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AN INTRODUCTION TO SOME PROBLEMS RELATING TO FINANCIAL AND TECHNICAL SUPPORT FOR THE PREPARATION OF NATIONAL COMMUNICATIONS IN SOME COUNTRIES OF THE ASIA-PACIFIC REGION

Working paper

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I. INTRODUCTION

1. In pursuance of Articles 4.1 and 12.1 of the United Nations Framework Convention on Climate Change (UNFCCC), all Parties to the Convention are obliged to communicate information to the Conference of the Parties (COP). This provision includes Parties that are not listed in Annex I to the Convention, referred to below as Parties. Article 12.5 specifies that each non-Annex I Party shall make its initial communication within three years of entry into force of the Convention for that Party, or of the availability of financial resources, in accordance with Article 4.3. Parties that are least developed countries may make their initial communications at their discretion.

2. This paper covers the information provided by 14 Parties (COK, FSM, IDN, JOR, KIR, KOR, LBN, MYS, NRU, PHL, SGP, TUV, VUT, WSM) that have submitted their initial communications to the UNFCCC secretariat as of 1 October 2000.

3. All reporting Parties provided information on financial and technological constraints associated with the implementation of various aspects of the Convention. Parties made references to the needs and constraints relating to human resources development, institutional and infrastructural capacity-building, access to and adequacy of methodologies and the promotion of information sharing and networking. Other needs include the lack of specific capacities to prepare greenhouse gas inventories, assessments of impacts and vulnerability to climate change, and identification and implementation of measures for addressing climate change and facilitating adequate adaptation to the adverse impacts of climate change. Others relate to more general capacities to prepare national plans and report on other relevant information related to the implementation of the Convention.

4. The level of detail provided by each reporting Party in respect of their financial and technological needs varied considerably. Technological and financial needs were most often presented together.

5. In accordance with Article 12.4 of the Convention and paragraph 17 of the UNFCCC guidelines, some Parties (FSM, IDN, JOR, KIR, LBN, VUT) included project proposals for funding to abate GHG emissions.

II. CROSS-CUTTING ISSUES

6. Most of the Parties acknowledged the importance of the financial and technical assistance received from the Global Environment Facility and various bilateral programmes,[1] many of them indicated the need for further financial and technical assistance to improve and maintain national capacity to implement the Convention and prepare and submit national communications. General needs identified can be summarized as follows:

(a) Strengthening of national institutional framework (climate change committees, technical and/or expert teams, etc.) for undertaking tasks relating to the implementation of the Convention (LBN, NRU, MYS, WSM);

[1] National communications made references to assistance received from the GEF through its implementing agencies (United Nations Environmental Programme, United Nations Development Programme and World Bank). Many also referred to assistance from bilateral programmes such as the United States Country Studies Programme, and the Netherlands and German cooperation agencies.

(b) Enhancing national capacity for policy formulation and planning (FSM, IDN, JOR, LBN, NRU, VUT, WSM). Parties also stressed the need to improve national legislation (COK, JOR, LBN, NRU);

(c) Strengthening national coordination and in particular the role of national UNFCCC focal points or national authorities designated to coordinate climate change activities, including coordination of participation in regional and international climate change activities (LBN);

(d) Improving infrastructure and equipment for data collection or monitoring, including by developing databases (COK, LBN, MYS, VUT), providing access to satellite imagery data and monitoring equipment (COK, LBN, NRU, VUT), and establishing or upgrading stations for systematic observation of the climate system, and environmental monitoring systems (FSM, JOR, LBN, PHL);

(e) Enhancing the analytical capacity of experts, policy-makers and decision-makers regarding the linkages between technical and political issues related to climate change (COK, KIR, LBN, VUT);

(f) Promoting the participation of key stakeholders, such as public and private sector, non-governmental organizations, academia, scientific, technical and local communities, and media practitioners (FSM, JOR, MYS, NRU, VUT, WSM);

(g) Promoting **public awareness** campaigns and incorporating the subject of climate change into national educational systems (COK, FSM, IDN, JOR, KIR, MYS, TUV, VUT, WSM). Cook Islands further expressed the need for increasing its opportunities to organize national technical events and workshops for exchange of information and training on climate change. Indonesia emphasized the need for establishing national and/or regional clearing houses for information sharing and networking on climate change issues.

