ally in assisting governments in addressing the L&D.

The survey participants have asked the network to focus more on sharing scientific knowledge (climate change impacts and vulnerability assessments) and sharing on-the-ground experiences of implementing adaptation projects and initiating pilot research projects on L&D. The need for implementing pilot projects to address L&D appeared significantly as an important gap in the current agenda of the network.

Among the individual countries, an overwhelming majority of respondents from Australia (100%) felt that there is no sufficient scientific understanding on the issue of L&D. Respondents from India (94%), Bangladesh (85%) and Philippines (69%) reported the lack of scientific understanding to address the L&D more in terms of lack of sufficient modeling tools to project the future climate and impacts, lack of sufficient understanding on the past and current climate change impacts, lack of tools for downscaling the projected risks to a specific location and lack of means to address the uncertainty. Others have felt that tools related to estimating economic L&D are equally lacking in addition to tools for projecting the physical impacts. Respondents from Australia have identified livelihoods as an important area lacking sufficient understanding and knowledge to address L&D while respondents from other countries chose multiple areas lacking scientific knowledge. For example, respondents from India have identified water sector as lacking sufficient scientific knowledge while responses from Vietnam have identified water and livelihoods as important areas needing scientific research to generate knowledge.

In conclusion, this survey has helped in obtaining the perceptions of major stakeholders engaged in adaptation and will shape the agenda of the network in the years to come. Relatively large proportion of respondents associated with APAN showing higher awareness levels clearly vindicates the knowledge sharing and capacity building efforts of the network. While the survey has broadly corroborated the direction the network is taking on the subject of L&D, the network needs to invest significant resources to implement pilot research projects addressing the L&D and share the lessons learned.

# Introduction

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Climate change has been in the spotlight for a long time as it is a well-known fact that increase in GHG levels in the atmosphere and the related increase in the global temperatures since the industrial era have disastrous effects on our planet. One of the factors that have contributed to spotlight on climate adaptation is that the number of disasters in new millennium have doubled in comparison to figures from 1987 to 1997 of which the increase is mainly due to weather-related disasters. The realization that the level of current emission reduction was not enough to prevent climate change became evident, especially with the publication by Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment Report in 2007, further gave impetus to act upon climate change adaptation.

Climate change has contributed to both the frequency and the intensity of extreme weather and climate occurrences (Field et al., 2012). The global rise of temperatures has already a major impact on changes of precipitation and heat waves, as well as storms resulting in heavy floods, landslides, ocean level rise in some parts of the world and drought as well as hurricanes in others. As a result, about 250 million people have been affected by natural disasters annually with an increase by roughly 30 percent in 10 years (Warner and Zakiendeen, 2012). In combination with slow onset impacts like sea-level rise there are other implications such as increase in water temperature, loss of biodiversity, ocean acidification and issues of desertification and forest degradation affecting the environment and people. Livelihoods, communities and even nations will be impacted due to climate change meaning that the loss and damage associated with climate change impacts and adaptation (L&D) is beyond just finance and economy (Stabinsky, 2012). These trends suggest that climate change will have great implications for the L&D associated with the natural hazards and calls for a greater attention on addressing these losses and damages.

Though there is no unanimously agreed definition of L&D, in general L&D refers to the losses and damages associated with the climate events: loss refers to something that is lost and cannot be retrieved while the damage refers to harm or injury or degradation caused to assets, lives, and natural resources that could be partially retrieved through investments in relief and rehabilitation. In general, presence of L&D aftermath a disaster induced by natural causes such as cyclones, droughts and sea level rise indicate that the hazard mitigation measures have failed to show the

impact in terms of reducing the risk and vulnerabilities and indicate need for additional investments in risk reduction and climate change adaptation.

Keeping the growing importance of L&D and adaptation to address the L&D, a need emerged for the Asia Pacific Adaptation Network to understand the perspectives of stakeholder it is engaged with as the network engages different stakeholders in addressing the bottlenecks that hinder promoting effective adaptation strategies at various levels. To understand the stakeholder perspectives, an online survey was designed consisting of questions, both open ended and closed, to elicit respondent's opinions on various aspects of L&D and how the stakeholders would prefer the issues be addressed by the network in the future. This report presents the findings in a succinct manner and the results of this survey should be interpreted and applied to the role of the Network pertaining to L&D.

# Understanding Stakeholder's Perceptions in Addressing Loss and Damage

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Risk governance to address loss and damage associated with climate change impacts and adaptation (L&D) is complex since it has to do with many different levels of approaches from local to national and global planning as well as cooperation. When it comes to extreme events and the stakeholder's perspectives, there are many actors involved at different levels. However, often it is the local people and the local community which are affected by the extreme weather events. Other stakeholders engaged in addressing disaster risks include local and national governments, non-governmental organizations and private sector. Understanding the opinions of these different stakeholders is of paramount importance for two reasons: a. opinions and perceptions shape actions leading to risk reduction, b. APAN is a network of stakeholders engaged in designing and implementing adaptation actions at various levels and hence understanding their perceptions and priorities will help a great deal in shaping the agenda of the network in the near future.

The importance of risk perception in shaping people's behavior is affirmed in several studies. For instance, Slovic (1987) emphasized the role of risk perception by indicating that the public relies on risk perception to evaluate hazardous situations. Some studies tried to emphasize the importance of risk perception both in design and operationalization of flood management (Michael and Fasil, 2001). Similarly, Weber (1997) identified public perception and expectations of climate change as important preconditions for technological and economic adaptation to climate change. People who perceive that they are vulnerable are more likely to respond to warnings and undertake protective measures (Michael and Fasil, 2001). Thus, understanding how people will perceive the risks communicated to them will influence how effective a risk management measure will be.

At this stage, it is worthwhile to mention few case studies pertaining to the nature of L&D associated with extreme events and how perceptions mattered in risk reduction. In the case of cyclones in Bangladesh, the local interviewees reported that the most devastating impact of the particular extreme event was the loss of livelihood opportunities. The destruction of the crops, fisheries and other household assets has

drastically reduced the livelihood earning potential over short- and long-term periods (Md. Shamsuddoha et al., 2013). Similarities can be drawn to the extreme event in Thailand where many local stakeholders experienced both the loss of their household assets and business opportunities. An owner of a local banana kiosk in Bangkok shortly after the 2011 floods reported to the media that even though nothing financially valuable was lost, not having any clothes or a mattress to sleep on was most devastating of all. Another local businessman in Bangkok where many business factories were affected reported that even though many of his customers will be back, most of them won't bring all of their business back, moving production elsewhere (Watts, 2011). These factors in combination with potential future financial problems with floods being uninsurable by insurance companies, it will make it very tough for local business owners to survive and stay at the same place after an extreme event.

In a case study focusing on Bolivian livelihoods under changing climate has indicated rainfall, hail and frost events becoming extreme and less predictable (McDowell and Hess, 2012). Many farmers have noticed that the hailstorms and frosts have become increasingly intense and less predictable which made it harder to strategize the harvest and planning necessary measures that would help during frost, rainfall and frost. In the same region, floods have swept away plots of cropland causing the collapse of irrigation canals which further compromised infrastructure as well as made agricultural production in the region even more uncertain and less predictable. These case studies indicate range of losses and damages associated with natural hazards some of which can be quantified and measured while others not and hence addressing these multiple impacts would require deeper understanding of the underlying vulnerabilities and processes. Important question to be asked here is how networks such as Asia Pacific Adaptation Network will be able to help different stakeholders in addressing these issues which forms an important objective of this survey research.

# Survey Methodology

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An online questionnaire survey was conducted with an aim to obtain opinions on various aspects of L&D from stakeholders engaged in climate change adaptation and disaster risk reduction to address L&D in the network agenda. The survey was implemented through an online survey system (surveymonkey.com) and the respondents were invited to the survey by sending an email request to the members enrolled for the e-communique of APAN.

The questionnaire (see Appendix I) consisted of 13 subject-related questions, out of which 12 were multiple choice questions, and 9 questions related to the background of respondents. Specific questions were included to understand the current scientific knowledge to address L&D, areas where significant knowledge gaps exist, current institutional mechanisms that could help in addressing L&D and identifying pertinent gaps. Though the survey uses largely multiple choice questions, option was also given to respondents to fill additional information to capture details that may have not been envisaged by the study team while designing the questionnaire.

102 online participants (n=102), most of them active in the areas of environment and climate change, have participated in the survey. Many of the respondents were either familiar or active in APAN with representatives from Bangladesh, Philippines, India, Thailand, Australia, Pakistan, Vietnam etc. Representatives from both governmental and non-governmental backgrounds have participated as well as those who were and weren't associated with APAN. The questionnaire is presented in Appendix I. Analysis was done only for specific questions for the purpose of comparison and presentation in this report. Responses were analysed using Microsoft Excel and the results were expressed as percentage of total responses and % of the analysed groups wherever applicable. No statistical significance test was carried out and only the numerical difference in percentage response was used as criteria to delineate the differences in responses.

## **KEY QUESTIONS FOR ANALYSIS**

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Though the questionnaire consisted of 13 questions, only a sub-set of questions were chosen to analyse the trends in perceptions due to their importance and for the purpose of focused discussion and comparison.

**Definition of L&D:** How stakeholders with different backgrounds define L&D and whether they think that the knowledge we have today is sufficient?

**Challenges to understanding L&D:** What the stakeholders consider the main bottlenecks to understand the L&D? Which area needs obtaining greater understanding in terms of L&D according to the stakeholders?

**Role of stakeholders in addressing L&D:** Who are specific stakeholders engaged in addressing L&D and how they can help governments?

## **GROUPING OF RESPONSES FOR ANALYSIS**

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The responses were grouped on the following categories to observe any trends in the survey.

Network affiliation: Since the nature of engagement with the network is an important variable that can show the influence of APAN activities on the stakeholder opinions, some of the responses were also discussed on the lines of association with the network (i.e. responses were isolated into two groups of those who had some kind of association with the network and those who did not had any association with the network). Association with the network constitutes participation in its activities rather than just being aware about the presence of the network.

Responses were also classified according to the nature of stakeholder backgrounds i.e. governmental and non-governmental to see if these two classes of stakeholders show any delineable differences in their opinions. Here, all the NGO developmental agencies, donor UN, intergovernmental agencies and universities were combined into NGO group.

Whether country background played a role in identifying the issues mentioned above, with focus on the biggest samples of stakeholders. Bangladesh, India and Philippines were the biggest participants followed by Australia and Vietnam.

# Discussion of Results

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## **DEMOGRAPHIC BACKGROUND OF THE RESPONDENTS**

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The total number of survey participants was 102 (n=102). Most responses were from the Asia Pacific region (91%) and the rest were either from outside the Asia Pacific (5%) or did not specify country/region (4%). Among those representing the Asia Pacific region, 17% were from India, 13% each from Bangladesh and Philippines, 6% each from Nepal and Vietnam and 4% each from Australia, Cambodia, Pakistan and Thailand. Remaining responses were from Indonesia, Japan, Kyrgyz Republic, Malaysia, Maldives, Myanmar, Sri Lanka, Tajikistan, Timor-Leste and Tuvalu.

Most respondents were in the age group of 30-50 (56%) followed by 50-60 (21%) and 18-30 (17%). Very few were above 60 years old (6%). 38% of the respondents have claimed that they either have specialization or are well verse with the subject of climate change adaptation, 30% have claimed to have specialization in environmental management and 12% in disaster risk reduction. Very few had specialization in climate change mitigation and from outside climate and environmental subjects but represent developmental sector. 36% of the respondents have been working on climate change related issues for more than 7 years while 33% for 3-4 years and the rest have been working for the past 5-6 years.

In terms of organizational representation, most respondents were from non-governmental developmental organizations (38%) followed by government departments (15%), independent think tanks (14%), universities (11%) and governmental think tanks (9%). Remaining represented donor agencies, UN and inter-governmental agencies, private sector think tank and private sector entities. In terms of specific occupation, most respondents were engaged in research and academic work (48%) followed by developmental practitioners (37%) and administrators in government and non-governmental agencies (15%). Rest included journalists, politicians and independent consultants.

The respondents were asked to clarify their nature of engagement with the Asia Pacific Adaptation Network, in terms of the role played and years of engagement with the network. Most respondents (40%) have not participated in any of the network activities. 35% were engaged with the APAN through attending various workshops and conferences it organizes while others were network members (15%). Few others (10%) represented steering committee members, staff of APAN and may

have obtained funding from APAN for carrying out various APAN activities and have contributed to the network publications. Among those who had some kind of association with APAN, 35% were engaged with APAN related activities for less than a year, 34% for the past 1-2 years and others for the last 3-4 years and more.

