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Nairobi work programme on impacts, vulnerability and adaptation to climate change

Measures, methodologies and tools for increasing economic resilience to climate change and reducing reliance on vulnerable economic sectors

Submissions from Parties and relevant organizations

1. The Subsidiary Body for Scientific and Technological Advice (SBSTA), at its twenty-eighth session, invited Parties and relevant organizations to submit to the secretariat, by 20 March 2009, additional information on examples of measures, methodologies and tools on increasing economic resilience to climate change and reducing reliance on vulnerable economic sectors, including through economic diversification (FCCC/SBSTA/2008/6, para. 72). It requested the secretariat to compile these submissions into a miscellaneous document to be made available by SBSTA 30.
2. The secretariat has received six such submissions. In accordance with the procedure for miscellaneous documents, these submissions are attached and reproduced* in the language in which they were received and without formal editing.

* These submissions have been electronically imported in order to make them available on electronic systems, including the World Wide Web. The secretariat has made every effort to ensure the correct reproduction of the texts as submitted.

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PAPER NO. 1: BELIZE

Submission by Belize on Increasing Economic Resilience within the Context of the Nairobi Work Programme on Adaptation

Introduction

The Subsidiary Body on Scientific and Technological Advice (SBSTA) invited Parties and relevant organizations to submit additional information on examples of measures, methodologies and tools on increasing economic resilience to climate change and reducing reliance on vulnerable economic sectors, including through economic diversification. (FCCC/SBSTA/2008/L.13/Rev.1 paragraph 63)

Background

The Belizean economy shares many of the characteristics of small states, with open and vulnerable economies, limited diversity in production, exports concentrated on a few products, thin markets and high transportation costs. Despite its best efforts, Belize faces considerable challenges in seeking to generate sustained economic growth rate. These challenges are being exacerbated by a series of external shocks, including fluctuations in energy prices, unstable commodity prices, the rising cost of external credit, the dismantling of preferential market arrangements and the introduction of stringent market entry conditions including sanitary and phyto-sanitary conditions.

Belize has a growing debt. The country now has a debt burden that exceeds 100% of Gross National Income (GNI). The net result of this increasing debt burden has been a deepening of the vulnerability that threatens to erode the social development gains that were achieved from the 1970s through to the mid 1990s.

Several of Belize's major export crops and sources of foreign exchange are facing serious challenges. The Food and Agriculture Organization (FAO) lists Belize as one of the 43 developing countries worldwide that depend on a single commodity (sugar) for more than 20 per cent of their total revenues from merchandise exports. It provides roughly 10% of the employment in Belize, primarily to the rural poor who often lack the skills or training to find employment in other sectors. However, sugar and banana producers are facing serious challenges by virtue of the loss of preferential access to the European Union (EU) market.

The country's vulnerability to external price shocks is also being exacerbated by the rising cost of imported food items. Belize must also contend with declining foreign direct investment (FDI) and official

development assistance (ODA). In addition the country has a large overseas population that provides regular remittances to dependent relatives at home. The global recession has affected employment especially hard and consequently remittances are declining.

The economic growth prospects of the country is also constrained by a variety of natural factors, including adverse physiographic conditions such as mountainous terrain, limited arable land, and many coastal and offshore settlements that are extremely vulnerable to erosion, storm surges and salt water intrusion. A vast majority of the region's population depends on subsistence agriculture, mostly seasonal short-term crops which are highly vulnerable to increased temperature, droughts, and changes in mean rainfall, pests and diseases which are associated with Global Climate Change (GCC).

Examples of measures for increasing economic resilience to climate change and reducing reliance on vulnerable economic sectors, including through economic diversification

Over the past two decades, Belize has sought to expand its agricultural from primarily sugar to include also citrus, bananas, winter vegetables, fishing and aquaculture. However, all these commodities have suffered extraordinary losses as a result of severe weather events including several severe hurricanes and heavy rains which have produced unprecedented floods. Fisheries resources are also coming under increasing pressures because of encroachment by its neighbours, overfishing, illegal fishing, increased sediment load as a result of flooding, and pollution produced by heavy use of pesticides and fertilizers to increase agricultural productivity. Fishers have been encouraged to shift from fishing to tourism as tour guides and guides for sport fishing. On the mainland, subsistence farmers are encouraged to also move toward the tourism sector as tour guides, bee keeping, sustainable and selective forestry instead of clearing new land for agriculture. However, there are insufficient resources to enforce conservation measures and illegal clearing continues and subsistence farmers remain vulnerable to climate variability and extreme events.

