



# PROJECT/PROGRAMME PROPOSAL

## PART I: PROJECT/PROGRAMME INFORMATION

PROJECT/PROGRAMME CATEGORY: **Regular**  
 COUNTRY/IES: **Honduras**  
 TITLE OF PROJECT/PROGRAMME: **Addressing Climate Change Risks on Water Resources in Honduras: Increased Systemic Resilience and Reduced Vulnerability of the Urban Poor**  
 (UNDP PIMS 4399; Atlas IDs – Proposal 00060323, Project 00075904, HND10)  
 TYPE OF IMPLEMENTING ENTITY: **Multilateral Implementing Entity**  
 IMPLEMENTING ENTITY: **United Nations Development Program Secretariat for Natural Resources and Environment (SERNA)**  
 EXECUTING ENTITY/IES:  
 AMOUNT OF FINANCING REQUESTED: **\$ 5,698,000** (in U.S Dollars Equivalent)

### PROJECT / PROGRAMME BACKGROUND AND CONTEXT:

Although Honduras has 19 watersheds with total mean yearly flows of over 90 million m<sup>3</sup> (Rodas, 2009) - including transboundary basins shared with El Salvador, Nicaragua and Guatemala - access to water is still limited in many areas of the country. In rural areas only 77.1% of the population has access to water and 15% to drinking water (INE, 2006). Degraded watersheds affected by deforestation and pollution of both surface and ground water aggravate the critical situation. The Choluteca River, which is the main water source for the capital city of Tegucigalpa, is no exception. According to the National Hydrological Balance (NHB) study (CEDEX, 2003) the main urban areas (Tegucigalpa and San Pedro Sula) and several key agricultural areas (mainly Patuca basin in Olancho) will face increased water scarcity in the near future.

Future climate scenarios indicate that existing water scarcity will be exacerbated by climate change and increasing variability. A recent national study on future climate change scenarios (Argeñal 2010) indicates a 5% decrease in annual rainfall by 2020 – particularly in departments located along the northwest - south east corridor from Cortes on the Caribbean coast to the Choluteca river basin on the Pacific slope. It also projects between 0.5 and 0.75 degrees Celsius increase in mean annual temperature, especially in departments in the western and southern regions. By 2050, a 20-25% decrease in precipitation is projected for most parts of the country between the months of June through August, with deficits exceeding 30% for most areas during the months of July and August especially in the departments of western Honduras. Under these conditions the decrease in rainfall that normally occurs in the middle of the rainy season in most of the country, will become longer, hotter and dryer thus putting crops and water access for human consumption at risk. The pessimistic scenario for 2090 presents a 30-40% decrease in precipitation with increases in temperature of more than 4 C° in most of Honduras. These scenarios represent a major threat in terms of Honduras' sustainability and political stability, if current demographic, urbanization and economic trends - particularly related to poverty levels – persist.

While the seven Central American countries emit less than 0.5% of the global emissions, it is estimated that the impact on economic, social and environmental losses by 2100 of these countries will be at least \$103 billion dollars. Clearly the poorest countries and therefore the most vulnerable will be the most affected by the impacts of climate change. Honduras is currently considered one of the most vulnerable countries in Latin America. According to the latest report of the Germanwatch Institute (2010), Honduras is ranked number three on the list of countries with highest levels of exposure and vulnerability to extreme events for 2008, confirming the urgent need to mainstream climate change into policies and programs, and to work both at national and local levels on climate change adaptation issues. A recent evaluation from the World Bank concluded that 62 percent of the territory Honduras and 92 percent of the total population were at risk from two or more hazards, placing Honduras in the world's top ten ranked countries at risk of natural disasters<sup>1</sup>.

Increasing frequency and intensity of hydrometeorological events as well as more marked climatic variability will exacerbate these high levels of exposure. The financial losses in Honduras due to disasters during the past 30 years are estimated at \$4.7 billion, representing approximately 50% of losses in Central America. Six of the twelve strongest hurricanes of the 20th century have impacted Honduras. The most notable example was Hurricane *Mitch*, which generated torrential rainfall nationwide for a number of days in October-November 1998, leading to flash floods and landslides which caused an estimated 10,000 deaths, destroyed 70% of the country's road infrastructure and drinking water supply network, and led to extensive crop losses. Less severe events such as tropical storms *Wilma*, *Beta* and *Gamma* in 2005 also had significant impacts on housing, infrastructure and agriculture. Forest cover loss was extensive and many of the country's watersheds "became extremely vulnerable to climatic events similar or even less dramatic than hurricane *Mitch*" (SERNA, 2000:67). There is no doubt that the country's vulnerability to such events is increasing and additional storage infrastructure will be needed to cope with the changing conditions. Most recently, the first tropical storm of 2010 (*Agatha*) brought torrential rains in Honduras that triggered flash flooding and landslides in parts of the country causing 18 deaths and forcing the evacuation of more than 16,000 people. In the Choluteca river basin 31% of housing reported massive damages and 30% of total agricultural output was lost.

Despite some positive socio-economic and human development indicators, social and environmental vulnerability has been constantly increasing in Honduras. This situation is a result of: (1) pervasive and structural poverty characteristic of the third poorest country in Latin America and the Caribbean after Nicaragua and Haiti: two-thirds of the people of Honduras are poor or extremely poor; social indicators for health and education are far below the average for Latin America and chronic malnutrition affected 27,4% of children in 2005-6; (2) extremely high inequality as measured by the distribution of income<sup>2</sup>; (3) recurrent impact of disasters triggered by environmental degradation, inadequate land use planning and enforcement aggravated by climatic drivers<sup>3</sup>; and, (4) limited access to public services including safe drinking water (10%) and sanitation (32%) which results in high levels of diseases related to maternal and child malnutrition and mortality<sup>4</sup>. Moreover, in Tegucigalpa water rationing is in effect 365 days a year. There are already serious water shortages in the city, which would need to double water supplies from 2 m<sup>3</sup>/s to 4 m<sup>3</sup>/s by 2029.

In Honduras's rural areas 75% of households live below the poverty line. Rural poverty is closely linked to

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<sup>1</sup> World Bank, *Natural Disaster Hotspots: A Global Risk Analysis*, Series on Management of Disaster Risks, No. 5, 2005

<sup>2</sup> Honduras has a Gini coefficient of 0.54: 0

<sup>3</sup> For example the 1997-98 El Niño events was followed by the destruction wreaked by Hurricane Mitch -which increased poverty levels by up to six percentage points.

<sup>4</sup> At present, only approximately 87% of the city's residents have access to sewerage collection systems.

lack of land and prevailing patterns of land distribution, where 1.6% of farmers own 40% of farmland and there are close to 300,000 landless families. A high frequency of drought episodes affects Honduras, causing social and economic losses and threatening the population's fragile food security. Small farmers living at the so-called "Corredor seco" or *Dry corridor* along the departments of Choluteca, Morazan and Valle -in central and southern Honduras-, are frequently subject to famine due to intense droughts - particularly related to ENSO events- in which they lose all their subsistence grain production. These types of impacts are expected to get worse as climate change hits the poorer peasants' subsistence crops with increased water stress and if climate-resilience is not increased in the high water demanding agricultural sector. Currently, within the framework of SEPLAN's new "Plan de Nación" or *National Plan*, the Choluteca River Basin is prioritized as one of most important of 17 planning zones given that the capital city, Tegucigalpa, concentrates 20 to 30% of the country's population.

A growing population - especially in urban areas around Tegucigalpa- leads to ever-greater encroachment in areas prone to landslides and flooding. Fragile infrastructure is highly vulnerable to adverse climatic conditions. High poverty levels (51% of the population - 29.7% of which in extreme poverty) could be exacerbated by climate change impacts. Despite recurrent impacts of tropical storms and hurricanes, the country has still an overall very low adaptive capacity at national, regional and local levels. A large proportion of the country's population remains at severe risk from hydrometeorological and associated extreme climatic events, such as floods, droughts and landslides, as well as the permanent threat of water resources mismanagement which aggravates reduced water availability.

According to the Central American Water Resources Adaptation Framework (CRRH-IUCN-GWP, 2001) the *El Niño* -ENSO- phenomenon juxtaposed with climate change could severely impact the Pacific slope of Honduras, the most vulnerable region according to CC scenarios. Honduras' *First National Communication to the UNFCCC* (SERNA, 2000) highlights that impacts generated by CC shifts in rain and temperatures patterns "could lead to a situation of disaster" in agricultural and other economic activities "if the appropriate (adaptation) measures are not undertaken in a timely manner" (SERNA, 2000:64). In particular, the agricultural activity in the valleys of Comayagua, Sula and Choluteca could be severely impacted and their hydropower capacity curtailed due to significant water stress (SERNA, 2000:64). Recent targeted local future climate scenarios modeled by the *Center for International Forestry Research* (CIFOR) and the *Tropical Agricultural Research and Higher Education Center* (CATIE) for the three main basins that provide water to Tegucigalpa indicate that river flows will decrease considerably due to climate change affecting severely water supply in the capital city (*Saborío, undated*).

Alterations in the hydrologic cycle and increasing difficulties in accessing water in Honduras is a socioeconomic problem driven and exacerbated by climate variability (ENSO) and change and therefore a high priority for Honduras' sustainable development agenda. More frequent and severe rationing of water is already taking place every year. During the rainy season, many households usually receive water only one day out of two. Tegucigalpa only gets water a few hours a day. The Government has already announced more frequent and longer cuts in water services in Tegucigalpa due to impacts of climate change and has considered adaptation measures to cope with this situation. However, adaptation measures to date have been short term and fragmented, and there is recognition of the need for a holistic approach that encompasses both short-term and long-term interventions. It is therefore recognized by the Government, civil society and development agencies that it is critical to mainstream adaptation considerations into existing water policy and programmes and to promote climate proofed integrated water resource management (IWRM) countrywide in conjunction with development of hydraulic infrastructure to mitigate floods and bridge droughts.

There is recognition of the need to increase water availability during the dry season and to reduce the risk of

flooding. The Government is therefore endeavoring to address climate risks to water resources through a multi-pronged approach that includes improved governance at both national and local levels, strengthened capacities to generate science-based information as well as development of vital sustainable infrastructure to reduce vulnerabilities to water scarcity and flooding. However, a series of barriers impede the effectiveness of the Government's efforts. These include difficulties in downscaling climate change models; an absence of technical and human capacities to generate and monitor hydrologic and climatic data; weak communication flow between scientists and policy-makers as well as between institutions and different economic sectors; insufficient local and national capacities to mainstream climate risk considerations into development planning and programming processes, as well as an overall low awareness of climate change impacts and adaptation options for climate-resilient water resources management.

Water scarcity increases the vulnerability of socio-economic conditions of the population from the marginalized neighborhoods<sup>5</sup>. In these neighborhoods there is no a public water system and they must buy the water from private water suppliers. This water is distributed by truck and the monthly cost is 50 times higher than in neighborhoods with access to the water system. The cost of the water can represent 25% of the total income of a poor family. This limited access to water increases the risk of diseases like dengue, skin diseases, and diarrhea. Surprisingly the neighborhoods with less access to the water system have less storage capacity. The storage capacity of a family from a high level income neighborhood (with better access to the water system) is on average 12 times the capacity of a family from a poor neighborhood.