III. GREENHOUSE GAS INVENTORIES

7. Most non-Annex I Parties reported the difficulties they had encountered in preparing their GHG inventories, as indicated in working paper no. 16.

8. In describing their financial and technical needs, Parties expressed the need to ensure **continuous collection and archiving of data.** This entailed maintaining stable national institutions such as inventory teams (MYS, PHL, SGP), improving infrastructure, equipment and facility (COK, FSM, KIR, MYS, NRU, SGP, TUV, VUT, WSM), creating and/or strengthening a statistic system for managing basic information related to GHG emissions (KOR), and establishing a reliable and an effective GHG inventory database system (IDN, MYS, WSM).

9. Financial and technical assistance is needed for the improvement of **data quality** (availability, accuracy and reliability) in various key socio-economic sectors, particularly in the **land-use change and forestry** sector where data are either lacking or are highly uncertain (COK, FSM, IDN, KIR, KOR, NRU, PHL, TUV, VUT, WSM). Specific needs identified relate to establishing systematic mechanisms to collect data, undertaking field studies and validation of default data, carrying out further surveys in order to reduce uncertainties in economic forecasts, improving the use of methodologies to determine forest area, improving institutional capacity to collect forest data, and formulating strategies to

generate more resources for carbon sequestration studies. Parties also expressed the need to improve the availability and reliability of data through active cooperation with relevant government departments and agencies, industry, non-governmental organizations and other sources of data. Access to adequate training was also considered as an important element in enhancing **local technical capacity and expertise in data collection**, management and dissemination (COK, FSM, IDN, KIR, MYS, NRU, TUV, VUT, WSM).

10. Most Parties indicated the need for developing **emission factors** in relevant sectors so as to improve estimates of national GHG emissions (COK, FSM, IDN, JOR, KIR, KOR, MYS, NRU, TUV, VUT, WSM). They emphasized, in particular, the limitations related to the applicability of the IPCC non-CO_2 emission factors and the need to study the composition of local fuel types, the development of specific emission factors for fugitive gases from oil fields, agricultural soils, and processes related to the production of steel, iron and cement.

11. The Federated States of Micronesia also referred to the need of improving methodologies to suit local conditions, particularly as they relate to research on **current and potential carbon sinks** of coral reefs and marine ecosystems, which are currently not considered by the IPCC methodology.

12. Some Parties stressed the need to develop a comprehensive **energy** balance to help compute GHG emissions in the energy sector on a continuous basis. The Philippines requested assistance to link the energy balance with GHG emissions methodologies such that data changes in the energy balance are automatically reflected in the GHG emissions values.

13. The Philippines indicated its lack of data on household consumption of **biomass** fuels (wood, wood waste, charcoal, "agriwaste", etc.) and requested funds to update and conduct studies on a more sustainable basis on the consumption of conventional and non-conventional types of fuels.

14. The Philippines further outlined technological and financial difficulties encountered in collecting data for accurate estimates of vehicular emissions and in measuring and applying default values for data sets in the **transportation** sector.

15. The Philippines also reported on the assistance needed to improve modelling of GHG emissions in the **agriculture** sector, especially estimation of the carbon fraction in rice fields, and to undertake research studies on savannah burning; and expressed the need to generate data on crop residue to help estimate emissions from burning of agricultural residues.

IV. MEASURES FOR ADDRESSING CLIMATE CHANGE

16. Most reporting Parties indicated their need for assistance in undertaking specific activities and implementing measures to address climate change. Access to adequate financial assistance is crucial to the development of an integrated GHG mitigation strategy and well-defined sectoral strategies and policies. Institutional capacity-building and effective coordination of government agencies were expressed as important steps for further identifying and implementing viable mitigation options. Parties expressed the need to access to appropriate technologies as well as the need to strengthen regional networks that would help facilitate technology transfers and the setting up of a network for information dissemination, training and education.

