

# Action Area 5 Questionnaire

Summary of information received from 43 non-Annex I Parties<sup>1</sup>

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In implementing Action Area 5 of its initial two-year workplan, the Executive Committee of the Warsaw International Mechanism (Executive Committee) invited relevant national entities, through a questionnaire, to describe the systems and/or processes currently in place for conducting and coordinating analyses of climate risk and loss and damage associated with the adverse effects of climate change, taking into account extreme and slow onset events.

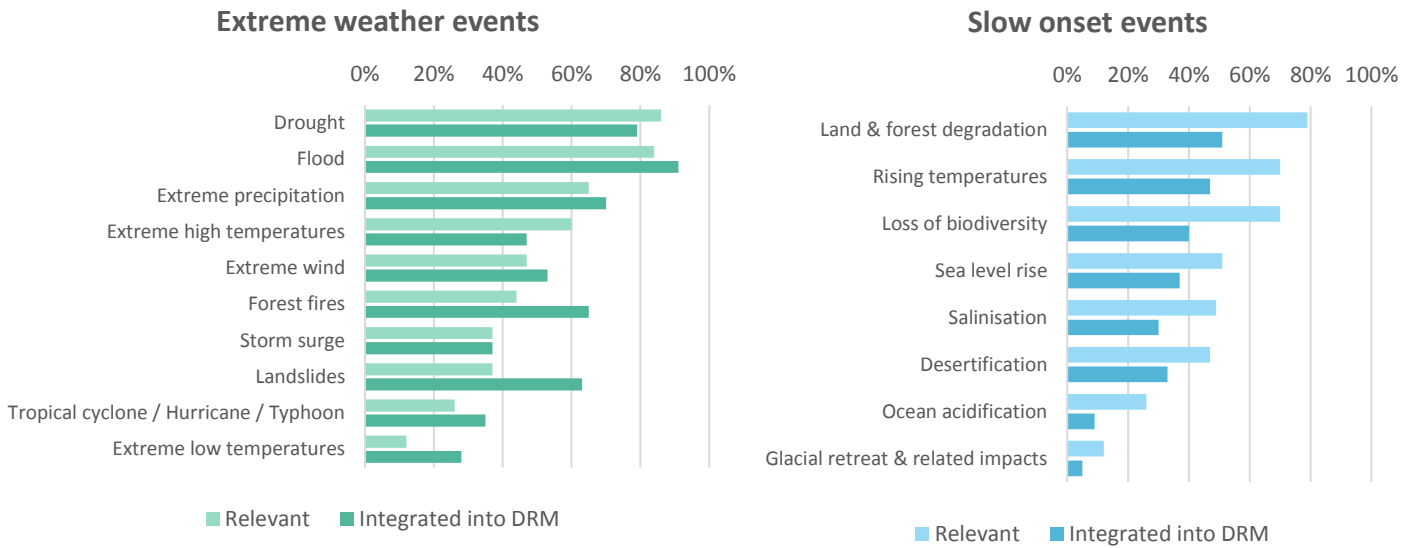
The questionnaire was sent to the UNFCCC focal points of all the non-Annex I Parties on two occasions: 2 August 2016 and 4 April 2017. This paper summarizes the 43 responses received as at 16 June 2017 (*see Annex 1 for the list of respondents*). Where possible qualitative information is illustrated with the help of graphs.

The information provided will serve as an input into the work of the Executive Committee, in particular the preparation of a paper, mandated under activity (c), Action Area 5 of its initial two-year workplan, with a view to consolidating experiences and lessons learned and identifying priority areas for increasing capacity and investment.

<sup>1</sup> UNFCCC secretariat, Loss and Damage team, 27 June 2017.

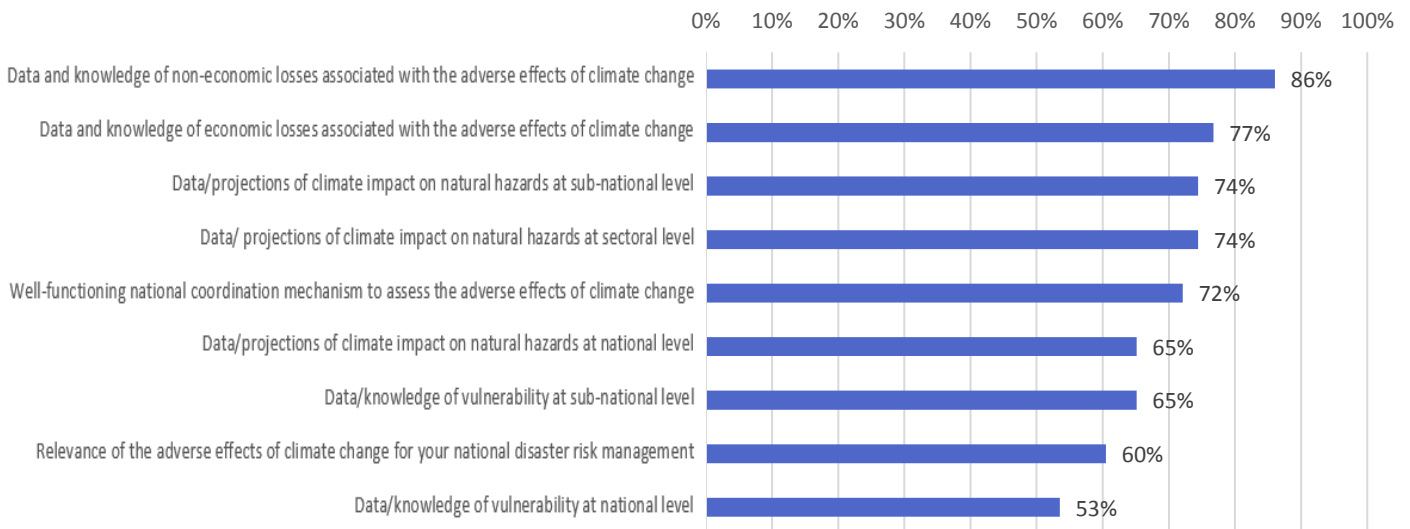
## 1. Extreme weather events & slow onset events

The graphs below illustrate the relevance of **extreme weather events** and **slow onset events** to countries and the degree to which each of these is integrated into countries' disaster risk management.



