**Annex V –Cuba's environmental profile**

**State of the environment and key pressures**

***Physical conditions***

Cuba is the largest island in the Caribbean. Its territory covers 110 860 km2. Approximately

two-thirds of Cuba consists of plains or rolling lands with low elevation. The rest of the

territory is formed by three groups of mountains, where most of the remaining natural forests

occur. Cuba lies within the northern tropics and has a semitropical climate. The country has a

total coast line of approximately 8000 kms. Average daily temperatures range from about 21°

C in winter to about 27° C in summer. Cuba has a dry season from November through April

and a rainy season from May through October. Average annual rainfall is about 1 300 mm,

with local variations (the northern slopes of the Sierra Maestra, for example, have over 3 000

mm). Thunderstorms occur almost daily during the rainy season and the island is subject to

hurricanes during the period June to November, but most commonly from August through

October.

***Economy and industry***

Cuba has 11,3 million inhabitants, the GDP amounts to 45,5 billion US dollar and GDP per

capita 4.051 US dollar (all figures for 2007 – see CSP – Cuba calculates its GDP differently

from the international standard method). Cuban industry encompasses sugar, petroleum (4

refineries), and food processing; the manufacturing of textiles, chemicals, wood, paper and

tobacco products, cement, fertilizers, and agricultural machinery; and the extraction of metals.

Only in mining and sugar processing does Cuba contribute a noteworthy portion of the

world's production. Tourism is the main source of income for the country and has surpassed

the sugar industry in terms of contribution to the GDP.

***Biodiversity***

Cuba has the highest species diversity and highest degree of endemism in the West Indies.

22% of the country is formed by specially protected areas. Cuba has 35 national protected

areas, while the land is covered for 25% forest (compared to 13 % in 1980. deforestation has

been stopped by active government intervention and the surface covered with forest is

increasing.). Of the flora in Cuba about 48% is in danger, of which around 22% in serious

risk. Of the fauna these figures are 30% in danger of which 14% in critical risk.

***Environmental risks***

Environmental risks include terrestrial degradation, industrial wastewater and sludge,

freshwater degradation, surface water pollution and extensive use of pesticides. Over the last

years industrial wastewater and sludge and pesticides risks have diminished (partly due to

measures taken, partly to the overall slow-down of the economy) but municipal wastewater

and marine coastal degradation rank higher than previously. Mining, oil exploration and

tourism form other and growing serious threats to the Cuban environment.

70 This information is part of the Regional Caribbean environmental profile which constitutes the wider reference

document on environmental issues for this CSP.

***Air pollution***

Cuba has a national monitoring system for air quality which indicates high levels of NOx and

NH3 in the urban areas. In the cities air pollution from (old) cars is a growing concern but

traffic density is low compared to other cities in countries in the region, (NOx and particulate

matter). In rural areas the emissions from agricultural activities (mainly NH3) and various

gaseous industrial emissions can be important on a local scale.

***Energy***

Partly due to political reasons, Cuba had to seek new sources of energy and to depend on its

own for its energy needs. Considering this as one of the main new challenges and bottlenecks

for development, Cuba embarked on an ambitious energy strategy that was based mainly on

energy savings and on improvements of energy management and the search for sources of

(renewable) energy. Energy consumption per capita is among the lowest in the area. Bagasse

is used to co-generate in the energy production. Hydropwer is used and gaining importance,

most important renewable sources are solar and wind energy.

***Water Pollution***

According to the United Nations Environmental Program (UNEP), water pollution in Cuba is

a serious concern, particularly since there is an important lack of infrastructure to address the

issue. Of the 2,160 main contaminant sources recognized by UNEP, 1,273 or 59 percent,

release their pollution into the Cuban environment without any treatment whatsoever. Another

433, or roughly 20 percent, receive limited but inadequate treatment before being discharged.

This analysis included agricultural sources of contamination, as well as industrial and human

waste.

