



# LOW EMISSION CLIMATE RESILIENT DEVELOPMENT

## JOINT PROGRAMME DOCUMENT

Country: MALDIVES

Programme Title: Low Emission Climate Resilient Development (LECRd)

UNDAF Outcome 9: Enhanced capacities at national and local levels to support low carbon life-styles, climate change adaptation, and disaster risk reduction

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| <p>Programme Duration: 3 years</p> <p>Anticipated start/end dates: 1<sup>st</sup> Nov, 2013/ 1<sup>st</sup> Nov, 2016</p> <p>Fund Management Option(s): Pass-through</p> <p>Coordinating Agency: UNDP</p> <p>Administrative Agent: UNDP Multi-Donor Trust Fund Office</p> | <p>Total budget*: US\$9.2 million</p> <p>Out of which:</p> <p>1. Funded Budget: US\$9.2 million</p> <p>Sources of funded budget:</p> <ul style="list-style-type: none"><li>Maldives One UN Fund: US\$9.2 million</li></ul> |
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**Names and signatures of (sub) national counterparts and participating UN organizations**

|  |   |
|--|---|
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## List of Acronyms and Abbreviations

|        |  |
|--------|--|
| AA     | Administrative Agent   |
| ADB    | Asian Development Bank   |
| APR    | Annual Project Review  |
| ASPU   | Atoll Statistics and Planning Unit                                   |
| AWP    | Annual Work Plan   |
| CDAP   | Capacity Development Action Plan                                     |
| CPAP   | Country Programme Action Plan  |
| CSES   | Communication and Stakeholder Engagement Strategy                    |
| CSO    | Civil Society Organisation   |
| CTA    | Chief Technical Advisor  |
| DMP    | Data Management Plan   |
| DMTP   | Data Management Training Plan  |
| DIM    | Direct Implementation Modality                                       |
| DNP    | Department of National Planning                                      |
| DRM    | Disaster Risk Management   |
| DRR    | Disaster Risk Reduction  |
| EIA    | Environmental Impact Assessment                                      |
| EPA    | Environment Protection Agency  |
| EPZ    | Environmental Protection Zone  |
| FAO    | Food and Agriculture Organisation of United Nations                  |
| GEF    | Global Environment Facility  |
| GDP    | Gross Domestic Product   |
| GHG    | Green House Gas  |
| GIS    | Geographic Information System  |
| GOM    | Government of Maldives   |
| GMS    | General Management Services  |
| HACT   | Harmonized Approach to Cash Transfer                                 |
| IWRM   | Integrated Water Resource Management                                 |
| ISS    | Implementation Support Services                                      |
| LECREd | Low Emission Climate Resilient Development                           |
| LGA    | Local Government Authority   |
| LLDP   | Local LECD Development Plan  |
| LWG    | Laamu Working Group  |
| MOU    | Memorandum of Understanding  |
| MOUNF  | Maldives One UN Fund   |
| MEE    | Ministry of Environment, Energy                                      |
| MoFT   | Ministry of Finance & Treasury                                       |
| MHA    | Ministry of Home Affairs   |
| MPTF   | Multi-Partner Trust Fund   |
| MPND   | Ministry of Planning & National Development                          |
| NAPA   | National Adaptation Programme of Action                              |
| NCIT   | National Centre for Information Technology                           |
| NCSA   | National Capacity Self-Assessment                                    |
| NDMC   | National Disaster Management Centre                                  |
| NGIS   | National Geographic Information System                               |
| NGO    | Non-Governmental Organization  |
| NSSD   | National Strategy for Sustainable Development                        |
| PB     | Programme Board  |
| PC     | Programme Coordinator  |
| PTC    | Programme Technical Committee  |
| PIP    | Policy and Investment Plan   |
| PCU    | Programme Coordination Unit  |
| POISED | Preparing Outer Islands for Sustainable Energy Development Programme |
| QWP    | Quarterly Work Plan  |
| SAP    | Maldives Strategic Action Plan 2009-2013                             |
| SIDS   | Small Island Developing State  |
| SLM    | Sustainable Land Management  |
| SREP   | Scaling-up Renewable Energy Programme                                |
| TOR    | Terms of Reference   |
| UN     | United Nations   |
| UNFCCC | United Nations Framework Convention on Climate Change                |
| UNDAF  | United Nations Development Assistance Framework                      |

|          |  |
|----------|--|
| UNDP     | United Nations Development Programme                               |
| UNFPA    | United Nations Population Fund                                     |
| UNICEF   | United Nations Children's Fund                                     |
| UNOPS    | United Nations Office for Project Services                         |
| UNRC     | United Nations Resident Coordinator                                |
| UN WOMEN | United Nations Entity for Gender Equality and Empowerment of Women |
| WASH     | Water, Sanitation and Health                                       |
| WB       | World Bank   |
| WDC      | Women's Development Committee                                      |
| WHO      | World Health Organisation of the United Nations                    |

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## **1. Executive Summary**

The Republic of Maldives is highly vulnerable to climate change due to its low-lying geography that makes it susceptible to flooding and inundation, and its dependence on economic activities that are sensitive to climate change, such as fishing and tourism. It is also highly dependent on imported fossil fuels for its energy supply and this represents a major source of greenhouse gas emissions for the country. Consequently, the Maldives has made significant commitments to the pursuit of a low emission climate resilient development agenda. However, ongoing decentralization reforms, fiscal crisis and low capacity at the sub-national level, mean that local planning is not reflective of national level commitments.

This 3 year, US\$9.2 million UN Joint Programme responds to the United Nations Development Assistance Framework Outcome 9: "Enhanced capacities at national and local levels to support low carbon life-styles, climate change adaptation, and disaster risk reduction" and builds on the comparative strengths of United Nations Organizations including UNDP, UNICEF, UNOPS, UNFPA, UN WOMEN, WHO and FAO. The programme is innovative and represents a pioneering initiative of bringing together the wealth of diverse development-oriented expertise from these United Nations Organizations with equally diverse national and local partners to address this multi-faceted development challenge.

The programme will assist the Laamu Atoll and its islands to realize low emission and climate resilient development (LECReD). The programme seeks to mainstream LECReD issues into local level development planning and service delivery for greater community-level ownership and sustainability of programme benefits. Towards this objective, the programme will support local councils, civil society, private sector and other local stakeholders to establish platforms for stronger partnerships, improved coordination, and enhanced participation in local planning for LECReD; it will strengthen data and knowledge systems for LECReD; improve local level LECReD development planning and management of service delivery; and through a learning-by-doing approach establish early lessons and build demand for LECReD planning and management for replication and scaling-up.

The aim is that the local development plans will evolve from stand-alone action plans into more strategic and evidence-based instruments, which are climate smart and able to mobilize public and private investment. This programme will be closely linked to the existing national development planning cycle and will build capacity of local and national partners engaged in these local processes. The rationale being that lessons learned will be used to inform replication throughout the country and directly support the national agenda.

## 2. Situation Analysis

### Global Context

The changes in climate due to human induced emissions of green house gases (GHGs) are presenting new and unprecedented challenges for human development and the natural world. The impacts of climate change are seen across the globe and the Maldives, being a small island developing state (SIDS), is geographically and economically vulnerable<sup>1</sup>. Responding to this threat by adapting to its impacts, called "adaptation", and by strengthening our adaptation systems by building "resilience", and by reducing the emission of GHGs, termed "mitigation", requires the transformation of many aspects of society and economy.

Decisions about land use and land reform, spatial planning, waste and water management, agricultural practices, electricity services and energy security, transport and infrastructure policy (which are often treated as being unrelated to climate policy) can be significant opportunities to reduce GHG emissions. These mitigation areas, whilst driven by national frameworks, are often the prerogative of local authorities and local enterprises and lead to actions ranging from inter-modal transport to decentralized cleaner energy production, improved water management, composting and recycling of waste.

Adaptation requires a tailored nuanced approach that responds to the particular circumstances and capacities. Consequently resilience and vulnerability, even for non-climate development policies, must be tackled at multiple scales. Due to implications of administrative boundaries and natural ecosystems the regional (sub-national) approach is often the most appropriate for implementation of adaptation measures in a number of key areas, such as regional biodiversity, regional infrastructure planning, regional water resource and waste management, disaster risk reduction, local socio-economic development. Adaptation and mitigation actions cut across sectors and, if taken together, can leverage additional benefits and significantly reduce the risks posed by climate change. Considering that climate risks are often intertwined with broader development challenges, dealing with them in an integrated manner can present opportunities for development gains, especially at the local level.

Sub-national authorities implement national policy, and under the newly developed decentralization framework, they also have regulatory, planning and service delivery functions at the local levels. They are simultaneously policy-makers and investors cutting across sectors and often well positioned, at the regional level, to tackle integrated mitigation and adaptation actions.