The country has also sought to diversify its economy into the tourism and financial services. However, the global recession has also impacted these areas severely.

Conclusions

Belize remains extremely vulnerable to climate variability and extreme weather events as well international economic factors. It continues to seek innovative means to transform its economy to make it more productive, less vulnerable and more immune to external influences. However, these efforts have met with limited success.

Climate change vulnerability studies undertaken show that rice, beans, corn, sugar and citrus production would decline by 10 to 20% with only a 10 to 20 % change in rainfall and a 1 to 2 degree Celsius rise in mean temperature. Tourism would also be adversely affected. Consequently, it is important that strong and enforceable international mitigation measures are implemented to limit climate change and that the region is provided with the financial and technological resources to adapt to climate change.

PAPER NO. 2: CZECH REPUBLIC ON BEHALF OF THE EUROPEAN COMMUNITY
AND ITS MEMBER STATES

**SUBMISSION BY THE CZECH REPUBLIC ON BEHALF OF THE EUROPEAN
COMMUNITY AND ITS MEMBER STATES**

Prague, 5 March 2009

**Subject: Nairobi Work Programme on impacts, vulnerability, and adaptation to climate change
Submission on additional information on examples of measures, methodologies and tools on increasing economic resilience to climate change and reducing reliance on vulnerable economic sectors, including through economic diversification**

Introduction

The SBSTA invited Parties and relevant organizations to submit to the secretariat, by 20 March 2009 additional information on examples of measures, methodologies and tools on increasing economic resilience to climate change and reducing reliance on vulnerable economic sectors, including through economic diversification.

General Comments

The Czech Republic on behalf of the EU welcomes this opportunity to supplement the information submitted in August 2007 by the EU. In its earlier submission¹, the EU provided examples of ways in which economic resilience can be increased through vulnerability assessments, by increasing sectoral resilience through innovation, by sharing tools through institutions for promoting and spreading good practice. We also offered examples of how the EU is reducing reliance on vulnerable sectors through vulnerability assessment and diversifying from vulnerable sectors. In this submission we provide further examples including two other important facets of improving economic resilience: increasing resilience through planning and decision making and recovery measures or post adverse effect resilience.

Approaches and experience in the EU and its Member States at EU level

The EU is preparing a climate change adaptation strategy for the EU (later in 2009), intended to improve the EU's resilience to the impacts of climate change and complement and reinforce the Member States' efforts in dealing with inevitable climate change. This work follows on from the European Commission's 2007 Green Paper "Adapting to climate change in Europe – options for EU action".

Adaptation will require solidarity among EU Member States in order to ensure that the poorer and disadvantaged regions and regions most affected by climate change will be able to take the necessary measures to adapt. In addition for certain sectors (e.g. agriculture, water, biodiversity, fisheries, and energy networks) that are largely integrated at EU level through the single market and common policies, co-ordinated EU action will be necessary.

Additionally, the EU revised its policies in its seven outermost regions², a group of regions with a special status within the Union given their geographical location and specific characteristics: remoteness, insularity, small size, climate, difficult topography, high vulnerability to climate change impacts of

¹ FCCC/SBSTA/2007/MISC.15

² Azores, Canary Islands, French Guiana, Guadeloupe, Madeira, Martinique, Reunion Island

natural resources, biodiversity, and built infrastructure, coupled with economic dependence on a few products or services. The aim of the revised policy is to address the new challenges and opportunities for these regions linked, among other issues, to their longer term resilience to climate change, and will involve optimizing the use of EU funds, specific impact studies, design and implementation of action plans, or adapting their economic sectors. The EU will endeavour to develop and make best use of possible advantages for these regions under the climate change scenarios.

Member States and European Commission approaches and experience

United Kingdom

Climate Change Risk Assessment (CCRA): The UK Climate Change Act mandates that a national risk assessment be carried out on a 5 year basis to consider risks at the regional level for a variety of different sectors within each region and cross-sectoral risks (likely to include water resources biodiversity agriculture, marine environment, built environment, spatial planning, health, heritage, transport, energy, tourism, business including small and medium sized enterprises forestry, education, emergency planning).