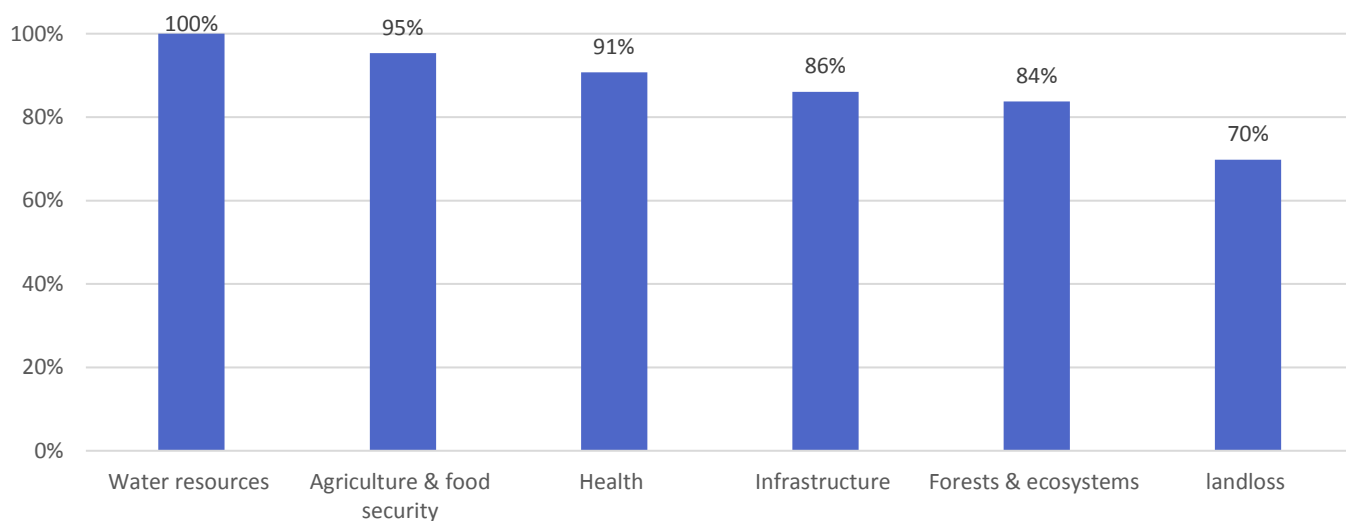
## 2. Addressing climate change aspects

The graph shows the extent to which countries are not able to adequately address or implement those aspects.



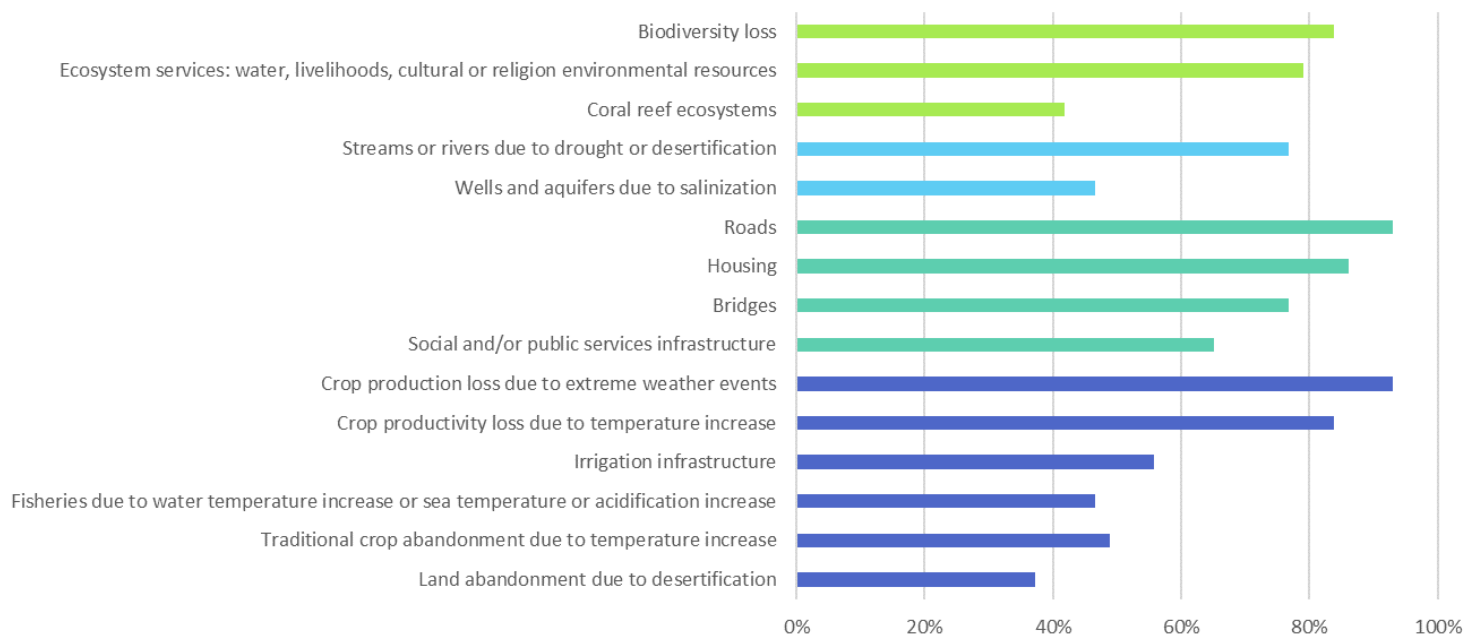
### 3. Key development sectors

The graph below illustrates the key development resources or sectors indicated by countries to be at higher risk or have been most impacted or adversely affected by extreme and/or slow onset events.



The **most important elements from the following four key development** sectors that countries consider might have been or have been damaged or lost in relation to extreme and slow onset events are as follows:

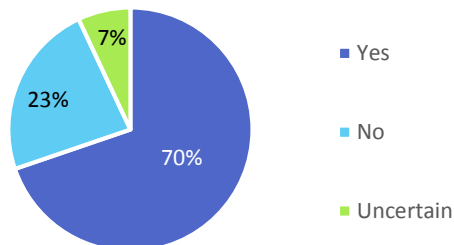
#### Forests & ecosystems – Water resources – Infrastructure – Agriculture & food security



**Annex 2** contains details pertaining to each sector and the most important elements from each sector that may have been damaged or have been lost in relation to extreme and/or slow onset events.

## 4. Climate risk analysis

The graph below illustrates the proportion of countries, among the 43 non-Annex I Parties that conduct climate risk analysis, which responded to the questionnaire.