### National Context

The Republic of Maldives is made up of 26 natural atolls lying north to south across the equator and 750km south west of Sri Lanka. These atolls are exclusively coral and sand scattered over 115,300 km<sup>2</sup> of ocean (see Figure 1). The 1192 islands are distributed sparsely with only 300 km<sup>2</sup>, or less than 0.3% of the total land area, suitable for human habitation. The population of over 300,000 people is unevenly distributed over the 194 habitable islands with more than a third of the population, more than 114,000 people, living in the 2 km<sup>2</sup> Male' region alone. Of the remaining islands, 105 are self-contained tourist resorts whilst other habitable islands range in size and population with an average of 900 people and an average household size of 6.5 persons. An average population growth of about 1.76% per year is contributing to inward migration into Male and major environmental issues.

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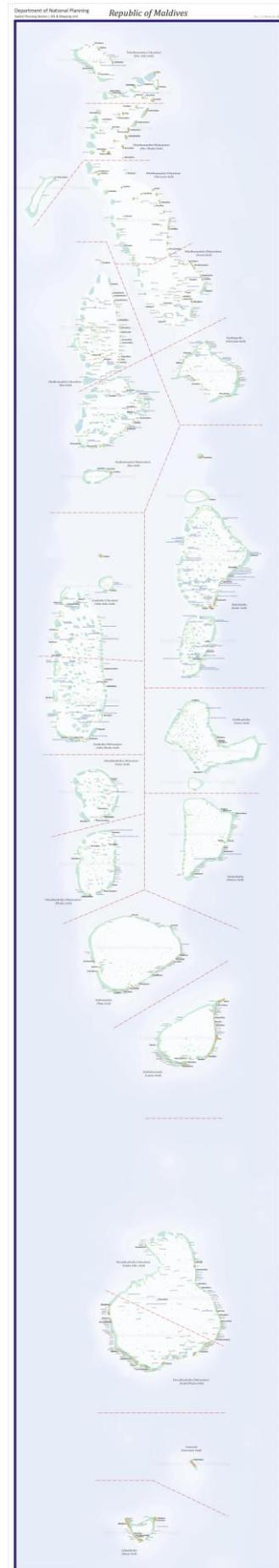
<sup>1</sup> National Adaptation Plan of Action (NAPA), Republic of Maldives 2007

The Maldivian economy is narrow with tourism accounting for over 27% of GDP, followed by fisheries, construction and commerce which each contribute between 5 and 10% of GDP. However tourism and fisheries present the key economic drivers for the island and these are both highly affected by external factors such as climate change.

The estimated per capita GDP<sup>2</sup> of the Maldives in 2013 was US\$3,969. In 2006, using a higher poverty line (\$3 in PPP terms), 19% of the population were considered poor with more than 60% of poor in the northern atolls. Furthermore, more than 50% of these poor are transient and particularly vulnerable to shocks. The Government, the private sector, non-government organizations (NGOs) and foreign donors have supported the development process of the country. While the Government has concentrated on providing basic socio-economic services, the private sector has played a key role in the development of tourism, trade, transport and fisheries among other activities. Maldives has been making development progress and is the only MDG-plus country in South Asia and in January 2011 was reclassified as a middle-income country. Despite such development progress, inequality is increasing between Male and the atolls as indicated by Gini-coefficient ranging from 0.12 to 0.18 respectively.

Maldives has a narrow export base and high dependence on imports for most of its economic activities. Consequently, foreign merchandise trade normally records a large deficit; imports have averaged around 61% of GDP in the last 5 years, while domestic exports consisting primarily of fish and fish products have ranged between 11-15% of GDP<sup>3</sup>. Notably more than 35% of GDP is fossil fuel-based imports (excluding bunker fuels) and as such the performance of the economy has been closely linked with carbon emissions. Consequently, decoupling economic growth from GHG emissions will require transformation to cleaner and more efficient energy production and use. Like several other small island nations, development in Maldives is also constrained by the absence of exploitable land based mineral resources, the limited scope for expansion of the agriculture sector, and vulnerability to natural disasters and environmental hazards.

The Maldives traditionally experienced a south west rainy (May to Nov) and a north east dry (Jan to March) monsoonal periods with an average temperature of 28°C, humidity around 78% and an average 7.4 hours of sunshine per day. Because 80% of islands are less than a meter above sea level, the Maldives is extremely vulnerable to extreme events in terms of sea level rise, heavy precipitation and storm events. The Asian tsunami of 26 December 2004, which destroyed the nation's economic and social infrastructure close to around 62% of GDP, was a clear demonstration of this vulnerability, although higher frequency lower impact



<sup>2</sup> <http://www.planning.gov.mv/publications/maldivesataglance/2013/04-MAG-April-2013.pdf>

<sup>3</sup> <http://mma.gov.mv/stat.php>, as of June 2013

Figure 1: Map of Maldives

threats such as storms and flooding continue to deliver a cumulative toll.

There has been a significant change in legislative and administrative structure in the country since the first multi-party elections in 2008. In particular, local governance systems were established through a regionalisation, and then through decentralisation. The Decentralisation Act 184 divided the administration among 19 atoll councils, 188 island councils and 2 city councils. Consequently a 3-tiered system persists with sector ministries at the national level, the Atoll Council Offices at the regional level, and the Island Council Office at the island level. Consequently, the sector ministries are responsible for formulating policies at the national level; atoll offices for formulating and implementing Atoll Development Plans according to national policies; and island offices for formulation and implementation of Island Development Plans according to the Atoll Development Plans and the national policies. The Local Government Authority was established to support Atoll and Island Councils and civil servants under the ministries extend the functions of line Ministries down to the local level.

The Strategic Action Plan: Framework for Development 2009-2012 (SAP) in 2009 with 5 pledges and 26 other commitments organised in 3 categories (democratic governance, social justice and economic development). An additional 6 crosscutting themes were identified including environmental sustainability and climate change, gender rights, social protection, decentralisation and regional development, public-private partnerships, and transport and connectivity. Consequently, environmental and climate change issues have featured in sector policies such as the National Environmental Action Plan 3 (NEAP3), National Energy Policy 2009-2013 (NEP), and the National Sustainable Development Strategy 2009-2013 (NSDS) and previously in the National Adaptation Plan of Action 2007 (NAPA). Together these provide the national policy context for climate change. However, in general implementation of SAP (and also sector plans) has been hindered by a lack of ownership, inadequate capacity to manage projects (due to regular restructuring and staff movements), lack of proper monitoring and evaluation systems, and weak coordination and cross-sector linkages<sup>4</sup>. In March 2009 the Government unveiled plans to make the country carbon neutral by 2020. This was a response to projected energy demand growth of 85% in Male region and 77% in the other atolls by 2020 – which given the unprecedented 35% share of GDP of current fossil-fuel based energy, will be unsustainable unless renewable energy and energy efficiency measures constitute a greater proportion of the country's energy portfolio. Given these and other climate change related imperatives, and considering the weak implementation track record, the lack of linkages between adaptation, mitigation (including energy issues) and human development at the National level pose important challenges for the country.

## **Climate Change and Disasters**

The Maldives is subject to many geographic and economic factors that make it highly susceptible to climate induced changes in sea level, rainfall, sea surface temperature, storm activity, wave action, and ocean acidification. Being the flattest country on earth, with more than 80% of the land less than 1 meter above sea level; more than 75% of critical infrastructure and 45% of dwellings within 100 meters of the ocean; the potential for climate change to impact adversely on Maldives makes it a highly vulnerable country.

Climate change is expected to present a number of profound challenges to the Maldives in particular sea level rise, rainfall, temperature and extreme events. The NAPA<sup>5</sup> identified the following key trends:

- *Sea level* - is predicted rise under all IPCC scenarios. In the Maldives the observed trend is approximately 1.7mm/year increase in mean sea level, with a 7mm/year rate for hourly (extreme) sea level rise. This means that storm surge

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<sup>4</sup> United Nations Development Assistance Framework for Maldives 2011-2015

<sup>5</sup> National Adaptation Plan of Action (NAPA), Republic of Maldives 2007

events are on the increase. For example, for Hulhule a 70cm surge is currently a 100-year event, but this is predicted to become an annual event by 2050.

- *Rainfall* – is expected to decline throughout the Indian Ocean region. In the Maldives, no trend is evident as yet, however predictions indicate a possible increase in extreme events. For example, currently a 180mm daily rainfall event occurs after 17 years, this is expected to occur twice as often by 2050.
- *Temperature* – is expected to increase by 2.1C and 3.2C by 2050 and 2080 respectively in the Indian Ocean region. In Maldives, projections indicate that 1.5C rise can be expected by 2100. However sea surface temperature changes are already being observed across seasons with relatively high rates of increase and with large geographical differences.
- *Extreme events* – cyclones in the region are expected to increase in intensity. Currently a 60knot winds are a 16-year event and this is predicted to become a 9-year event by 2025. Cyclonic storm surges if coupled with high tide are predicted to reach 2.3m and will cause regular inundation on most islands.