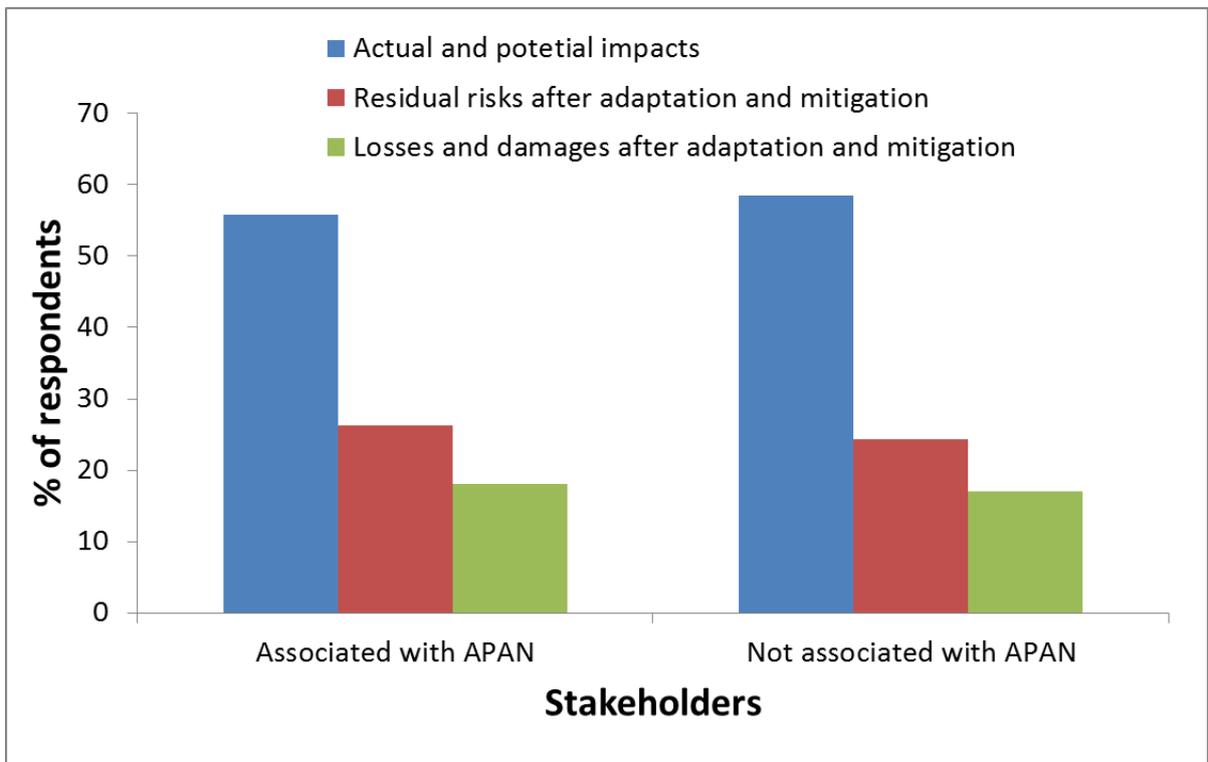
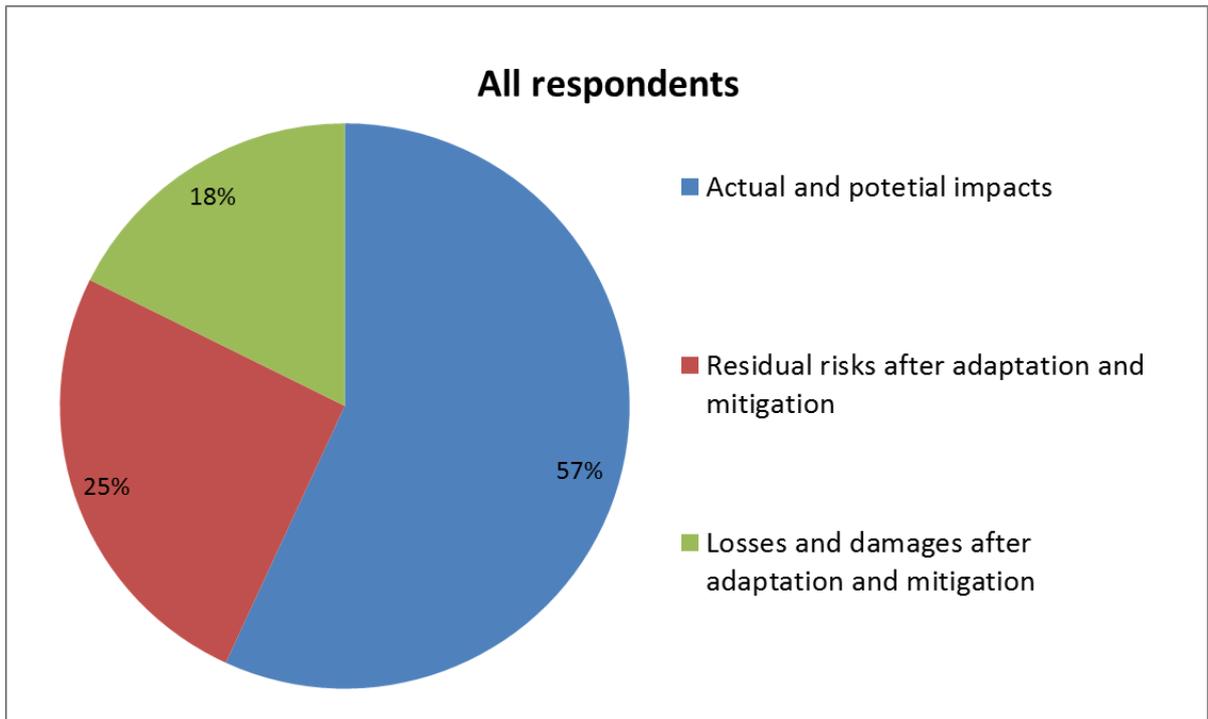
## **DEFINITION OF L&D**

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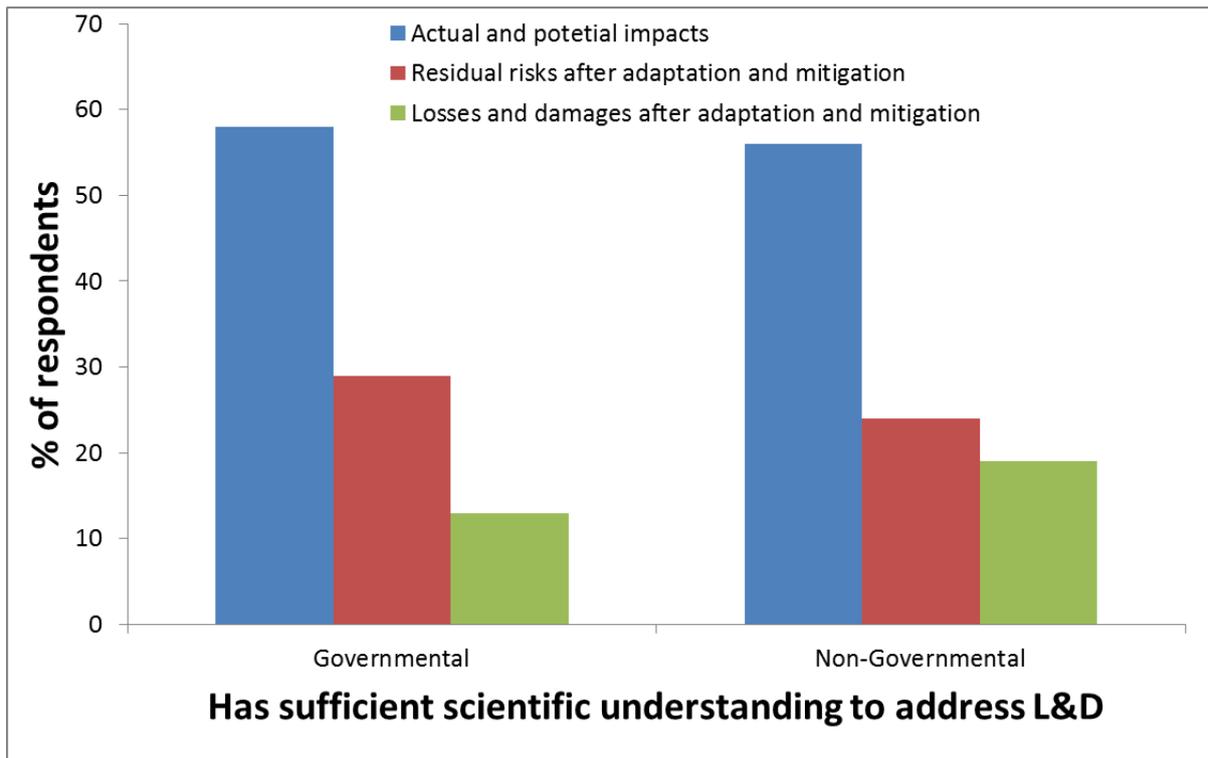
One of the important questions asked as a part of the survey was on how much various stakeholders understood the meaning of L&D. The questionnaire (Appendix I) has provided three alternative choices of definitions with a choice to write own definition: 1. All the actual and potential manifestation of impacts associated with climate change, 2. Residual risks when mitigation and adaptation actions are insufficient 3. Losses and damages experienced after implementing mitigation and adaptation activities.

It was clear that the majority of the respondents (57%) have chosen the first definition i.e. “All the actual and potential manifestation of impacts associated with climate change” while the rest were divided between the second and the third definition (43% combined) (Figure 1). The differences were negligible when the responses were segregated into those associated with APAN and those not associated with APAN though relatively more number of the later has preferred actual and potential impacts.

Negligible differences were observed between governmental and non-governmental respondents as the trend of response distribution across different definitions stayed the same i.e. both the groups preferred to define L&D as actual and potential manifestation of impacts associated with climate change (Figure 2). However, 8% more governmental respondents preferred the definition of residual risks after adaptation and mitigation actions were implemented. The second most popular alternative appears to be the residual risks when mitigation and adaptation actions are insufficient followed by the losses and damages experienced after implementing mitigation and adaptation.



**Figure 1: Definition of L&D by different stakeholders**

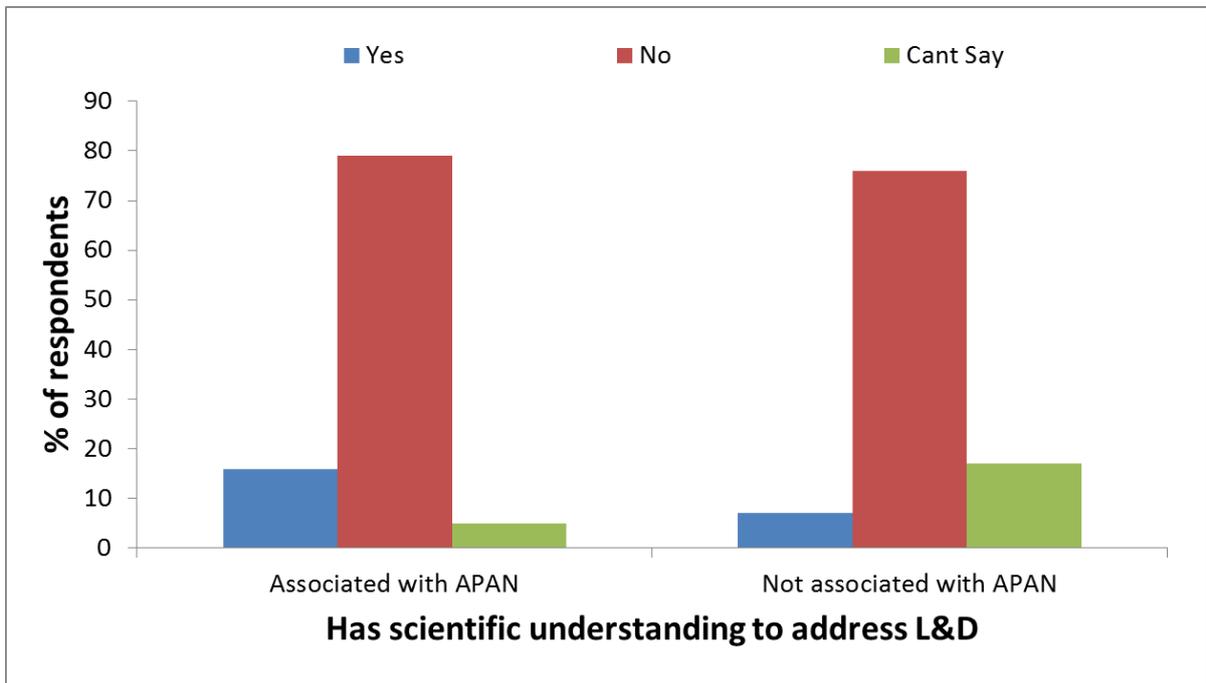
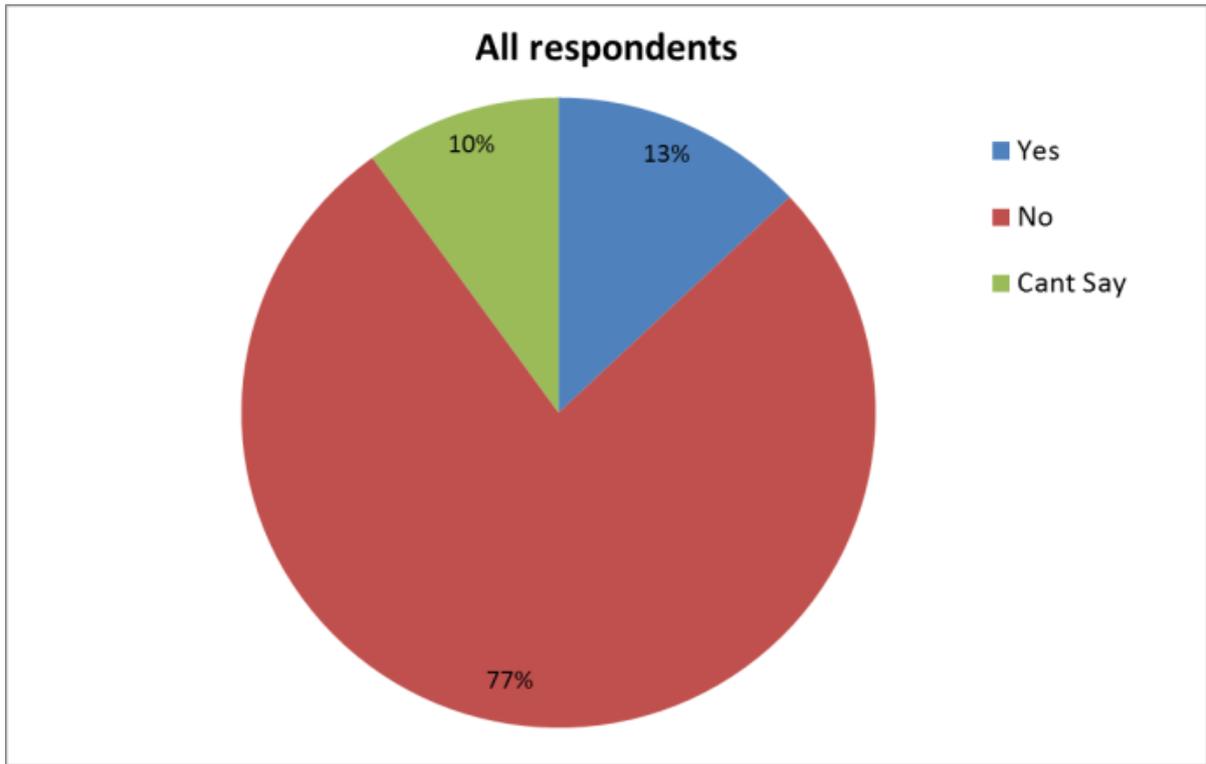