#### *Tegucigalpa and environs*

The heavy rainfall and the associated landslides and floods affect the economy of the population and threaten their lives. A study developed by JICA identifies 15,000 inhabitants in flood risk areas and 132,500 inhabitants in landslide risk areas. Landslides are the main hazard in Tegucigalpa. Due to the high cost of the land, the poorest people live in the most vulnerable areas, especially those prone to landslides. As a result of increasing of rainfall some of these landslides have become more frequent in recent years affecting poor families' houses. After hurricane Mitch, the municipality of Tegucigalpa tried to relocate some of these people in vulnerable areas to new small villages far from the city. However in most of the cases they returned to their vulnerable original location as their only livelihood options and possible sources of income are in Tegucigalpa. There is therefore a need to develop response measures that reduce vulnerability levels of these highly exposed communities.

Efforts undertaken by the national Government with the technical support of UNDP attempt to identify the most vulnerable areas in the country to climate change. Many workshops with key actors have taken place and as a result of these meetings Choluteca Basin, and as part of the upper part of the basin the city of Tegucigalpa, was identified as the most vulnerable area to climate change in the country. This participatory identification was the result of an analysis of scenarios and vulnerabilities to climate change in Tegucigalpa. In the area of Tegucigalpa some of the main impacts identified by the future scenarios to climate change are:

- **Water scarcity.** As noted above, the city of Tegucigalpa was identified in the National Hydrological Balance (NHB) as one of the areas that will suffer most water scarcity in the 2025 scenario. In Tegucigalpa water rationing is already in effect 365 days a year. There are already serious water shortages in the city, which might need to double the water supply from 2 m<sup>3</sup>/s to 4 m<sup>3</sup>/s by 2029. As an example of the critical situation of Tegucigalpa to face the projected water scarcity, in December 2009

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<sup>5</sup> Water as a Human Right and the Effects of Privatization in Honduras, prepared for Mario Ardón Mejía, Honduras, March 2005 for Bread for the World, Honduras, (March, 2005).

the Government of Honduras declared a state of emergency in Tegucigalpa due to water shortages from drought caused by the climatic phenomenon "El Niño".

- **Heavy rainfall.** In the assessment for the national land use plan, Tegucigalpa and the Choluteca basin were identified as one of the areas with the most extreme rainfall in the country, extreme rainfall that produces floods and landslides. In June 2010 during storm Agata 24% of people that were evacuated in the country were from Tegucigalpa.
- **Landslides.** Tegucigalpa is strongly affected by landslides. One study developed by UNDP identified an area of 1,856 ha affected by landslides in Tegucigalpa.
- **Diseases.** In June 2010 the Honduras Government declared a national health emergency as a result of the high number of dengue cases. 78% of the total cases were in Tegucigalpa. The high impact of the dengue in Tegucigalpa is a result of the water scarcity. Due to this water scarcity, people in the poorest areas must store water and these water tanks are ideal breeding grounds for the dengue mosquito.
- **Deforestation** An assessment of the environment vulnerability in the main Honduran basins identifies the Choluteca basin as one of the most deforested basins in the country. Urban expansion has already started to penetrate important watershed areas, such as the Guacerique watershed, which is one of only three future water sources for the city. In the northern part of the city, urban growth is encroaching on the United Nations Parks (El Picacho) and La Tigra National Park. In the case of La Tigra, encroaching development also threatens the quality of another one of the city's watersheds. In the south, development is encroaching on the city's major reservoir, La Concepcion. Deforestation in the protected areas, particularly in the watersheds, is a serious problem, which has contributed to sedimentation of river channels and increased potential for flooding on the Choluteca and its tributaries (Angel et al., 2004).
- **Density.** Tegucigalpa city has the highest population density in the country with 734 inhabitants per square kilometer, which is a factor in high exposure levels to natural disasters. This high density is especially critical for a city located in a fragile environment, with high slopes and volcanic soils. Over the past 30 years, the urban area of Tegucigalpa has more than tripled in size and will continue to grow reaching an estimated population of 2,000,000 by the year 2029 (Angel et al., 2004). Population density is highest in the northwestern area of the city and along much of the urban periphery which is constantly impacted by floods, landslides and droughts.
- **Governance.** In 2009 Tegucigalpa was identified as the 8<sup>th</sup> most violent city in the world.
- **Poverty.** Tegucigalpa also evidences high economical vulnerability. In Tegucigalpa 57% of households live below the poverty line. These inhabitants that live under the poverty line are the most affected by the various hazards (landslides, water scarcity and floods)

In addition to this study, in June 2010 the municipality of Tegucigalpa with support from UNDP carried out a participatory study to identify the most vulnerable areas of the city. As part of this study 14 *barrios* (neighborhoods) were identified as the most vulnerable. The main common features of these vulnerable areas are the following:

- The populations of the neighborhoods are families with high levels of poverty. Most work in the informal sector for income generation that is affected during emergencies. Security conditions are very bad and there are high levels of crime and violence.
- Most homes and other buildings have been built on steep slopes informally and without applying any building regulations or taking into account soil characteristics.
- Access to safe water under normal conditions is very limited. In emergency situations the availability of water decreases dramatically.
- The roads leading into the neighborhoods and the internal streets are mostly dirt and have no proper drainage system, so the streets collapse during heavy rain events. Waste water is usually thrown out on the streets, generating pollution and diseases.

In order to identify the perception of the population of these vulnerable neighborhoods about climate change and disasters 657 surveys were applied. The results were:

- 90% of respondents believe there are more natural disasters now than before, and 33% perceived that this is a consequence of the climate change.
- Additionally 90% of respondents also believe that they could be directly affected by a disaster in the near future, mainly because they live in an area at risk (73%) and because housing is constructed with materials that are very weak (34%).

Therefore the perception of the risk of disasters associated with climate variability and change is high among the city’s population but the association between disasters and climate change is still incipient. There is a need to move beyond short term understanding of vulnerability and of response options to more long-term planning, programming and understanding that encompasses the projected climate change scenarios. Tegucigalpa and the upper Choluteca basin clearly evidence a complex multi-hazard scenario that will be exacerbated in the future according to climate change scenarios.

### **PROJECT / PROGRAMME OBJECTIVES:**

The objective of the project is to increase resilience to climate change water-related risks in the most vulnerable population in Honduras through pilot activities and an overarching intervention to mainstream climate change considerations into the water sector. Given the cross-cutting scope of this sector, the project will therefore contribute to incorporate climate change issues into the planning processes and investment decisions of key line ministries. Targeted work in Tegucigalpa and the watersheds that provision the capital city, will validate concrete response measures – ranging from economic incentives to low-cost technology investments that will assist in orienting work at policy levels. This will be achieved through three outcomes:

1. Improved institutional capacities and tools for mainstreaming adaptation to climate change through the regulation and application of the new Water law and the National Plan law, which calls for inter-sectoral and landscape approaches that internalize climate change concerns.
2. Existing water stress and projected increased water scarcity in Tegucigalpa and environs, as well as flash floods due to extreme events, addressed through a range of complementary measures that will serve to pilot responses to climate change impacts in both watershed and urban settings.
3. Targeted capacity building and tools enable stakeholders at all levels to effectively respond to long-term climate change impacts

### **PROJECT / PROGRAMME COMPONENTS AND FINANCING:**

<b>PROJECT COMPONENTS</b>	<b>EXPECTED CONCRETE OUTPUTS</b>	<b>EXPECTED OUTCOMES</b>	<b>AMOUNT (US\$)</b>
1. Relevant institutional structures including the National Water Authority, strengthened for mainstreaming climate change risks	1.1 Integration of climate change risks and opportunities into the new Water Law and the new National Plan Law effectively mainstreams these into water resource policies, watershed management plans, and investment planning policies for sectors with high water demand 1.2 Capacities at the new Water Authority and SEPLAN for integrating climate risks into planning and programming processes strengthened (eg investments, allocation of land and	Capacities and tools developed to collect and manage climate risk information for strategic development processes to enhance resilience	1,420,000 <i>(Note: 77% will allocated for investments)</i>

into water resources management as well as into national planning, public investment - budgeting and decision-making processes (at various scales)	water use rights, and urban development) 1.3. National meteorological network strengthened, and quality and quantity of information on the scientific, technical and socioeconomic aspects on impacts of climate change, vulnerability and adaptation improved 1.4 Climate risk assessment tools and information available (eg updated National Hydrological Balance, vulnerability assessment of groundwater resources, update of CC risk socioeconomic indicators, review of climate related risk maps) to relevant institutions and embedded in planning processes for climate proofing watershed management approaches, agricultural practices, flood and landslide control measures, and infrastructure development		
2. Comprehensive measures piloted to safeguard Tegucigalpa City and environs' water supplies in response to existing and projected water scarcity and to the vulnerability to extreme climate events	2.1. Water provisioning services maintained despite long-term climate trends through sustainable land use practices piloted in the highland watersheds and green belt around Tegucigalpa 2.2- Financial mechanisms (eg water pricing, risk transfer/insurance) assist in managing water supply and demand to address current and projected water scarcity in the capital city and surrounding landscape 2.3- Activities for adaptation to climate change impacts, ranging from water scarcity to flooding piloted in the 14 most vulnerable areas of Tegucigalpa (eg low cost water storage facilities, stabilized landslides areas, more efficient water use and rainfall management schemes, early warning systems) 2.4- Targeted thematic strategic plans (eg. adaptation strategy for upper Choluteca basin, rainfall management plan, groundwater diagnostic analysis) enable municipal authorities of the upper Choluteca River to overcome short-term reactive responses to climatic risks and impacts	A range of targeted investments and actions reduce climate change risks and vulnerability to projected water scarcity as well as to hydrometeorological hazards in Tegucigalpa	2,950,000 <i>(Note: 88% will be allocated for investments)</i>
3. Targeted capacity building and outreach enable stakeholders at all levels to effectively respond to long-term climate change impacts	3.1. Targeted training provided to policy-makers and key stakeholder at national and municipal levels on the incorporation of CCA information in decision-making processes 3.2. "Policy dialogue platforms", enable key Ministries and stakeholder groups to define and prioritize adaptation options, negotiate trade-offs and resolve conflicts 3.3 Communications and outreach strategy uptakes lessons and practices developed through the project for replication	Decision makers and resource users understand the projected impacts of climate change and identify effective options for reducing climatic risks and vulnerability	310,000
6. Project Execution cost			500,000
7. Total Project/Cost			5,180,000
8. Project Cycle Management Fee charged by the Implementing Entity			518,000
<b>Amount of Financing Requested</b>			<b>5,698,000</b>

## PROJECTED CALENDAR:

MILESTONES	EXPECTED DATES
Start of Project/Programme Implementation	November 2010
Mid-term Review (if planned)	May 2013
Project/Programme Closing	November 2015
Terminal Evaluation	December 2015

## PART II: PROJECT JUSTIFICATION

### **A. Describe the project components, particularly focusing on the concrete adaptation activities of the project, and how these activities contribute to climate resilience.**

#### ***Component 1- Relevant institutional structures including the National Water Authority, strengthened for mainstreaming CCA into water resources management as well as into national planning, public investment - budgeting and decision-making processes (at various scales)***

The recent approval of the Water Law<sup>6</sup> and the National Plan Law<sup>7</sup> in Honduras represents a unique opportunity to strengthen capacities for mainstreaming climate change into the country's inter-sectoral policy framework. However, despite the country's significant exposure to climate change risks and high vulnerability, no provisions have been made for mainstreaming climate change considerations into these norms or into related development planning process. Therefore the project will work at two levels: under **Output 1.1** at the national level, and taking full advantage of the opportunities created by the recent approval of both these Laws, it will ensure that these legal frameworks are harmonized in terms of mainstreaming climate change adaptation issues. Jointly, these norms will be pivotal in getting other line ministries and sub-national actors to effectively take climate risk issues into account when deciding on key developmental issues such as investments, allocation of land and water use rights, and urban development.