The NAPA also identified eight primary sectors most vulnerable to the impacts of climate change, these being:

1. *Land, beach and human settlements* – severe storm events are already taking a toll on coasts settlements and eroding natural barriers. Flooding as a consequence of storm surge is the most common cause of emergency. Considering that the frequency of severe storms is expected to increase due to climate change this is a key vulnerability for all Maldivians.
2. *Critical infrastructure* – including airports, seaports, island harbours, piers, causeways, roads, waste management and sewer systems, water systems, power plants and electricity networks, hospitals and schools. These are vulnerable due to climate change induced storms and secondary effects such as flooding, saltwater intrusion and erosion.
3. *Tourism* – represents almost 30% GDP and with almost 90% of resorts within 100m of coastline they are highly vulnerable and pose a major economic risk. The degradation of coast by erosion or reefs through ocean acidification poses tangible threats.
4. *Fisheries* – being a major livelihood activity involving more than 20% of the population, is susceptible to changes in sea temperature that influence fish migration paths and plankton and bait fish populations.
5. *Human health and disease epidemic* – as a consequence of changing rainfall patterns and flooding, water- and vector-borne diseases are on the increase. This includes increased prevalence of dengue and water borne diseases such as shigella and diarrheal diseases (especially in children under 5 years). Flooding is also a barrier to health service delivery and health infrastructure is at risk.
6. *Water quality and availability* – ground water has been impacted by saltwater intrusion and reduced catchment and droughts and water shortages are on the increase in many islands. Water from desalination plants is expensive and consumed significant amounts of energy, and consequently is often only available to resorts of towns.
7. *Agriculture and food* – changes in temperature, precipitation and the timing of severe weather events have impacted agricultural production and increasing populations and shortage of arable land reduces food security. Competing water needs and erosion is impacting on available land for agriculture.
8. *Coral reef biodiversity* - The coral reefs, in particular, play an important role in protecting the islands from the impacts of extreme weather events, along with coastal sand ridges, natural vegetation and other natural features. Consequently, the Government has adopted measures to protect the country's coral reefs, including a ban on coral mining; environmental safeguards on tourism development; and more recently, the establishment of marine protected areas. There continues to be local human induced pressure on the reefs. However, the single largest source of coral destruction in recent history, particularly of soft

corals, was due to the El Nino-related bleaching event of 1998, which demonstrates that the biggest threat to the country's coral reefs are climate related.

The Indian Ocean tsunami in 2004 had dramatic impacts on the population and economy and showed that the entire nation is exposed to high levels of risks. Considering that climate change is expected to increase the frequency, intensity and unpredictability of weather-related hazards, a strong element of disaster risk management is required as adaptation measure. Despite several important initiatives in the years following the Indian Ocean Tsunami in 2004, it is early days for proactive disaster risk management. Disasters response is often ad hoc and handled by the civil defense, armed forces and the President's office. The National Disaster Management Center's (NDMC) role has traditionally been confined to emergency logistics and water supply. However, NDMC prepared the Disaster Management Bill in 2008 and a Strategic National Action Plan for DRR/CCA for 2010-2020.

Climate and disaster risks are first and foremost 'local' phenomena. This is particularly true in Maldives (and Laamu atoll) due to the remoteness of the islands and the distance to other populated areas. For this reason, effective and sustainable risk management strategies will need to be based on the resilience and coping capacity of communities at risk. Community-based adaptation and DRR is a promising approach since it addresses perceived problems, capitalizes on local knowledge and resources, empowers people, is cost-effective and contributes to sustainability.

### **Low Emission Development**

Maldives has no indigenous fossil-fuel energy resources available to be utilised and consequently it is reliant on imported petroleum fuels. These fuels are used for power generation, transportation, lighting, water production and food preparation. This therefore a significant economic and development implication with more than 25% of GDP on fossil fuels and energy security closely linked with local development. Power generation is the largest consumer of fuel and one of the largest growing sectors. In March 2009 the Government unveiled plans to make the country carbon neutral by 2020. This was a response to projected energy demand growth of 85% in Male region and 77% in the other atolls by 2020 – which given the unprecedented 35% share of GDP of current fossil-fuel based energy, will be unviable unless renewable energy and energy efficiency measures are pervasive.

The Science and Technology Master Plan of the Maldives identifies six alternative sources of energy for practical use in the Maldives. They are solar (including thermal as well as photovoltaic); oceanic; biogas; biomass and fuel wood; waste to energy (solid waste); and wind. Solar energy and wind energy, either standalone or hybrid, are considered to hold the best short-term supplemental opportunities for power generation, and there are substantial opportunities to improve efficiencies of generation, networks and demand side.

Proper solid waste management will contribute significantly to the objectives of lowering emission. It is estimated that inefficient waste burning is the third largest contributor to greenhouse gases emissions (19%), after tourism (36%) and electricity (19%). It is also estimated that approximately 20% of waste is disposed of in island vegetation. In addition to the greenhouse gas emissions associated with burning waste, there is also concern that uncontrolled burning of waste disposed increases the risk of uncontrolled vegetation and forest fires. The risk to local communities from large-scale fires would be heightened if drought severity and frequency were increased by climate change. This is in addition to the greenhouse gas emissions associated with burning carbon-rich vegetation.

Furthermore, it has been estimated that more than 60% of the waste stream on inhabited islands is carbon-rich organic material. This waste is composed of local debris such as wood trimmings, palm leaves, coconut husks, kitchen waste and agricultural wastes. The government estimates that approximately 30% of agricultural produce is discarded as waste such that increased agricultural efficiency, value-added processing and composting would significantly reduce waste volume and waste-related emissions whilst presenting improved development opportunities.

Nitrogen-based fertilizers use and production contributes about 30% to global emissions and currently agriculture in Maldives is overly dependent on their use. Climate smart agriculture can reduce the dependence on these fertilizers and improve farmer's livelihoods whilst also reducing emissions. For example, intercropping with nitrogen fixing species and incorporating locally produced compost is a key intervention that can build resilience of cropping systems while reducing emissions.

The provision of energy, local authorities, and the provision of agriculture manage waste, water and sanitation and fisheries extension services are so locally driven, the ability of local actors to engage in low emission development is paramount. Though national policy and vision map out laudable objectives for emission reduction these will amount to little unless they can be translated to local action. The strengthening of the local level to deliver low emission development options is therefore crucial.

### **Context of Laamu Atoll**

The focus of this area-based programme is on the sub-national or local level with application to Laamu Atoll and its islands. Like all 26 atolls in Maldives, Laamu Atoll is comprised of rings of coral in the Indian Ocean some of which host emergent islands. The second largest atoll in the country in terms of land area, Laamu is dotted with 73 coral islands with almost 12 thousand people living in 12 inhabited islands (see Table 1). One island, (Olhuveli) is privately leased to operate a luxury tourist resort; two additional resorts are planned for two more islands (Gasgandufinolhu and Bodufinolhu). One island (Mendhoo) is entirely agricultural, three are industrial, and the remaining 54 are uninhabited. Laamu is approximately 6 hours from Male by speedboat and 55 minutes by airplane. There is a daily intra-atoll ferry services although this services does not meet demand. There is no regular ferry to/from Male although private operators can arrange upon request.

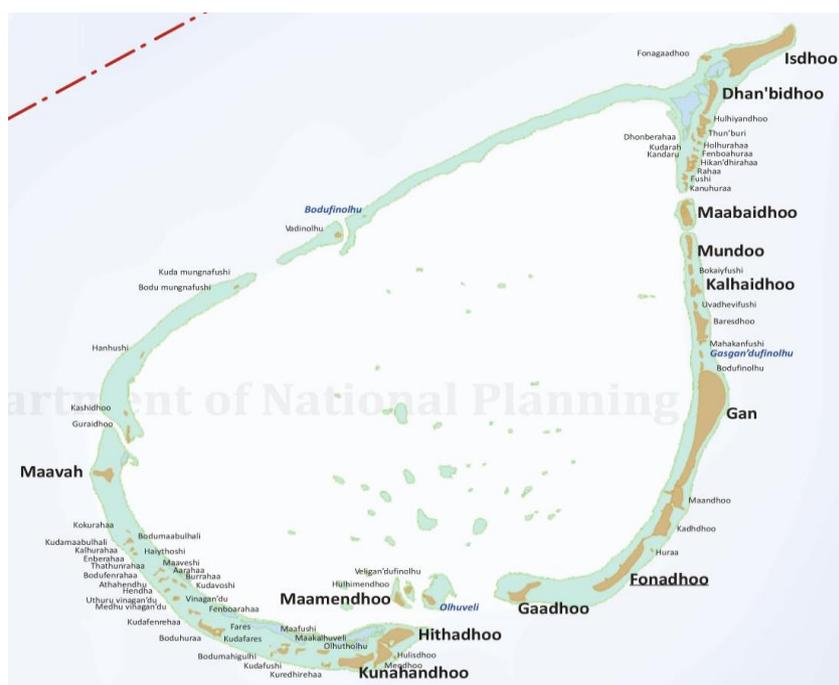


Figure 2: Map of Laamu Atoll and its 73 islands of which 12 are inhabited and 1 is a private resort.