**Figure 2: Governmental and non-governmental responses on the definition of L&D**

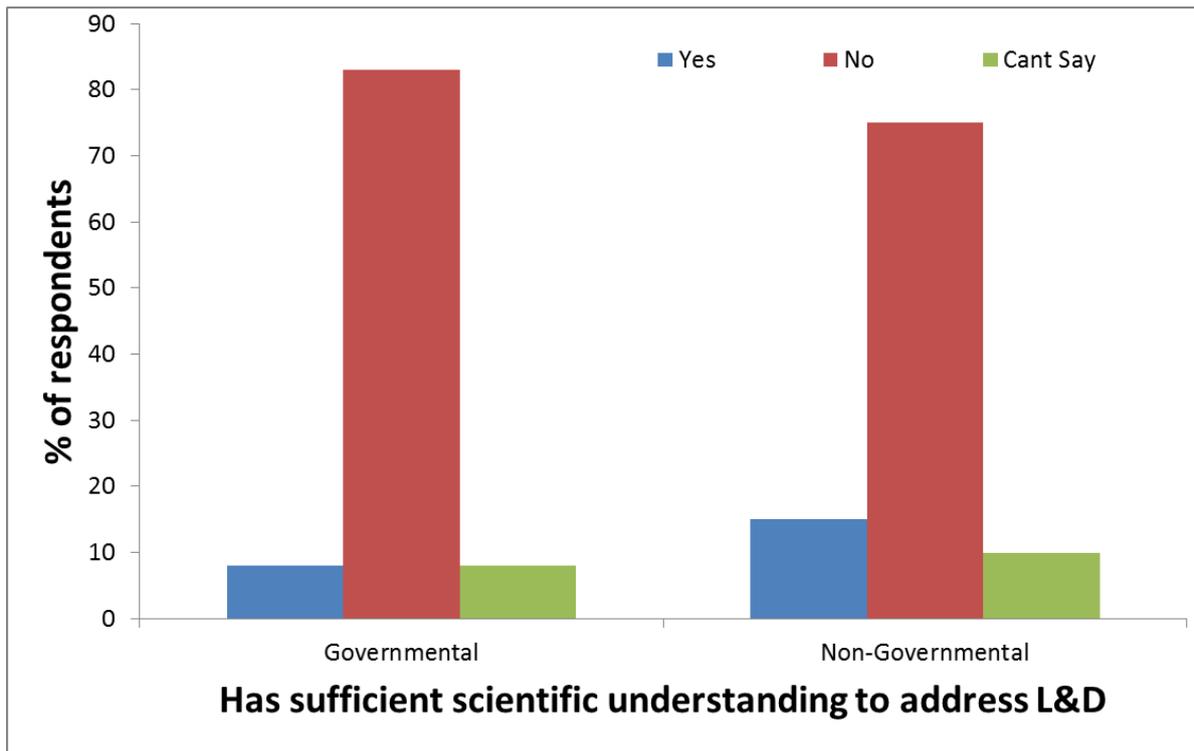
## SCIENTIFIC UNDERSTANDING ON L&D

Addressing L&D require great deal of scientific understanding of the issues leading to means to address the L&D. An overwhelming majority of respondents (77%) felt the lack of scientific understanding on how to address the L&D as an important bottleneck (Figure 3). However, those who were associated with the network have expressed relatively higher confidence (16%) in the scientific knowledge to address L&D when compared to those who have not been associated with the network (7%). The non-APAN members constituted the most (17%) among those who said they have no idea about the present state of scientific knowledge (can't say) while only 5% of those associated with APAN responded as 'can't say'.

There were no significant differences between respondents representing governments and non-governmental agencies (Figure 4). Largely, both were of the opinion that there is no sufficient scientific understanding to address L&D though a marginally higher proportion of non-governmental respondents felt the presence of sufficient scientific understanding.

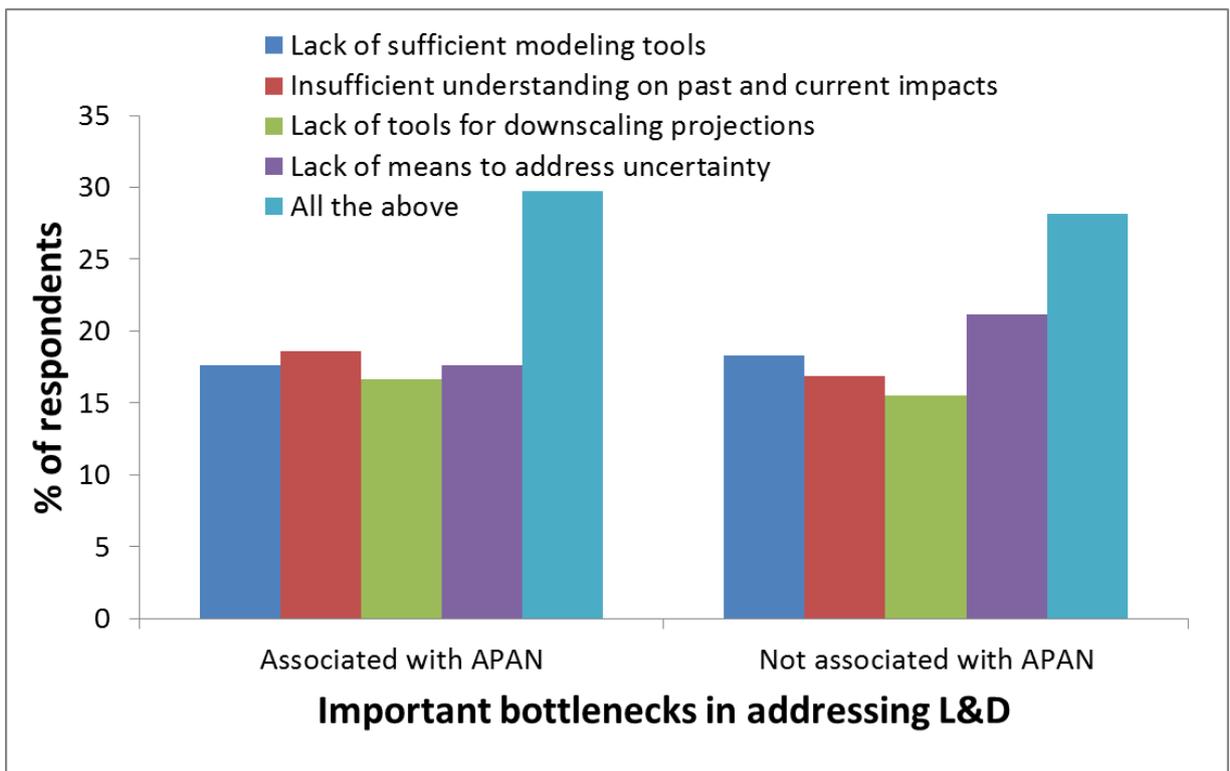
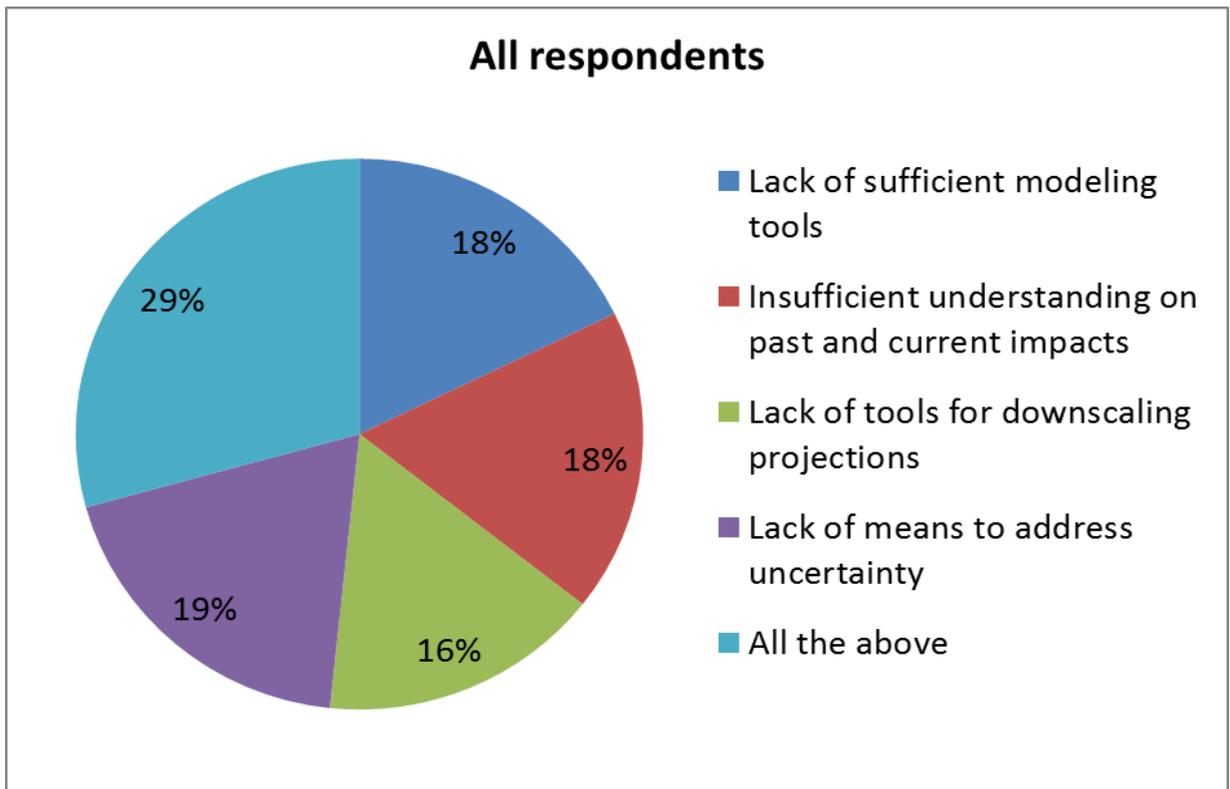


**Figure 3: Presence of scientific knowledge to address L&D**



**Figure 4: Current level of scientific understanding to address L&D**

This question on important bottlenecks was designed as a follow-up question to the previous question on the current state of scientific knowledge and only those who responded that the knowledge is insufficient was expected to answer this question. However, most of the respondents who answered that there is sufficient understanding to address L&D also answered this question. Most respondents (29%) agreed with all of the given bottlenecks such as lack of sufficient modeling tools to project the future climate and impacts, lack of sufficient understanding on the past and current climate change impacts, lack of tools for downscaling the projected risks to a specific location and lack of means to address the uncertainty involved in climate change projections (Figure 5). Almost equal number of respondents associated with APAN (30%) and not associated with APAN (28%) agreed with all the given bottlenecks with relatively higher number of non-APAN respondents (21%) thought that addressing uncertainty stands out to be an important bottleneck in addressing the L&D while the APAN associated respondents felt the limitation in understanding the past and current climate change impacts as important (19%).