17. Three Parties (IDN, MYS, PHL) stressed the need to develop methodologies for determining and/or monitoring the potential of sinks, as well as to undertake studies on sink capacities, in particular carbon sequestration capacity. Indonesia requested assistance to strengthen research work on sustainable **agricultural practices** and to provide training and education at higher institutions. It also stressed that, although local communities have the know-how to deal with **forest** fire, they lack the resources, and training in this area should also be supported.

18. Many Parties expressed the need for both financial resources and technology related to the **energy sector**. Jordan and Lebanon stressed the need for access to information, **awareness creation** to decision-makers, development of institutional framework, including legislation and human resources development. Malaysia called for a strategy to increase the knowledge and awareness of its media practitioners on climate change issues. It also stressed the need for the preparation of a handbook on climate change and expressed the view that these initiatives would help increase public awareness of the subject matter and result in behavioural changes.

19. Needs related to the promotion of **renewable energy** were identified by many Parties. These include access to affordable technologies for power production with renewable resources (PHL), agricultural waste-fuelled cogeneration plants (MYS) and the promotion of hybrid renewable energy projects (IDN), as well as the use of photovoltaics for household electricity supply. Other needs cover access to and development of solar and wind energy (KIR) and sensitization of stakeholders to the use of more efficient and cleaner production systems (LBN).

20. Many Parties pointed out the need to obtain energy management support to improve **energy efficiency**. A wide range of energy efficiency measures identified included assessment of the electricity generation system with regard to optimal efficiency, taking into account different types of generators and cable distribution (KIR, MYS), promoting building insulation, replacing old electric motors by energy efficient ones, as well as replacing old boilers and furnaces (LBN).

21. Two Parties (JOR, LBN) also emphasized their needs in the **industry** sector for reducing energy losses from major industrial establishments (oil refineries, cement factories) and **improving awareness** and upgrading training on energy savings of decision-makers in energy-intensive industries.

22. Indonesia also requested assistance to help build capacity to **formulate mitigation projects** for funding. Assistance was also requested to provide information on incremental costs and economic assessment of mitigation projects.

V. ASSESSMENT OF VULNERABILITY TO CLIMATE CHANGE

23. Most reporting Parties identified further needs for technical and financial support to complete vulnerability assessments initiated in preparing the initial national communications. Assistance was also sought for undertaking studies in relevant sectors not covered in previous work. Needs include building capacity to use and improve climate impact models and to promote education and training. Other needs relate to capacity to collect and update relevant information, including data, to undertake long-term monitoring activities.

24. Tuvalu and Vanuatu stressed the need for enhancing existing methodologies and their capacities to undertake **integrated assessment** of climate change impacts in different sectors (such as water resources, agriculture a nd human health, or coastal zones, human settlements, biodiversity, etc.). Cook Islands, the Federated States of Micronesia, the Philippines, Samoa and Vanuatu indicated the need for assessing the relationships between climate change impacts and **impacts of extreme events** and climatic variability events (such as El Niño, storm surges, strong winds due to tropical cyclones, etc.) including changes in their frequency and intensity.

25. Many Parties outlined problems in developing **climate change scenarios** for assessing vulnerability of different sectors to climate change. One of the major areas of concerns is related to the use of general circulation models (GCMs). Malaysia, the Philippines and Samoa stressed that the definition of space and scope of GCMs limits their local and regional use. Malaysia therefore called for the need to enhance the capacity of its scientist to adapt, develop and run a climate model to generate relevant and localized scenarios for local use and for weather, as well as impacts of climate change on the environment. Tuvalu and Vanuatu also requested further assistance to undertake training and research on predictive modelling and interpretation of outputs of models. Vanuatu further stressed the need for assistance to undertake or further improve **socio-economic scenarios** and in particular, its need to integrate climate change impacts and concerns into the broader context of social development priorities.