For each sector the timescale for vulnerability that will need to be considered in relation to: current vulnerability; vulnerability in the next 30-40 years; the remainder of the century.

Cost Benefit Analysis: In addition to the CCRA, the UK is undertaking a national cost-benefit analysis of climate change adaptation. This aims to complement the CCRA by identifying the measures that will help reduce the risks from climate change as identified in the CCRA, and assess the costs of implementing these measures and the benefits they will bring. This will help inform the prioritisation of measures, and will also provide information to the wider economy on cost-effective responses to climate risks.

Business opportunities from adaptation: The Government will be undertaking research to identify possible business opportunities from climate change adaptation, and barriers that may prevent them from being exploited. This recognises that climate change will bring opportunities as well as risks; grasping these will help direct economic resources to productive and resilient sectors of the economy.

Reporting power/statutory guidance: The UK's Climate Change Act provides the Secretary of State with the power to ask public bodies and statutory undertakers to report on how they are addressing risks from climate change to their organisation. This will contribute to reducing the potential for economic disruption from climate change, by improving resilience of local and national infrastructure that is particularly vulnerable.

Green Book: The Government is preparing the UK for the challenges posed by the physical impacts of a changing climate and the increased incidence of extreme weather events such as heat waves, storms and floods. To embed better climate risk management in all public spending, the Government is reviewing its own appraisal guidance (the Green Book) to ensure that policy and investment decisions incorporate adaptation.

APF: The Government published a document "Adapting to Climate Change in England: A Framework for Action" that outlines the work of its new Adapting to Climate Change programme <http://www.defra.gov.uk/adaptation>. The work of the programme contributes to improving the resilience of the economy by taking the lead in providing information and tools, and by building capacity and the institutional framework for effective and efficient adaptation. This will help all organisations consider the risks that a changing climate might impose on their activities, plan what actions should be taken to increase resilience and reduce those risks, and take the necessary action in the most sustainable manner.

The Netherlands

The future climate change challenges for a low lying country such as the Netherlands are linked with water management issues like the risk of flooding, salt water intrusion, managing drinking and irrigation water, navigability of rivers, and the morphology of the coastal zone. As part of building economic resilience and remaining an attractive environment for domestic and foreign enterprise the Netherlands has a strong spatial challenge in relation managing water. This requires an innovative approach in sectors vulnerable to climate change. Innovative research is being conducted into agriculture on saline soil and floating glasshouses. Another example is energy policy-making provisions for preventing climate change by saving energy and switching to clean, more sustainable sources of energy and the selection of locations for new power stations, which, partly with a view to the cooling water problem, are all located on the coast (more information can be found on <http://www.maakruimtevoorklimaat.nl/english-summary.html>).

Costs and Benefits Analysis

Estimating the costs and benefits of different mitigation and adaptation strategies for climate change and land use in the Netherlands creates new challenges. The uncertainties and irreversibility's of climate change need to be incorporated into policy and the various strategies. A research project as part of the *Programme Climate changes Spatial Planning*³ works on innovative methods for evaluating the costs and benefits of various strategies in relation to land use and spatial planning, taking into account the consequences of the strategies for different sectors and policy domains.

Spain

Spain, a Mediterranean country, is located in a very vulnerable area and climate type; the country's economy depends strongly on sectors and resources sensitive to climatic parameters that are projected to significantly shift under most future climate scenarios.

Building resilience to climate change in Spain

The Spanish National Climate Change Adaptation Plan (PNACC) identifies, upon the results of a preliminary evaluation exercise, 15 critical sectors and systems for Spain's economy and welfare. The bulk of tasks identified in the PNACC is prioritized through Work Programmes (WP). The 1st WP (2006) tackles 4 sectors (providing regionalised climate scenarios, evaluation of impacts, vulnerability and adaptation options on water resources, coastal areas and biodiversity), chosen under the criteria of: a) their potential to feed other sectors' assessments, and b) being critical sectors or resources. (http://www.mma.es/portal/secciones/cambio_climatico/areas_tematicas/impactos_cc/pnacc.htm)

Water resources

In Spain, water resources are an overarching limiting factor for development. The first piece of legislation ever modified in Spain for considering climate change has been the Water Management Planning Regulation (2007). Additionally, an ambitious project is underway to evaluate the climate change effects along the 21st century on: the natural hydrological regime at the basin level, the critical water demands (irrigation, drinking water, industry...), the capacity of the current Spanish hydrological system, and the ecological status of the waters, with the aim of mainstreaming the results in the sustainable planning of its river basins.