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<sup>6</sup> In December 2009 Honduras approved a new national Water Law that provides the framework for responding to the challenges faced by this sector. Under the Law, a new Water Authority has the mandate over water resources management, but also, as the Text of the Water Law states: the Water Authority has a mandate over water, ecosystems and their (Natural) Resources. The Water Authority, which operates under the auspices of SERNA (Secretariat for Natural Resources), merged two government departments: the Meteorological department and the Water Resources department. A National Water Resources Management Institute will underpin it as a technical body charged with provision of scientific information and policy briefs for the implementation of the Water Law.

<sup>7</sup> In February 2010, the Law for the National Plan was approved which divides Honduras into six regions based on the main river basins in the country. (Tegucigalpa district is under the 4th Region and the 11<sup>th</sup> sub-region). According to the Law, a Regional Development Committee must be created in each region. These regional committees incorporate both public and private actors, and are tasked with the elaboration of a regional development plan, with the support of a regional technical unit. The integration of all the regional development plans (that includes a significant land management component) will constitute the national development plan.



Work on normative solutions will need to be complemented by institutional strengthening at all levels, as proposed under **Output 1.2**. This will require enhanced collaboration between the Ministry of Natural Resources (the lead agency for the Water Law), the Ministry of Planning (the lead agency for the National Plan) and other key stakeholder groups to ensure streamlined regulation and enforcement processes that provide for effective attention to climatic risks and avoidance of decisions or investments that could lead to maladaptation. Inter-sectoral mechanisms already exist at a sub-national level in the form of the Regional Committees, established by the new law and key linchpins for water governance, with a mandate for the coordination of actions by public and private actors in a given basin. These are therefore an important vehicle for effectively incorporating climate risk considerations into planning processes and for applying these to decisions on water management, development of hydraulic infrastructure and protection, and conservation of water resources in the basin. The institutional framework for water resources management in the upper Choluteca river basin will be strengthened including developing capacities of the six Regional Committees<sup>8</sup> of the Choluteca Basin and the different municipalities located in the upper part of the basin for applying the requisite tools for incorporating CCA considerations into planning and investment decisions at the watershed level. It will thus in fact be a pilot for working with Regional Committees and municipalities. Overall, under this output the project would deliver an increased understanding of climate change impacts and response measures within national and regional planning committees, and thus the development of targeted strategies and tools to integrate CCA into planning processes. The project will thus effectively facilitate the integration and harmonization of climate change issues into territorial planning approaches in the various Honduran planning tools and institutions. This effort will be ground-truthed in work described under Outcome 2 which will focus at sub-national levels in the area of Choluteca Basin.

Another one of the challenges in Honduras for the integration of adaptation to climate change in development planning is the absence of technical information. Therefore under **Output 1.3** the national meteorological network will be strengthened. The assessment carried out by the WMO in 2005 to define requirements for strengthening the national meteorological network will be the basis for detailing investment and equipment needs. This network will assist in permanent monitoring of water flow and capture levels in the Choluteca River, thus contributing critical information to underpin proposed financial mechanisms under Output 2.3. *Over 71% of the resources requested under Outcome 1 will be allocated to this.*

In addition to this, critical technical information to orient decisions at national and sub-national level, as well as for the elaboration of climate change induced socio-economic scenarios, is still missing in Honduras. These gaps will also be addressed under **Output 1.3** through the development of technical products relevant for the analysis of vulnerability, impacts and adaptation measures in Honduras including:

- Update the National Hydrological Balance (NHB) – understood to be a vital resource for a range of adaptation options. This updated NHB will provide an overlay of climate variability (ENSO)/climate change projections estimated over short and medium term periods. Thus it will be a tool to prevent mal-adaptation through the allocation of water uses along the main Honduran river basins as well as to inform planned and future investments in the sector. This will be coupled with work under the National Plan to ensure that critical areas, such as groundwater recharge zones, are adequately managed.

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<sup>8</sup> Regional Committees have been established by the new National Plan Law and are emerging as key sub-national entities for planning, programming and decisions related to investments. They include all key sectors and stakeholders.

- ❑ In the Upper Choluteca River Basin, a Hydrological Balance will be undertaken to capture and manage information on its 6 main tributaries. This information will also contribute to strengthening Early Warning systems and other measures to prevent urban flash floods in Tegucigalpa City frequently caused by heavy rains. In turn this would represent a first step towards climate-proofing the water management plan for the entire Choluteca River Basin, one of the most important in the country.
- ❑ Update the inventory of groundwater resources and analysis of the vulnerability of these resources to climate change.
- ❑ Develop a high precision topography of the coast line to allow the modeling of the impact of sea level rise.
- ❑ Inventory of elements exposed to climate change and their vulnerability in critical sectors for national development.
- ❑ Update of socioeconomic indicators relevant for vulnerability to climate change analysis.
- ❑ Information of sedimentation estimates according to land uses trends and projections.
- ❑ Update of climate related risk maps (hazards, vulnerabilities and impacts)

In parallel to strengthening relevant policy and institutional frameworks, and generating required information, under **Output 1.4** the project also proposes to work on the development of specific tools to inform investments and activities throughout the country. In close coordination with SERNA and SEPLAN, and with the technical support from the UNAH, hydro-meteorological and climatic data will be integrated into flexible, user-friendly Geographic Information Systems (GIS). The proposed project aims to support the establishment of a GIS system equipped with the key information for incorporating climate change adaptation aspects into water resources management including: (a) river flow dynamics, (b) sedimentation estimates according to land uses trends and projections, (c) socioeconomic indicators, and (d) climate related risk maps (hazards, vulnerabilities and impacts). These will be integrated into an information GIS system that, supported by targeted training programs under Output 3.2, will become a vital technical tool for decision makers, climate change adaptation/disaster risk reduction practitioners as well as for community leaders. Even though a GIS for Tegucigalpa urban area already exists, the upper Choluteca River Basin which generates the water for the city lacks both information and the technical platform.

**Component 2** - Comprehensive measures piloted to safeguard Tegucigalpa City and environs' water supplies in response projected climate change induced water scarcity

At national and sub-national level the Government of Honduras appreciates that responding to the challenges posed by existing and future climate risks in the capital city and surrounding area will require a comprehensive, multi-pronged approach that addresses the long term sustainability environmental provisioning services, the rationalizing of both domestic and industrial water demand, and targeted interventions and investments to increase water supplies and to reduce the impact of climate change. Therefore **Outcome 2** proposes a comprehensive package of interventions will constitute a pilot with high replication potential in many water-stressed urban centers in Central America and elsewhere.

Under climate change scenarios, the protection and selection of areas of the upper part of Choluteca Basin for the creation of protected areas is critical. Tegucigalpa's water supplies come from the upper Choluteca river and in particular from two protected areas, La Tigra and the Yerba Buena Biological Reserve. However, no ecosystem services valuation assessments have ever been undertaken both to evaluate the economic benefits generated by this system as well as to determine how ecosystem services can be enhanced under conditions of climate change. For example, the provisioning services of these Protected Areas, mist forests that capture water from the atmosphere, could be enhanced by providing for greater connectivity between the protected areas around Tegucigalpa as climate changes. To improve this

connectivity under an ecosystem approach, the project as part of **Output 2.1** will develop pilot activities for sustainable land management in the highland watersheds and green belt around Tegucigalpa. This selection must include considerations of city water supply, watershed integrity, and sensitive ecosystems such as cloud forests located at high elevations that are particularly vulnerable to climatic impacts.

Under **Output 2.2** the proposed project would incorporate CCA considerations into economic incentives frameworks, including the revision of water pricing in Tegucigalpa. This would contribute to a no regrets suite of adaptation measures that would promote sustainable land uses as well as ecosystem conservation and restoration for key ecosystems with provisioning services and that function as “bio-shields” for hazard mitigation under changing climate conditions. The project will support consolidation of the “Cinturón Verde” or “Green Belt” connecting mountain protected areas around Tegucigalpa in partnership with relevant stakeholders – with the added value of encouraging connectivity as a climate change adaptation measure for biodiversity conservation, disaster risk-hazard mitigation, and to secure hydrological environmental services. There are ongoing initiatives to develop payment for environmental services (PES) for the Choluteca basin. The strengthened national meteorological network (Output 1.3) will assist in generating accurate quantitative estimates on how much water is captured in the Choluteca River Basin, in order to present and account for alternatives to urban local stakeholders’ vis-à-vis traditional infrastructure facilities. The pilot activities developed as part of Output 2.1 will serve as models to be implemented with the economic incentives framework promoted under Output 2.2.

In parallel, initiatives to increase water supplies and provisioning services need to be complemented by efforts to manage demand given current water rationing in Tegucigalpa and surrounding areas, and climate change scenarios that predict further precipitation decreases. In addition, risk transfer schemes, such as index insurance schemes will be advanced as appropriate. Mechanisms for demand management will be advanced, including revised water pricing, and included as part of **Output 2.2**. This mechanism must include clear strategies to facilitate water access by the most vulnerable population. As mentioned above, the most vulnerable population of Tegucigalpa to climate change is the population that lives under the poverty line in marginalized areas. This population is vulnerable to water scarcity, floods, landslides and diseases, impacts that will be exacerbated by climate change. Cost-benefit analyses will also be undertaken and participatory processes carried out to allow to the various stakeholders involved in the development planning processes at national and sub national level to contribute to defining and prioritizing adaptation measures based. Cost benefit analyses should underpin optimal decisions to benefit the most vulnerable population.

Under **Output 2.3** the proposed project will implement targeted, concrete actions and investments to reduce climate change and variability risks in neighborhoods prioritized for their exposure levels, in order to create more climate change resilient “barrios”. These actions will include low cost water storage facilities, stabilized landslides areas, more efficient water use and rainfall management schemes. For example, rain harvesting in Tegucigalpa and surrounding areas could mitigate water shortages given that there is currently rationing throughout the year. UNDP Small Grants Programme, Visión Mundial – World Vision - and PREVDA project do have some valuable experience in this field with lessons that can be shared. (The capture of “green water flows” usually represents around 67% of precipitation, making them central to discussions and planning adaptation strategies in the water sector - UNFCCC, 2006). An Early Warning System (EWS) will be developed integrating meteorological forecasts for the upper Choluteca basin (with information generated by the strengthened meteorological network). It will be based on a suite of defined benchmarks, and will be designed to account for both water scarcity and excess. It will also be used as a complimentary safeguarding tool for the operations of existing and planned dams. In addition to this, the EWS would help define the appropriate rationing benchmark in times of water stress. All the

actions will be developed through a robust community-based approach and using low cost technologies that facilitate the replication. *Over 86% of resources for this Outcome will be allocated to this Output.*

The Government of Honduras, and in particular the Mayor's Office of Tegucigalpa and local authorities in the upper Choluteca basin recognize that there is a need to develop targeted thematic strategic plans to in order to avoid short-term reactive solutions or actual mal-adaptation, and to rather lay the bases for long-term investment and planning processes underpinned by sound science. Under **Output 2.4** therefore the following activities will be undertaken:

- Development of a hydrological plan and an adaptation strategy for the upper watershed which would lay the basis for basin-wide processes. As part of the plan various adaptation options based on future CC scenarios and climate and hydrological projections, and targeted cost-benefit analyses will be identified and prioritized.
- Development of a rainfall management plan under climate change scenarios for the city of Tegucigalpa. Due to topography with steep slopes, this is critical for the city. This is a common problem in many of the main cities in the region and the identification of appropriate low cost technologies for responding to extreme rainfall in Tegucigalpa can serve as a model and a pilot experience for other cities.
- Elaboration of a diagnostic analysis for short and long term sustainable management of groundwater resources (quantity and quality) for Tegucigalpa City under climate change scenarios; this will be integrated into water resources assessment methodology (National Water Balance) under Output 1.3. Given current and projected water scarcity, which has led to overexploitation of aquifers, this information will be critical in allocating water use in the city and surroundings, and to orienting the regulation of the new Water Law.