26. Four Parties referred to the need for financial assistance to help improve the development of **sea-level rise scenarios and monitoring** and to adapt **models** to local conditions (FSM, PHL, VUT, WSM). Samoa stressed the need for improving regional information on future climate and sea-level changes as well as the cumulative and indirect effects of such changes. Malaysia called for the need to conduct a national mapping exercise to identify coastal areas that are susceptible to the impacts of sea-level rise. It also stressed the need to develop a national coastal vulnerability index.

27. The development of capacity to undertake assessment in the area of **water resources** was underlined by a majority of Parties. Specific needs include capacity to link climate change impact models to hydrological models and to adapt them to local conditions (PHL), and enlargement of the coverage of assessment of the major reservoirs and river basins (JOR, PHL). The Philippines further expressed the need to develop the capacity to undertake measurement and mapping and computer modelling of ground water lenses, establish databases for different reservoirs, assess impact of climate change on water consumption and water users (domestic, industrial and agricultural sectors) and study variations in temperature and quality of surface ground water.

28. Parties presented various examples of financial and training needs for research and observation of vulnerability to climate change impacts on **coastal zones**. Funding was requested for regular periodical monitoring of topographic information (such as changes in coastline), salinity intrusion, and changes in morphological processes and ecological systems (such as coral reefs to warmer temperature) (PHL). Further studies will also be required to evaluate natural resources on coastal zones, such as sensitivity of coral reef ecosystems to climatic and non-climatic changes (WSM). Samoa also drew attention to the need to further evaluate coastal erosion processes and land at risk from flooding and inundation.

29. With regard to the **agriculture** sector, financial assistance was requested for assessing the vulnerability of a broader range of crops and livestock (PHL, WSM), effects on soil fertility (PHL), agricultural productivity of different crop varieties, and incidence of vector-borne disease and impacts of changes in water supply (PHL, VUT, WSM).

30. Financial assistance was also requested for undertaking studies on impacts of climate change on **human settlements and population**. These studies included cross-cutting impacts of coastal zone changes in population and human settlements (PHL), assessment of the vulnerability of communities and human carrying capacity of small islands (TUV, VUT). The need for funding for further assessment of impacts on **human health** was also stressed by the Philippines and Samoa.

VI. MEASURES TO FACILITATE ADAPTATION

31. Most Parties reported on financial and technological needs and constraints for measures to adapt to the adverse impacts of climate change. The need for improving and completing vulnerability assessment was considered as a basic step for identifying and implementing adaptation options. Adaptation assessment needs were often presented together with vulnerability assessments needs. Parties stressed that financial assistance for improving information sharing, education and training along with technical and scientific research are essential to achieve a well-balanced adaptation plan. Parties also emphasized the need to access adequate technology and to ensure the participation of local stakeholders in planning for adaptation.

32. Malaysia, the Federated States of Micronesia, the Philippines and Samoa further recalled the need to improve understanding of the relation of climate change impacts to impacts of **extreme events**, in order to ensure **preparedness**, in particular with regard to infrastructure, human health and agriculture.

33. Funding to conduct additional research and improve modelling would be necessary to further analyse, prioritize and define national adaptation options on **water resources** (JOR, PHL). Capacity to plan and manage water supply would enhance adaptation measures to mitigate climate change impacts on water resources (KIR, TUV). Parties also emphasized the need for funding and technology for undertaking a number of specific measures, such as improving waste water management (TUV).