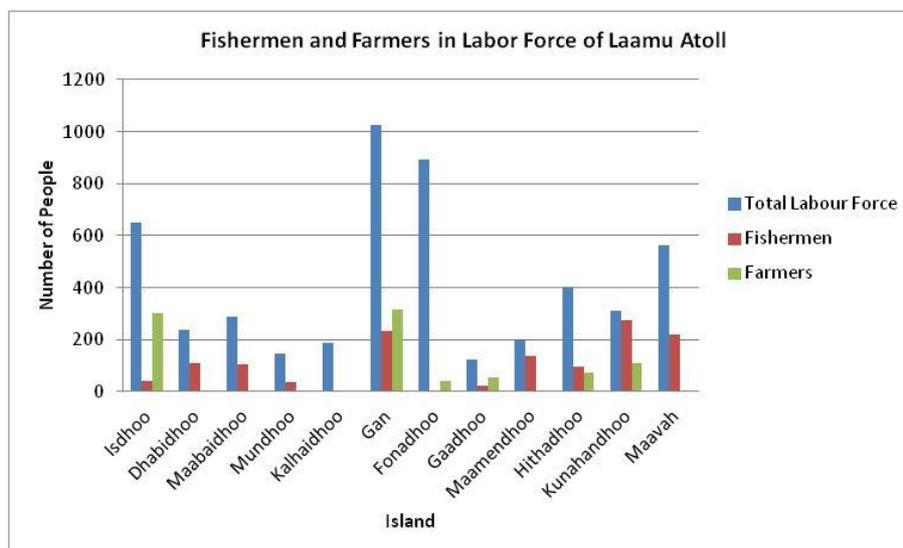
Based on the Census 2006, 11,743 people were in Laamu with the major population centres being Isdhoo, Gan, Maavah and Fonadhoo. Laamu atoll had modest population growth (0.35%) compared to the national figures. Population density is not uniform across the islands and environmental and resource potential also vary. Consequently development challenges and opportunities differ from island to island.

Table 1: Gender disaggregated population data for Laamu Atoll and its Islands (Census, 2006)

| Atoll/Island                 | Both sexes | Male  | Female | Population Growth (Exprn) | Population Distribution (percent) | Land Area (Hectares) | Population Density |
|------------------------------|------------|-------|--------|---------------------------|-----------------------------------|----------------------|--------------------|
| <b>Hadhdhummathi (Laamu)</b> | 11,743     | 5,928 | 5,815  | 0.35                      | 3.9                               | -                    | -                  |
| Isdhoo                       | 1,559      | 755   | 804    | 1.41                      | 13.3                              | 294                  | 5                  |
| Dhabidhoo                    | 537        | 263   | 274    | -1.87                     | 4.6                               | 47                   | 12                 |
| Maabaidhoo                   | 690        | 351   | 339    | -2.31                     | 5.9                               | 43                   | 16                 |
| Mundhoo                      | 372        | 206   | 166    | -5.47                     | 3.2                               | 20                   | 19                 |
| Kalhaidhoo                   | 434        | 233   | 201    | 0.04                      | 3.7                               | 25                   | 18                 |
| Gan                          | 2,502      | 1,277 | 1,225  | 1.81                      | 21.3                              | 517                  | 5                  |
| Maavah                       | 1,373      | 652   | 721    | 0.27                      | 11.7                              | 32                   | 43                 |
| Fonadhoo                     | 1,762      | 937   | 825    | 0.21                      | 15.0                              | 159                  | 11                 |
| Gaadhoo                      | 231        | 110   | 121    | -2.47                     | 2.0                               | 69                   | 3                  |
| Maamendhoo                   | 845        | 401   | 444    | -0.97                     | 7.2                               | 19                   | 45                 |
| Hithadhoo                    | 836        | 438   | 398    | 3.09                      | 7.1                               | 109                  | 8                  |
| Kunahandhoo                  | 602        | 305   | 297    | 2.18                      | 5.1                               | 81                   | 7                  |

The Demographic Health Survey (2009) indicates that Laamu atoll has a high incidence of poverty and that has the second highest percentage of the population that belongs to the lowest wealth quintile in the country. Fishery and agriculture are the two largest employers of the workforce with fishery having a slightly larger percentage (see Figure 3). Government is a significant employer for Fonadhoo, the atoll capital.

Figure 3: Fisherfolk and farmers in Laamu Atoll



Laamu is recognised as an Atoll where social and economic challenges persist. Laamu has the second highest incident of crime<sup>6</sup> in the country and gang violence and drug use<sup>7</sup> is a feature of Laamu's social challenges. These are compounded by limited access or weak services and limited employment opportunities. Social cohesion issues stem from a long history of communal tensions recently exacerbated by the relocation of Tsunami displaced communities to Laamu. By virtue of its south-central position in the country, Laamu exhibits most of the vulnerabilities to climate change experienced throughout the country and in some cases these are exacerbated by local geography, economic and social issues. Laamu atoll is exposed to multiple natural hazards including earthquakes, tsunamis, floods, tropical storms and droughts. The Indian Ocean tsunami in 2004 had dramatic impacts on the population and economy and showed that the entire nation is exposed to high levels of risks.

Due to its potential for agriculture, Laamu is also a major user of nitrogen-based fertilizers. This is not only a major cost for farmers it is also a major source of GHG emissions. Consequently, Laamu's potent Agricultural sector and large population, and interconnected island electricity systems present substantial low emission development opportunities.

In addition to the above, the main climate and socio-economic vulnerabilities in Laamu atoll identified during a series of community consultations, field visits and desk reviews undertaken during programme preparation are as follows (not in any particular order):

- *Coastal erosion and flooding and rain-induced flooding* - All the islands in Laamu atoll suffer from coastal erosion and experience regular flooding. While to a certain extent, erosion and accretion is a natural phenomenon, communities report a rapid increase in the rate of erosion. Southern Atolls in general, including Laamu, have greater rainfall and are more susceptible to flooding than northern Atolls<sup>8</sup>. This is a concern for denser islands as well as for communities and economic activities near the coast.
- *Solid waste management* - At present there is no waste management in any of the islands. Waste is buried, burned or dumped along the coast or near housing

<sup>6</sup> Maldives Police Service Report on Crime Statistics, 2011

<sup>7</sup> Drug Use Survey, 2011 UNODC

<sup>8</sup> Disaster Risk Profile of Maldives, Republic of Maldives, 2006

areas. This is affecting communities' health, reducing resilience of natural systems to cope with climate change and contributing to carbon emissions. It should be noted that solid waste management has been consistently identified as a first or second community priority.

- *Water insecurity* - A prolonged dry season has increased water insecurity where many households no longer having sufficient water to last them through the dry period. Aggravating this is the contamination of groundwater by sewage causing groundwater to be unusable for drinking.
- *Outmigration* - Although unconfirmed at the local level, concern remains that high outmigration particularly of the productive workforce will put undue burden on the remaining population and reduce the atoll's resilience as a whole to cope with climate change and other vulnerabilities. As a consequence of outmigration, there might be a surplus of women and children in Laamu atoll.
- *Future generations* - Although climate change impacts all aspects of life on Laamu atoll, women and children are more vulnerable to disaster risk and climate change than others. Among youth, a sense of hopelessness is perceived to contribute to social ills such as drug abuse, gang violence and sexually transmitted infections
- *Education* - Relevance and quality of education system cannot meet the needs of a modern Maldivian society.
- *Trust and social cohesion* - Lack of trust of outsiders as well as of each other is an emergent issue of many island communities in the Maldives. This is exacerbated by recent political changes, which has further polarized communities and led to a sense of dislocation from national systems. This undermined community's ability to work together to overcome climate change and other pressures.
- *Governance* - Recent administrative reforms, in particular the introduction of decentralization in 2008, have resulted in lack of clarity of roles and responsibilities which result in deterioration in effectiveness of planning and quality of service delivery (especially with regards health care and land management) and creates a barrier for new services to be introduced (such as waste management)
- *Access to health care and other services* - weak institutional capacities affect service delivery while lack of connectivity has limited capacity to coordinate with national entities. Resource allocation is often not needs driven with some important services being sufficiently funded while others underfunded.
- *Electricity* - aging and poorly maintained power generation and distribution systems are not meeting growth in demand. It is estimated that replacing generators can save over 25% of fuel costs whilst improving efficiency and reliability of the network can save an additional 23-35%. Increasing demand has been unchecked and in many cases there are substantial opportunities to reduce demand through load scheduling or improved efficiency appliances or processes.
- *Fishing* - Local fishermen and Horizon fishery, a large canning business, is already seeing a declining fish catch although it is not known whether this is caused by climate change or overfishing just outside the Maldives' Exclusive Economic Zone. This problem is further compounded by inability of local fishermen to compete with larger vessels, lack of a harbor in some islands and difficulty in getting ice.
- *Connectivity* - Limited transport services presents a vulnerability as communities lack access to supplies and services such as medical supplies during emergencies, specialized health care services and emergency water supply during prolonged dry season.
- *Access to markets* - Businesses including farmers do not understand their markets and do not have adequate training, technical expertise and information to develop potential products or services. This will weaken livelihood and economic diversification, contributing to reduce resilience of communities in Laamu.

These are issues are examined in detail in Annex G – Situation Overview for Laamu Atoll.