Despite its clear importance to the citizens of Cuba, the treatment of urban sewage in

particular is very limited: only 17 or 18 percent receives any treatment before discharge into

Cuban waterways. According to INRH (hydrological Institute) this amounts to 37%. 40% of

the domestic water is collected by sewer system. The infrastructure of water and sanitation are

old an urgently need extension and repair. Havana’s sewer system, which was built almost a

hundred years ago, is serving over two million citizens, well beyond its design capacity of

400,000. There are in total 8 small and old Waste Water treatment plants in the country,

leading to the situation where most water are untreated and, in the case of Havana, are

pumped untreated through pipelines into the Caribbean Sea, some kilometers offshore.

Initiative with financing from GEF for different countries in the region includes a new

WWTP for Havana. This is still in a very preliminary state of evaluation.

The Cuban government has recognized this as a major environmental problem on the island.

UNEP reported an approximate total of 341,716 tons per year of organic material discharged

into Cuban waters, equivalent to the pollution generated by a population of over 22.3 million

people (almost twice the actual population).The effects on the Cuban environment have been

severe. Cuban bays are widely recognized as being heavily polluted although improvements

have been achieved over the last years and programmes were initiated to tackle the problem.

The Almendares River, which flows through Havana, carries the untreated sewage of over

42,000 people directly to Havana Harbor and coastal waters. There has been evidence that in

Havana, an underground aquifer that provides 36% of the city’s potable water that runs

directly beneath the polluted Almendares, represents a high risk of widespread drinking water

contamination for the city. This is a phenomenon that is being replicated throughout the

country: it has been estimated that annually 863.4 billion gallons of contaminated water finds

its way into Cuba’s rivers, much of it industrial. A recent study of the groundwater in Moa,

usually a naturally protected resource, concluded that a new water source for the population of

Moa must be developed quickly, as the present source will be increasingly contaminated with

heavy metals much of it from the nickel industry in the medium to long-term. Tourist

facilities have also exhibited insufficient treatment regimens, as many either pump waste

directly into the sea at some distance from the coast, or use small oxidation pools, and release

lightly treated water into the ocean.

***Drinking water***

Pollution is not the only serious problem facing Cuban water supply. Cuba’s water

distribution infrastructure is old, leading to gross inefficiencies and very high loss (up to 70%

in the worst cases). According to a study by the Pan American Health Organization, the

amount of water lost to leaks in the system is alarming: in smaller cities of Cuba the

percentages range from 13 percent in Pinar del Río to 30 percent in Manzanillo to 42 percent

in Santa Clara. It has been estimated that of the 30 million cubic meters of water pumped into

Havana every month, 12 million is lost. This leads to an overdrawing situation where

extraction from the environment far exceeds the actual volume that reaches the end user,

creating undue strain on the water resources of the island. 98 % of the Cuban population is

connected to a drinking water system. Apart from inefficiency and high losses the use per

capita is high.

***Waste***

Waste is collected efficiently in most parts of the country but dumped in uncontrolled

dumpsite for the mayor part. The existing landfills for Havana are full and new two landfills

will be constructed, making use of state-of the art technology (ground water protection,

leakage and leaching control). For industrial waste no good solutions are available (some is

incinerated in cement factory).

***Land use and soil degradation***

The urbanization grade is about 75 %. Most land is used for agricultural (sugar cane)

business. The most serious environmental problem in the country concerns terrestrial

degradation, which included the effects on soil quality due primarily to agriculture, mining,

etc. The widespread use of irrigation in agriculture with poor drainage has caused a

significant amount of salinization of the soil, which leads to acceleration of erosion and

decreased crop yields. According to the United Nations, Granma province suffers from a 20-

40 percent reduction in crop yields due to increased salt in the soil, while the province of

Guantánamo has been more severely affected with 10 to 70 percent reductions in yields. Salt affected soil covers 14 percent of the national territory, or approximately 1 million hectares.

The cost of recovering these salt-affected soils has been estimated at $1.43 billion. This is one

of the main contributors to soil erosion which according to the Cuban government, affects 60

percent of Cuba’s territory, which has given rise to serious concerns about desertification, or

extreme topsoil loss.