34. Parties mentioned a number of adaptive options in the **agriculture** sector requiring further financial and technological resources. A wide range of specific research needs was identified, such as the effect of CO_2 fertilization on crop growth (PHL), analysis of crops and animal productions and assessment of optimal varieties of crops (MYS, WSM). The Philippines stressed the need for improving land-use policy to help farmers adopt adaptation measures and gain access to modern technology. It also outlined its need for resources to promote adaptive options in agriculture that could also be beneficial for mitigation purposes. Assistance will be required to enhance national capacity and infrastructure for planning for integrated **coastal zone management** taking into account additional impacts on human settlements, fisheries and infrastructure and possible economic impacts (KIR, PHL, VUT). Malaysia stressed the need to develop proactive measures to facilitate adequate adaptation to the adverse impacts of sea-level rise on its coastal resources. Parties also mentioned the need to undertake more research on response measures to impacts on coral reefs, such as by assessing the effect of sewage (FSM).

VII. RESEARCH AND SYSTEMATIC OBSERVATION

35. Most reporting Parties provided information on research and/or systematic observation. Two Parties (KOR, PHL) described activities on climate research and systematic observation in common sections. Because research information embraced a range of activities other than only climatic research, some Parties dedicated different sections to systematic observation and research (COK, LBN, TUV). Nauru devoted sections to systematic observation only, while Indonesia, Kiribati and the Federated States of Micronesia described research only. Jordan presented information regarding research programmes and activities under different chapters. The scope, coverage, and level of detail of the information varied widely.

A. Research

36. Apart from climatic research, Parties reported a wide spectrum of specific research activities on assessment of vulnerability and adaptation, implementation of adaptation options, measures to address climate change and its adverse impacts and measures to improve national inventories of greenhouse gases.

37. Jordan and the Federated States of Micronesia provided information on planned research programmes that will be undertaken depending on the availability of financial and technical resources. Others (LBN, PHL, VUT) stressed that although a number of the studies undertaken were relevant to climate change, they did not have a structured framework for undertaking studies dedicated exclusively to climate change. These research studies proposed by Parties varied from general vulnerability assessments (FSM, JOR, KOR) to the adaptation of general circulation models, the statistical interpretation of GCMs, and development of country specific climate change and economic scenarios (KOR, MYS).

38. Research on **measures to address climate change** concentrated on the energy sector, in particular with regard to ways of improving energy efficiency and of improving the feasibility of using different types of renewable resources. Specific studies on agriculture (MYS), forestry, waste management, industry, transport (MYS) and public health (MYS) were also mentioned. Malaysia stressed the need to conduct a study to evaluate the energy demand and supply balance in the transport sector. Singapore called for research into measures such as docks and dykes for the protection of populated areas, protection of coastal reservoirs from salt water intrusion and the protection of low-lying areas from flooding through the use of tide gates and pumping systems. The Federated States of Micronesia and the Republic of Korea stressed the role of these studies as a basis for implementing national planning.

39. Parties mentioned research programmes covering issues related to **inventories**, such as the role of social and economic activities in greenhouse gas emissions and characteristics of greenhouse gases (KOR). Korea also stressed the need to expand national statistics and set up a database to develop projections.

B. Systematic Observation

40. Some reporting Parties (COK, KOR) made specific references to the national implementation capacity with regard to the type and number of the observation stations available; other Parties did not. The terminology used to describe the network of systematic

observation units was very diverse, and included meteorological stations[2] (KOR, PHL), synoptic stations (COK, KOR, PHL), data collection platforms (PHL), agrometeorological stations (PHL), upper air stations (COK, KOR, PHL) flood forecasting stations (PHL), storm surge monitoring stations (PHL), marine stations (KOR, NRU), tide stations (KOR, TUV), seaframe stations (COK, NRU), and satellite (KOR), radar (COK, KOR) and aeronautical stations (KOR).

41. Some Parties reported on the special observation stations for background air pollution monitoring (KOR, PHL) and ozone monitoring (KOR, PHL). The secretariat, to ensure consistency in the use of the terminology, has attempted to categorize the types of units constituting the network.