## **Local capacity for planning and management**

Resilient development is strongly linked to society's ability to plan for, detect and respond to change in a way that makes it better equipped to manage its exposure and sensitivity to climate change and disasters. Similarly, exploiting the opportunities that a low emission development pathway can present requires data and the ability to analysis options and informs planning at the local level. Ideally building resilience and reducing emissions are done in an integrated manner so as to maximize the potential for synergies and avoid any negative side effects. Consequently, strengthening the capacity of local governments, civil society and communities is essential to low emission climate resilient development that is viable and sustainable.

Decentralization and democratization is very new and evolving in the Maldives with the Decentralization act only coming into place in 2009. The current island and atoll councils were elected for the first time in February 2011 and are due for re-election in February 2014 following the Presidential elections in September 2013. Consequently, council members are often inexperienced and lack the capacity to undertake planning and management as envisaged. The trend for more substantial fiscal transfers and block grant means that skills in planning and budgeting will need to be developed quickly and effectively in council staff. Planning that is participatory and inclusive is new from both an administrative and a cultural perspective, and this consideration needs to be reflected in any capacity building program.

Evolving and incomplete decentralization has resulted in unclear allocation of roles and responsibility between different stakeholders. An example in Laamu is waste management, where island council has responsibility for waste management at island level, although the utility could also take on this function. On the other hand, there is a big gap for waste management and financing at the regional level. Similar problems are found in other sectors and thematic areas in Laamu. There is a need for improved dialog between the different island, atoll and national stakeholders to reach agreement on roles and responsibility and to support improved coordination and planning.

Civil society also has an important and emerging role in planning and service delivery at the local level, especially regarding waste management, water, agriculture and coastal protection. Currently civil society organizations in Laamu are few and have very limited mandate and capacity to participate in planning and service delivery.

At the local level data management capacity is extremely limited and local level councils and service provides depend on national counterparts. Subsequently, the availability of data often leads to constraining the options available to local decision makers and priorities or planning decision-making is no longer based on evidence. This increases the risk that planning will becomes captive of individual vested interests. The capacity to gather evidence for planning is required not only for the island councils but also for the atoll council who also serves as the reporting conduit, enabling national level monitoring as well as national level planning.

The effective implementation of national laws and regulations at the local level in the form of bylaws is critical in the delivery of service or the enforcement of policy. An example is the bylaw prohibiting illegal waste dumping or introducing users' fees for waste. Local councils are very new to developing bylaws and are limited in their ability to enforce them. The Police traditionally overseen enforcement although resource limitations mean they are often not able to attend to all islands from their base in Gan. Alternative enforcement approaches are required.

### **3. Strategies, including lessons learned and the proposed joint programme**

#### **Background**

Climate change as a development priority is identified in the Maldives Strategic Action Plan 2009-2013 (SAP) as central to economic development. It is recognized that adaptation is a governance challenge in Maldives as stated:

*"The foremost principle of the Government's environment policy is to view the natural environment as the key to socio-economic development. Furthermore it is to ensure sustainable adaptation measures by strengthening democracy in the country – a pre-requisite to good governance and therefore successful climate change adaptation."*

The need to reduce emissions and transform the economy to more sustainable energy sources is recognized by bold commitments as stated:

*"Being aware and concerned about environmental degradation and the effects of global warming, particularly in small island nations like the Maldives, the government deems it necessary to provide reliable, affordable and sustainable energy supply to all citizens and protect the environment and people from the hazardous effects of energy production. The government has set itself the ambitious goal of going carbon neutral in ten years."*

The NSSD<sup>9</sup> identifies the need for integrated approaches, short-term action and long-term perspective, and the improvement of coherence and coordination at all levels as stated:

*"The main challenge is to change the current development patterns and the non-integrated approach to policy-making. Negative trends [...] bring about a sense of urgency, and short-term action is required, whilst energy security and food security requires a long term perspective." The NSSD also "recognizes the importance of strengthening policy coherence and coordination. [...] This requires all levels of government to support, and to cooperate with, each other, taking into account the different organizational settings and strategic objectives"*

Through the current UNDAF for Maldives, the UN has committed itself to support Maldives towards low emission climate resilient development. The proposed programme therefore responds to UNDAF Outcome 9: "Enhanced capacities at national and local levels to support low carbon life-styles, climate change adaptation, and disaster risk reduction", as the UNDAF attributes a dual challenge at the national and local levels, a lack of coherent mechanisms to adopt renewable energy, lack of national institutional capacity for climate change adaptation and disaster risk reduction, and lack of community-level preparedness for disaster and climate change impacts.

This programme has four closely aligned and mutually supportive outputs, designed to mainstream within local planning and management a low emission climate resilient development paradigm whilst building lessons from a learning-by-doing approach.

#### **Lessons Learned**

*Institutional and individual capacity, governance structures at the national and local level, and weak inter-sectorial coordination limit the potential for delivering LECD.*

The Maldives has undergone a series of political changes in recent years, culminating in the country's first multiparty elections in November 2008. Since then, there has been

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<sup>9</sup> National Strategy for Sustainable Development, Republic of Maldives, 2009

major restructuring of government entities at both the national and sub-national levels. Insufficient inter-sectorial coordination and limited local capacity means that overall policy coherence at the local level is constrained. Consequently climate risk planning principles, adaptation measures and low emission options are not integrated into sub-national practices and planning frameworks. Capacity for climate change related planning at the atoll and island level is even lower as historically, development planning in the Maldives has been undertaken at the national level. Poor local understanding of climate change-related risks and particularly of the different options to manage these, have also contributed to local development choices and individual actions that have unwittingly increased the vulnerability of the population and economic assets to current and future climate risks.

The decentralisation reforms require the government to devolve many of its planning and decision-making functions to the atolls and islands. However, technical, professional and administrative capacity constraints constitute a serious barrier to effective decentralization and mainstreaming of climate change and DRR considerations.

*Capacity limitations in identifying appropriate LECReD measures and in developing projects and accessing finance means that national policy is not translating to local action.*

Generally, there is little knowledge available about the possible range of locally appropriate adaptation and low emission development options including the costs and benefits of different “soft” and “hard” options. NDMC also has very limited capacity and has therefore struggled to fulfill its mandate on DRR. Adaptation and DRR costs are especially high, because of the geography of the country and the scattered distribution of the population across many far-flung islands, and renewable energy options are untested and there is a lack of local experience. Currently, the country is facing a range of economic problems including accumulated debt and the impacts of the global recession on the tourism industry, and there is limited experience in accessing alternative sources of finance or service delivery, such as may be available through greater private sector involvement. Budgetary resources for the country’s development plan for the next five years are already severely constrained and limited resources are available to meet the additional costs of developing and implementing climate change adaptation measures. At the community level, a lack of awareness and practical experience means that investments in climate change adaptation or low emission energy options are not understood or perceived as risky and back-able projects are often not identified.

*Data on climate, vulnerabilities and sources of GHG emissions and observation capacity is weak, especially at the local level, and as such evidence is not available to support LECReD policy and planning.*

Major capacity gaps exist in relation to environmental and climate change related data collection and analysis at the local level, and planners and service delivery managers are often unable to base decisions on concrete evidence. The data that exists is often not accessible to local level planners either because the local capacity to interpret and utilize the data is not available or the data management systems are not accessible. In some cases these systems are in place at the national level but not recognized or inaccessible at the local level. Often data is collected sporadically without a systematic approach and little coherence with the planning cycle and there is no aspect of planning which values data maintenance or development. Focused effort will be required to ensure reliable data collection, analysis and ongoing management.

## **The Proposed Joint Programme**

The strategic approach of the joint programme is to build on the institutional and local comparative advantages of the Participating UN Organizations (PUNOs) in order to leverage the extensive skills, knowledge and operational experience of the UN County Team. An overview of relevant experience of PUNOs is presented in Annex A – Relevant Experience of Participating UN Organisations.

This joint programme will work with local and national partner organizations, drawing on their skills and capabilities, whilst further enhancing their capacities where appropriate. Hence, the overall role of the PUNOs will be the provision of capacity building, technical assistance, and financial and programme management, particularly targeting the people of Laamu Atoll.

In order to enable sufficient scope to ensure a truly integrated and comprehensive engagement an area-based approach with a focus on Laamu Atoll will be employed. The selection of Laamu atoll, being a large centrally located atoll which exhibits most climate change vulnerabilities and low emission development opportunities, will provide important lessons and models applicable to other atolls in the country.

The UNDP is the programme's lead agency by virtue of its significant capacity at the county and regional level; and its global mandate and strength on crosscutting perspectives of environment, governance and poverty reduction; and its past experience working in Laamu Atoll. Consequently, UNDP will establish a Programme Coordination Unit (PCU) to coordinate delivery of the programme. The PCU will therefore be substantively responsible for coordination of all Joint Programme outputs and will ensure overall quality and effective delivery of the programme.