***Climate change and natural disasters***

Climate change is already having significant and serious impacts on developing countries as

highlighted in the recent reports of the Intergovernmental Panel on Climate Change (IPPC).

Climate change is a threat to development and diminishes the chances of achieving the

Millennium Development Goals. Cuba has attainted most of the MDGs, but the goals

‘environmental sustainability’ and a ‘global partnership for development’ require still further

efforts. These are still challenges for the Government, which is committed to safeguard the

environment and rationalize the use of natural resources. Economic development and food

security are still on the priority list. Cuba contributes very little to the emission of greenhouse

gasses. Adaptation to climate change has become a precondition for sustainable development.

Climate change and raising water levels form a serious threat to the coastal zones and other

low areas of the country. Infrastructure and tourist resorts are still built on vulnerable coastal

areas. Cuba is right in the hurricane belt and frequently suffers severe impacts from tropical

storms. The climate change seems to strengthen this effect given the higher frequency and

strength of the hurricanes that develop in the area. Together with UNDP, CDM projects are

being prepared (landfill gas extraction e.g.). There is a tradition and culture of disaster and

risk mitigation in Cuba equal to none in the developing world. The number of lethal victims is

usually close to zero and evacuation plans are rehearsed frequently, are well coordinated and

can be seen as an example for the region. The Cuban meteorological institute has a lead

position when it comes to prediction and early warning.

Droughts are much more disastrous for Cuba than Hurricanes. The effects of droughts last

very long and agricultural production diminishes drastically.

**Political, legislative and institutional framework**

Following the Earth Summit in 1992, Cuba designed and implemented a variety of programs,

administrative structures, and public awareness activities to promote sound environmental

management and sustainable development. This came shortly after the fall of the Soviet

Union and the strengthening of the US blockade in 1990, which resulted in a 35% drop in

Cuban GDP. This period, witnessed a decrease in many environmentally damaging activities

both by choice and by necessity, but also resulted in many decisions to resuscitate the Cuban

economy.

The Ministry of Science, Technology and Environment (CITMA) is the central national

authority with respect to policies and environmental management. AMA, the Environmental

Agency of Cuba is responsible for the development of a scientific and technical basis for

integral solutions for the environment and natural resources on the archipelago, including

management, consultancy and information. CIGEA (centre for environmental management,

information and education) is responsible for pollution control, implementation, inspection

and information management. CNAP and CBIO are respectively responsible for protected

areas and biodiversity. Specialized institutes for monitoring pollution and environmental

quality exist in the country. The NMI, National Meteorological Institute is the leading

authority with respect to climate change and hurricane prediction/response. Cuba has a

National Programme for the Environment and development, which includes spatial planning.

A National Environmental Strategy was formulated, including millennium goals for

sustainable development. The environmental legislation includes technical standards and an

EIA and system of environmental permits is in place. Cuba has environmental inspection and

monitoring system and financial incentives for environmental purposes. From a scientific

point of view Cuban environmental institutes are of a high level. In practice, often lack of

investment capital and hardware form a bottleneck.

***Priority fields of action for the environmental authorities***

Protected areas; sanitation and waste water treatment, cleaning and regeneration of (Havana)

bay(s); introduction of innovative solutions in the handling of solid waste; soil

decontamination; better energy production (renewable) and savings; drinking water system;

handling of hazardous waste, infrastructural planning and coastal zone management.

***International Agreements and cooperation***

Cuba is (as contracting party, in the same manner as most other Caribbean Sates), adhered to

Multilateral Environmental Agreements such as the Basel, Montreal, Ramsar, Marpol (annex

2), Climate Change, Rotterdam, Biodiversity, Desertification, SPAW and other regional

Environmental Agreements on oil spills and waste to the protection of marine ecosystems.

Bilateral cooperation with different European countries in the field of environment take place

and also with Japan. Active cooperation takes place with CCCCC.

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