³ <http://www.climatechangesspatialplanning.nl/>

Coastal areas

As a significant proportion of the national population and activity is concentrated along its 7.800 km coastline, Spain has developed a methodology to provide detailed models of the likely impacts of climate change in coastal areas (full Spanish report, http://www.mma.es/portal/secciones/cambio_climatico/areas_tematicas/impactos_cc/imp_cost_esp_efec_cc.htm); upon its results, a first detailed projection of the impacts and vulnerability has been carried out along small coastal units defined by a mix of socio-economic and natural features, and integrated in the framework of a sustainability Strategy for the Spanish coastal areas that is under development.

Tourism

Tourism is one of the main income sources for the country, and a sector highly dependent on many different agents, public and private that needs strong consensus. To fill knowledge gaps and provide all the agents with the best decision tools for designing climate resilient tourism plans, a R+D+ innovation Programme on impacts and adaptation to climate change has been designed within the National R+D+ innovation Plan, which defines tourism as one of four priority sectors (together with agriculture, health and forestry) to deal with, identifying 7 key research lines within the sector (e.g. impact analysis, vulnerability, indicators, new management models, demand changes, cost analyses, other limiting resources).

Germany

National Adaptation Strategy

In December 2008 the Federal Cabinet adopted the "German Strategy for Adaptation to Climate Change". It aimed at assessing the risks of climate change for different economic sectors like the financial sector or insurance. It lays the foundation for a medium-term, step-by-step process undertaken in cooperation with the federal Länder and other civil groups and aimed at assessing the risks of climate change. On this basis, appropriate goals, long-term strategies and measures will be defined and adaptation activities will be developed and implemented. It encourages the financial sector to actively develop and implement a risk management which includes possible climate change and its impacts. (<http://www.bmu.de/english/climate/downloads/doc/42841.php>)

Munich Climate Insurance Initiative (MCII)

The Munich Climate Insurance Initiative (MCII) was initiated by Munich Re in April 2005 in response to the growing realization that insurance solutions can play a role in adaptation to climate change, as suggested in the Framework Convention and the Kyoto Protocol. This initiative is formed by insurers, climate change and adaptation experts, NGOs, and policy researchers intent on finding solutions to the risks posed by climate change. MCII provides a forum and gathering place for insurance-related expertise applied to climate change issues.

(http://www.climate-insurance.org/front_content.php)

The Carbon Disclosure Project (CDP)

The Carbon Disclosure Project (CDP) is an independent not-for-profit organisation, which holds the largest database of corporate climate change information in the world. The data is obtained from responses to CDP's annual Information Requests, issued on behalf of institutional investors, purchasing organisations and government bodies. Since its formation in 2000, CDP has become the gold standard for carbon disclosure methodology and process, providing primary climate change data to the global market place. Several German companies are participating in that project.

(<http://www.cdproject.net/>)

Finance Forum Climate Change (FFKw)

A focus of the national strategy to respond to climate change is the development of financing mechanisms and investment strategies to better use the already existing market potentials. On initiative of the Federal Government and in the frame of the High Tech Strategy the Finance-Forum on climate change was founded. Together with the 'Sustainable Business Institute' of the European Business School (EBS) it developed recently a joint research program. The forum aims at supporting the science-policy dialogue between finance industry and federal Ministry of Research. This should facilitate the industry to identify existing and future risks of climate change as well as identifying options to realize practical adaptation activities and measures.