### ***Component 3- Targeted capacity building and outreach enables stakeholders at all levels to effectively respond to long-term climate change impacts***

Mainstreaming of climate change issues into economic and land-use planning processes requires new or strengthened skill sets that are largely absent in government institutions. Therefore the Government of Honduras assigns high priority to capacity development at all levels. New skills will be required, for example, to undertake comprehensive vulnerability assessments and to develop climate change scenarios, as well as to incorporate climatic variables into their relevant decision and planning processes. Therefore under **Output 3.1** a targeted capacity needs assessments of key institutions, including the new Water Authority and the regional and national development committees, will be undertaken to determine precise training requirements so as to develop tailored capacity development programs that are going to effectively enable the Honduran society to confront climate change challenges. Improvement of capacities at national, sub-national and sectoral level to further identify and understand impact, vulnerability and adaptation responses is critical in order to effectively select and implement practical and high priority adaptation actions. Key government authorities at national and local levels as well as representatives of key resource use groups in private sector and communities will be trained. A possible source of training is CAP NET, an international network for capacity building in integrated water resources management, coordinated by UNDP.

Under **Output 3.2** policy dialogue platforms for training policy-makers and key stakeholder at national and municipal levels in the use of CCA information in decision-making processes would be developed, that would complement formal capacity development under Output 3.1. To date, the Plataforma del Agua (Water Platform) has initiated discussions on adaptation to climate change at a national sectoral level, with

the main objective of clarifying concepts related to the new Water Law. The project would integrate climate change information and scenarios into this process, thus strengthening understanding of climate change impacts and response measures among key stakeholder groups including public authorities, private sector, academia and non-governmental sectors. The platform will also serve to develop a network of expertise and a roster of experts who will be able to provide professional advice on hydrological and climate adaptation issues to local institutions through each municipality in the basin. These platforms would play a critical role in enabling decision makers and resource users to understand the projected impacts of climate change and identify effective options for reducing climatic risks and vulnerability. Through the platforms, it will be possible to prioritize various options and to address potential trade-offs and associated conflicts between resource users. Conflict resolution mechanisms will be developed through this output given that under scenarios of increased water stress it will be essential that societies are able to engage in participatory decision-making processes that provide for equitable access to increasingly scarce resources. Policy dialogues among all relevant stakeholders from the different municipalities belonging to the Choluteca River Basin would take place under the aegis of this Platform, leading discussions and negotiations on the adaptation (or on the prevention of maladaptation) costs of development projects proposed for the basin, focusing on their social, environmental, hydrological and climate risks cost in terms of adaptation to future climatic, hydrological and socioeconomic scenarios.

A communications and outreach strategy will be developed and implemented for relevant stakeholders for uptake of lessons learned and engagement in the various project components under **Output 3.3**. Climate change issues are relatively new on the human development agenda and there is a pervasive lack of understanding of the scope, projections and impacts. This is true for all levels and segments of society. Therefore the proposed project will launch an interactive audiovisual and online communications and outreach strategy designed to reach relevant stakeholders and to disseminate lessons learned as well as to uptake climate change adaptation response measures and experiences; this will inform both the process of mainstreaming adaptation at national institutions, policies and planning budgets, as well as specific response measures by resource use groups.

The comprehensive package of measures proposed for Tegucigalpa valley and surrounding area would constitute a pilot with high replication potential for other urban centers in Central America. Therefore the project would ensure diligent capture and systematization of lessons learned and practices. The project would also establish a local CCA clearinghouse for adaptation knowledge and toolkits management nested in national and local water agencies (National Water Authority, Choluteca Regional Water Authority and Choluteca River Basin Committees) with technical advisory support from an academic institution or centre. Lessons learned and best practices would also be disseminated through the Adaptation Learning Mechanism. The Choluteca River Basin Platform would feed this clearinghouse with experiences and lessons from the technical, institutional and political processes taking place in the basin.

Overall the training, outreach and communications efforts undertaken through this Outcome will decisively contribute to mitigating some of the risks identified for the project which are related to limited political will and a possible reluctance to incorporate climate change risks into decision and planning processes on the part of public and private sector as well as the general public. Therefore work to build up awareness of both potential climate change impacts as well as of potential adaptation response options and measures, will be a critical cross-cutting component of this project.

**B. Describe how the project provides economic, social and environmental benefits, with particular reference to the most vulnerable communities.**

Over the past 30 years, the urban area of Tegucigalpa has more than tripled in size and demographic trends indicate continued growth, reaching an estimated population of 2 million by 2029 (Angel et al., 2004). Population density is highest in the northwestern area of the city and along much of the urban periphery which suffers from recurrent impacts of floods, landslides and droughts. According to vulnerability maps developed by the Autonomous University of Honduras, high levels of vulnerability characterize 54 municipalities. Given that a majority of the poorer population inhabits informal, unplanned, and under-serviced settlements often on land subject to landslides or floods, exposure and therefore vulnerability levels are exacerbated. Difficult topographic conditions -the city is located in the middle-upper Choluteca river basin on an irregular and unstable surface with steep slopes- contributes to this multi-hazard climate risk scenario. According to the Japanese Cooperation Agency (JICA), 133 thousand families -14% of the city population- inhabit the 17 high landslide-risk zones they have mapped in Tegucigalpa. If urban expansion continues in this (unplanned) fashion, by 2031 most of the city's new development will continue to occur in high risk areas (Angel et al., 2004) and climate change impacts could be devastating. The project will pilot an integrated package of practical, cost-effective response measures that aim to reduce vulnerability to climatic risks in the 14 poorest neighborhoods in Tegucigalpa with a population of 32,000 that is highly vulnerable to climate change. The criteria for the prioritization was hazard information, indicators on poverty, housing fragility, level of organization, people at risk, population density and disaster history. The implementation of pilot adaptation actions in these barrios will benefit this population directly decreasing their vulnerability both to flooding events as well as growing water scarcity. As described above, key areas to be addressed include improved water storage capacity and targeted investments to reduce flood and landslide impacts, using low cost technologies. In addition to defined actions, other measures will continue to be defined through a highly participatory process. The vulnerability assessment carried out in Tegucigalpa identified another 70 barrios that are highly vulnerable to climate change. Therefore the pilot measures developed through the project will have very significant replication potential both within Tegucigalpa as well as in other areas of Central America.

The project will not limit itself, however, to piloting adaptation measures with the most vulnerable communities in Tegucigalpa. As underlined above, the project will put in place a comprehensive suite of measures that address not only water supply but also water demand. Therefore strategies for improved water pricing and regulation to manage demand will also be put in place. In addition to addressing needs in urban areas, the project also aims to improve land use and management options in highland watersheds and green belt around Tegucigalpa. This will both benefit water provisioning ecosystem services as well as the communities that live in the areas surrounding the capital city and in the buffer areas of the several protected areas.

The Government of Honduras understands this project to be a unique opportunity for ensuring climate-resilient development pathways. Therefore the project will also work at a more systemic level, putting in place norms that will mainstream climate change and variability considerations into key economic sectors. In this regard, the “climate proofing” of the new Water Law as well as of the leading land use planning tools to limit and control growth in high-risk areas, is considered a significant deliverable of the project. Urban expansion has already started to penetrate important watershed areas, such as the Guacerique watershed, which is one of only three future water sources for the city. In the northern part of the city, urban growth is encroaching on the United Nations Parks (El Picacho) and La Tigra National Park. In the case of La Tigra, encroaching development also threatens the quality of another of the city's watersheds. In the south, development is encroaching on the city's major reservoir, La Concepcion. Deforestation in the protected areas, particularly in the watersheds, is a serious problem, which has contributed to

sedimentation of river channels and increased potential for flooding on the Choluteca and its tributaries (Angel et al., 2004). Therefore under climate change scenarios, the selection of areas for the creation of protected areas must include considerations of city water supply, watershed quality, and sensitive ecosystems such as cloud forests located at high elevations. Therefore work under the project will deliver significant long term benefits that encompass social, economic and environmental benefits.

**C. Describe or provide an analysis of the cost-effectiveness of the proposed project**

Although many adaptation response measures are site specific, there is a need to ensure against ad hoc, fragmented responses that may address an issue or an impact in a given locality or sector, but transfer externalities or restrict options elsewhere. This is particularly true for a landscape that includes a large urban conglomeration dependent on its surrounding environment for critical ecosystem provisioning services. Given its exposure to natural hazards, Honduras has achieved progress in terms of disaster risk management. The baseline scenario will therefore consist basically of uncoordinated DRM responses which are largely short-term and without an integrated vision that provides for an effective understanding of linkages between sectors and geographic areas, as well as without the tools and mechanisms for decision making processes capable of identifying opportunities for no-regrets responses, addressing trade-offs, and addressing potential conflicts. Opportunities for mainstreaming climate change risks into normative frameworks – a cost-effective way to achieve changes in many key sectors – will be missed. Requisite capacities and tools will not be accessed, creating constraints to the identification, prioritization and implementation of adaptation response measures. Therefore and unfortunately, in the absence of support by the Adaptation Fund, a continuation of a range of largely short-term, fragmented responses will be the alternative for Honduras - a country with such high levels of vulnerability.


The approach proposed by this project therefore provides for an integrated package of measures that will effectively generate the requisite capacities, tools and information for sound decision-making that integrates an understanding of climate risk, while also piloting activities to both increase water supply and manage water demand. Given that Honduras is only beginning to address climate change adaptation issues, the Government is keen to develop a multi-pronged strategy that incorporates a range of responses and requirements that can then be replicated in other areas. The proposed project is therefore doubly cost-effective in so far as it both provides for a comprehensive approach that capitalizes on economies of scale (eg defining varying capacity and information requirements at different levels), while at the same time piloting a range of measures that can then be replicated.

Moreover, the recently approved Water Law as well as the National Plan Law provides unique entry points for mainstreaming climate change issues into the water sector which underpins the sustainability of Honduras's development and social stability. It is an opportunity for effectively incorporating climate change considerations into emerging policy frameworks that have the capacity to influence decisions in key sectors such as agriculture, tourism and infrastructure. It is noted that the current administration is less than a year old and will therefore have the time and political will to consolidate these efforts. Honduras is a country already facing significant water scarcity in many regions during the dry season and increasingly during the dry spell during the wet season. It is therefore imperative that water demand and use across sectors be guided by informed understanding of possible climatic scenarios and corresponding development options. As noted above, decisions on adaptation options may entail difficult trade-offs. Full information on scenarios and options as well as informed and participatory decision-making processes, such as those proposed in this project, are essential to managing potential conflicts. Finally, more detailed cost effectiveness analysis will be undertaken at the project design phase. Effectiveness will be assessed according to the extent to which the project a) is financial sustainable and b) reduces vulnerability to climate variability and change.