From the countries that conduct climate risk analysis:

- ✓ Almost all included extreme weather events and slow onset events associated with the adverse effects of climate change in their climate risk analysis
- ✓ 50% undertake climate risk analysis at a subnational level
- ✓ 40% conduct climate risk analysis periodically (either over a period of 1-5 years or over a period of 6-10 years)

Hazards/Thematic areas considered in their climate risk analysis:

- ✓ Extreme weather events (73%)
- ✓ Slow onset events (50%)
- ✓ Displacement and migration (33%)
- ✓ Non-economic losses (30%)

Information considered in their climate risk analysis:

- ✓ Climate scenarios (80%)
- ✓ Scientific information (77%)
- ✓ Hydro-meteorological information (80%)
- ✓ Climate services (50%)

**Key challenges** reported in conducting climate risk analysis include:

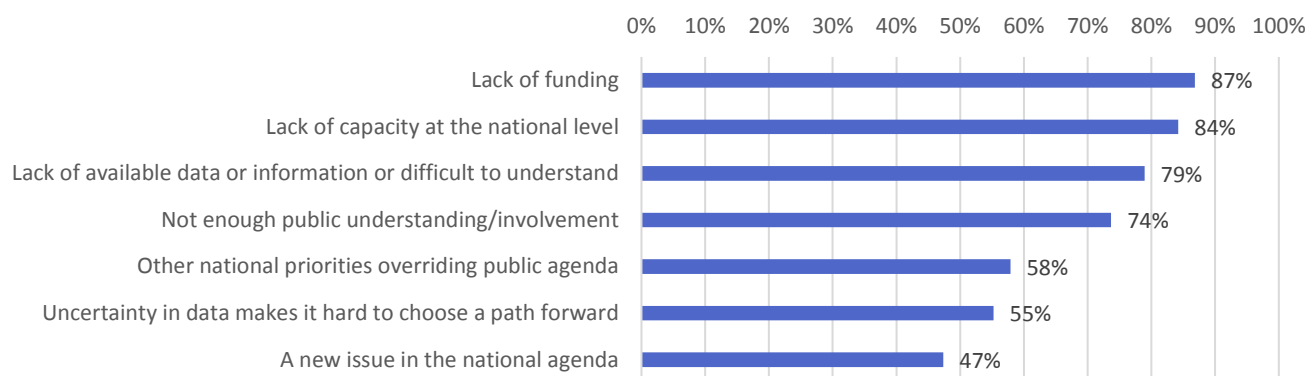
- **Data** comparability and consistency and lack of linkage to systematic climate observation
- **Access to quantitative and long-term data**, relevant to identification and prioritization of climate risk analysis (existing data is not comprehensive because analysis was done on a project basis or only focused only on certain extreme events)
- Access to **skilled personnel** (esp. with skills in data collection and modelling)
- **Lack of a common understanding** of slow onset events
- **Lack of institutional frameworks** and commitment amongst key stakeholders on issues related to slow onset events
- **Lack of baselines, capacities and resources** to monitor, analyze and quantify desertification, acidification and its impacts on fisheries, loss of productivity, biodiversity loss, temperature increase impacts in livestock and other natural ecosystems and other non-economic losses

Details of the **types of data** reported to be used in conducting their climate risk analysis:

- **Climate scenarios** (e.g. regional; downscaled global climate models; IPCC representative Concentration Pathways 8.5 and 4.5; regional and subnational climate models; scenarios modelled for UNFCCC National Communications)
- **Scientific information** (e.g. IPCC; information generated by the national meteorological agencies; climate risk conceptual frameworks; academic journals)
- **Hydro-meteorological data** (e.g. rainfall/temperature data; information generated by national meteorological agencies; historic hydro-meteorological data)
- **Climate services** (e.g. numerical weather prediction; weather and climate forecasts; scientific information generated by national meteorological agencies)
- **Others** include expert opinions in climate risk analysis to compensate for deficiencies in data and information

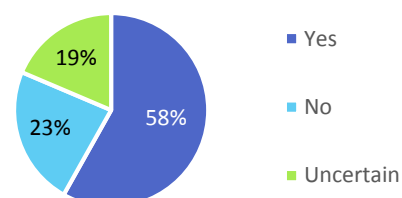
## 5. Challenges in integrating long-term changes

Of the 43 non-Annex I Parties that responded, 88% indicate that they face challenges in integrating long-term changes from extreme weather events and slow onset events in their country's climate risks analysis. The graph below indicates some of the main challenges.



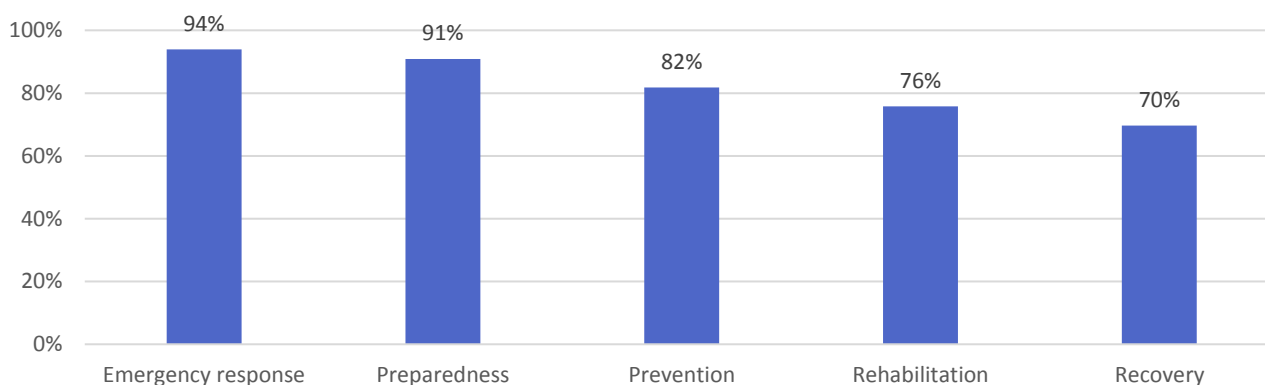
## 6. Vulnerable groups

The graph to the right indicates the **proportion of countries whose national risk analysis includes consideration of how vulnerable groups are exposed to the adverse effects of climate change** (e.g. because of geography, socioeconomic status, livelihoods, gender, age, indigenous or minority status or disability).

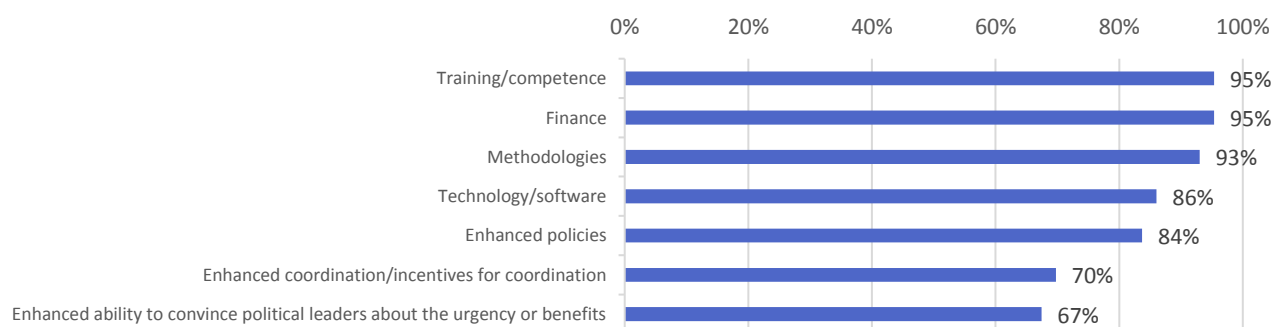


## 7. Comprehensive national disaster risk management process/plan/strategy

Of the 43 non-Annex I Parties that responded, 77% reported to have comprehensive national disaster risk management process/plan/strategy developed. The majority of these (77%) have integrated climate risk analysis into it. The graph below illustrates key focus areas of the risk management process/plan/strategy. In addition to these, countries indicated: resilience building; mitigation; monitoring; early warning; risk communication; risk transfer.