The main conceptual element of the programme is the emphasis on mainstreaming LECReD considerations into local level development planning and management. This is reflected in the emphasis on improved coordination and partnerships, integrated participatory planning and area-based approaches, indicator development, management arrangements and selection of local implementing partners. The programme will build on existing institutional arrangements and planning mechanisms to strengthen participation and coordination and ensure an integrated and inclusive local level LECReD planning. The planning and data management initiatives will not only lead to LECReD plans for use of this programme, but will build local institutional capacity for data collection, management and analysis and for planning at the local level in line with national capacity development priorities. The aim is for the local development plans to evolve from stand-alone action plans into more strategic and evidence-based instruments, which are climate smart and able to mobilize public and private investment. This programme will be closely linked to the existing national development planning cycle and will build capacity of local and national partners engaged in these local processes. The rationale being that lessons learned will be used to inform replication throughout the country and directly support the national decentralization agenda.

The programme design identifies and responds to key risks as outlined in Annex B - Risk Analysis.

The LECReD planning approach is to be mainstreamed into existing local development planning and management of service delivery will include LECReD considerations. The proposed LECReD planning methodology<sup>10</sup> is adapted to the local context, but maintains three basic components:

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<sup>10</sup> Building on "Charting a New Low-Carbon Route to Development: A primer on integrated climate change planning for regional Governments", UNDP 2009

- *A platform for partnership, coordination and participation* – to ensure stakeholders are effectively engaged and want to pursue a LECReD approach.
- *Data and knowledge systems for local planning and management* – provide data on climate change, vulnerabilities, GHG carbon emissions and analysis to identify options and opportunities for development. This includes all sectors and thematic groups and consequently the systems to capture, manage and analyze the data must be strengthened.
- *Planning and management for LECReD* – support local planners to prepare backable investment and policy plans and incorporate LECReD guidance into local management

To ensure planning leads to concrete actions, resources will be provided to support capacity development and priority LECReD initiatives that are identified during the local planning process. The PUNOs will support these local-driven initiatives but other financing options will be investigated and councils will be supported to mobilize alternate finance where possible. To ensure that planning does not take place in an experience vacuum, the programme will provide the opportunity for early lessons by identifying a number of “no regret” actions that can quickly deliver results. These learning-by-doing activities will provide important lessons for local planners and communities and increase stakeholder demand for LECReD. In addition to resources earmarked for new activities arising from the planning process, a small-grants facility will also be established to promote community-based adaptation and low emission livelihood initiatives. This will build interest in LECReD and provide valuable early local lessons to inform both public and private planning and investment.

#### **4. Results Framework**

In order for the Maldives to shift to a low emission climate resilient economy there must be support for change and development at the local level. Climate change policies cannot be developed in isolation from the overall development context, and therefore, capacity at the local level must be able to turn policy into action. The objectives of strengthening resilience to climate change and climate risks, and shifting to a lower GHG emission economy with improved access to secure energy, are closely intertwined with development choices across a variety of sectors such as land-use, energy, water management, sanitation, waste management, agriculture, health and marine resources. It is important to consider both the trade-offs and synergies between adaptation and mitigation and to guard against possible negative side effects whilst maximizing the potential for accelerated development gains. Similarly, development objectives must be aligned with the low emission climate resilient development agenda lest they lead to reduced impact or contradiction.

The programme’s overall objective is to support low emission climate resilient local development in Maldives. It will achieve this by taking an atoll-based approach, focusing on Laamu Atoll, and supporting local decision-makers and planners at both the island and atoll level to integrate climate change and disaster risk management considerations into local development planning. The programme will directly align with the existing Decentralization Act 184 that requires Atoll and Island councils to prepare Development Plans and integrate them into 5-year Development Plans and annual work plans.

In pursuit of the core objective, the programme will achieve the following outputs:

##### **Output 1: Partnership, coordination and participation platform for local LECReD planning and action is strengthened.**

Under this output, the programme will establish the legal and institutional arrangements for LECReD governance at the local level. This must ensuring that stakeholders are engaged effectively in ways that minimize conflict and help build consensus and

leadership. These structures must be inclusive, especially of women and children, and people must be informed and aware of the issues. A communication and stakeholder engagement mechanisms that ensures ongoing strengthening of these mechanisms will therefore be essential. Effective communication that supports mobilization of community in the activities of the programme will also be essential for ensuring effective delivery.

A regular local climate change forum will be established to provide a platform for information sharing, policy engagement, and catalyzing of public and private sector action on LECReD. The forum will link with existing national level dialogue activities but will be locally driven and owned. Establishing a local Laamu Working Group (LWG), either as a new structure or by strengthening existing structures, will strengthen coordination structures at the local level in order to support sector and thematic coordination and engagement on local issues of local and national stakeholders. The LWG will be a transition structure, as these functions will be integrated with existing planning and coordination structures and processes.

### **Output 2: Data and knowledge systems established or identified to support evidence-based planning and policy development for LECReD at the local level.**

Activities under this output will support local councils and service providers to identify data and data management needs to support LECReD planning and management. Whilst ownership of some data and systems may reside in the various sectors and institutions, a data management plan will make this data visible and an asset for planning. Capacity development needs will also be identified and the appropriate management and coordination structures will be identified and strengthened. Rather than duplicate national level systems, capacity will be strengthened to ensure local planners can better utilize national system. PUNOs will support their designate partners and sectors in this data integration in order to support preparation of Climate Profiles for the Atoll and its islands. The Climate Profile will provide the evidence and analysis to support effective LECReD planning and will include assessments of social-economic and physical vulnerabilities and sources of GHG emissions, as well as options for addressing these challenges and opportunities. In particular, this will include, amongst other things, assessment of development context and priorities, energy resource and use profile, integrated water and waste management assessments, environmental resource assessment, vulnerability maps, and local GHG inventories. The Climate Profiles will then form the basis for identifying and analyzing local LECReD options and opportunities. These options and opportunities are manifested as feasible local policy or investment actions to be considered during planning.

### **Output 3: Improved Local Level Planning and Management for LECReD.**

Using improved data and knowledge systems, planners and decision makers will be further supported by strengthening alignment with national policy and good practices. Guidelines, tools and systems will be established and training will be provided to support effective LECReD participatory planning and management and integration in service delivery. In particular, LECReD and DRR mainstreaming in the existing Environment Impact Assessment methodologies and support to councils for the implementation and enforcement of bylaws will be important elements of mainstreaming.

By synchronising with the existing planning cycle, the local 5 yearly and respective annual development plans will be prepared with a LECReD approach. This will include identification of specific 5-year Policy and Investment Plans (PIPs) and annual Capacity Development Action Plans (CDAPs). PIPs will be strengthened by undertaking feasibility studies and assessing financing options to ensure that the PIP is not only strategic but includes back-able local initiatives. In some cases support will be provided to assist in promoting the investments to mobilise financing and build partnerships for

implementation. Similarly the CDAPs will identify capacity development needs that are strategic and driven by local priorities.

A portion of the resources of the Programme will be reserved in order to support priority back-able initiatives identified in the PIPs or CDAPs. Additionally, the PUNOs will assist local councils to mobilise additional public and private resources to implement initiatives where feasible. This support will be spread over each year of the programme to ensure a multi-year planning experience so that mainstreaming can be validated and lessons identified.

#### **Output 4: Practical local experience in LECReDs interventions leads to learning and promotes replication.**

The identification of lessons and the establishment of knowledge management systems will ensure that LECReDs is replicated in each island of Laamu Atoll. In order to ensure that early lessons are derived during the programme a small-grants facility will be established using the structures and processes of the UNDP/GEF Small Grants Programme and as such will be mobilized quickly. This grant facility will fund community-based organizations, councils and small enterprises to undertake locally led initiatives in priority areas identified during programme preparation. These are: 1) community-based DRR projects, 2) low-cost coastal remediation and reef protection measures, 3) innovative low emission climate resilient income generating activities, and 4) low cost behavior change initiatives for LECReD and DRR. These small grants will be less than \$50,000 each and will be supported by relevant PUNOs who will assist in mobilizing proposals and provide tailored capacity development support for implementation.

In addition to the small grants projects, a number of “no-regret” actions, identified during programme preparation, will be implemented. The “no-regret” actions are larger LECReD actions that would be considered a priority sustainable development initiative even if LECReD were not specifically considered. Four “no-regret” actions have been identified, these being:

- 1) *Renewable energy* - feasibility and other preparation activities to mobilize finance for rehabilitation and integration of renewable energy into power generation and electricity networks. The financial will be mobilized through SREP<sup>11</sup> financing via the SREP Investment Plan of the Government.
- 2) *Energy and water efficiency* - Implement a demand side energy and water efficiency and demand response management programme aimed at residential, commercial and government end-users. This project will provide energy and water audits, awareness raising and performance based subsidy on efficient retrofits of standard technology packages.
- 3) *Water harvesting* - Implement immediate opportunities for improving the utilization of existing rain water-harvesting systems by refurbishing and optimizing residential and communal facilities. This project will not install new systems but will work to rapidly improve existing infrastructure and its management.
- 4) *Waste management* - Assist community and council or utility in select islands to develop solid waste management systems including: assignment of roles and responsibilities; establishment of user pay scheme; value adding through recycling and composting; training; household separation.

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<sup>11</sup> Scaling-up Renewable Energy Programme (SREP) is Climate Investment Fund programme managed by World Bank and ADB in Maldives. The SPREP component “Preparing Outer Islands for Sustainable Energy Development Programme” (POISED), being implemented by ADB, is supporting integration renewables and strengthening of networks in small and large islands.