**Figure 5: Opinions on bottlenecks to address L&D**

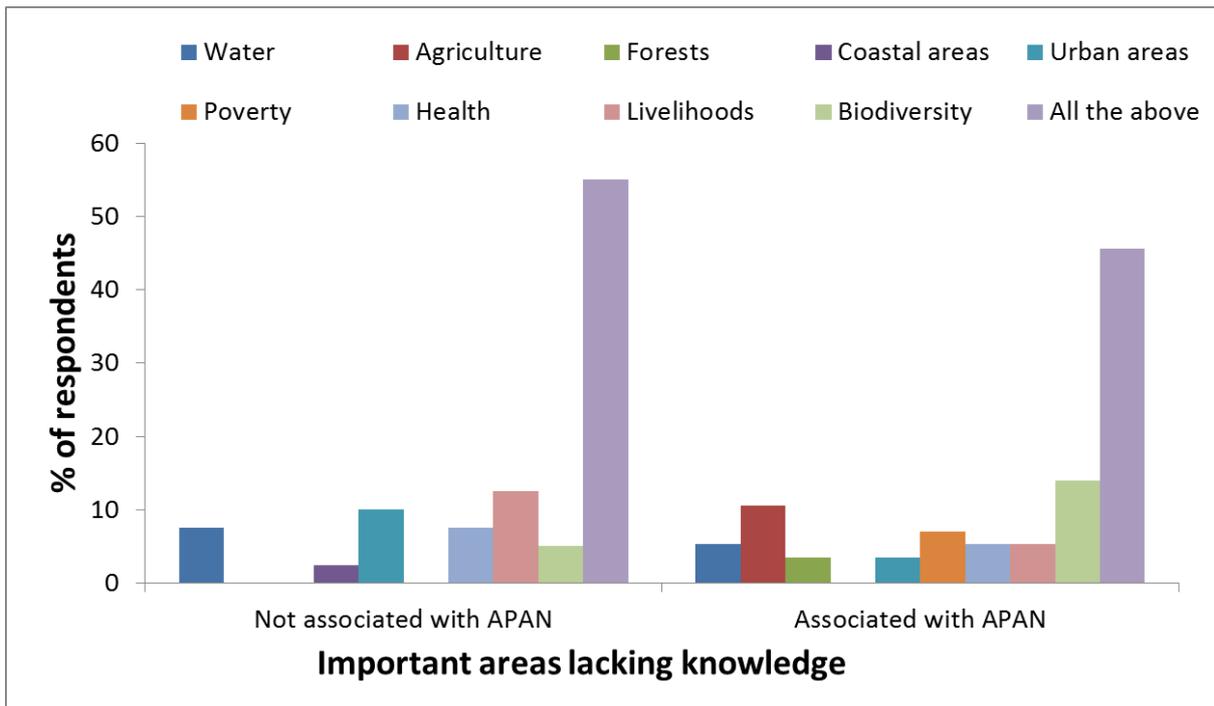
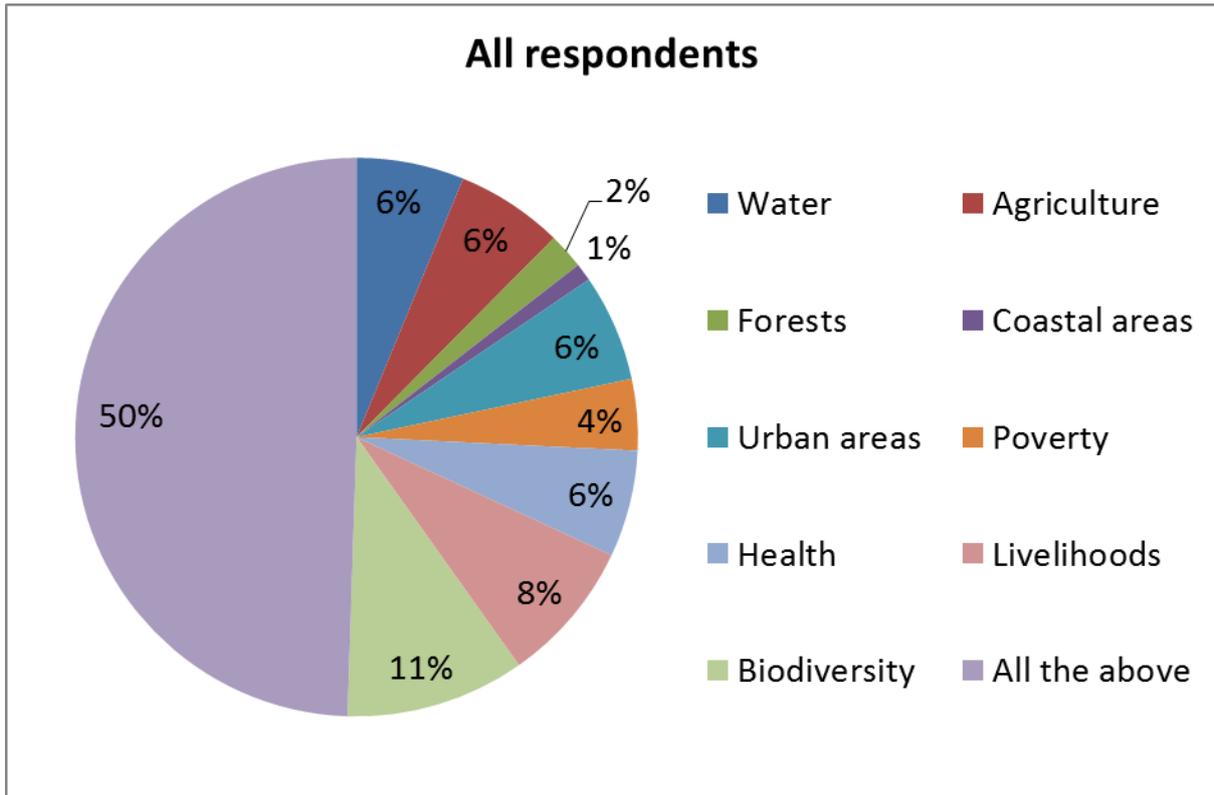
## **Important bottlenecks in understanding the L&D**

Among the governmental and non-governmental respondents, majority of respondents have chosen 'all the above' alternative with negligible difference between the governmental and non-governmental respondents. It appears that the governmental respondents were keener on choosing concrete and specific choices rather than going for 'all the above' alternative. Another distinctive difference was the fact that the governmental group of respondents chose lack of sufficient modeling tools to project future climate as an important limitation (24%) while the non-governmental group has chosen uncertainty involved in climate change projections (20%) and lack of sufficient understanding on the past and current impacts of climate change (20%) as important.

## **SPECIFIC AREA WITH LIMITED KNOWLEDGE**

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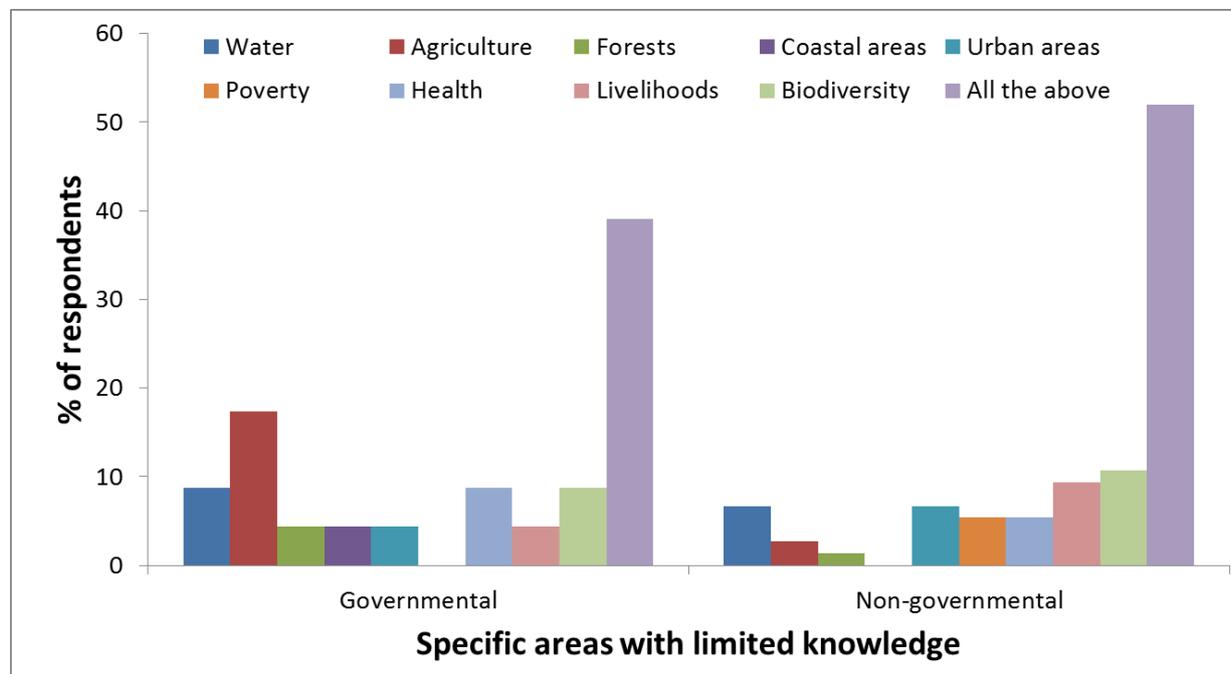
Delving into specific sector that is lacking knowledge for addressing L&D, the majority of respondents (50%) agreed that there is a lack of knowledge in all the listed areas while others have opined that there is a greater dearth of knowledge in the area of biodiversity (11%) to address the L&D (Figure 6). Followed by biodiversity, areas such as livelihoods, water, agriculture and urban areas have received significant responses of lacking knowledge to address L&D. There were some significant differences between the respondents associated with APAN and those not associated with APAN. For example, most respondents not associated with APAN felt that livelihoods (13%) and urban areas lack sufficient knowledge to address L&D while the respondents associated with APAN felt greater need to address knowledge gaps in biodiversity (14%) and agriculture (11%). This indicates clear difference in opinions between those associated with the network and those not associated with the network. In addition, it also shows the greater need for the network to focus on newer sectors to focus in knowledge generation and dissemination. In addition, most stakeholders (55%) not associated with APAN opined that most areas lack knowledge than those associated with APAN (46%) which shows relatively higher knowledge levels among the stakeholders associated with the network. However, none of the non-APAN associated respondents have selected agriculture, forests and poverty as areas with limited knowledge to address L&D.



**Figure 6: Opinion on areas with limited knowledge to address L&D**

Some significant differences could be found between the governmental and non-governmental representatives participating in the survey (Figure 7). Most governmental respondents (17%) thought there is significant dearth of knowledge to address L&D in agriculture sector while the most non-governmental respondents

(11%) thought biodiversity needs more attention for understanding L&D. As in the earlier case, more governmental respondents have preferred to choose specific options rather than choosing 'all the above' option while most non-governmental respondents chose 'all the above' option.



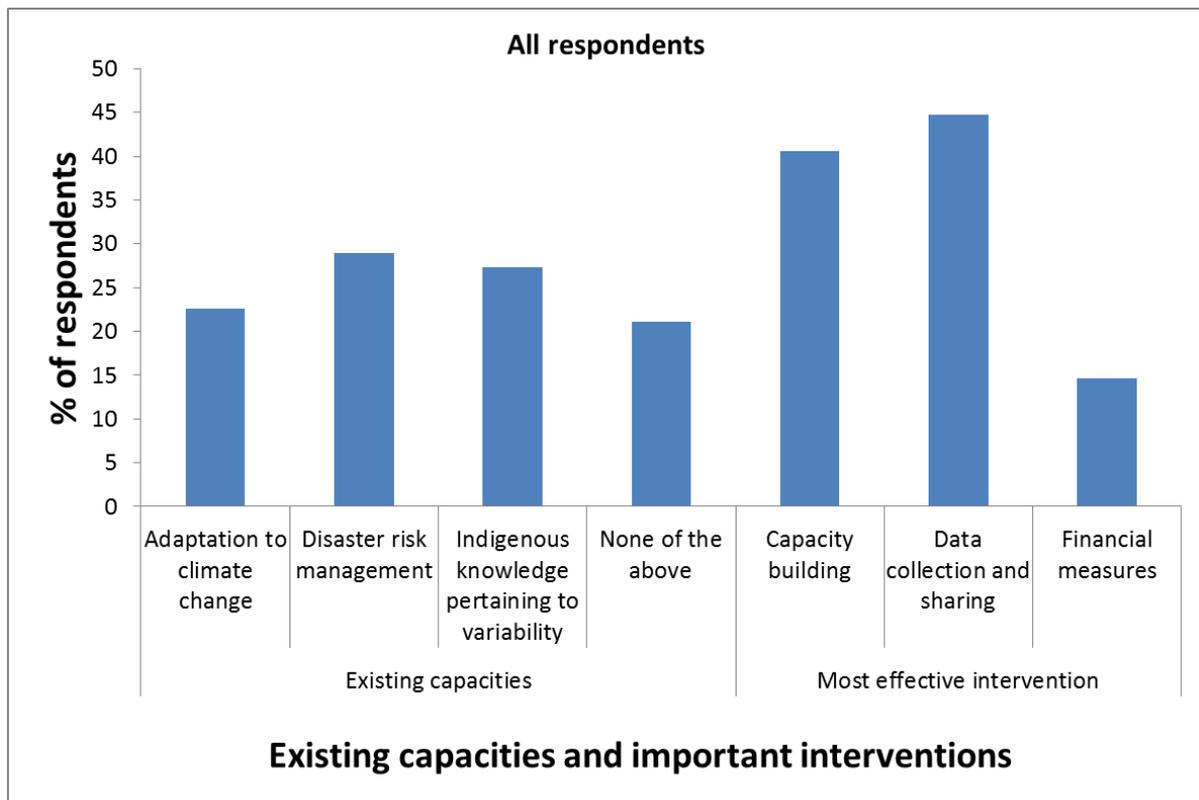
**Figure 7: Governmental and non-governmental responses on specific areas with knowledge gaps**