The next graph shows key requirements, as reported by countries, to **better integrate considerations** of the adverse effects of climate change into national risk management.

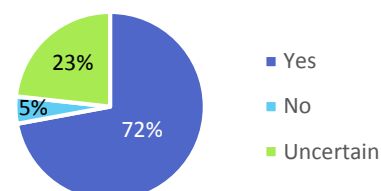


## 8. Information gaps

**Key needs** countries identify include:

- **Research, data and/or modelling** (e.g. downscaled models to enable projection of climate scenarios and likely impacts on climate sensitive sectors, vulnerability assessments, cost benefit analyses for adaptation measures, baseline analyses, economic models for GHG emissions, climate impacts, sea level rise mapping at the sub-national level, etc.)
- **Measurement and monitoring systems** (e.g. more hydro-meteorological stations, tools for measuring climatic characteristics in the field, better monitoring systems using satellite, radar and other technologies, early warnings systems for multiple risks, systems to monitor impacts in climate sensitive sectors, etc.)
- **Technical training** (e.g. of the relevant stakeholders to increase their understanding of the risk management technologies, etc.)

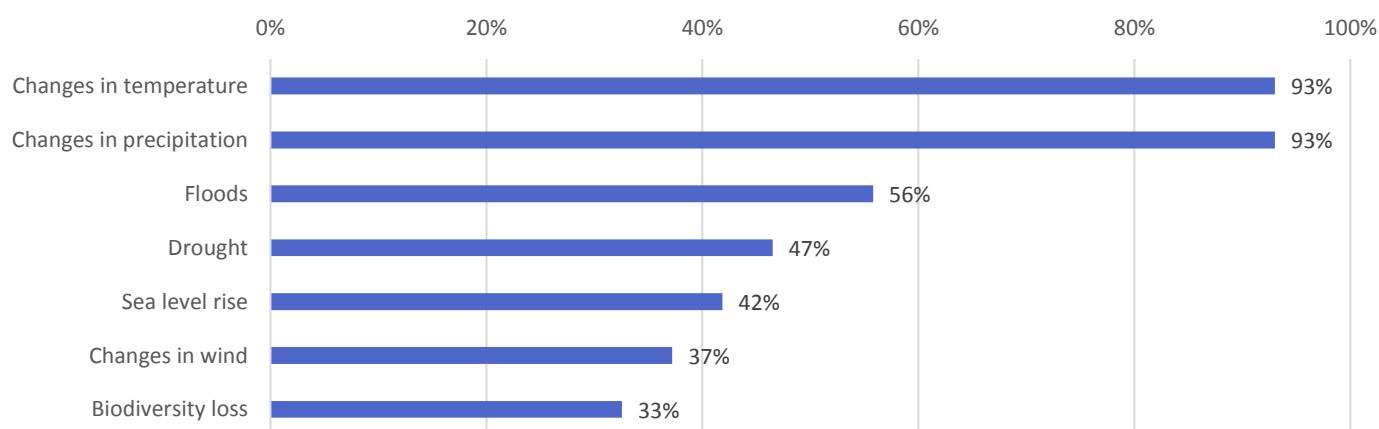
This graph indicates the proportion of countries that indicated that there are **information gaps or problems** with the climate service provision.



**Key challenges** countries reported include:

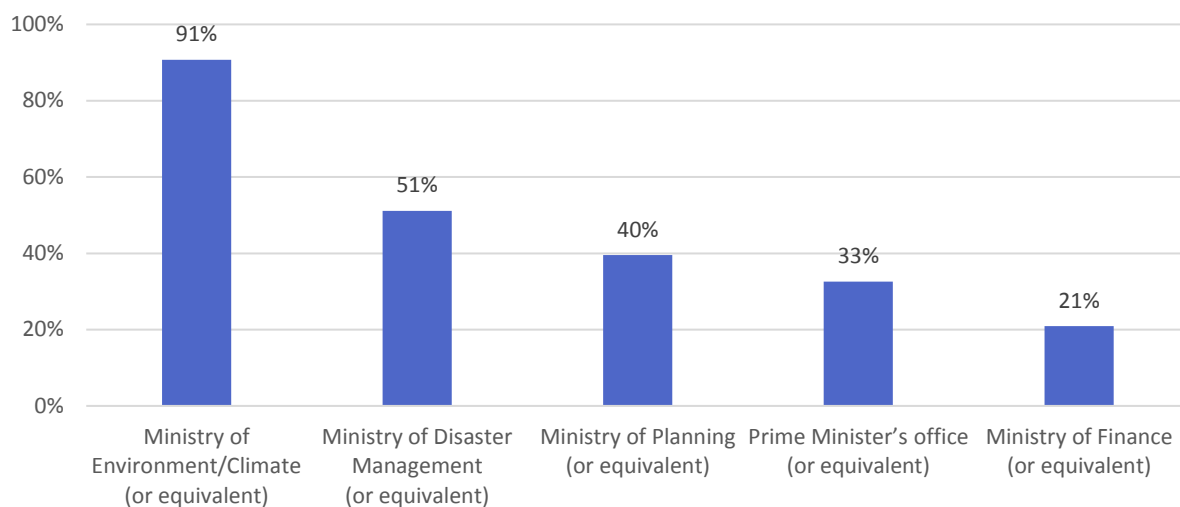
- **Insufficient forecasting and data coverage** (e.g. weather services do not have comprehensive coverage because weather stations are too widely distributed geographically, leading to weather and climate data being of low resolution, and so unable to produce accurate information for some sub-district levels, and unable to provide localized area forecast and quantitative forecast; insufficient spatial and temporal coverage of data)
- **Insufficient financial, technical and human resources** (e.g. insufficient budget and investment in climate service provision and equipment; understaffed in climate service institutions; insufficient staff with required knowledge and skills for example in Geographical Information System (GIS) to undertake geospatial monitoring and mapping for sea level rise, storm surges and other climate related extreme events; limited staffing and capacity in respect of specific climate services in countries; capacity-building and technology transfer are needed to create comprehensive climate service provision for key sectors)
- **Insufficient institutional frameworks** (e.g. no structured framework or appropriate institutional arrangement to integrate climate data into policy-making, poor communication channels, insufficient coordination among national, subnational government agencies, research institutes and other stakeholders, low awareness and knowledge about available technologies to adopt climate change)
- **Data not systematic or incomplete** (e.g. data collection and assessment of economic losses are done on case by case and not systemic manner; gaps exist in diffusion of information; data is not centralized, and if it exists, it cannot be found and used when needed)

The graph below indicates the extent to which countries have **science-based national climate impact projections** for certain aspects. In addition to those aspects, countries also indicated: saline intrusion of wells; cyclones; dust storms; landslides; super storm/sea surges.