**D. Describe how the project is consistent with national or sub-national sustainable development strategies, including, where appropriate, national or sub-national development plans, poverty reduction strategies, national communications, or national adaptation programs of action, or other relevant instruments, where they exist.**

The recently lunched ‘National Plan 2010-2022’ declares that water is a human right and a strategic resource of national priority that underpins the country’s economic and social security (National Plan, 2009:155). The plan includes targets to double water services in the main cities by 2022; to halve the percentage of people that lack access to water by 2022; and to supply drinking water to 93 percent of the rural areas and sewer system to 60 percent (National Plan, 2009). The new Planning Secretariat (SEPLAN), responsible for implementing the National Plan, therefore endorses the current proposal in the understanding that climate change is not an environmental problem but a social and economic challenge that requires inter-sectoral responses.

The Second National Communication, which is being finalized, defines as a priority the updating of the National Adaptation Plan (NAP), taking into consideration Honduras new national policies, like the new Water Law. The NAP seeks to identify adaptation policies and measures in at least two prioritized river basins in order to reduce environmental and social vulnerabilities, such as in the Choluteca watershed. Moreover, in the follow up to the final approval of the new Water Law extensive consultations and workshops were held which prioritized the impacts of climate change on the water sector, and identified specific adaptation challenges. Among the organizations that have participated in this process are ‘Honduras Water Platform’, ‘Water and Sanitation Network (RAS-HON)’, ‘Freshwater Action Network – Central America (FANCA)’, ‘The Indigenous and Peasant Coordination Association for Community Agroforestry (ACICAFOC)’ and the ‘Global Water Partnership in Central America (GWP)’. These civil and governmental initiatives prove the consistency of the proposed project with country priorities and the response to policies and political commitments.

 At the regional level, in 2008 Honduras hosted the ‘Climate Change and Environment Summit, Central America and the Caribbean’ in San Pedro Sula where countries agreed to mainstream adaptation to climate change, as a cross-cutting and high priority issue, in all national development plans as well as in all the strategic and operational plans of the government institutions. Moreover, the proposed project will build upon the regional GEF-funded adaptation project: ‘Capacity Building for Stage II Adaptation to Climate Change in Central America, Mexico and Cuba’.

**E. Describe how the project meets relevant national technical standards, where applicable.**

The project will be consistent with all national social and environmental safeguards and standards. As a UNDP supported project, all project activities must be in keeping with national and UN standards. Additional details will be spelt out in the full project proposal when it is submitted to the Adaptation Fund Board for final approval.

**F. Describe if there is duplication of project with other funding sources, if any.**

The proposed project will create synergies and will be harmonized with other related initiatives mentioned below. The project will not duplicate efforts and will rather complement them through mainstreaming adaptation measures to climate change as a crucial step for the success of these projects, as well as through contributing to fill in the information gaps identified in previous studies. During the preparatory phase,



dedicated efforts will be undertaken to fully identify potential synergies with all relevant ongoing or planned initiatives and activities, and these will be built into the project design.

- The World Meteorological Organization (WMO) undertook in 2005 a study identifying the gaps and barriers in Honduras to set up a strong and sustainable meteorological network. The actions suggested in the study to overcome these barriers were never implemented due to lack of financial resources and lack of a favorable regulatory framework. Moreover, the project will use this information to define required investments and targeted support under Component 1.
- Policy 2012 is a project funded by the Spanish Development Agency and executed by SERNA which is developing financial assessments of required investments in Honduras to successfully address climate change adaptation issues in the water sector. The result of the Policy 2012 project will provide inputs for the final design of the intervention strategy of this project, which will be further developed during the preparatory phase.
- The World Bank is currently working on a Rapid Assessment document as a first step to develop a strategy for an Integrated Urban Water Management project. The project will continue the dialogue with the World Bank to avoid duplication actions and identify synergies.
- The government of Honduras has signed a loan with BCIE on July 2009 to carry out a USD 46.5 million program to expand water supply and sanitation in Honduras. The proposed project would develop capacities in both national and local authorities to ensure that investments are duly climate-proofed.
- UNDP CO in Honduras is implementing a Risk Reduction Disaster and Climate Change Adaptation program financed by BCPR, EU and COSUDE. The project will use some of the information generated by these projects as the base line and will fill in the information gaps identified. Moreover, the project will support the program providing tools to mainstream adaptation to climate change.

**G. *If applicable, describe the learning and knowledge management component to capture and disseminate lessons learned.***

As noted above, the Government of Honduras understands this project as a pilot experience that will generate foundational capacities and develop basic tools and information to ensure that climate risks are incorporated into planning and investment processes. It will also develop a range of adaptation responses within an integrated package in the environs of Tegucigalpa valley. Therefore the Government assigns importance to the capture and systematization of lessons learned and practices.

In addition to this, all UNDP supported donor funded projects are required to follow the mandatory requirements outlined in the UNDP Programme and Operational Policies and Procedures (UNDP POPP). This includes the requirement that all UNDP development solutions must always reflect local circumstances and aspirations and draw upon national actors and capabilities.

Moreover, all UNDP supported donor funded projects are appraised before approval. During appraisal, appropriate UNDP representatives and stakeholders ensure that the project has been designed with a clear focus on agreed results. The appraisal is conducted through the formal meeting of the Project Appraisal Committee (PAC) established by the UNDP Resident Representative. The PAC representatives are independent in that they should not have participated in the formulation of the project and should have no vested interest in the approval of the project. Appraisal is based on a detailed quality programming checklist which ensures, amongst other issues, that necessary safeguards have been addressed and incorporated into the project design.

**H. Describe the consultative process, including the list of stakeholders consulted, undertaken during project preparation.**

SERNA, cognizant of the importance of addressing adaptation issues in the water sector, and having determined it is a priority within the climate change national agenda, organized a workshop in November 2009 on “Climate Change and Water Challenges in Honduras”. This workshop created the conditions to exchange ideas and generate a discussion among different civil organizations and governmental institutions regarding the threat of climate change for water resources. Over 60 people participated, representing a wide range of organizations including the ‘Honduras Water Platform’, ‘Water and Sanitation Network (RAS-HON)’, ‘Freshwater Action Network – Central America (FANCA)’, ‘The Indigenous and Peasant Coordination Association for Community Agroforestry (ACICAFOC)’ and the ‘Global Water Partnership in Central America (GWP)’ (which are partners under ‘The Water Alliance’), SERNA, SANAA, SOPTRAVI and ICF as well as Multilateral and Bilateral organizations. As a result of this event, which was also the initiation of the preparatory phase for this project, several key meetings and consultations were undertaken lead by both SERNA and SEPLAN which will execute the project. The consultations focused on key government counterparts at both national and local levels, especially leading stakeholders from the Climate Change Unit, the Water Resource Unit, SEPAL, the national meteorological center and the University of Honduras. Other consultations undertaken sought to ensure there was no duplication but rather synergies with relevant ongoing work and initiatives.

In Tegucigalpa, detailed studies were undertaken with support from USGS, JIXA and Lotti, to map the areas at greatest risk from landslides. This information was layered onto maps of neighborhoods to facilitate the identification of the most vulnerable ones. Indicators related to response capacity were then defined in order to arrive at an initial prioritization of the neighborhoods, which was then validated with the Municipal Emergency Committee (CODEM). The project baseline in the selected neighborhoods was defined through the following through:

- Definition of community level indicators on response capacity to climate change
- Survey to measure family perceptions per family in the general population on the source of disasters, climate change, and their current risk status, as well as regarding their rights and needs.

Over several days, local consultations were undertaken in coordination with the (CODEM), the Institute for Municipal Development and with representatives of community organizations (*Patronatos*, Water Boards, Local Emergency Committees) in the selected neighborhoods.

**I. Provide justification for funding requested, focusing on the full cost of adaptation reasoning.**

***Component 1 - Relevant institutional capacities, including in the National Water Authority, strengthened for mainstreaming CCA into water resources management as well as into national planning and decision-making processes***

***Baseline (without AF Resources)***

Since the elaboration of Honduras’ First National Communication to the UNFCCC, the country’s institutions in charge of the environment and national planning have begun to raise awareness regarding the need to consider disaster risk reduction measures and climate change as key issues that need to be addressed in order to increase the resilience of all sectors of society and all geographic regions in the

country. The water sector has since been a priority for the Honduran National Adaptation Plan. Even though disaster risk reduction – in the aftermath of hurricane Mitch in 1998 - is tardily being integrated into planning and programming, climate change and variability risks have not yet been fully recognized as a source of critical stressors to which Honduras must learn to adapt as soon as possible. In the absence of this proposed intervention, climate change considerations will not be mainstreamed into overarching normative frameworks, or into the planning and programming processes at both national and sub-national levels. High levels of exposure to natural hazards would result from continued emphasis on short-term, largely reactive responses. Neither the capacities, nor the tools and information needed to understand climate change impacts, generate scenarios and orient decisions around these, would be available.

***Additionality (with AF Resources)***

Today, as a new suite of norms as well as of new national and local institutions – including the new Water Law, the National Plan Law, and the new Water Authority - are being established and mandated to set in place new approaches to address the challenges of future national planning, Honduras has the opportunity to begin programming its development on the basis of its historical, current -and with climate change- future vulnerability scenarios to hydro-meteorological hazards and water stress. This is a critical task for which Honduras needs decisive support. This project will enable the country to redirect its long-term planning and programming processes, integrating climate change variables into sectoral and territorial planning through the emerging water resources and land-use legislation and regulations. The new Water Law is definitely a major step in the sustainable development pathway for the country, which underlines the significance of this project’s goal in terms of adapting it to climate change or climate proofing it.

The project will promote the generation and use of climatic information in an institutionally coordinated manner to climate proof development planning of various strategic sectors at a diversity of scales, including watershed management approaches, agricultural practices, and infrastructure development. The sharing of information with decision makers will be fostered by all means, using GIS<sup>9</sup> technology to manage complex sets of information. Appropriate information tools for water and climate monitoring and assessment as well as strengthened institutional capacities are needed to overcome Honduras’ overwhelming vulnerability to climate change and variability risks and growing water stress. Basic data will be generated by a strengthened national meteorological network.

***Component 2 - Comprehensive measures piloted to safeguard Tegucigalpa City and environs’ water supplies in response to existing and projected water scarcity***

***Baseline (without AF Resources)***

As described above, Tegucigalpa is a city with high vulnerability to climatic phenomena including variability and change, and poor neighborhoods are at highest risk. Given the repeated and increasing impacts of events – ranging from intense rainfall to hurricanes, perversely coupled with permanent water scarcity, under a business as usual scenario only fragmented, ad hoc responses are possible. Often temporary evacuation is the only response measure. Options for addressing water scarcity are even more limited. The vulnerability levels of the poorest neighborhoods and communities, precisely those with the most limited response options and coping ranges, will continue to increase.

As noted above, the first tropical storm of 2010 (Agatha) brought torrential rains in Honduras that triggered

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<sup>9</sup> The Japanese Cooperation Agency (JICA) for example contributed to the establishment of a GIS, designed for part of the Tegucigalpa urban area. The upper Choluteca river Basin as well as the rest of Tegucigalpa city needs further GIS development, capacity strengthening and equipment to count on the most adequate local resources.

flash flooding and landslides in parts of the country causing 18 deaths and forcing to evacuate more than 16,000 people. In the Choluteca river basin 31% of houses were reported as damaged and total agricultural losses were over 30%. This reflects the current levels of vulnerability which are expected to increase significantly under climate change scenarios. As noted above in Section C, in the absence of support from the Adaptation Fund, the government and people of Honduras will continue to privilege short-term reactive responses, given the daunting scope of vulnerabilities and the high levels of exposure.