## CAPACITIES AND GAPS TO ADDRESS L&D

Discussions at the International Conference on Adaptation and L&D organized in Bangkok<sup>1</sup> indicated that certain capacities already exist with various stakeholders that could come handy in addressing the L&D while others need infusion of new capacities. When asked about the most important current capacities that could come handy in addressing the L&D, most respondents (29%) felt that the experience obtained in disaster risk management could come handy in addressing the L&D followed by the indigenous and traditional knowledge pertaining to climate variability (28%) (Figure 8). Few contrasting differences could be found wherein respondents not associated with APAN felt more need for capacity building than those associated with APAN and relatively more percentage of APAN associated respondents stressed the need for data collection and dissemination. As for responses from the non-governmental organizations is concerned, the respondents

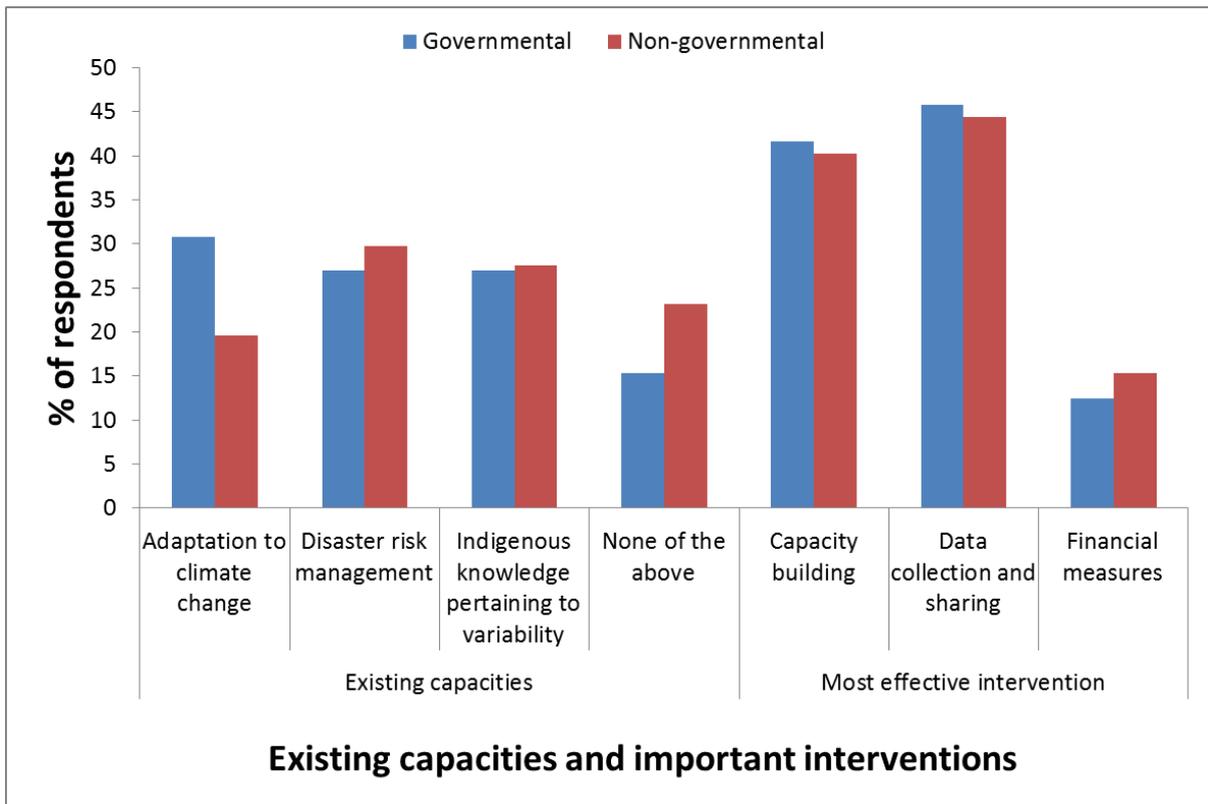
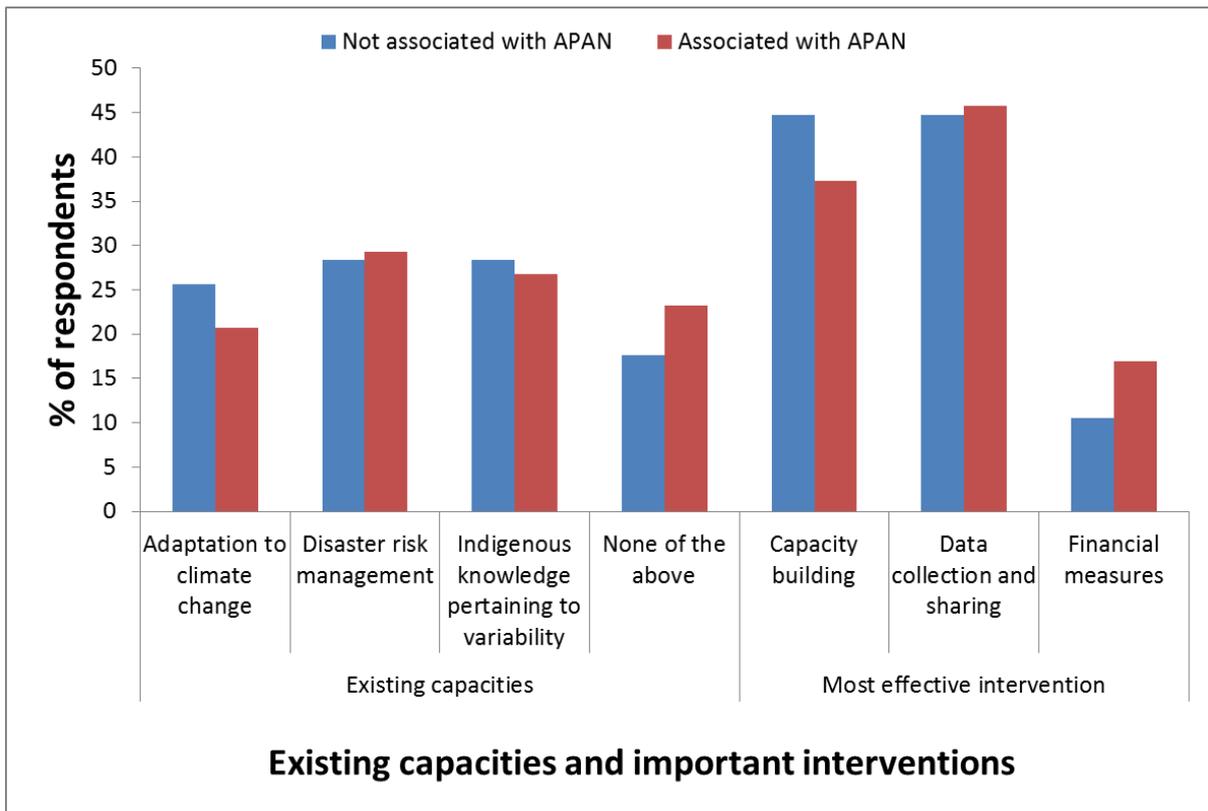
<sup>1</sup> IGES. 2013. Conference Summary International Conference on Adaptation and Loss and Damage: Integrating Scientific Aspects 30-31st August 2013, Bangkok, Thailand. Available at <http://pub.iges.or.jp/modules/envirolib/view.php?docid=4776>.

representing governmental organizations opined that the current experience of working on adaptation will form major capacity to address the L&D. However, significant number of respondents also thought that the current capacities will not be helpful to address L&D and that there is a need for creating new capacities. In this regard, responses were similar among APAN members (23%) and non-governmental respondents (23%).



**Figure 8: Responses on existing capacities and important interventions**

When asked about the most important intervention that could be effective in addressing the L&D, capacity building (45%) was chosen followed by data and information gathering and sharing (41%) and financial measures such as insurance (15%). Those not associated with APAN gave equal preference to capacity building and data gathering and sharing (45%) while those associated with APAN preferred data gathering and sharing the most (46%). Trends were similar among the governmental and non-governmental respondents, both preferred data gathering and sharing followed by capacity building and insurance approaches. Respondents felt the greater need for investing in early warning systems, information sharing not among the scientists but among those vulnerable communities impacted by the climate change through the networks if they are able to reach out to the needy.



**Figure 8 continued: Responses on existing capacities and important interventions**

## **INSTITUTIONAL ARRANGEMENTS AT NATIONAL LEVEL**

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Several national level institutions have already been created to cater to promoting adaptation and disaster risk reduction and these institutions and related mechanisms could come handy in addressing the L&D associated with the climate change. From this view point, most respondents felt that the disaster risk management mechanisms created at the national and local level could help address the L&D from climate change (57%) while others felt that the climate change adaptation related institutions could be more appropriate to address the L&D (43%). Similar trends were observed among APAN, non-APAN related respondents and governmental and non-governmental respondents. However, some of the respondents also felt that none of the existing institutions could help in addressing the L&D due to capacity limitations and that there is a need for regional and international level institutions to build the capacity of national level institutions. Others have felt that the existing institutions lack the access to grassroots level issues and thus there is a need for implementing local level climate change action plans which will enable putting in place concerted actions at the local level. The other proposals included focus on water induced disaster prevention, developing national plans and strategies to address L&D and to provide mandate to regional institutions such as Secretariat of the Pacific Regional Environment Program (SPREP) to build capacities at the national level.

Several issues plague the effectiveness of current institutional mechanisms at the national and sub-national levels and these issues appears to equally influence the effectiveness with which the institutions respond to address the L&D. First and foremost, lack of coordination among the local governments appears to be the most important institutional bottleneck in addressing the L&D (31%) followed by lack of coordination outside the environmental ministries (25%) and lack of coordination among international knowledge institutions (23%). Similar trends were observed among the responses from those related to APAN and those not related to APAN who also thought the lack of coordination at local governments is an important issue. Those not associated with APAN gave equal importance to lack of coordination among the non-environmental ministries and the international knowledge institutions (26%) while those associated with APAN felt the coordination among non-environmental ministries is an issue (25%). Interestingly, governmental respondents also corroborated the observation that the coordination at the local governments (29%) is an issue followed by lack of coordination outside environmental ministry (27%). Responses from non-governmental organizations followed similar trends as that of the governmental responses.