(<http://www.cfi21.org/29.0.html?&L=1>)

European Commission

As a first step, the EC has undertaken a 9-months study (to be released in 2009) to provide options for the design of a set of vulnerability indicators that could be used to prioritize and assess policy proposals on adaptation at local, regional, national and European level. The indicators will go beyond direct impacts of climate change, and will pay attention to the drivers of adaptive capacity and resilience of both natural and socio-economic systems. The study will be followed by specific assessments of:

- The potential of overarching land use/management, biodiversity and water related measures to strengthen climate resilience of the EU
- The need for measures to protect public health
- The need for measures to prevent climate or mitigate effects of climate related disasters
- The investment needs in the public and private sectors in relation to infrastructure

PAPER NO. 3: SAUDI ARABIA

SUBMISSION BY SAUDI ARABIA

Nairobi Work Program on Impacts, Vulnerability and Adaptation to Climate Change -
Submission under the area of economic diversification

REFERENCE:

The SBSTA invited Parties and relevant organizations to submit to the secretariat, by 20 March 2009, additional information on examples of measures, methodologies and tools on increasing economic resilience to climate change and reducing reliance on vulnerable economic sectors, including through economic diversification. It requested the secretariat to compile these submissions into a miscellaneous document to be made available to the SBSTA by its thirtieth session. Refer to paragraph 72 of document FCCC/SBSTA/2008/6 (24 July 2008)

Saudi Arabia welcomes the opportunity to submit its views and information on the above subject

The implementation of the Nairobi work program should take into account the following:

- Further elaboration will be needed on the work of the IPCC fourth Assessment Report and Working Group III on spillover effects and impacts of response measures. The program should promote and advance options to reduce impact of these response measures and their spillover effects.
- The establishment and enhancement of grounds to provide financial and technical support, to share experiences, and to take up opportunities, in order to incorporate and integrate adaptation within sustainable development, specifically in the area of economic diversification.

Saudi Arabia is highly concerned about the lack of progress in addressing and assessing the economic impacts of response measures. A clear process should be identified in the program to advance solutions and opportunities to contribute to sustainable development, through practical measures aimed helping developing countries in their efforts for adaptation to the impact of response measures. It is therefore vital for any program of work to incorporate economic diversification as a means of adaptation for countries whose economies are highly vulnerable to the impact of response measures, with specific emphasis on countries whose economies are highly dependent on income generated from the production, processing and export, and/or on consumption of fossil fuels and associated energy-intensive products.

The program should also establish methodologies to guide Annex I Parties in implementing win-win policies and measures, which have long been requested and advocated by developing countries. Such policies must meet both the need to reduce emissions and the need to minimize adverse social, environmental and economic impacts on developing country Parties, especially those identified in Article 4.8. This should be given a high priority since no methodological work is established under Article 4.8 on impacts of response measures.

As many developing countries lack the capacity to assess their scope and magnitude of the impacts of climate change and response measures, the program should promote the exchange of information and sharing of experiences and views, to improve and enhance efforts towards:

- Understanding of the scientific, technical and socio-economic impact of climate change and the impact of response measures;
- Identifying innovative and efficient adaptation technologies for both the impacts for climate change and the impact of response measure.

Moreover, the program should address capacity building and transfer of adaptive and advanced technologies to assist developing country parties in their efforts at diversifying their economies and building their resilience. It should also address the following:

- Assessment of cost effective options including capacity building and transfer of technology for effective economic diversification as one of the options for adaptation to the impact of climate change and the impact of response measures;
- Emphasis on the integration of economic diversification in the sustainable development plans by developing countries;
- Promotion of the exchange of views on experiences in economic diversification and lessons learned.

Finally, it is worth noting that the issue of economic diversification needs to be given serious consideration and that the SBSTA should emphasize that the technical workshop that is to be organized before SBSTA 30 under the guidance of the chair of SBSTA should stay focused on increasing economic resilience and reducing reliance on vulnerable economic sectors, including through economic diversification, with the participation of representatives from Parties, business, and communities, and experts. The workshop should be held with a view to promoting understanding and the development and dissemination of measures, methodologies and tools for increasing economic resilience, including the understanding of social aspects.

We look forward to a productive workshop and wide participation by major stakeholders.

PAPER NO. 4: SRI LANKA

Nairobi work programme on impacts, vulnerability and adaptation to climate change (SBSTA)

Submissions under the area of economic diversification

As at present, Sri Lanka concentrates on disaster compensation and response rather than disaster prevention. Every year Government of Sri Lanka allocates money for the disaster compensation and response through the Ministry of Disaster Management and Human settlement and the Ministry of Social Services.