***Additionality (with AF Resources)***

This proposed project will essentially undertake an integrated climate-proofing exercise for water resources management in the upper Choluteca river basin and Tegucigalpa. This watershed is critical for Tegucigalpa's population given that as it is the source of over 60% of its water supplies yet there are no clear mechanisms in place to safeguard the forests and the so called "green belts" around Tegucigalpa that provide these ecosystem services and which are under pressure from deforestation and urbanization. The project will explore, consult and design the most appropriate national and local mechanisms –including economic valuation of water resources provided and payments for environmental services schemes together with the Water Authorities and the Watershed Councils, in order to increase resources to preserve the existing mountain forest patches and promote sustainable land use practices as climate change adaptation measures for water management. These efforts will also be extended to other financial mechanisms and incentives which will seek, inter alia, to better manage water demand.

Moreover, the project will tailor and implement a suite of response measures through targeted, mostly low-cost technologies that will respond to specific local needs that have been identified through extensive, hands-on, participatory surveys. These actions will include low cost water storage, stabilized landslides areas, more efficient water use, low-tech community early warning systems (EWS) and rainfall management schemes.

***Component 3- Inter-sectoral approaches support the definition of adaptation options***

***Baseline (without AF Resources)***

*La Plataforma del Agua* (Water Platform) had begun discussing adaptation to climate change issues in late 2009 with a diversity of institutional, academic and NGOs stakeholders. However the process has had limited momentum and Honduran society in general remains largely unaware of the need to ensure that climate change and variability risks are duly mainstreamed into sectoral and territorial planning and decision making processes – particularly related with long-term issues such as infrastructure investments. The new skill sets that will be needed to effectively appreciate, assess and respond to current and emerging climate risks, are not available. Overall there is very limited understanding among government staff, private sector, resource user groups and the general public of projected climate change impacts for Honduras and of requirements not only for generating adaptation response measures but also for avoiding continued maladaptation - such as through ill-conceived land use planning.

***Additionality (with AF Resources)***

Targeted capacity development programs for key national and sub-national authorities as well as stakeholders will be developed and implemented. These will be specifically tailored to the needs and priorities of each group, based on a capacity needs assessment. This will ensure the design of the most effective training packages. These skill sets are needed in order to translate the incorporation of climate risks into policy frameworks into concrete actions and investments.

In addition to this, the Policy Dialogue Platforms the project proposes to establish in the upper Choluteca watershed would operate as "one-stop shops" for (1) clearing information on climate change adaptation

measures' design, cost-benefit analysis and implementation; (2) training policy-makers and key stakeholder at national and municipal levels in the use of CCA information in decision-making processes for climate proofing water resources in the different sectors. These would therefore play a critical role in enabling decision makers and resource users to understand the projected impacts of climate change and identify effective options for reducing climatic risks and vulnerability. Through the platforms, it will be possible to prioritize various options and to address potential trade-offs and associated conflicts between resource users. Conflict resolution mechanisms will be developed given that under scenarios of increased water stress it will be essential that societies are able to engage in participatory decision-making processes that provide for equitable access to increasingly scarce resources.

These PDP will operate under the aegis of the Regional Water Authority, with full institutional support from SERNA and SEPLAN and with full project financial and technical assistance. This effort will be complemented by targeted training and capacity building activities that address the requirements and concerns of specific resource user groups, sectors, or communities.

## **PART III: IMPLEMENTATION ARRANGEMENTS**

### **A. Describe the arrangements for project implementation.**

The Government of Honduras will execute this five-year project with the support of UNDP under the NIM modality. The Secretariat Environment and Natural Resources (SERNA) will be the executing institution responsible for ensuring that the objectives and components of the project are delivered, and resources are allocated and disbursed in an efficient and effective manner as will be detailed in the Project Document. The duration of the project will be 5 years. Implementation of the project will be carried out under the general guidance of a Project Steering Committee (PSC), specifically formed for this purpose. The project structure will be constituted by a National Project Director (NPD) and a National Project Coordinator (NPC). The National Project Director (NPD) will be the Minister of SERNA (or the person designated by him) and will be responsible for orienting and advising the National Project Coordinator on Government policy and priorities. The NPD will also be responsible for maintaining regular communication with the lead institutions in the water and planning sectors, the National Water Authority and SEPLAN, and ensuring that their interests are addressed and communicated effectively. In addition to this, SERNA will define Letters of Agreement with relevant counterparts for support in project execution of specific components, including with the Mayor's Office in Tegucigalpa, Autonomous National Service for Water and Sanitation (SANAA), and SEPLAN.

SERNA will prepare an Annual Work Plan that incorporates project activities and results to be delivered through it. The Plan will define the execution time frame for each activity and the responsible parties for its implementation. The first Work Plan will be finalized and incorporated into the Project Document within 30 days of its signature. The participation of project counterparts will be essential for the success of the planning phase, during which the Annual Work Plan will be prepared.

For its part, UNDP will provide support to the Director and the Coordinator of the project, in order to maximize its reach and impact as well as the quality of its products. Moreover, it will be responsible for administering resources in accordance with the specific objectives defined in the Project Document, and in keeping with its key principles of transparency, competitiveness, efficiency and economy. The financial management and accountability for the resources allocated, as well as other activities related to the execution of Project activities, will be undertaken under the supervision of the UNDP Country Office.

UNDP will undertake the interal monitoring of the Project and of evaluation activities, taking into account from the outset local capacities for administering the project, capacity limitations and requirements, as well as the effectiveness and efficiency of communications between ministries and other institutions that are relevant to the project.

**B. Describe the measures for financial and project risk management.**

<b>Risk</b>	<b>Level</b>	<b>Mitigation strategy</b>
Decision and policy-makers at all levels are slow to appreciate the need to mainstream climate change considerations into activities and investments	Low	The project aims to strengthen science-policy dialogues and to reinforce climate change awareness in government and civil society. Cost-benefit analyses will enable society's decision makers at all levels to understand the costs of business-as-usual. The project aims to empower policy-makers to use climate information in decision-making processes.
Potential governance tension or conflicts at national level	Low	Following national elections in November 2009 and a consultative process during 2010, tensions between parties have been reduced. Several countries in the region and beyond have already recognized the government of President Porfirio Lobo, and dialogue on this matter is ongoing within the Organization of American States. It is very unlikely that there will be any repeat of conflicts in 2009
Weak implementation of the new Water Law and of the National Plan Law	Low	It is not within the project's purview to directly influence overall implementation of the Law. However, the project will work closely with key institutions that are responsible for this, and provide support to them.
Coordination between SERNA and SEPLAN will be limited	Low	Both institutions fully recognize that it is critical that they coordinate their agendas and actions, particularly with regards to the regulation, application, implementation and enforcement of the new Water Law and the new National Plan Law. They are also cognizant of the fact that these not only demand harmonization but robust integration of climate change considerations. Both institutions are therefore the proponents of this proposed project as they agree on the need for additional support and resources to achieve these objectives.
Key municipal stakeholders do not agree to further adaptation strategies coordinated at the watershed level	Low	During the preparatory phase, through extensive consultations, understanding of the project and its stated aims will be clarified and defined, which should enable municipalities to support it. Throughout implementation, strong collaborative mechanisms will be advanced throughout the watershed, building upon the established Watershed Councils.
Water pricing reforms are difficult to put in place given established interests	Medium	The recently approved Water Law, as well as the strong political commitment to reform of this sector by the administration of President Lobo indicates that the requisite political will is in place to advance such reforms. However it is

Risk	Level	Mitigation strategy
		recognized that water use allocations and pricing are complex and difficult issues to tackle, and that far reaching negotiations with key economic sectors may be required. Therefore although the project proponents are sanguine about advancing on this front, it is recognized that there are factors outside of the project's purview.
Land use pressures limit possibility of extending and consolidating forest corridors in the upper Choluteca basin	Medium	As with water use rights, land use rights are also potentially contentious issues. However, there are already well consolidated protected areas in the upper basin, one of which has particularly strong management by a local NGO and the Forestry Service. The project will build upon this and, in particular through Outcome 3, generate increased awareness of the vital provisioning services of these highland areas. Moreover, the implementation of the new National Plan Law in conjunction with the Water Law will provide a framework for advancing land-use planning in the upper Choluteca that privileges the protection of ecosystem services under climate change scenarios.
Conflict over the water resource between private sector, local and national governments and communities.	High	The project will work under an integrating watershed management plan approach involving all stakeholders and institutions and ensuring a transparency policy in the information generated by the project and the decision-making processes. The new water law provides an appropriate legal framework to overcome these barriers. In addition to this, under Outcome 3, the policy dialogues will generate the necessary platform for negotiating trade-offs and working to resolve conflicts. As noted above, the project will develop conflict resolution mechanisms as these will be critical given projected climate change trends in Honduras.

**C. Describe the monitoring and evaluation arrangements and provide a budgeted M&E plan.**

Project monitoring and evaluation (M&E) will be in accordance with established UNDP procedures and will be carried out by the Project team and the UNDP Country Office. Periodic monitoring of implementation progress will be undertaken by the UNDP-CO through quarterly meetings with the project proponent, or more frequently as deemed necessary. This will allow parties to take stock and to troubleshoot any problems pertaining to the project in a timely fashion to ensure smooth implementation of project activities.

Type of M&E activity	Responsible Parties	Budget US\$* <i>(does not include staff time)</i>	Time frame
Inception workshop	▪ Project Coordinator	\$500	Within first two months

	<ul style="list-style-type: none"> <li>▪ UNDP-CO</li> </ul>		of project start up
Inception Report	<ul style="list-style-type: none"> <li>▪ Project team</li> <li>▪ UNDP-CO</li> </ul>	None	Immediately following IW
Measurement of Means of Verification for Project Purpose Indicators	<ul style="list-style-type: none"> <li>▪ Project Coordinator</li> </ul>	None	Start, mid and end of project
Measurement of Means of Verification for Project Progress and Performance (measured on an annual basis)	<ul style="list-style-type: none"> <li>▪ Project Coordinator</li> </ul>	None	Annually prior yearly reports and to the definition of annual work plans
Quarterly reports	<ul style="list-style-type: none"> <li>▪ Project team</li> </ul>	None	At the end of each month
Annual reports	<ul style="list-style-type: none"> <li>▪ Project team</li> <li>▪ SERNA</li> <li>▪ UNDP-CO</li> </ul>	\$1000	At the end of each year
Meetings of the Project Coordination Committee	<ul style="list-style-type: none"> <li>▪ Project Coordinator</li> <li>▪ UNDP-CO</li> </ul>	None	After the inception workshop and thereafter at least once a year
Technical reports	<ul style="list-style-type: none"> <li>▪ Project team</li> <li>▪ External consultants</li> </ul>	None	To be determined by Project team and UNDP CO
Mid-term external evaluation	<ul style="list-style-type: none"> <li>▪ Project team</li> <li>▪ UNDP-CO</li> <li>▪ External consultants</li> </ul>	\$ 20,000	At the mid-point of project implementation.
Final external evaluation	<ul style="list-style-type: none"> <li>▪ Project team</li> <li>▪ UNDP-CO</li> <li>▪ External consultants</li> </ul>	\$ 30,000	At the end of project implementation
Final Report	<ul style="list-style-type: none"> <li>▪ Project team</li> <li>▪ UNDP-CO</li> </ul>	None	At least one month before the end of the project
Audit	<ul style="list-style-type: none"> <li>▪ UNDP-CO</li> <li>▪ Project team</li> </ul>	\$10,000 (average \$ 2,000 per year)	Yearly
<b>TOTAL INDICATIVE COST</b>		<b>\$ 61,500</b>	