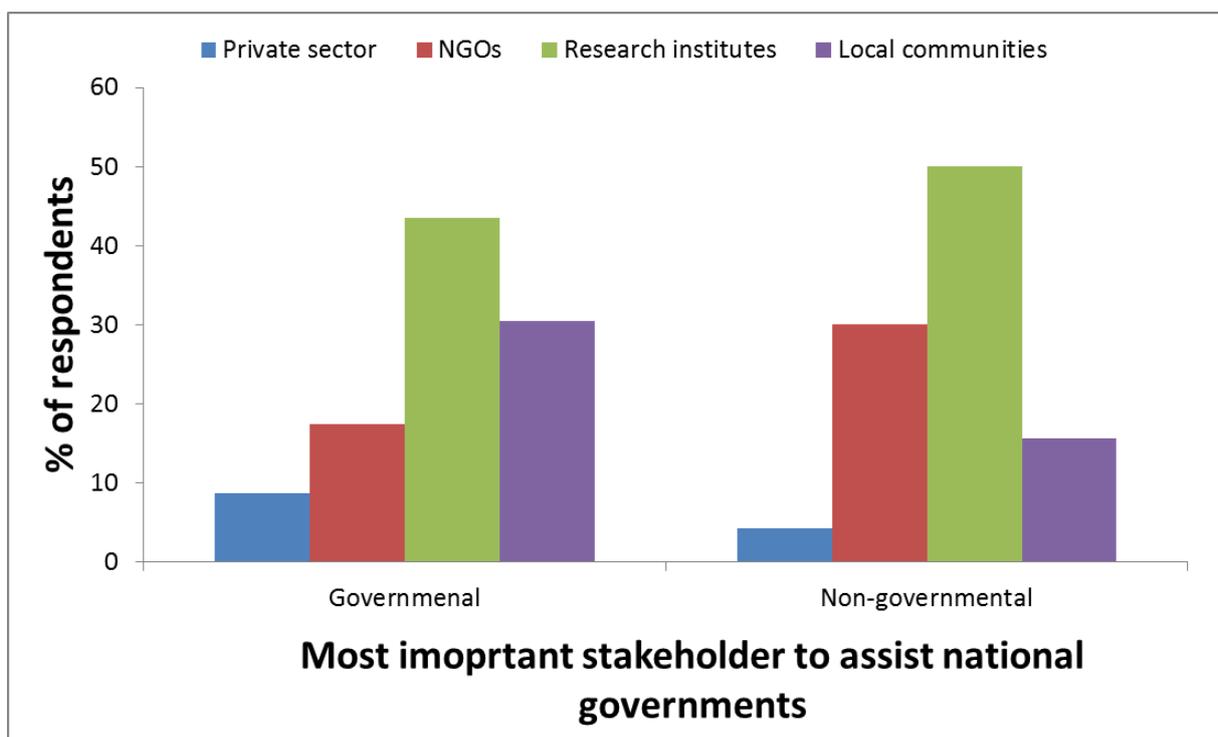
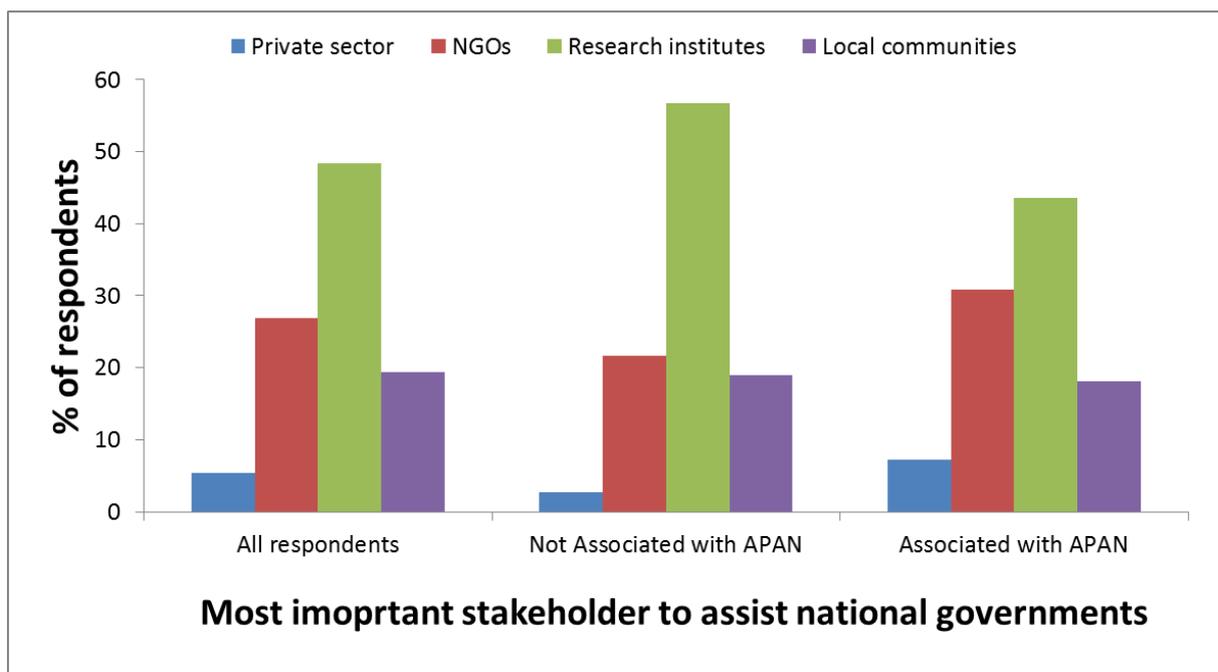
## **STAKEHOLDER TO ASSIST NATIONAL GOVERNMENTS**

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While addressing L&D needs concerted actions from all the stakeholders engaged in development, it is always crucial that the governments set the enabling environment for other stakeholders to work together. From this stand point, interventions in L&D are no different from the other areas of development. When asked respondents about the key stakeholders that could assist national governments in addressing the L&D, a majority of respondents felt the need for the research institutions to take lead in creating the scientific knowledge and tools to address the L&D (49%) followed by NGOs (27%) and communities (18%) themselves (Figure 9). This corroborates with the observation made about the insufficiency of current level of scientific understanding on L&D. Similar responses were obtained from those associated with APAN and those not associated with the APAN though predominantly large number non-APAN respondents (57%) felt the need for research institutions to take lead in collaborating with governments than rest of the respondents.

The above observations were also corroborated by the governmental (43%) and non-governmental (50%) respondents where non-governmental respondents gave relatively more preference to research institutions than the governmental respondents. Similarly, few governmental respondents (17%) preferred NGOs as important stakeholders compared to non-governmental respondents (30%). Surprisingly, very few respondents, irrespective of group they belonged to, have selected the private sector as an important ally in assisting governments in addressing the L&D. 5% among all the respondents and a maximum of 9% among governmental respondents have thought private sector as an important ally in assisting the national governments.

When responses were combined, clear difference could be seen in prioritizing which stakeholders are the most important for assisting national governments (Figure 9). Governmental respondents see research institutes together with local communities as most important stakeholders (74% combined), non-governmental representatives, however, see research institutes and NGOs as the main stakeholders (80% combined).



**Figure 9: Role of various stakeholders in addressing L&D**

## **ROLE OF APAN IN ADDRESSING L&D**

One of the main purposes of this survey is to find out the stakeholder perspectives on how APAN can contribute to addressing the L&D. APAN has been mainly focusing on sectors of agriculture and water and has spent significant amount of resources on training and capacity building of various stakeholders engaged in these sectors which are highly vulnerable to L&D and are very relevant for the socio-economic

development of the countries in the Asia and Pacific region. Most respondents were equally split between sharing scientific knowledge (climate change impacts and vulnerability assessments) and sharing on-the-ground experiences of implementing adaptation projects and initiating pilot research projects on L&D (19% for each option) followed by organizing training programs and organizing scientific conferences (Figure 10). This observation clearly corroborates the way how APAN has been working since the network has been actively engaged in sharing scientific knowledge and on the ground experiences through organizing workshops and conferences through very few efforts have been made to implementing pilot research projects on L&D.

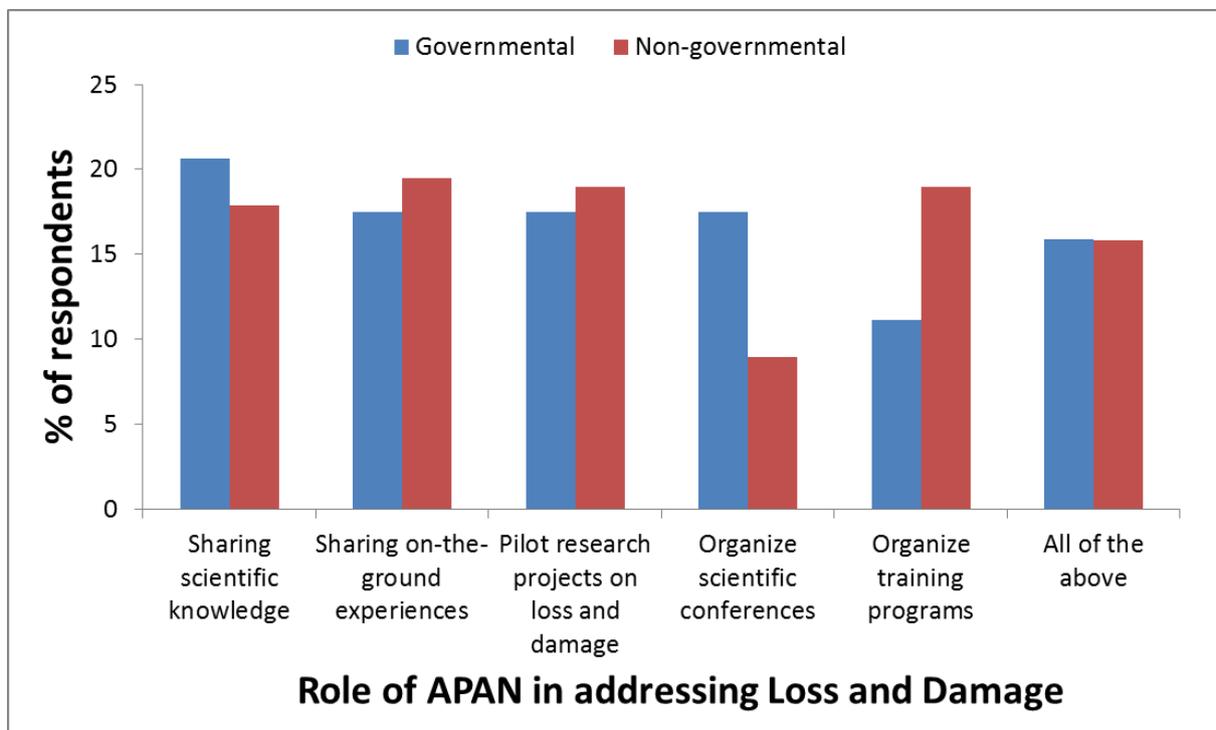
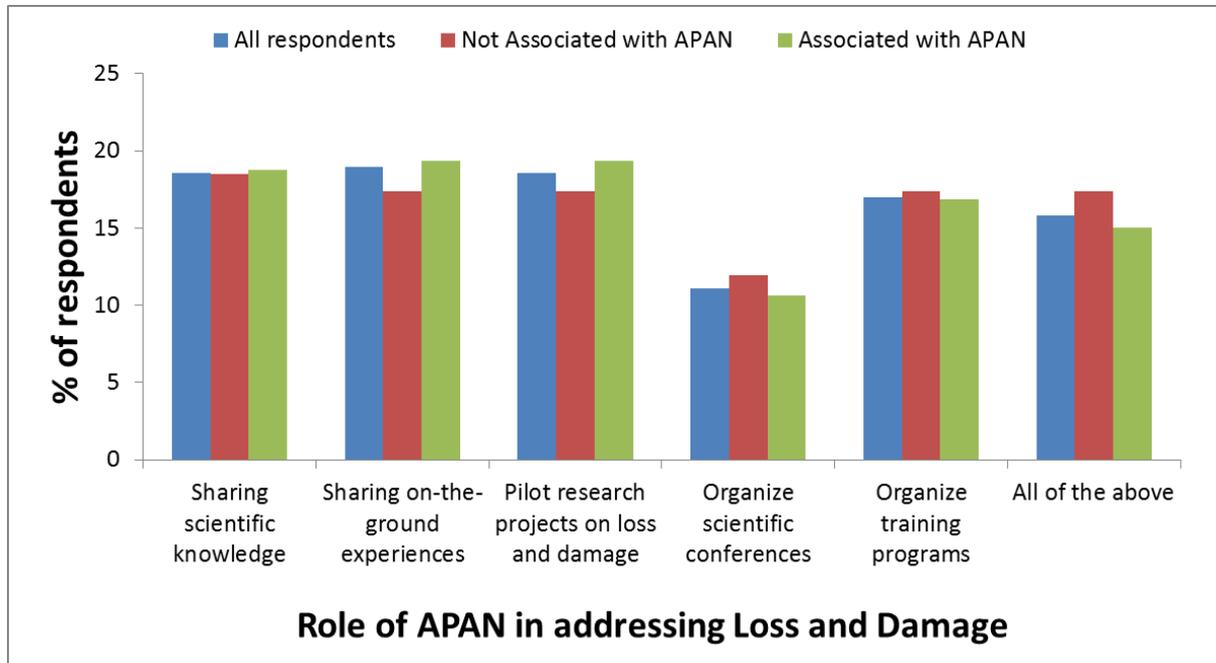
Relatively more number of non-APAN respondents tend to prefer organizing training programs and scientific conferences than APAN associated respondents. Similarly, relatively large number of APAN associated respondents has preferred conducting pilot research projects and sharing on-the-ground experiences. Governmental respondents gave more preference for APAN to sharing scientific information (21%) in addition to giving importance (17%) to sharing on-the ground experiences, initiating pilot research projects on L&D and organizing training programs (Figure 10). However, non-governmental respondents preferred that the network should give least focus to organizing scientific conferences (9%) and instead focus (19%) on sharing on-the ground experiences, initiating pilot research programs and organizing training programs.

## **COUNTRY-SPECIFIC RESULTS**

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While the above results were discussed in terms of overall responses received and the grouping of respondents by association with the network and governmental and non-governmental representation, significant number of responses was also obtained from specific countries which enabled us to group respondents according to country of representation. These results should be read as the responses of the individuals rather than those of the countries since responses were obtained on individual capacity rather than representing a particular country or the institution to which the respondent belonged to. Responses from Australia, Bangladesh, India, Philippines and Vietnam were isolated for identifying trends for the reason that several responses were obtained from these countries. Please refer to the demographic background section of this report for percentage representation from these countries.