42. A limited number of Parties reported on the presence of automatic weather stations (COK) whereas others referred to an auto-controlled network taking marine measurements, earthquake and lightning (KOR). The fact that some of the stations within each national network form part of regional and global monitoring networks was reported. Korea reported on the provision of national data on systematic observations to other Parties and international data centres, but no reference was made either to the existence of national policies or guidance relevant to such an exchange or the existence of any barriers. The national implementation capacity needs relating to maps, data banks, statistics and research werre indicated (KOR). In addition, the Republic of Korea emphasized the placement of data on the Internet.

43. Many of the Parties that reported on systematic observation included a reasonably detailed consideration of the difficulties encountered as well as the needs which would have to be met to improve in the current level of reporting. Some of the gaps identified by Parties in the present reporting on systematic observation included the conduct of irregular observations (LBN), lack of data collection (COK, LBN), information gaps in data collection (COK), outdated hardware and software (LBN), and lack of trained personnel (COK, LBN). Correspondingly, the needs identified relate to rehabilitation of networks and creation of a databank (LBN), upgrading and expansion of existing networks (PHL), capacity-building needs relating to equipment and data transfer systems (COK), and software for data processing and database development (LBN).

VIII. SUSTAINABLE DEVELOPMENT AND THE INTEGRATION OF CLIMATE CHANGE CONCERNS INTO MEDIUM- AND LONG-TERM PLANNING

44. In describing **sustainable development** concerns, Parties emphasized the need for ensuring an integrated approach in dealing with environmental issues including environmental conventions (FSM, LBN, NRU, PHL) and national development policies (FSM). Lebanon and the Philippines presented detailed information regarding sustainable development activities and priorities initiated within the framework of implementing Agenda 21.

45. Parties also described activities that national environmental or development plans should incorporate in order to achieve sustainable development. These included the protection of natural resources by assessing environmental impacts; conservation of soils, water resources, forests and biodiversity; protection of coral reef and combating desertification; improvement of waste management, pollution control and land-use planning; integrating economic incentives and tools into environmental policies; and

[2] Some Parties also used the term meteorological observatories and posts.

enhancing public awareness and the participation of non-governmental organizations and the private sector in the implementation of measures.

46. Some Parties (KIR, LBN, WSM) indicated that they are in the process **of formulating comprehensive climate change national plans and policy frameworks** to coordinate and facilitate the implementation of the UNFCCC. Several other Parties (COK, FSM, IDN, JOR, LBN, NRU, PHL,VUT) stressed that the climate change planning would be taken into account in future social, economic and environmental actions in accordance with national development priorities. They mentioned climate change planning under other related plans, such as on nature conservation (LSO), energy conservation (KIR, KOR, PHL), and the environment (FSM, JOR, LBN, NRU).

47. Some Parties reported on the need to build capacity to implement adaptation and mitigation options (VUT, WSM) and capacity to identify national priorities and develop sectored strategies and measures. These include specific needs in the areas of coastal zone integrated management (COK, KIR, LBN), agriculture (VUT), and integrated energy plans (PHL).

48. Some Parties mentioned the creation of **specific institutional frameworks** dedicated to climate change. These included inter-ministerial climate change coordination committees (FSM), technical working groups undertaking specific studies on inventories(SGP), mitigation, and vulnerability and adaptation (NRU). The Federated States of Micronesia and Lebanon reported that there is a need to improve capacity for developing a framework for activities dedicated exclusively to climate change and called attention to difficulties related to coordination and division of labour among national agencies. Most Parties also made mention of institutional strengthening initiatives essential for effective implementation of climate change activities (COK, FSM, IDN, JOR, KIR, LBN, NRU, PHL, SGP, TUV, VUT, WSM)

49. Efforts to **coordinate climate change activities** were highlighted by a number of Parties (IDN, KIR, LBN, TUV, WSM). Some national communications (FSM, LBN) stressed the importance of the role of national UNFCCC focal points or national authorities designated to coordinate climate change activities; others included information on specific coordination activities, such as the integration of databases (LBN). The need for strengthening their capacities to coordinate climate change activities was identified at the local level (FSM).