Agriculture sector is a main contributor to the Sri Lanka's economy. Due to the climate change impacts the agricultural lands are becoming decertified and infertile. Therefore, the crop production has declined. Tea, rubber, coconut and paddy cultivations are also affected due to climate change impacts and this has caused considerable economical damages. Therefore it is required to develop resistant crop varieties and implement crop diversification programmes. Farmers and fishermen awareness and training programmes regarding climate change impacts and ways to respond to these impacts should be implemented.

Since this is time to think "green" the Government of Sri Lanka considers the concept about the **green economy**. Sri Lanka recognized that the importance of moving to a green economy through towards developing Green Collar Jobs, like Solar Energy Systems Designer, Energy Consultant, Energy Efficiency Finance Manager, Green Education, Green Communities etc.

Sri Lanka is rich in the natural resources; therefore we have a great potential to move on to green jobs with a view to achieve a sustainable economy.

However, Sri Lanka as well as other developing countries needs technology transfer capacity development to implement such policies.

PAPER NO. 5: UZBEKISTAN

**Opinion of the Republic of Uzbekistan
on the examples of measures, methodologies and mechanisms of strengthening the
economical sustainability regarding the climate change and decrease of vulnerability in
economical sectors**

The Republic of Uzbekistan supports the activities of secretariat on the implementation and further development of Nairobi work program in the field of the impact, vulnerability and adaptation to climate.

Currently the government of Uzbekistan issues the enactments and edicts on the urgent measures related to the reduction of vulnerability and adaptation to climate change while different departments and agencies elaborate sectoral, interdepartmental and national programs and plans of development.

The measures on the forced adaptation and mitigation elaborated and implemented in Uzbekistan are diverse – they are presented by technologies and improvement of the management structure and the strengthening of information impact.

All these measures facilitate the sustainable development, deepen the resistance against the negative impacts of climate change, reduction of greenhouse gases emissions and implementation of National programs, however, up to the moment only part of the planned measures are being realized.

National project and programs being implemented and planned

Program of land-reclamation for the period of 2008-2012 – this program puts forward the task of the construction and reconstruction of the main, inter-district and inter-farm collectors the overall length of which is more than 3,5 thousand km and of more that thousand land-reclamation wells, the reconstruction of drainage network with the length of 7,6 thousand km, the equipping of the contracting agencies and water-management organizations with the modern technical devices on leasing basis. It is planned to allocate more than 75 billion sums for the whole program realization.

Program of concrete actions on the improvement of ecological and social-and-economical situation in the Aral Sea basin (2003-2010) – the program foresees the following measures: development of the legal basis in the field of the water use, improvement of monitoring systems; scientific research; implementation of the concrete projects aimed at adaptation measures (reconstruction of irrigation and drainage systems, creation of the manageable lake systems, feasibility of the access of population of vulnerable areas to fresh water, etc.).

Program of actions on the environment protection (2008-2012) and Summary list of the priority investments projects – they include the projects on the rational water use and increase of water availability. Among them there are the measures including the construction of the local water bodies in Amudarya river delta, creation of water storages for increasing the water supply and for improvement of irrigation of lands in the provinces and regions of the republic.

Program of actions on the environment protection includes also the measures on realization of the National strategy and plan of actions aimed at the preservation of biological biodiversity, envisages the creation of the network of the protected natural territories and centres of the bondage cultivation and rearing of the animals and plants which are under the threat of disappearing.

The increase of the mud flows and constancy of high avalanche risks and increase of the risk of the outburst of mountain lakes threaten the stability of life of the part of population in Uzbekistan. This program foresees also the relocation of population whose farms are in the landslide, mud flow and flood prone areas.

National strategy and plan of actions on preservation of bio-diversity: obligations of Uzbekistan on the realization of Convention on Bio-diversity include the elaboration of system of measures stimulating the protection and sustainable development of the components of bio-diversity.

Regional plan of actions on environment protection (REAP) for Central Asia: the approved priority problems covered with this plan are: air pollution, water contamination, land degradation, management of wastes and degradation of mountain systems.