**D. Include a results framework for the project proposal, including milestones, targets and indicators.**

<b>Objective:</b> To increase resilience to climate change water-related risks in the most vulnerable population in Honduras through pilot activities and an overarching intervention to mainstream climate change considerations into the water sector.					
	<b>Indicators</b>	<b>Baseline</b>	<b>Targets End of Project</b>	<b>Sources of verification</b>	<b>Risks and Assumptions</b>
<b>Project Objective</b>  To increase resilience to climate change risks in the most vulnerable communities in Tegucigalpa and environs, within an overarching intervention that will mainstream climate change considerations into water sector	Normative frameworks for water management and land-use planning mainstream climate change	In 2010 Honduras started a process to develop a national normative framework for land use planning and water management. However, this process has not mainstreamed CC considerations	National Water Law and National Plan Law incorporate climate change and variability considerations By Y5	<ul style="list-style-type: none"> <li>• Official legislative bulletin</li> </ul>	Decision and policy-makers at all levels are slow to appreciate the need to mainstream climate change considerations into activities and investments
	Increase in allocation of public budget to address climate related risks of the most vulnerable population	In Honduras a population of 6,000,000 is highly vulnerable to climate change and no provisions have been done in the planning process to reduce this vulnerability. Public investment has been limited to specific disaster risk reduction	At least 10% of the national budget is allocated to investments and actions to reduce climate risk of the most vulnerable populations in Honduras By Y5	<ul style="list-style-type: none"> <li>• National and sub-national plans</li> <li>• Project evaluations: 6 month project reports; annual reports; mid-term and terminal evaluation</li> </ul>	Potential governance tension or conflicts at national level
	Number poor households in Tegucigalpa and the upper Choluteca basin experience	132,500 poor households in high landslide risk areas	At least 13,000 poor households in Tegucigalpa and the upper Choluteca basin report reduced	<ul style="list-style-type: none"> <li>• Surveys</li> <li>• Project evaluations: 6 month project reports; annual</li> </ul>	Natural disasters or extreme hydrometeorological events affect project timelines

	reduced risk from floods and landslides (projected to increase under climate change scenarios)		vulnerability to flooding and landslide risks By Y5	reports; mid-term and terminal evaluation	
	Number of poor households in Tegucigalpa and the upper Choluteca basin that have increased access to water all year, thus reducing current vulnerability and increasing their coping range under climate change scenarios	An estimated 100,000 poor households currently suffer water scarcity.	At least 10,000 of poor households in Tegucigalpa and the upper Choluteca basin increase their access to water by 50% through pilot activities (eg water pricing and construction of water storage facilities) By Y5	<ul style="list-style-type: none"> <li>• Surveys</li> <li>• Project evaluations: 6 month project reports; annual reports; mid-term and terminal evaluation</li> </ul>	
<b>Outcome 1</b>  Relevant institutional structures including the National Water Authority, strengthened for mainstreaming climate change risks into water resources management and into national	Coordination mechanism between SERNA and SEPLAN for incorporating CC into development planning, agreed and operational	No mechanism exists to coordinate the incorporation of CC issues in development planning between SERNA and SEPLAN.	Regular, periodic meetings between SERNA and SEPLAN based on an interagency agreement Starting Y1	<ul style="list-style-type: none"> <li>• Interagency agreement</li> <li>• Minutes of meetings</li> </ul>	Weak implementation of the new Water Law and of the National Plan Law
	Number of regional development plans that mainstream CC considerations	The government is currently preparing the regional development plans. CC issues are not going to be included under a BAU situation	At least four regional development plans have demonstrably incorporated climate change considerations (as measured against a baseline assessment) By Y4	<ul style="list-style-type: none"> <li>• Copy of regional development plans</li> <li>• Project evaluations: 6 month project reports; annual reports; mid-term and terminal</li> </ul>	Coordination between SERNA and SEPLAN will be limited

planning and programming processes				evaluation	
	National meteorological network meets WMO standards	Only fourteen hydrometeorological stations, many in poor conditions, installed in the country; limited capacity for diagnostic work	30 automatic hydrometeorological stations installed following the WMO standard.	<ul style="list-style-type: none"> <li>• Proof-of-purchase for hardware, software and other equipment</li> <li>• Project evaluations: 6 month project reports; annual reports; mid-term and terminal evaluation</li> </ul>	
	Number of institutions and key stakeholders at national and sub-national level that have access to CC relevant information and integrate it into their core work	Access to climate change and variability information is seriously limited. Currently Honduras does not have a system for public access to information about CC.	At least 4 key line ministries, 30 key resource use groups represented in the Regional Committees and at least 30% of municipalities at national level are regularly accessing CC information disseminated by the Water Authority which will be strengthened through the project By Y3	<ul style="list-style-type: none"> <li>• Yearly surveys</li> <li>• Number of visits to project website; visitor profile required for access</li> <li>• Project evaluations: 6 month project reports; annual reports; mid-term and terminal evaluation</li> </ul>	
	<b>Outcome 2</b>	Number of hectares of new forest	There are 5 Protected Areas covering 30,000	60,000 ha of forest corridors in the upper	<ul style="list-style-type: none"> <li>• Project reports and PA</li> </ul>

Comprehensive measures piloted to safeguard Tegucigalpa City and environs' water supplies in response to existing and projected water scarcity and vulnerability to extreme climate events	corridors in the upper Choluteca basin contribute to enhanced ecosystem water provisioning services	has. (into the project area) However these PAs are not connected and face increasing threats from urban development and an expanding agricultural frontier.	Choluteca basin under effective protection By Y5	incorporation documents	not agree to further adaptation strategies coordinated at the watershed level
	Climate change considerations incorporated into water pricing practices	No consideration has been given to incorporating the projected impacts of CC in water pricing in Tegucigalpa	Reforms to water pricing policies incorporate climate change scenarios By Y3	<ul style="list-style-type: none"> <li>Copies of water pricing regulations</li> <li>Minutes of meetings between the Water Authority and key resource user groups</li> <li>Project evaluations: 6 month project reports; annual reports; mid-term and terminal evaluation</li> </ul>	Water pricing reforms are difficult to put in place given established interests  Land use pressures limit possibility of extending and consolidating forest corridors in the upper Choluteca basin  Conflict over water resources between private sector, local and national governments and communities.
	Number of poor households in Tegucigalpa benefitting from rain harvesting and water storage systems <i>(differentiated by gender)</i>	Government support has been limited to distribution of water to poor households and not to promoting more sustainable options as such as rain harvesting and water storage systems.	At least 3,500 households in the 14 target <i>barrios</i> in Tegucigalpa benefit from rain harvesting and water storage systems <i>(Target population differentiated by gender)</i> By Y4	<ul style="list-style-type: none"> <li>Donation certificates per household</li> <li>Proof-of-purchase of materials and equipment</li> </ul>	
	Number of poor households in	Only one study has been carried out on possible	At least 1,000 households in the 14	<ul style="list-style-type: none"> <li>Donation certificates per</li> </ul>	

	Tegucigalpa benefit from flood and landslide control infrastructure	flood and landslide control infrastructure but no actions have been implemented.	target <i>barrios</i> in Tegucigalpa benefit from investments for flood and landslide control By Y4	household <ul style="list-style-type: none"> <li>• Proof-of-purchase of materials and equipment</li> </ul>	
	Number of EWS for floods and landslides operational	No EWS for flood and landslide are operational at present	4 EWS established that benefit a total estimated population of 13,000 in the most vulnerable areas of Tegucigalpa and the upper Choluteca basin By Y3	<ul style="list-style-type: none"> <li>• Donation certificates per household</li> <li>• Proof-of-purchase of materials and equipment</li> </ul>	
<b>Outcome 3</b> Targeted capacity building and tools enable stakeholders at all levels to effectively respond to long-term climate change impacts	Number of staff and key stakeholders that effectively apply training on climate risk issues to planning and programming work	At present government staff, at both national and sub-national levels, do not have a good understanding of climate change issues and nor of the tools and information that is necessary to effectively incorporate these into planning and programming processes. The general public, including the private sector, has an even more limited understanding.	At least 300 stakeholders at national and sub-national levels who participate in training sessions report effective application of new skills and knowledge By Y2	<ul style="list-style-type: none"> <li>• Capacity development evaluation reports</li> <li>• Surveys</li> <li>• Project evaluations: 6 month project reports; annual reports; mid-term and terminal evaluation</li> </ul>	
	Number of agencies, sectors and regions that actively participate in the water policy dialogues		At least 30 key institutions, including line ministries, trade organizations, and local government entities participate in water policy dialogues Starting Y1	<ul style="list-style-type: none"> <li>• Minutes of the meetings</li> <li>• Agreements between different sectors for conflict management</li> <li>• Surveys</li> <li>• Project</li> </ul>	

				evaluations: 6 month project reports; annual reports; mid-term and terminal evaluation	
	Number of lessons learned and best practices uptaken in the project outreach strategy	Not applicable	Every year of project implementation, at least 10 lessons learned and best practices consolidated in Experience Notes and disseminated through website and other media Starting Y2	<ul style="list-style-type: none"> <li>• Experience Notes</li> <li>• Project evaluations: 6 month project reports; annual reports; mid-term and terminal evaluation</li> </ul>	

## PART IV: ENDORSEMENT BY GOVERNMENT AND CERTIFICATION BY THE IMPLEMENTING ENTITY



### Letter of Endorsement by Government

20 July 2010

To: The Adaptation Fund Board  
c/o Adaptation Fund Board Secretariat  
Email: Secretariat@Adaptation-Fund.org  
Fax: 202 522 3240/5

Subject: *Endorsement for Addressing Climate Change Risks on Water Resources in Honduras: Increased Systemic Resilience and Reduced Vulnerability of the Urban Poor*

In my capacity as designated authority for the Adaptation Fund in Honduras, I confirm that the above national project proposal is in accordance with the government's national priorities in implementing adaptation activities to reduce adverse impacts of, and risks, posed by climate change in Honduras.

Accordingly, I am pleased to endorse the above project proposal with support from the Adaptation Fund which is being submitted under the one-step modality. If approved, the proposal will be coordinated and implemented by the Secretariat for Natural Resources and Environment/Secretariat for Planning (SERNA/SEPLAN)

Sincerely,

  
**Dr. Rigoberto Cuéllar Cruz**

Minister

Secretariat for Natural Resources and Environment (SERNA)



Edificio Principal: Despacho de Recursos Naturales y Ambiente, 100 metros al sur del Estadio Nacional  
Teléfonos: 232-2011, 239-4298 • Fax: 232-6250 • Apartado Postal 1339,4710,  
Tegucigalpa, M. D. C., Honduras, C. A.