## 9. Key public authorities/institutions

The graph below illustrates the key public authorities/institutions (or their equivalents) countries indicated as responsible for assessing overall climate risk and vulnerability.

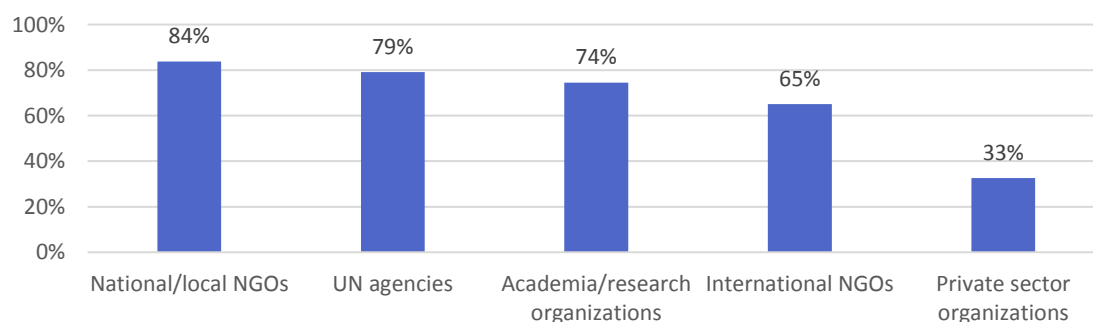


In addition to the ministries mentioned above, the key institutions countries draw scientific and technical information on the adverse effects of climate change for the purpose of development planning, policy advice and disaster risk management, include:

- **Meteorological and hydro-meteorological institutes or offices** (e.g. for climate data, scientific climate projections, sea level rise data and seismic information)
- **Scientific and technical research institutions** (e.g. for research on climate, scientific climate projections, water and atmosphere, geography, industry, space, and agriculture)
- **National universities** (e.g. for science research)
- **National emergency system** (e.g. for data on impacts of natural disasters)
- **Ministries/departments of agriculture and/or rural development** (e.g. for agriculture sector data, and primarily damage assessments)
- **Ministries/departments of fisheries** (e.g. for fisheries data and resource assessments for coastal and marine ecosystems including mangrove, beach, reef)
- **Ministries/departments of forestry** (e.g. for forest data, and woodlands and watershed assessments)
- **Ministries/departments of tourism** (e.g. for data on damage to tourism)
- **NGOs** (e.g. for sector and area specific data)
- **Ministries/departments of civil defence/protection** (e.g. for risk management data)
- **Ministries/departments for health** (e.g. for health data)
- **Ministries/departments of energy** (e.g. for data on the vulnerability of hydroelectric power dams)
- **National statistical agencies** (e.g. to verify data)
- **Utilities or water authorities** (e.g. for water resources assessment and management)

## 10. Key intergovernmental and non-governmental organizations

The graph below illustrates the key intergovernmental and/or non-governmental organizations that contribute to addressing the adverse effects of climate change. **Annex 3** contains a full list of organizations indicated by the 43 non-Annex I Parties



## 11. Mechanisms for coordination

Countries reported that the following institutional coordination mechanisms are in place to bring together relevant stakeholders to assess and address climate risks:

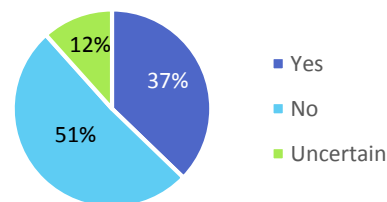
- **Multi-sectoral bodies** (e.g. comprising members of government, NGOs, private sector, etc.)
- **Climate change commissions/committees/councils /advisory boards** (e.g. steering/ technical; led by a prime minister or environmental ministers, or members from all relevant ministries, etc.)
- **Interagency coordination mechanism** (e.g. task force, working group, etc. to facilitate coordination of actions on climate change between ministries and agencies)
- **Regular meetings** coordinated by a relevant ministry (e.g. to bring together stakeholders from hydrometeorology and monitoring services, and science institutions, etc.)
- **National platforms** coordinated by a high state authority (e.g. by president, to bring together stakeholders from NGOs, science institutions, etc.)
- **Agreement between key ministries** (e.g. ministries for climate and disaster prevention)

## 12. National legislation

All existing legislation enables links between dealing with the adverse effects of climate change and risk management (including disaster risk management). 77% of respondents have specific disaster risk management legislation.

Some countries that do not have legislation or are uncertain, have other national or sectoral policies and/or plans (e.g. national adaptation plan, land use and infrastructure, agriculture, water, health) that enable links between dealing with the adverse effects of climate change and risk management (including disaster risk management).

*This graph shows the proportion of countries that have **legislation related to the adverse effects of climate change, including slow onset events.***