Undoubtedly, the main stage in the area of preservation of mountain ecosystems is the elaborated strategy on “**Regional cooperation in the field of sustainable development of mountain territories in Central Asia**” the main priority of which is organization and coordination of the complex researches of mountain territories in monitoring regime. For this the purpose the Regional mountain center of Central Asia was established.

Program on the protection and prophylactics of public health for 2004-2008 – with support of the donor community the investment programs and projects aimed mainly at prophylactics of dangerous diseases (HIV, tuberculosis, malaria), improvement of food-supply and equipping with the modern medical equipment and medical-and-sanitary assistance to the rural population are realized.

Besides, in the sector of public health in Uzbekistan a number of adaptation measures are being implemented with support of international financial organizations. Project «Public health -1» is completed; project «Public health-2» is carried out. These projects are aimed at the improvement of the system of the public health funding regarding the market relations and technical equipping of the rural medical services in several provinces (credits of the World Bank, etc.).

With the funds of Asian Development Bank (ADB) the projects aimed at the improvement of the system of the protection of maternity and childhood, strengthening of the logistics base of the obstetrical hospitals and clinics, hematological service and four projects on the improvement of water supply are being implemented. For the strengthening of the system of the urgent medical aid the agreements with the Islamic Development Bank (IDB) are signed. The contract for the delivery of diagnostic equipment and its installation in oncological dispensaries is signed with PRC. With the support of GEF the measures aimed against AIDS, tuberculosis and malaria are being performed

In their turn, such sectors of economy as oil-and-gas sector, transport, construction and municipal economy which are the sources of greenhouse gases are subjected to the climate change impact and also need the adaptation measures. Adaptation measures in the oil-gas sector, transport, construction and municipal project proposals but currently they are not presented in fact.

Unfortunately, up to the moment the measures, programs and plans which facilitate the adaptation are separated and are faced with the lack of financing, naturally. Involvement of the funds of international adaptation funds can be substantial support.

National plans of development can be supported with the resources and mechanisms envisaged for the realization of mitigation and adaptation measures in the framework of UN FCCC, other ecological Conventions and international financial institutions.

PAPER NO. 6: CARIBBEAN COMMUNITY CLIMATE CHANGE CENTRE

Submission by the Caribbean Community Climate Change Centre on the Nairobi Work Programme on Adaptation in Increasing Economic Resilience

Introduction

The Subsidiary Body on Scientific and Technological Advice (SBSTA) invited Parties and relevant organizations to submit additional information on examples of measures, methodologies and tools on increasing economic resilience to climate change and reducing reliance on vulnerable economic sectors, including through economic diversification. (FCCC/SBSTA/2008/L.13/Rev.1 paragraph 63)

Background

The Caribbean Community Climate Change Centre (CCCCC) is a regional intergovernmental organization established by the Heads of Government of the Caribbean Community to coordinate the Members' response to climate change.

The Caribbean's Vulnerability

Caribbean economies share many of the characteristics of small states, with open and vulnerable economies, limited diversity in production, exports concentrated on a few products, thin markets and high transportation costs. Despite their best efforts, Caribbean Governments face considerable challenges in seeking to generate sustained economic growth rates that exceed the rate of unemployment and poverty. These challenges are being exacerbated by a series of external shocks, including rises in energy prices, fluctuating commodity prices, the rising cost of external credit, the dismantling of preferential market arrangements and the introduction of stringent market entry conditions including sanitary and phyto-sanitary conditions.

The growing debt burden of many Caribbean countries, especially those in the Organization of Eastern Caribbean States (OECS) is generating considerable concern. Seven Caribbean countries are included among the 10 most indebted countries in the world. In the OECS, debt nearly doubled between 1997 and 2006. In the wider Caribbean, Belize has joined Guyana, Grenada, and St. Kitts and Nevis in indebtedness that exceeds 100% of GNI. The net result of this increasing debt burden has been a deepening of the vulnerability of the region that threatens to erode the social development gains that were achieved from the 1970s through to the mid 1990s.

Sugar and banana producers are facing serious challenges by virtue of the loss of preferential access to the European Union (EU) market. Already more than 60% of banana farmers in the Windward Islands have left the industry and in St. Kitts and Nevis sugar cane production has been discontinued. However, sugar still accounts for more than 20 per cent of the merchandise exports and roughly 10 per cent of employment in Belize and Guyana. It occupies an average of 31 per cent of the cropland in the region and more than 60 per cent of the cropland in Barbados and Trinidad and Tobago. It provides jobs to the rural poor who often lack the skills or training to find employment in other sectors.