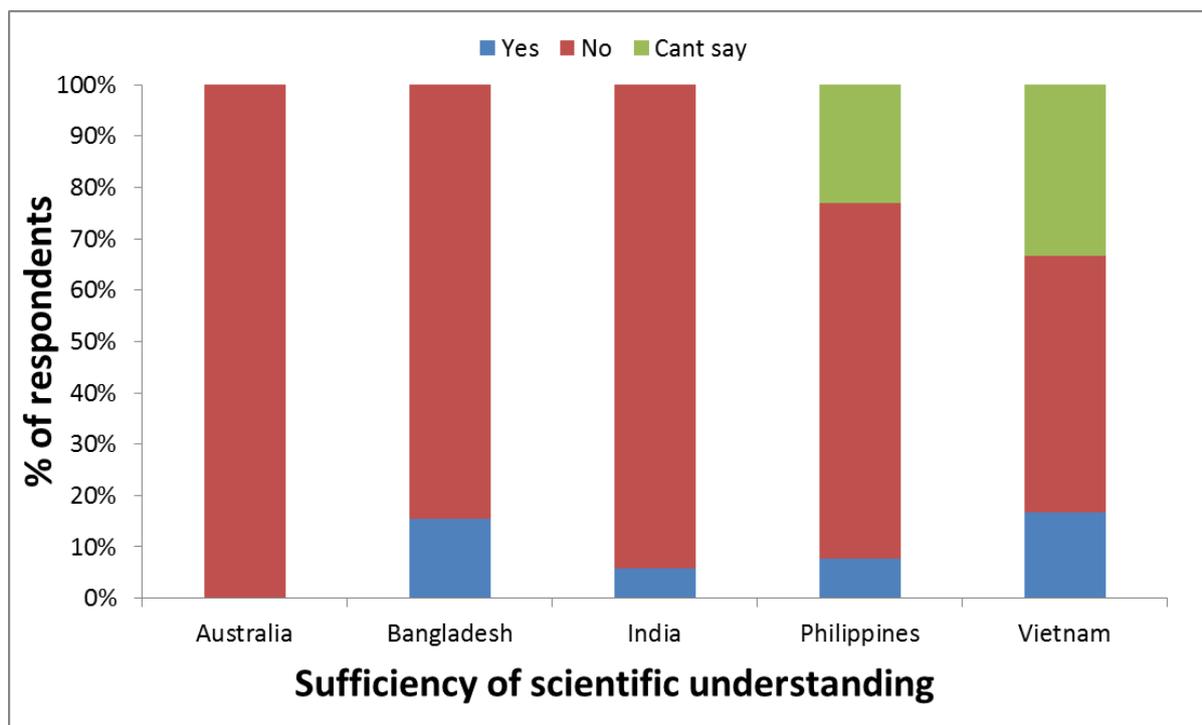
The following questions were analyzed for identifying trends: a) sufficiency of scientific understanding, b) important bottlenecks in understanding the L&D, c) specific areas with limited scientific knowledge and d) gaps in institutional arrangements at the national level to address L&D.



**Figure 10: Role of APAN in addressing L&D**

## Scientific understanding on L&D

In general, majority of the respondents believed that there is a lack of scientific understanding on the issue of L&D (Figure 11). Among the individual countries, an overwhelming majority of respondents from Australia (100%), the only developed country in this group, felt that there is no sufficient scientific understanding on the issue of L&D. Among the developing countries, more respondents from India (94%), Bangladesh (85%) and Philippines (69%) reported the lack of scientific understanding while significant number of respondents from Vietnam and Philippines thought it is difficult to say whether we have sufficient scientific understanding or not.

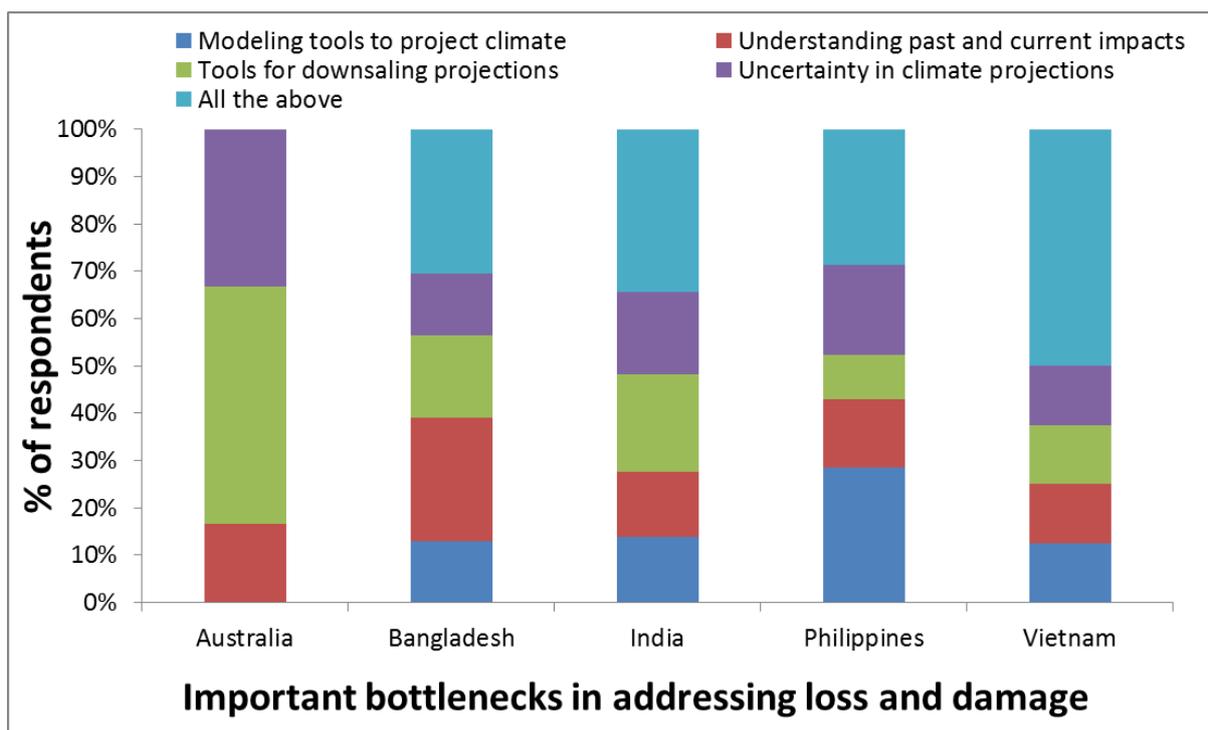


**Figure 11: Country-specific responses: Scientific understanding on L&D**

## Important bottlenecks in addressing L&D

At large, most respondents have selected the lack of sufficient modeling tools to project the future climate and impacts, lack of sufficient understanding on the past and current climate change impacts, lack of tools for downscaling the projected risks to a specific location and lack of means to address the uncertainty involved in climate change projections as most important obstacles in understanding the L&D (Figure 12). This indicates that the obstacles are not limited to the developmental state of the country and that the scientific needs are comparable in most countries. Most respondents from Australia (50%) and India (21%) felt the need for tools to downscale the climate projections to a specific location while respondents from

Bangladesh (26%) wanted clear analysis of past and current climate change impacts. Respondents from Philippines have identified lack of sufficient modeling tools to project climate change impacts as an important obstacle in addressing the L&D (29%) and responses were equally split among other options. Respondents from Australia felt that we need to be able to quantify the benefits of adaptation and mitigation in terms of climate change impacts if the L&D is defined as residual after implementing adaptation and mitigation. Other respondents felt that the understanding in areas of ecosystems and biodiversity loss, loss of livelihoods and damage to natural resources are grey areas with insufficient tools and techniques and hence lack scientific knowledge to address L&D in these areas. Others have felt that tools related to estimating economic L&D are equally lacking in addition to tools for estimating the physical impacts. Interestingly, few respondents thought the current political environment is not congenial in bringing the available information to public domain so that the measures are implemented to address the L&D in vulnerable regions. It appears that lack of historical data is a major bottleneck even if tools are available elsewhere to analyze and disseminate actionable messages to various stakeholders.

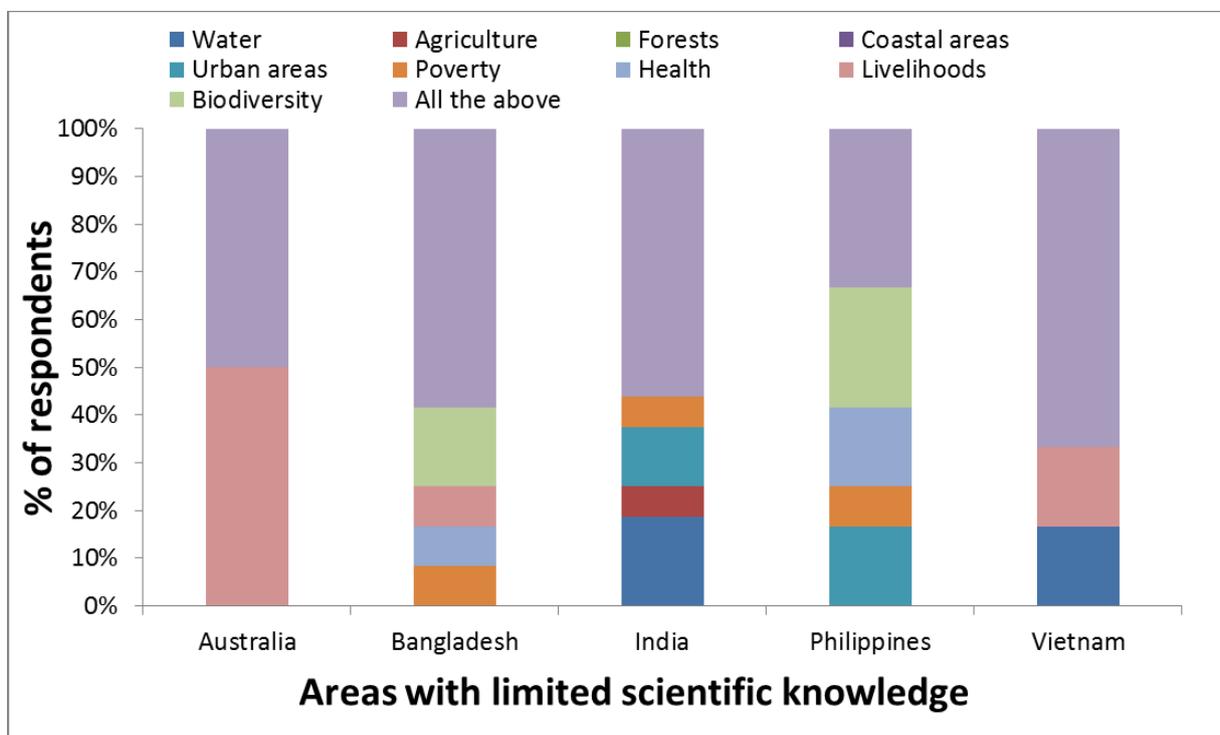


**Figure 12: Country-specific responses: Bottlenecks to address L&D**

### Areas with limited scientific knowledge

In terms of specific areas lacking scientific knowledge to address the L&D, most respondents opined that there is a gap in knowledge in all the sectors listed (water, agriculture, forests, coastal areas, urban areas, poverty, health, livelihoods, and

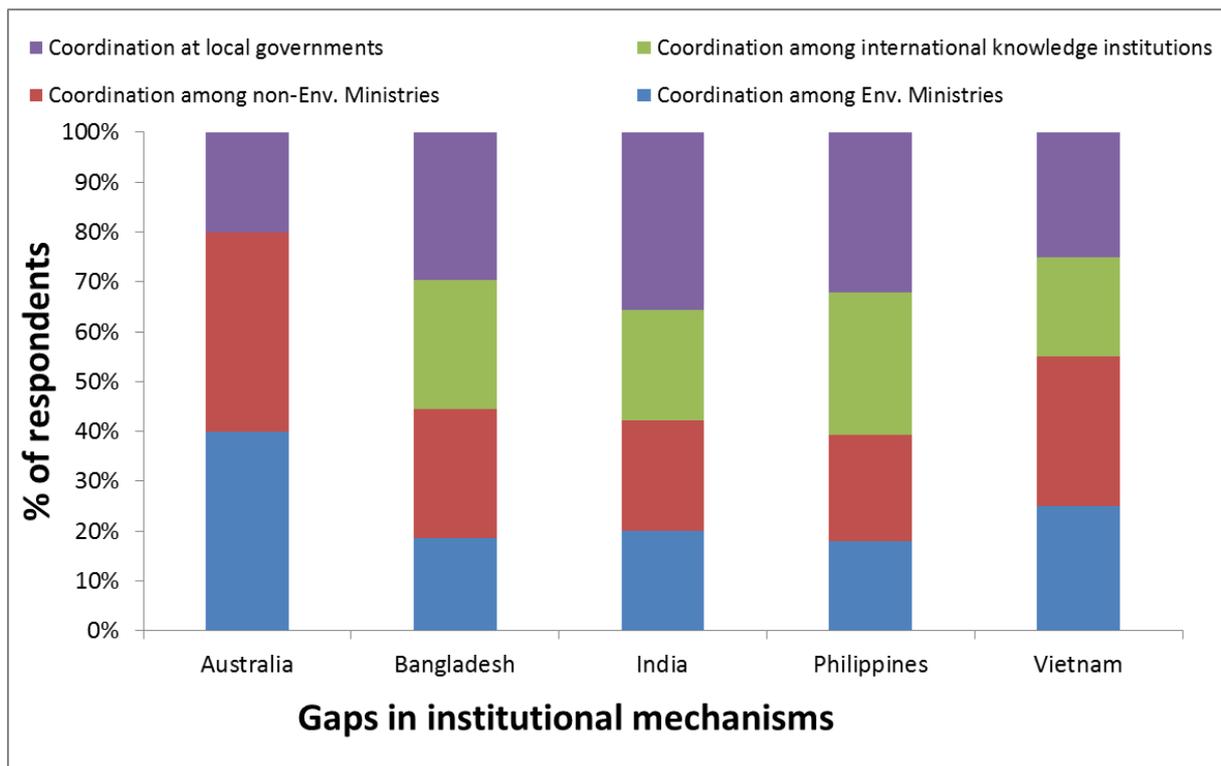
biodiversity). Respondents from Vietnam, India and Bangladesh tend to choose all the above option predominantly while respondents from Philippines and Australia preferred to narrow down the options (Figure 13). Responses differed among different countries; wherein respondents from Australia have identified livelihoods (50%) as area lacking scientific knowledge to address L&D while respondents from Bangladesh and Philippines have identified biodiversity (17 and 25% respectively) as lacking sufficient scientific information for decision making. Respondents from India have identified water sector as lacking sufficient scientific knowledge while respondents from Vietnam have identified water and livelihoods as important areas needing scientific research to generate knowledge. Some respondents have identified mountainous areas and means to applying global policies at the local level as important areas with significant knowledge gaps.