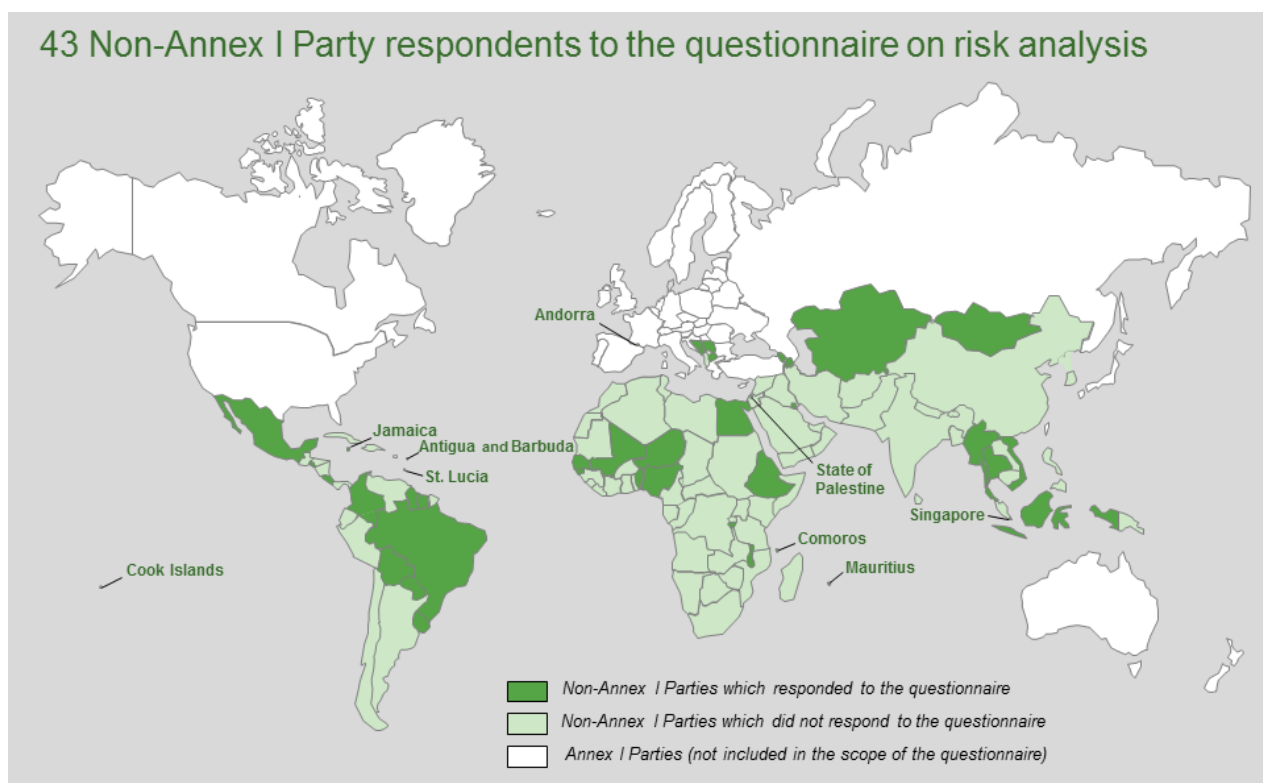




## Annexes

### Annex 1: Respondents to the questionnaire

- |                           |                   |   |
|---------------------------|-------------------|---|
| 1. Andorra                | 16. Ethiopia      | 31. Niger                                     |
| 2. Antigua and Barbuda    | 17. Georgia       | 32. Nigeria                                   |
| 3. Armenia                | 18. Guinea-Bissau | 33. State of Palestine                        |
| 4. Azerbaijan             | 19. Guyana        | 34. Paraguay                                  |
| 5. Benin                  | 20. Indonesia     | 35. Senegal                                   |
| 6. Bolivia                | 21. Jamaica       | 36. Serbia                                    |
| 7. Bosnia and Herzegovina | 22. Kazakhstan    | 37. St. Lucia                                 |
| 8. Brazil                 | 23. Kuwait        | 38. Singapore                                 |
| 9. Burundi                | 24. Malawi        | 39. Suriname                                  |
| 10. Colombia              | 25. Mali          | 40. Thailand                                  |
| 11. Comoros               | 26. Mauritius     | 41. The former Yugoslav Republic of Macedonia |
| 12. Cook Islands          | 27. Mexico        | 42. Uruguay                                   |
| 13. Costa Rica            | 28. Mongolia      | 43. Viet Nam                                  |
| 14. Egypt                 | 29. Montenegro    |   |
| 15. El Salvador           | 30. Myanmar       |   |



## Annex 2: Details regarding key development sectors that may have been damaged or have been lost in relation to extreme and/or slow onset events

### WATER RESOURCES

#### A. General comments

- Climate events lead to increased water insecurity by increasing water stress and scarcity, as well as impacting water quality
- Climate change leads to shortened rainy seasons, declining sources of surface and ground water, and a decline in clean and potable water
- There is increasing demand for water resources as a result of population dynamics
- Climate events impacting water resources lead to:
  - Less water for irrigation, could lead to decreased agricultural productivity
  - High evaporation leads to the drying up of lakes, and rivers
  - Dams can dry up or do not reach the minimum storage volumes for inland river navigation
  - Potential increase in energy insecurity and declines in power generation due to changes in river runoff
  - Potential damages to population and biodiversity due to high or low river levels from floods and drought
  - Significant impacts to industries reliant on water resources (e.g. fish farming, mining, oil and gas exploration, cooling of power plants, etc.)
  - Algal blooms and an increase in waterborne diseases due to increased temperature of water resources
  - Change in runoff levels which may cause water distribution problems and deficit of water in associated dams, which in turn would impact hydro-energy generation

#### B. Impacts related to specific climate events

- **Drought** (including changes in drought frequency and intensity) leads to:
  - Economic losses in yachting sector
  - Failure of pipe infrastructure
  - Decreasing amounts of available groundwater and lower groundwater recharge
  - Reduced natural flow of rivers
  - Increased pressure on the water sector to meet increasing demands of the agricultural, tourism, industrial and residential sectors
  - Severe impact on agricultural production and food security. Drought allows build-up of solid waste and sediments that can block storm-water drains, impeding the flow of water from the impacted area and polluting a wider area
  - Water scarcity that affects the hydrological water cycle which leads to soil salinization and loss of aquifers; and results in increased reliance on desalination which translates into increased costs of living and production
  - Increase demand for water and increase the amount of water discharged from aquifers
- **Floods** (changes in flood frequency and intensity) lead to:
  - Decreased amounts of available groundwater and lower groundwater recharge
  - Damage to water infrastructure (potable water, sanitation, irrigation, water supply)
  - Pollution of water resources and the environment, resulting in little or no access to safe and potable water and sanitation
  - Food insecurity
  - Pollution and salinization of wells, streams and aquifers
- **Saltwater intrusion**
  - Will be exacerbated by sea-level rise
  - Puts water supply at risk as it can lead to damage to reservoirs; saline intrusion into fresh water wells and reservoirs effects the quality of groundwater in the coastal aquifers
- **Melting of glaciers**
  - Threaten availability of water resources, irrigation system, food security and hydropower energy systems
  - Impacts the water cycle, affecting the rate of snowmelt and groundwater recharge

- **Sea level rise**
  - Population is at risk of exposure to flooding in coastal zones, including industrial settlements, tourism-related infrastructure and facilities, and crops
  - Water sources will be vulnerable to sea water intrusion

## AGRICULTURE

### A. General comments

- Agriculture plays not only an **economic role** (significant proportion of GDP, and working population) but a significant social role in some countries. Climate change events lead to:
  - Damage to farm buildings, water scarcity (e.g. from changes in rainfall timing and quantity, drought or floods, the drying of wells, etc.), pest outbreak, increase in harmful insects and rodents, loss of grazing area, soil erosion and increased leaching of plant nutrients and fertilizers to groundwater, which in turn can lead to major economic losses, such as from:
    - Jeopardized quantity and quality of agricultural production
    - Damage to, reduction in production/ yield of or complete failure of crops (such as grapes; stone fruits; vegetables; field crops; irrigated vegetables, etc.), for rain fed agriculture in particular, higher production costs
    - Loss of livestock, which is substantial for some countries where livestock makes up more than 50-60% of the agriculture sector; production of meat and milk affected
    - As a result of these impacts, there can be lower incomes in vulnerable areas, where smallholder farmers and poor consumers are particularly affected; increased food price (domestic as well as imported) and increased numbers of people who are food insecure