50. Some Parties emphasized the importance of sustaining the activities initiated under the preparation of their initial national communications. These include human resources and infrastructure for undertaking the collection, management and monitoring of data (LBN) and continuity of national teams constituted for the preparation of the national communications (LBN, VUT).

51. The **participation of stakeholders,** including non-governmental organizations was deemed to be an important means of ensuring continuity of climate change activities. Many Parties (COK, FSM, IDN, JOR, LBN, NRU, PHL, TUV, WSM) mentioned the relevance of effective participation of stakeholders, including non-governmental organizations, the private sector, academia and local community-based organizations, in the development of climate policy and for ensuring continuity of climate change activities during the preparation of initial national communication. Almost all Parties identified the specific role to be played by stakeholders as including the provision of expertise, identification of national priorities, promotion of measures to address climate change, and provision of

information for the preparation of national communications, promotion **of public awareness** and informal education, planning for adaptation measures,control of forest fires and conservation of nature reserves.

52. Many Parties (COK, FSM, JOR, LBN, MYS, NRU, PHL) emphasized that one of the ways of integrating national climate change into planning is through the **development and enhancement of appropriate legislation**. Lebanon stressed the need to improve capacity for developing climate change legislation, while other Parties provided information on national environmental or energy-saving regulations of relevance to climate change. Three Parties (FSM, LBN, NRU) reported on existing and planned environmental legislation. Energy conservation and renewable energy legislation or strategies were mentioned by Jordan, Lebanon, and the Republic of Korea.

IX. CONCLUSIONS

53. All reporting Parties provided information on **financial and/or technological constraints** associated with the implementation of the Convention in various sections of the communications with varying level of detail with some Parties dedicating a full chapter or section to their needs.

54. In general, financial and technical assistance was requested to strengthen national institutional framework and coordination, enhance the capacity for policy development and planning, and improve infrastructure and equipment for data collecting and monitoring. Others include the enhancement of analytical capacity of experts, policy-makers and decision-makers, promotion of participation of key stakeholders in climate change activities, promotion of **public awareness** campaigns, and incorporation of climate change in national educational systems.

55. In relation to the preparation of GHG inventories, Parties expressed the need for assistance to ensure continuous collection and maintenance of activity data and improvement of the accuracy and reliability of data, especially in the land-use change and forestry sector. Other needs relate to the enhancement of local technical capacity and expertise and the development of country-driven methodologies to estimate emission factors. Parties also described specific capacity needs related to the energy, transportation, agriculture, and waste management sectors.

56. Financial assistance and access to appropriate technologies were identified as being crucial to the development of integrated mitigation strategies and policies. Specific needs included the promotion of renewable energies and achievement of energy efficiency, increase in sink capacities, research into sustainable agricultural practices, enhancement of national capacities for forest fire management, strengthening of national policies to manage solid and liquid wastes, and the promotion of the use of more energy efficient vehicles. Parties also emphasized the need for improving their national capacities to prepare mitigation projects for funding.

57. Most Parties identified further needs to complete studies initiated during the preparation of their initial national communications and to undertake vulnerability and adaptation assessment studies in sectors not covered in their national communications. These included needs for integrated assessments; studies of the relation of climate change impacts to impacts of extreme events; improvement and development of climate change, socio-economic and sea level rise scenarios; development of climate impact models; and enhancing monitoring capacity. The main sectors of concern were water resources,

agriculture and coastal zones. Some Parties also requested for assistance to carry out further assessments of impacts on human settlements, population and health. Parties also requested for financial and technical assistance to facilitate adequate adaptation to the adverse impacts of climate change. These included improvement in information sharing, education and training, as well as technical and scientific research relevant to the development of comprehensive adaptation plans. Parties also emphasized the need for accessing adequate and appropriate technology to facilitate and ensure the participation of local stakeholders in planning for adaptation. Specific measures requiring resources and technology were identified in the areas of water resources, agriculture, coastal zone management and preparedness to extreme natural events.

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