The economic growth prospects of the region are also constrained by a variety of natural factors, including adverse physiographic conditions in the majority of the countries such as mountainous terrain, limited arable land that is mainly concentrated within the coastal zone, and vulnerable to storm surges and salt water intrusion. A vast majority of the region's population depends on subsistence agriculture, mostly seasonal short-term crops (corn, beans, pigeon peas, sweet potatoes and vegetables) which are highly vulnerable to increased temperature, droughts, and changes in mean rainfall, pests and diseases which are associated with Global Climate Change (GCC).

The region's vulnerability to external price shocks is also being exacerbated by the rising cost of imported food items. In 2006, the region's food import bill was approximately US\$3 billion. This figure is expected to rise dramatically in line with the steep rise in the cost of fuel and instability in the main producing markets thus posing severe challenges for those mono-commodity countries (Antigua and Barbuda, Grenada, Haiti, St. Lucia, St. Vincent and the Grenadines, and the Bahamas) that are heavily reliant on imported food. The Food and Agriculture Organization (FAO) reports that of the 43 developing countries worldwide that depend on a single commodity for more than 20 per cent of their total revenues from merchandise exports six are Caribbean countries (Guyana, Belize and Cuba (sugar); Dominica, Saint Lucia and St. Vincent (bananas)).

Caribbean countries must also contend with declining foreign direct investment (FDI) and official development assistance (ODA). In 2006, FDI inflows to Latin America and the Caribbean (excluding the main financial centres) reached over US\$72 billion, an increase of 1.5 percent over 2005, while the Caribbean region's share of global FDI inflows declined, as flows increased more rapidly in other parts of the world. Outward FDI from Latin American and Caribbean countries jumped by 115 per cent to about US\$41 billion, expanding faster than in the rest of the world. Also of concern to the region is the global decline in Official Development Assistance which dropped from \$106.8 billion in 2005, to

about \$103.9 billion in 2006.¹ However, the impact of this decline has been offset somewhat by steady growth in remittances which moved from 5.2% of GNI in 2000 to 7.0% in 2004².

Examples of measures on increasing economic resilience to climate change and reducing reliance on vulnerable economic sectors, including through economic diversification

Over the past decade, several Caribbean countries have sought to transform their economies away from agriculture and manufacturing to services, anchored around tourism and financial services. Tourism now accounts for between 25 and 35 per cent of the total GDP of the region. It is also the major foreign exchange earner in the region, accounting for one-quarter of foreign exchange earnings, and one-fifth of all jobs. However, as the fall-out from the events of 9/11 has shown, tourism is no less vulnerable than agriculture to external shocks. And given the heavy presence of tourism infrastructure within the coastal zone in many of the countries, tourism is even more vulnerable to the adverse impacts of GCC and sea level rise.

Fisheries resources are coming under increasing pressures across the Caribbean because of overfishing, illegal fishing, and pollution, increased sediment load as a result of flooding, and pollution produced by heavy use of pesticides and fertilizers to increase agricultural productivity. Fishers have been encouraged to shift from fishing to tourism as tour guides and guides for sport fishing.

On the mainland subsistence farmers are encouraged to also move toward the tourism sector as tour guides, bee keeping, sustainable and selective forestry instead of clearing new land for agriculture. However, there are insufficient resources to enforce conservation measures and illegal clearing continues and subsistence farmers remain vulnerable to climate variability and extreme events.

Conclusions

The Caribbean remains one of the most vulnerable regions, yet it has limited options for economic diversification to reduce its vulnerability. Consequently, it is important that strong and enforceable international mitigation measures are implemented to limit climate change and that the region is provided with the financial and technological resources to adapt to climate change.

¹ Global Development Finance 2007, The Globalization of Corporate Finance in Developing Countries, http://siteresources.worldbank.org/INTGDF2007/Resources/3763069-1179948748801/GDF07_Overview.pdf

² Toward an Outward-Oriented Development Strategy for Small States, Briguglio et al, 2006 Small States Forum 2006