### B. Impacts related to specific climate events

- **Rise in temperatures** leads to:
  - Higher rates of evaporation
  - Reduced soil moisture increases the demand for water
  - Shift in agricultural zones
  - Heat stress
  - Physiological effects on certain crops
  - Increases mortality in poultry
  - Incidence of agricultural pests and crop diseases
  - Reduced grazing area, and so damage to livestock
- **Drought** (including changes in drought frequency and intensity) leads to:
  - Damage to reservoirs
  - Loss of livestock due to decreased potable water
  - Soil erosion
  - Increased need for irrigation
- **Floods** (changes in flood frequency **and** intensity) lead to, inter alia, salinization of agriculture land and affect crop productivity and agricultural production
- **Rise in ocean temperature**, also related to drought **and** desertification leads to the loss of fisheries.
- **Sea level rise** leads to:
  - Salinization of water used for irrigation in coastal zones
  - Coastal flooding and loss of agricultural land around the coast
- **Irregularity of the rainy season** leads to crop losses, especially where crops depend on regular rain.

## FORESTS & ECOSYSTEMS

### A. General comments

- Forested nations are especially vulnerable to events such as forest fires and forest die off.
- Climate change events lead to: forest ecosystems significantly shrinking; tree death or extinction; changes in forest and tree species composition; loss of genetic diversity and economic value of forests; loss of biodiversity ; declines in native fauna and flora (including endemic birds); changes to biological cycles of native fauna and flora due to scarcity of natural foods; reduced breeding success and productivity of certain bird species; habitat modification, degradation and loss; shift in species ranges, further challenged by species' limited abilities to move between terrestrial ecosystems; changes in the distribution and composition of ecosystems; creation of vacant niches, which in turn may increase invasion and proliferation of invasive species; system wide impacts due to changes in micro-systems
- Fisheries are affected due to ocean acidification, loss of coral reefs and fish migration

### B. Impacts related to specific climate events

- **Drought** (including changes in drought frequency and intensity) leads to:
  - Smoke and air pollution, affecting the health of vulnerable people
  - Increased the risk of the fire spreading, also due to stronger winds
  - Aggravation of forest fires
  - Spreading of forest pest (e.g. bark beetle plague)
- **Rise in temperatures** leads to:
  - Reduction in vulnerable ecosystems like forest-steppe, mountain taiga, permafrost and moorlands
  - Reduction of snow-capped areas and moorlands and associated environmental services.
  - An increase in the median temperature of the sea may affect corals which would influence biodiversity and fishing resources
- **Tropical cyclones** affect hatchability and chick survival of certain bird species
- **Coastal ecosystems** (e.g. coral reefs, beaches, mangroves, etc.) are particularly impacted, e.g. because of the declining reef health and declining numbers of fish species which are important for diet and increased temperature leads to episodes of coral bleaching
- **Floods** affect vulnerable ecosystems (e.g. scrublands)

## INFRASTRUCTURE

### A. General comments

- Negative impact on people's mobility
- Affecting social services (health care, education institutions, etc.)
- Disruption to economic chains of production
- Reconstruction of infrastructure affected by extreme events is resource-intensive and poses a significant burden on governments
- There is need to create or update building codes

### B. Impacts related to specific climate events

- **Floods** (caused by extreme rainfall, storms and cyclones) lead to:
  - High negative impact on public and private infrastructure such as houses, roads, bridges, drainage systems, pumping stations, dams, health centers and schools, telecommunication infrastructure, water supply infrastructure and electricity generation systems.
  - Stretched the government has had to reallocate funds to ensure these are maintained and operational
  - Damage to irrigation systems
- **Landslides** (caused by extreme rainfall and flooding) lead to:
  - Damages to properties, transportation infrastructure, water supply infrastructure, as well as dams and dykes
  - Economic losses due to traffic disruption
- **Avalanches** (caused by more intense precipitation events) damage roads and tourism infrastructure
- **Sea level rise and storm surges** damage/destroy coastal infrastructure and houses

## HEALTH

### *A. General comments*

- Extreme and slow onset events cause diseases to spread and emerge in untypical regions
- In addition to the direct health risks, indirect risks exist (e.g. drought leads to less water for sanitation; increased marine disturbances are likely to contribute to intoxication; floods affect health services as a result of the damages to infrastructure, equipment, supply)

### *B. Impacts related to specific climate events*

- **Droughts, flooding and rising temperatures** lead to:
  - Emergence of new diseases (e.g. Chikungunya virus, Zika virus)
  - Increase in the likelihood for transmission of air-borne, water-borne, and food-borne disease (observed increased incidence of malaria, typhoid, meningitis and measles)
  - Exacerbate the effects of the already high prevalence of non-communicable diseases leading to increased rate of cardiovascular diseases, respiratory diseases, strokes, renal diseases
  - Increased potential for heat stroke and heat wave stress
  - Chronic diseases (e.g. diabetes, ischemic heart disease) magnify the risk of death or severe illness

### **Annex 3: Key intergovernmental and non-governmental organizations<sup>2</sup> that contribute to addressing the adverse effects of climate change, as indicated in the 43 responses to the questionnaire,**

#### **UN agencies**

FAO (Food and Agriculture Organization); IFAD (International Fund for Agricultural Development); IOM (International Organization for Migration); IPCC (Intergovernmental Panel on Climate Change); OCHA (Office for the Coordination of Humanitarian Affairs); UN Women; UNDP (UN Development Programme); UNEA (UN Environment Assembly); UNECA (UN Economic Commission for Africa); UNECLAC (UN Economic Commission for Latin America and the Caribbean); UNEP (UN Environment Programme); UNESCO (UN Educational, Scientific and Cultural Organization); UNFCCC (UN Framework Convention on Climate Change); UNHABITAT; UNICEF (UN Children's Fund); UNIDO (UN Industrial Development Organization); UNISDR (UN Office for Disaster Risk Reduction); UNITAR (UN Institute for Training and Research); UNOOSA (UN Office for Outer Space Affairs); UNPF (UN Population Fund); UN-REDD Programme; WB (World Bank); WFP (World Food Programme); WHO (World Health Organization); WMO (World Meteorological Organization).

#### **International NGOs**

CARE International; Cooperazione Internazionale; COSUDE (Agencia Suiza para el Desarrollo y la Cooperación); German Cooperation; GVC (Gruppo di Volontariato Civile); Handicap International; Help Age International; Helvetas Swiss Intercooperation; ICCO (International Cocoa Organization); International Union for Conservation of Nature; Italian Cooperation; KOICA (Korea International Cooperation Agency); Oxfam; Plan International; Practical Action; Protos; Red Cross; Save the Children; SNV (Netherlands Development Organisation); Spanish Cooperation; The Asia Foundation; Tree Project; Welt Hunger Life; Wetlands International; World Vision; WWF (World Wide Fund).