- 5) *Disease surveillance* - Strengthen surveillance system at island and atoll levels to monitor communicable and non-communicable diseases that are sensitive to climatic conditions.

To ensure these learning-by-doing activities produce lessons and knowledge products that are captured and disseminated, a knowledge management system will be established. These lessons and knowledge products will be shared at the Climate Change Forum and at other local and national level forums, and through the coordination structures of the programme in order to promote LECReD replication.

The detailed result framework including indicative activities and responsible PUNOs is included in Annex C – Results Framework for LECReD Joint Programme

## 5. Management and Coordination Arrangements

The management and coordination arrangements of the programme are depicted in Figure 4. The Programme will be implemented by seven participating organizations (UNDP, UNOPS, FAO, UNFPA, WHO, UNICEF, UN Women) under one umbrella program framework coordinated by UNDP and in close consultation with respective Government counterpart organizations.

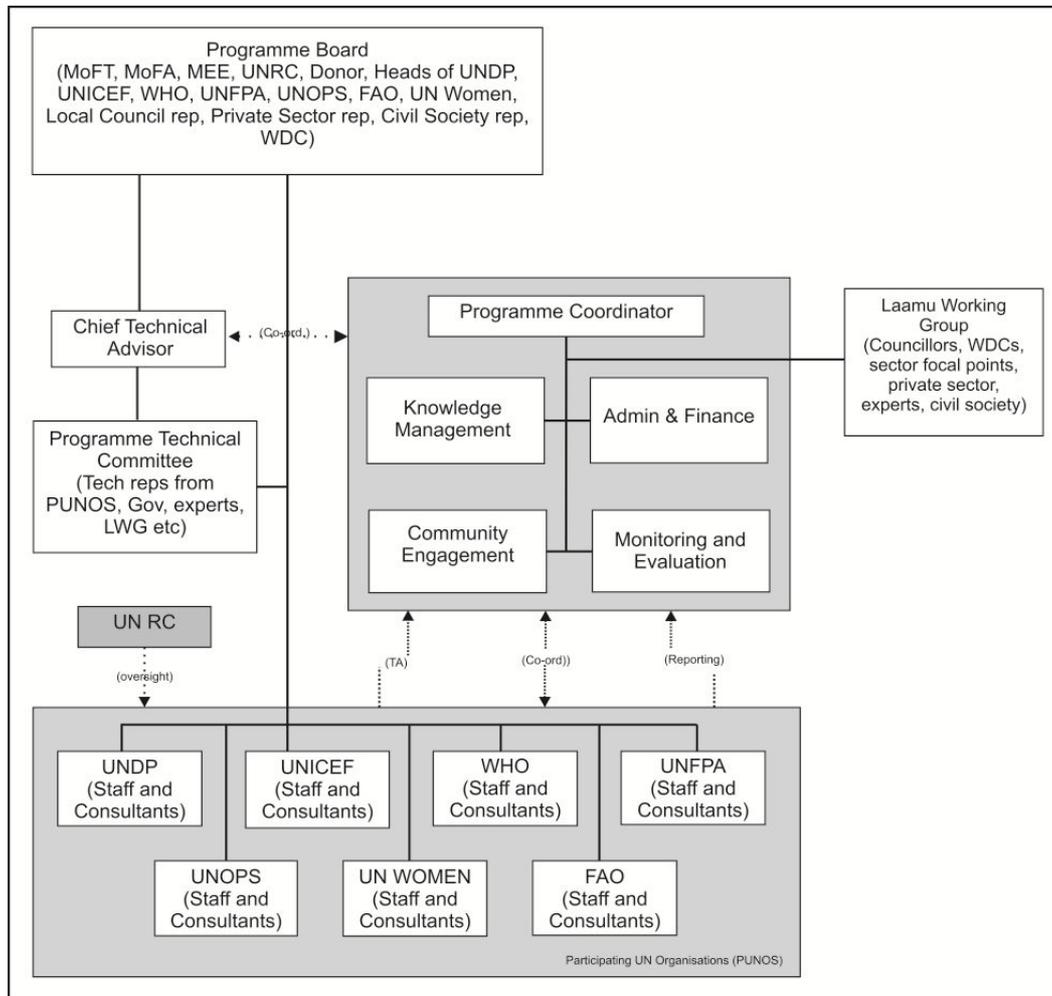


Figure 4: LECReD Programme Management Structure

The joint programme falls under the overall United Nations Development Assistance Framework (UNDAF) and as such the overall responsibility for execution rests with the Government. Due to the limited capacity for delivery at the local level, in consultation with relevant authorities, it was decided that the programme would be implemented under direct management of the PUNOs. This approach, termed Direct Implementation Modality (DIM), engages the PUNOs directly in implementation of programme activities. Through the Programme Board (PB), being the strategic governing entity of the programme, the Government of Maldives (GOM) will exert its ownership and responsibility for execution of the programme. The PB is the key decision making body and consists of a representatives of GOM, United Nations Resident Coordinator (UNRC), Government of Denmark (being the donor to the Maldives One UN Fund), Heads of PUNOs, and programme beneficiaries including Laamu Atoll council, Private Sector, and Laamu Women's Development Committee (WDC) representative. The PB is co-chaired by the GOM and the UNRC. Heads of PUNOS have the option to delegate their representation on the PB to the UNRC. In particular, the PB will approve any changes to the Programme Document and any subsequent revisions and will review progress, at a minimum, twice a year in accordance with the Monitoring and Evaluation plan, which will be finalized during the programme inception.

The Programme Technical Committee (PTC) provides technical and operational guidance and reports to the PB. The PTC is co-chaired by the Chief Technical Advisor (CTA) and a representative of the Ministry of Environment and Energy (MEE), and includes technical-level representation from other parties involved in, or relevant to programme implementation. This includes PUNOs, Government counterparts, Programme Coordinator (PC), gender experts, WDCs, NGOs, private sector, other technical experts, representative of Laamu Working Group (see below) and key stakeholders (particularly World Bank, ADB, and EC). The PTC is therefore also a forum for coordination to ensure harmonization with other UN, Government or other programmes. The PTC is not a strategic-level decision making body but provides technical assurance and operational coordination. The PTC may be called upon by the PB or PC to provide specific guidance on high-level technical and policy matters for the programme. The CTA is responsible for overall technical quality and provides quality assurance support directly to the PB. The CTA is not involved in programme management but will work closely with the PC and PUNOs to ensure technical integration and quality of all elements of the programme. The PC provides the overall coordination of the programme delivery and management of the PMU and is responsible for results at the outcome and output levels. However the delivery of programme activities is the responsibility of the nominated PUNOs and national and local partners. The PC oversees the smooth operation of the Programme Coordination Unit (PCU) that includes operational staff to ensure effective coordination, procurement for the PCU, reporting, monitoring and evaluation of the programme at the outcome and output level. PUNOs will ensure effective delivery, procurement, reporting, for their activities, and will support programme monitoring and evaluation. The PUNOs will also provide specific technical support to the PCU as and when inputs are needed for integrated actions.

This structure ensures the GOM, being the co-chair of the PB, takes a substantive role in the governance of the programme whilst giving a strong role to the donor, UNRC, Heads of PUNOs, and target beneficiaries. The inclusion of local beneficiaries on the PB provides a direct linkage between PB and local level to ensure the PB is informed and local beneficiaries are empowered. Involvement of local level representation in the PTC strengthens this coordination linkage further. The PTC promotes effective coordination and integration of activities whilst ensuring that the PB is well informed and objective. Training on aspects of programme management will be provided to PB members to ensure equal, active and effective participation. The MEE technical staff and other

relevant central and sector ministries will participate in the PTC as will technical level staff from PUNOs and other interested stakeholders.

The PB will be responsible for approving any amendments to the Joint Programme Document. The PTC will support the PB by proactively identifying substantial issues and risks, which have the potential to impact on the programme's ability to deliver its intended results. The PTC will also provide guidance to the PB on how to respond to these issues and risks and the subsequent changes in programme activities required. The Joint Programme Document must be amended if changes in the activities (including sequencing, duration, budget, content, responsibilities) are likely to affect the intended outcome of the programme. Any amendment is subject to mutual agreement in writing by the relevant PUNOs and implementing partners who are signatories to the Programme Document.

A CTA will be required to ensure that all outputs are of the highest quality and to provide objective technical assurance support to the PB. The CTA works with PUNOs to ensure that the strategic direction is maintained and that all key technical and operational decisions and all activities are implemented to a high standard so as to best meet programme goals. The assurance of quality for this multi-sector, multi-level programme involving a broad range of stakeholders in a complex national context will be a demanding task and consequently this role must be separate from the management and coordination role of the PC. However the CTA and PC will work closely on a day-to-day basis to ensure effective delivery. The CTA will be an experienced international LECReD planning expert who will support the PB, work closely with the PC, and provide substantive expert advice to all those involved in delivery of the programme.