**Figure 13: Country-specific responses: Areas with limited scientific knowledge**

### Institutional arrangements at national level and gaps

Significant differences could be observed among countries in terms of gaps in institutional arrangements at the national level (Figure 14). Respondents from Australia felt that the lack of coordination among the environment related ministries (40%) and non-environmental ministries (40%) is an important institutional limitation while respondents from developing countries gave more preference to lack of coordination outside the non-environmental ministries and especially at the local level (Bangladesh, India and Philippines).



**Figure 14: Country-specific responses: Gaps in institutional arrangements for addressing L&D**

While respondents agreed that the lack of coordination among line ministries is an important issue, they stressed that these ministries need reliable data and means for interpretation of the data to take concerted actions. Lack of coordination appears to be a reflection of lack of understanding on what needs to be done which in turn is reflected from the lack of information to rely upon. Other respondents informed that the lack of coordination is just not a national phenomenon and that there exist gap even among international organizations engaged in climate change adaptation and mitigation. Respondents have indicated that establishing a database of L&D will enable most stakeholders to coordinate and collaborate while utilizing the data for decision making purposes. In a way, data appears to play an important and pivotal role in initiating collaboration and coordination among stakeholders.

# Conclusions

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The following conclusions emerge from the survey.

- The observations made by respondents in the survey largely corroborates with the direction that the Asia Pacific Adaptation Network (APAN) has been taking in promoting the adaptation agenda in the region by sharing the scientific and local knowledge with variety of stakeholders through organizing workshops, training programs and publications. However, there is a greater need for the network to invest in promoting case study based research for understanding underlying factors leading to loss and damage associated with climate change impacts and adaptation (L&D) and identify effective interventions that could be scaled up leading to transformative adaptation.
- The survey seems to suggest that most respondents associated with APAN tend to show relatively better knowledge and tend to prefer sharing on-the-ground information and conducting pilot research programs than those respondents not associated with APAN. This is corroborated by observations made in questions where most respondents associated with APAN showed relatively higher awareness on L&D than those not associated with APAN. These differences could probably be attributed to the capacity building and information sharing efforts by the network.
- An overarching consensus that emerges out of this survey is that capacities created at the local level can be the most effective way of addressing the L&D associated with climate change. In order for this to happen, there is a need for putting in place supporting structures at various levels and networks play a vital role in capacity building. It is evident that the national institutions in most countries from which the respondents represented in this survey doesn't have required institutional and technical capacity to understand and address L&D. For concerted action at the local level, local adaptation plan of actions could be the entry point to start addressing the L&D.
- Scientific knowledge is lacking in areas of agriculture, water resources, biodiversity and livelihoods and there is a need to enhance research and capacity building efforts in these areas. Lack of data and related limited understanding of past and current climate change impacts hinder our understanding on L&D for which strengthening research facilities and skills to project the future climate change impacts, downscaling the projections to the scale at which adaptation

happens and dissemination of information to relevant stakeholders for use in risk management approaches were suggested. The developmental state of countries represented by survey respondents doesn't appear to make much difference in terms of current scientific understanding and solutions to address the L&D. Regional and international institutions vested with necessary skills could be the source of capacity building for the national and sub-national levels.

- Among all the stakeholders, the primary role belongs to the research and academic institutions in generating needed scientific knowledge and tools that could help institutions address issues on the ground in addressing the L&D. NGOs, local communities and private sector have the role of participating in sharing and implementing the solutions while networks create enabling environment for these stakeholders to collaborate.
- Most of the current institutional systems put in place for promoting climate change adaptation and disaster risk reduction could be helpful in addressing the L&D. However, issues such as lack of coordination among different ministries and departments appear to be an issue more importantly in local governments which is a reflection of lack of knowledge and information on what needs to be done.
- Most important needs emerged out of this survey include (not in any order): tools that help in assessing and maximizing adaptation effectiveness and avoid maladaptation, access to climate information that can put governments and other institutions at the center of decision making, tailored early warning information designed to protect lives, livelihoods, agriculture and natural resources, selective application of indigenous knowledge, vulnerability assessments and hazard mapping at all levels, inculcating the habit of risk based thinking and strategizing, developing and disseminating location specific information and solutions, monitoring and recording weather data, strengthening medium and long term climate projections and addressing related uncertainties with stress on slow onset events, assessing limits to adaptation for geographical regions through risk analysis of key infrastructure and social systems, expanding the preparedness and mitigation plans beyond the disaster risk management sector based approach to other livelihood related sectors such as agriculture, water and natural resources.
- In conclusion, this survey has helped in understanding the perceptions of major stakeholders engaged in adaptation and will shape the agenda of the network in the years to come. While the survey has broadly corroborated the direction the network is taking on the subject of loss and damage associated with climate change impacts and adaptation, the network need to invest significant resources to implement research addressing the L&D and share the lessons learned.

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# Appendix: Questionnaire

## SURVEY ON THE ROLE OF APAN IN LOSS AND DAMAGE ASSOCIATED WITH CLIMATE CHANGE AND ADAPTATION

This survey aims to obtain opinions on Loss and Damage associated with climate change and adaptation (L&D) from the Asia Pacific region to consider future activities on L&D under the Asia Pacific Adaptation Network (APAN). Responses are solicited from policy makers, policy researchers and practitioners in engaged in climate change. The form seeks opinions in ranked choices to prioritize various issues and solutions where APAN can contribute. All the opinions expressed in this questionnaire will be dealt as opinions of individuals and will not be attributed to their affiliated institutions. Please fill all the questions including your background at the end of the questionnaire. **Please email the survey to [survey\\_ad@iges.or.jp](mailto:survey_ad@iges.or.jp).**

### Definition/Understanding on L&D

1. How do you think L&D should be defined? (tick one)

- All the actual and potential manifestation of impacts associated with climate change
- Residual risks when mitigation and adaptation actions are insufficient
- Losses and damages experienced after implementing mitigation and adaptation activities
- Other (Specify): \_\_\_\_\_

2. Do you think we have sufficient scientific understanding on how to address the L&D associated with the future climate change? (tick one)

- Yes  No  Cannot say

3. If the answer to the above is no, what do you think are the important bottlenecks in understanding the L&D associated with the future climate change? (tick multiple if necessary)

- Lack of sufficient modeling tools to project the future climate and impacts
- Lack of sufficient understanding on the past and current climate change impacts
- Lack of tools for downscaling the projected risks to a specific location
- Lack of means to address the uncertainty involved in climate change projections
- Others (please specify): \_\_\_\_\_
- All the above

4. In what specific area do you think we have far limited knowledge in terms of L&D due to the future climate change (and hence we must obtain greater

understanding in these areas)? (tick one)

- Water     Agriculture     Forests     Coastal areas     Urban areas  
 Poverty     Livelihoods     Biodiversity     Others (Please specify: \_\_\_\_\_)

5. At what geographical scale do you think we lack greater understanding of L&D associated with the future climate change? (tick one)

- Village     Cities     Districts     Sub-national level (e.g. states)  
 National     Regional     Global     Our need for understanding greatly differs for different aspects of impacts and hence cannot be limited to one scale

6. Keeping in view the unavoidable L&D due to climate change, what specific information needs do you see for making even effective adaptation decisions at the local level?

- Please specify: \_\_\_\_\_

7. Given the unavoidable L&D associated with climate change, rank the source from where you think we can draw lessons to move forward? (tick multiple if necessary)

- Lessons from adaptation-specific projects  
 Lessons from disaster risk management measures implemented  
 Lessons from generic adaptive management principles implemented  
 None of the above experiences are relevant for addressing L&D and hence the current global discussion on this subject  
 Others (Please specify): \_\_\_\_\_

8. Rank the single most important measure to further address the L&D? (tick one)

- Capacity building (Please specify area: \_\_\_\_\_)  
 Data and information collection and sharing  
 Financial measures such as insurance  
 Others (Please specify): \_\_\_\_\_

9. What capacities already exist to address L&D in your country? (tick multiple if necessary)

- Experience of adaptation to climate change  
 Experience of disaster risk management  
 Indigenous and traditional knowledge pertaining to climate variability  
 None of them are sufficient and we need to develop new capacities  
 Others (please specify): \_\_\_\_\_

10. What institutional arrangements exist at national level to tackle L&D? (tick multiple if necessary)

- Climate change related institutional arrangements (e.g. climate change cell)  
 Disaster risk management mechanisms  
 Others (please specify): \_\_\_\_\_

11. What is the gap at national level to tackle L&D in the context of institutional arrangement? (tick multiple if necessary)

- Lack of coordination among environment related ministries

- Lack of coordination outside of environmental ministries
- Lack of coordination with international knowledge institutions
- Lack of coordination with local governments
- Others (please specify): \_\_\_\_\_

12. Who is the most important stakeholder that could assist national governments on L&D? (tick one)

- Private sector
- NGOs
- Research institutes
- Local communities
- Others (please specify): \_\_\_\_\_

13. In your opinion, how the Asia Pacific Adaptation Network should contribute to the work on L&D in your country/region? (tick multiple if necessary)

- Sharing scientific knowledge (climate change impacts and vulnerability assessments)
- Sharing on-the-ground experiences of implementing adaptation projects
- Initiate pilot research projects on L&D
- Organize scientific conferences
- Organize training programs (please specify subjects if any): \_\_\_\_\_
- Others (please specify): \_\_\_\_\_
- All of the above

### Demographic and other background of the respondent

14. Representing country: \_\_\_\_\_ (please fill in)

15. Organizational affiliation: \_\_\_\_\_

16. Type of your organization (tick one):

- Governmental administrative body,
- Government think tank,  Independent think tank,
- Private sector think tank,  Private sector entity,
- Non-governmental developmental agency,  Donor agency
- Other: \_\_\_\_\_

17. Professional occupation (tick one):

- Researcher,
- Development worker,
- Administrative officer,
- Politician
- Other: \_\_\_\_\_

18. Professional specialization (tick one):

- Climate change adaptation (please specify the area)
- Disaster risk reduction (please specify the area)
- Social development (please specify the area)

Environmental management (please specify the area

Other: \_\_\_\_\_

19. Tick if you played any role in the activities of the Asia Pacific Adaptation Network (tick multiple if necessary)

I am one of the network node member,       Steering committee member,

Staff of APAN,       Obtained funding from APAN

Contributed to APAN publications

Attended APAN workshops/conferences

Has not played any direct role so far

Other: \_\_\_\_\_

20. How long you have been working on climate change impacts related issues:

<1 year,  1-2,  3-4,  5-6,  >7

21. Years of experience with APAN related activities:

<1 year,  1-2,  3-4,  5-6,  >7

22. Your age group:

18-30  30-40  40-50  50-60  >60

Please insert additional comments if any:

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**Thank you very much for participating in this survey! Please email this survey to [survey\\_ad@iges.or.jp](mailto:survey_ad@iges.or.jp). For more details, please contact [ad\\_survey@iges.or.jp](mailto:ad_survey@iges.or.jp)**





**Contact details:**

Adaptation Team

Natural Resources and Ecosystem Services Group

Institute for Global Environmental Strategies

Hayama, Japan

Email: [ad-info@iges.or.jp](mailto:ad-info@iges.or.jp)