#### **National/local NGOs**

Action for Development; Amerindian Peoples Association; Arab Network for Environment & Development; Association Burundaise pour la protection de la Nature; Association pou le Developpement Durable; Bolivian Red Cross; Brazilian Forum for Sustainable Development; Caucasus Environmental NGO Network; Centro de Promoción de Tecnologías Sostenibles; Civil society platform on climate change Niger; CREDEL Benin; ENDA Senegal; Environmental Awareness Group; Environmental Foundation of Jamaica; Environmental Protection and Conservation Organisation; Fundación Moisés Bertoni; Fundación para el Desarrollo Participativo Comunitario; Gaia Pacha Foundation; Gilber Agriculture Rural Development Centre; Global Environment Facility Small Grants Programme National Council; Guyana Organisation of Indigenous Peoples; Guyra Paraguay; HuMa (Association for Community and Ecology-Based Law Reform); HUNDEE Oromo Grassroots Development Initiative; IDID Benin; Imazon; Indonesian Forum for the Environment; Instituto de Estudios Avanzados en Desarrollo; Inter-Governmental Ministry of Environment and Water; Kuwait Environment Protection Society; Liga de Defensa del Medio Ambiente; MaliFolk Center; Mauritius Council of Social Service; Mauritius Marine Conservation Society; Mauritius National Women Council; Mauritius National Youth Council; Mauritius Wildlife Foundation; Milieukontakt Macedonia; Myanmar Red Cross Society; National Amerindian Development Fund; National Service of Meteorology and Hydrology; PIKUL; Plan Paraguay; Plurinational Authority of the Mother Earth; Raks Thai Foundation; Reef Conservation Mauritius; Regional Pastoral Livelihood Resilience Project; Remisia; Saint Lucia National Trust; Secrétariat de Concertation des ONG nationales du Mali; SIDS Youth AIMS Hub; Social Pastoral Caritas Boliviana; Sumaj Huasi Foundation; Sustainable Water; Thailand Environment Institute Foundation; Te Ipukarae Society; The Amerindian Action Movement of Guyana; The Indonesian Biodiversity Foundation; The Nature Conservancy; Wetland; Women Support Association; WWF Indonesia; Yayasan Terumbu Karang Indonesia.

#### **Academia/research organizations**

Anton de Kom University of Suriname; Belgrade University; Bolivian San Pablo Catholic University; Caribbean Agricultural Research and Development Institute; Caribbean Institute for Meteorology and Hydrology; Chulalongkorn University; Climate and Development Knowledge Network; Chancellor College; Commonwealth Scientific and Industrial Research Organisation; Comoros University; l'Ecole Nationale d'Ingénieurs Abderhame Baba Touré; Faculties for civil engineering; Faculties of sciences; Federal University of Sao Paulo; Federal University Rio de Janeiro; Federal University Santa Catarina; Food, Agricultural Research and Extension Institute; Gabriel Rene Moreno University; Gaston Berger University; Global Research Alliance on Agricultural Greenhouse Gases; Higher University of San Andres; Institutes für Energiewirtschaft und Rationelle Energieanwendung; Institute for Agriculture; Institute Geology; Institute of Botany; Institute of Geography of the Republic of Kazakhstan; Institute of Zoology; International Research Institute for Climate and Society; Joint Research Centre; Kasetsart University; Kuwait Foundation for the Advancement of Science; Kuwait Institute for Scientific Research; Kuwait University; Lilongwe University of Agriculture and Natural Resources; Lembaga Ilmu Pengetahuan Indonesia; Macedonian Academy of Sciences and Arts; Malawi University of Science and Technology; Malawi University of Science and Technology; Mauritius Cane Industry Authority; Mauritius Oceanography Institute; Mauritius Research Council; Mechanical Engineering and agricultural faculties; Mongolia National Agency for Meteorology and Environmental Monitoring; Myanmar Information Management Unit; Mzuzu University; National Amazon Research Institute; National Space Research Agency; National Institute of Water and

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<sup>2</sup> Names of organizations are listed in an alphabetical order.

Atmospheric Research; Northern Caribbean University; Novi Sad University; Open University; PROCISUR cooperative research programme; NOAA/NWS Storm Prediction Center; Secretariat of the Pacific Regional Environment Programme; Thammasat University; The Polytechnic Malawi; Universite des Mascareignes; University of Abomey Calavi; University of Dakar; University of Mauritius; University of Parakou; University of San Simón; University of Technology Jamaica; University of Technology Mauritius; University of the Republic Uruguay; University of the South Pacific; University of the West Indies.

#### **Private sector organizations**

Aerowatt; ASTRA; Entrepreneurial Salvadoran Council for Sustainable Development (CEDES); Environmental Solutions Ltd; Ethiopian Chamber of Commerce; Joint Economic Council; Mauritius Chamber of Agriculture; Mauritius Chamber of Commerce and Industry; Niger Chamber of Commerce and Industry; Omnicane Management and Consultancy Limited; PERTAMINA; Press Corporation Limited; Saint Lucia Electricity Services Company (LUCELEC); SARACO; Suzlon Padgreen Co Ltd; The Private Sector Organization of Jamaica; Tobacco Control Commission.

#### **Other (bilateral agencies, funds, IGOs, etc.)**

AECID; AHA Center; Asian Development Bank; Caribbean Catastrophe Risk Insurance Facility; Caribbean Community Climate Change Centre; Caribbean Disaster Emergency Management Agency; CARICOM (Caribbean Community); Catholic Development Commission; Central American Integration System; Center for Environmental Policy and Advocacy; Center for Relief and Civil Protection; Civil Society Network on Climate Danish International Development Agency; Convenio Marco del Cuenca del Plata; Department for International Development; Deutsche Gesellschaft für Internationale Zusammenarbeit; Development Bank of Latin America; Euroclima; Evangelical Association of Malawi; FONTAGRO (Regional Fund for Agricultural Technologies); French Development Agency; Green Climate Fund; Global Environment Facility; Inter-American Development Bank; Inter-American Institute for Global Change Research; Irish AID; Japan International Cooperation Agency; Kreditanstalt für Wiederaufbau (KfW); Lem Ethiopia; Organization of American States; Organization of Eastern Caribbean States; Population Health and Environment; The Regional Environmental Center for Central and Eastern Europe; Regional Organization for the Protection of the Marine Environment; Saint Lucia Chapter of Caribbean Youth Environment Network (CYEN); Swedish International Development Cooperation Agency; the Global Green Growth Institute; United States Agency for International Development; Inter-American Institute for Agriculture; DIPECHO (Disaster Preparedness European Civil Protection and Humanitarian Aid Operations).

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