**A. RECORD OF ENDORSEMENT ON BEHALF OF THE GOVERNMENT<sup>1</sup>**

*Provide the name and position of the government official and indicate date of endorsement. If this is a regional project, list the endorsing officials all the participating countries. The endorsement letter(s) should be attached as an annex to the project proposal. Please attach the endorsement letter(s) with this template; add as many participating governments if a regional project:*


**Dr. Rigoberto Cuellar Cruz, Minister, Ministry of Natural Resources and Environment (SERNA)**

**Date: 20 July 2010**

**B.**

**IMPLEMENTING ENTITY CERTIFICATION**

*Provide the name and signature of the Implementing Entity Coordinator and the date of signature. Provide also the project contact person's name, telephone number and email address*

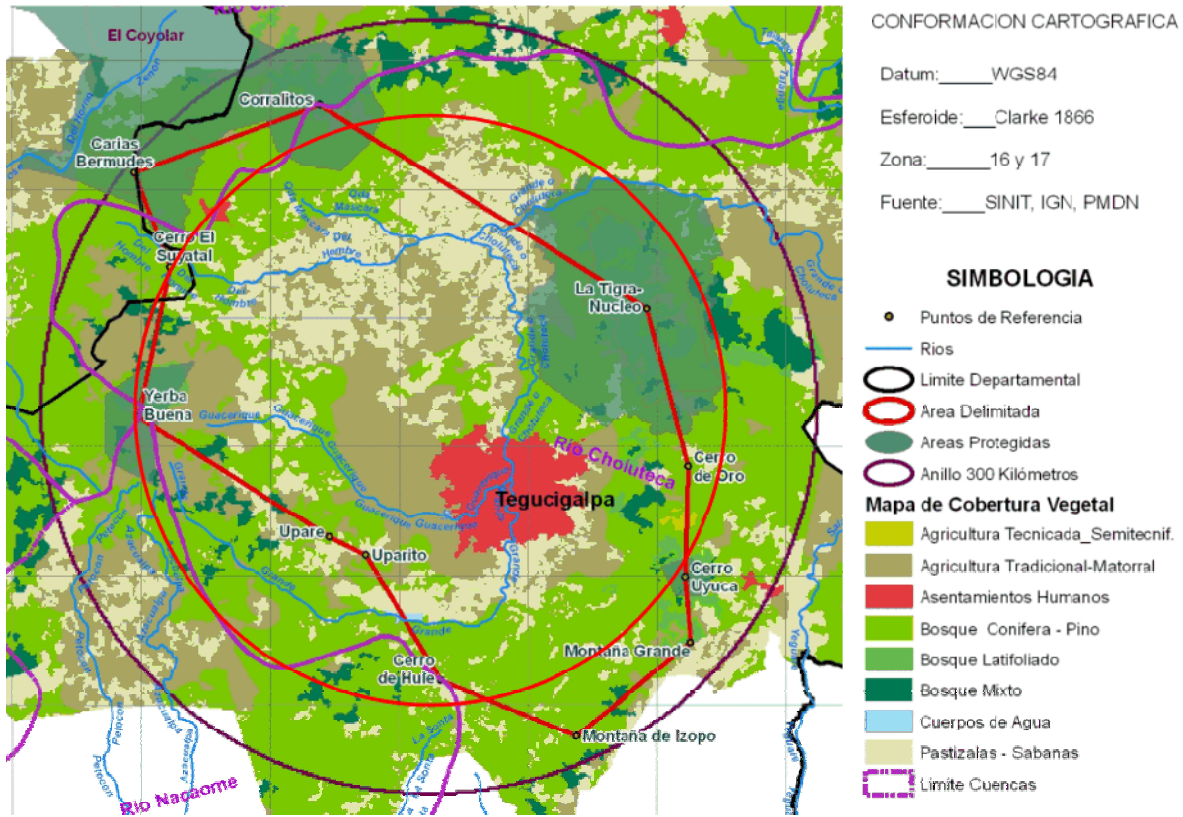
I certify that this proposal has been prepared in accordance with guidelines provided by the Adaptation Fund Board, and prevailing National Development and Adaptation Plans and subject to the approval by the Adaptation Fund Board, understands that the Implementing Entity will be fully (legally and financially) responsible for the implementation of this project/programme	
 John Hough Officer-In-Charge Environmental Finance UNDP Implementing Entity Coordinator	
Date: 26 July 2010	Tel. and email: +1-212-906-5560, <a href="mailto:john.hough@undp.org">john.hough@undp.org</a>
Project Contact Person: Paula Caballero, Regional Technical Advisor, UNDP-EEG	
Tel. and Email: +507 302 4571, <a href="mailto:paula.caballero@undp.org">paula.caballero@undp.org</a>	



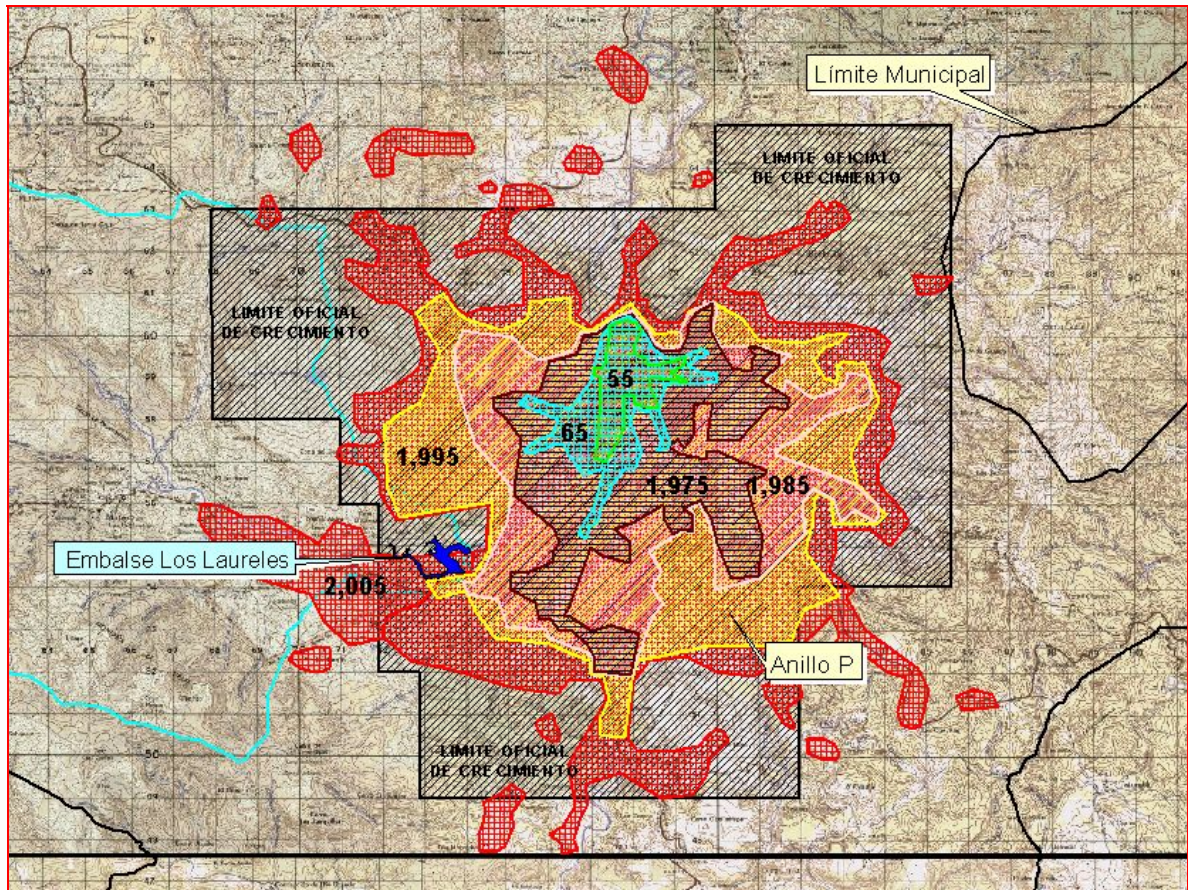
# ANNEX

## MAPS

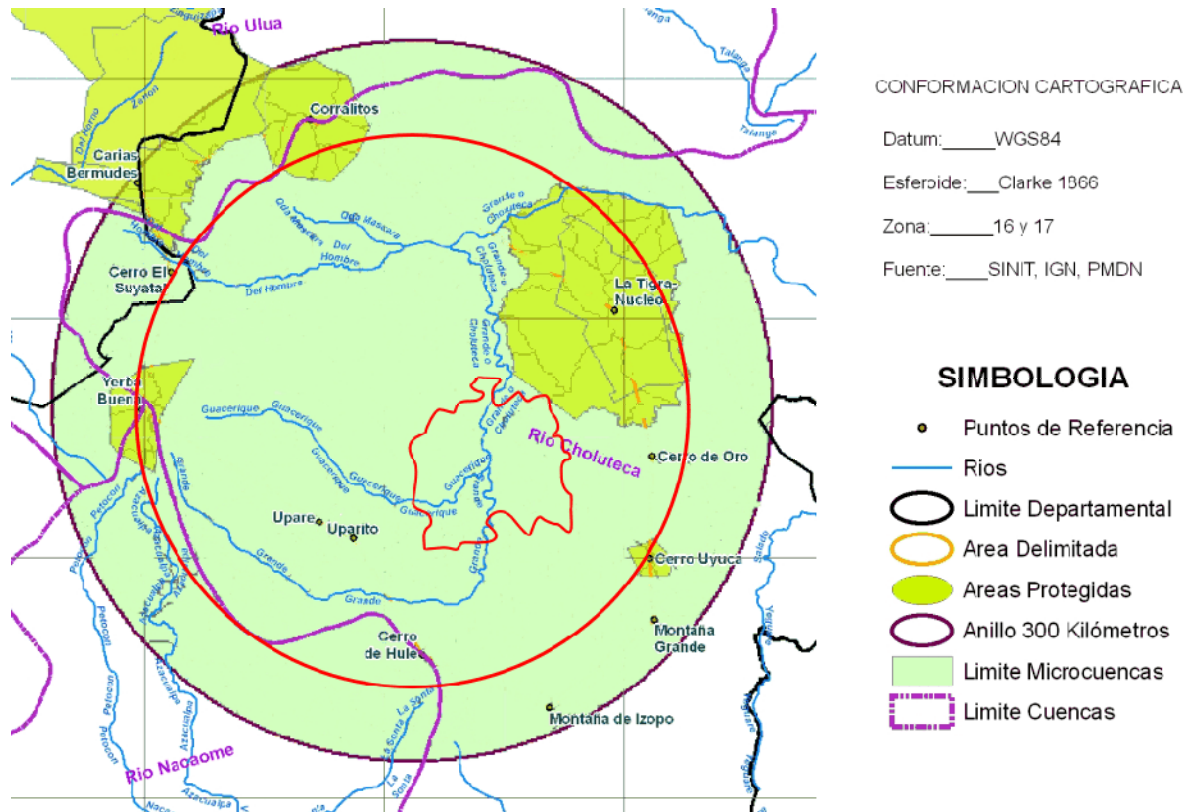
### 1. FOREST COVER OF THE "GREEN BELT" OF TEGUCIGALPA



## 2. HISTORICAL EVOLUTION OF THE EXPANSION OF TEGUCIGALPA CITY'S URBAN PERIMETER



### 3. KEY WATERSHEDS THAT DRAIN INTO TEGUCIGALPA CITY'S MAIN RESERVOIRS





#### 4. VULNERABLE NEIGHBORHOODS (*BARRIOS*) IN TEGUCIGALPA



**Aerial photo of Tegucigalpa with the most vulnerable *barrios* in red color.**