The overall coordination of the programme will be the responsibility of the PC who will manage the PCU and coordinate delivery on a day-to-day basis to ensure effective integration of PUNOs and their activities. The PC will be responsible for coordination of activities and delivery of outputs that contribute to achievement of the programme outcomes. The PC reports to the PB and oversees the operation of the PCU that provides programme support including the administration and financial management of the PCU, reporting, monitoring and evaluation. The PCU will also take a central role as a repository for lessons learned and as a central source of specialist expertise. The PC may require technical inputs from the CTA. The PC can also request the PTC to provide input on substantive technical and operational issues or to undertake thematic- or issue-based review and analysis.

The PUNOs will be responsible for delivery of their assigned programme activities and will coordinate with the PC. The PUNOs will participate to establish and agree a joint work plan; this process will be facilitated and managed by the PC. The PC, with support of the PCU, will coordinate delivery of this joint work plan directly with the PUNOs although formal oversight will be via the UNRC. The UNRC will provide operational oversight of PUNOs and support their coordination with the PC.

The "pass-through" modality has been adopted for the fund management and UNDP's Multi-Partner Trust Fund Office serves as the Administrative Agent (AA) for the Maldives One UN Fund (MOUNF). The AA will facilitate reporting to the donor and will coordinate directly with PUNOs and the PC on their activities. The PUNOs are responsible for providing financial and narrative reporting on their activities in accordance with the harmonized reporting arrangements. These matters are discussed further in the following sections.

To ensure effective coordination at the local level and to provide a platform for dialogue on technical and policy issues at the local level, the Laamu Working Group (LWG) will be established. The LWG will include representation from local councils, local level sector focal points, women's development committees, private sector, NGOs, CBOs and other

key stakeholders. The CTA and technical staff from PUNOs and Government counterparts will also provide support to the LWG as required. A representative from the LWG will participate in the PTC. Initially, the PC will chair the LWG. However, at the initial meeting and on an annual basis after that, the group will nominate a new Chair. The LWG will be supported and engaged by the PCU to provide inputs and feedback on programme activities, and participate in monitoring and evaluation activities. The LWG will also be a forum for cross-sector dialogue to support the integrated planning process and other activities of the Atoll and Island council if required. The LWG is not a decision making body of the programme but will provide guidance and provide a platform for dialogue and coordination on LECReD to the Programme as well as to the local community.

Draft terms of reference for the PB, PTC, CTA, PC, PCU and LWG are included in Annex D – Draft Terms of Reference (TOR).

## 6. Fund Management Arrangements

The programme will be implemented in accordance with the UN Joint Programming methodology. The Maldives One UN Fund (MOUNF) utilises the “pass-through” modality of fund management as approved by all PUNOs<sup>12</sup> as depicted in Figure 5. The programmatic and financial accountability rests with the PUNOs that will be managing their activities under the programme in accordance with a common joint work plan. This approach is intended to ensure an effective, efficient and timely implementation, and to reduce transaction costs for national partners, donors and the UN.

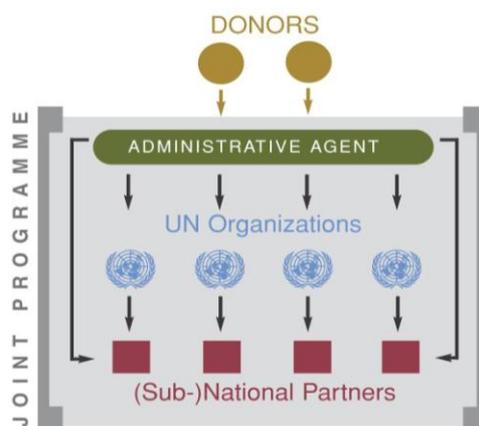


Figure 5: Diagram of Pass-through fund flows and management

On behalf of the PUNOs, the Administrative Agent (AA) will:

- a) Receive contributions from donors that wish to provide financial support to the MOUNF Fund through the AA;
- b) Administer such funds received, in accordance with the relevant Memorandum of Understanding (MOU) between the AA and PUNOs, including the provisions relating to winding up the MOUNF Account and related matters;
- c) Subject to availability of funds, disburse such funds to each of the PUNOs in accordance with instructions from the PB/ UNRC (on behalf of the PB), taking into account the budget set out in the approved Joint Programme Document, as may be amended in writing from time to time by the PB;
- d) Consolidate statements and reports, based on submissions provided to the AA by each PUNO, as set forth in the Joint Programme Document, and provide these to each donor that has contributed to the MOUNF Account and to the PB/UNRC;

<sup>12</sup> according to [Guidance Note on Joint Programming](#) 2003

- e) Provide final reporting, including notification that the MOUNF has been operationally completed;
- f) Disburse funds to any PUNO for any additional costs of the task that the PB may decide in accordance with Joint Programme Document; and
- g) Provide certified annual and final financial statement (“Source and Use of Funds”) no later than five months (31 May) and seven months (31 July) after the end of the calendar year and of the year following the financial closing of the Fund, respectively.

The funds will be allocated to PUNOs in two stages, where the first allocation stage will be based on the activities indicated in the Programme document. The second stage will be allocated in accordance with pre-agreed criteria by the PB and based on the back-able activities identified in the PIPs and CDAPs arising from the local level LECReD development planning process of islands and Atoll councils. Activities funded under the two stages may run concurrently but must be completed by the end of the programme. The timing of the stages will be aligned with annual Tranches. This mechanism requires that a portion of the total fund initially be reserved and unallocated for use in the second stage.

## 7. Monitoring, Evaluation and Reporting

The monitoring, evaluation and reporting be in accordance with the terms of the Maldives One UN Fund (MOUNF) MOU<sup>13</sup>. In the event that any aspect of this programme document is in conflict with the MOU, the MOU will prevail. The office of the UNRC will also provide additional guidance to the PUNOs to ensure Monitoring and Evaluation uses the UN Standard Progress Report and is compliant with the Programme Document and Annual Work Plan.

**Monitoring:** The PUNOs will monitor their activities according to their rules and regulations and in accordance with the MOUNF MOU. The overall programme monitoring will focus on the output and outcome levels and will be the responsibility of the PC, with the support of the PCU, and will be based on the Annual Work Plan. The PC, with inputs from the PUNOs, will undertake on an annual basis the following:

- Quarterly quality assessment to record progress towards results;
- Open access Issue Log established and maintained on a regular basis to facilitate tracking and resolution of potential problems or requests for change;
- Risk Log, based on the risk assessment included in the Annex, maintained and regularly updated and communicated to PB;
- Lessons-learned Log activated and maintained to ensure on-going learning and adaptation and to facilitate preparation of lessons-learned reports and knowledge products;
- Monitoring Schedule Plan prepared and maintained to track key management actions and events;

Regular field trips will be undertaken by the PCU in order to support PUNO coordination and effective progress reporting. The PC will prepare an Annual Review Report, based on a facilitated review undertaken jointly with national and sub-national partners and PUNOs and shared with the PB. Programme performance indicators measuring outputs and outcomes are included in Annex C – Results Framework for LECReD Joint Programme and will be used to determine performance against annual targets. Based on the Annual Review Report, a Joint Annual Programme Review will be conducted during the fourth quarter. The programme will also be included in the annual reviews and evaluations of UNDAF and these review processes will be coordinated and integrated where possible.

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<sup>13</sup> Refers to “Memorandum of Understanding between Participating UN Organisations and the United Nations Development Programme regarding the operational Aspects of a ON UN FUND in the Maldives” 2011

**Evaluation:** Given the importance of identifying early lessons and closely engaging with local planning, an independent mid-term evaluation will be undertaken in mid-2015, after completion of at least one local planning cycle in the targeted islands. The mid-term evaluation will focus on reviewing performance and guiding the second half of the programme to ensure delivery of results. This will include a detailed review of the risks and assumptions and indicators identified in the Results Framework. An independent Terminal evaluation will be undertaken upon completion of the programme. The Terminal Evaluation will focus on identifying lessons for informing replication to other atolls and scaling-up. Evaluations will be carried out in accordance with the provisions contained in the MOUNF MOU and which are consistent with UNDG evaluation Norms and Standards.

**Results and Financial Reporting:** Due to the integrated nature of the programme, and the need to ensure close coordination with partners and between PUNOs at the local level, the PUNOs, in the spirit of better coordination and synergies, will develop updated quarterly work plans and progress reports for the PCU. The PCU will also use these quarterly reports and plans as the basis for Quarterly Reports to the PB. A common reporting format should be adopted by all participating UN organizations<sup>14</sup>. The PTC in order to review implementation progress and identify lessons learned will review these Quarterly reports. The PC will also prepare a consolidated Annual Programme Report based on Annual narrative progress reports of the PUNOs and submit for review by the PB, PTC, AA and to the UNRC. The Annual Programme Report will include technical and financial review and provide lessons learnt and critical information on the effectiveness and efficiency of the implementation mechanisms and delivery of results. This report will be made available on the programme website and shared with Government, donors, programme entities, PUNOs and all interested institutions in order to share results and experience and to solicit feedback. The report will be used to inform the preparation of the detailed Work Plan for the next year.

Each PUNO shall therefore also provide the AA and PCU with statements and reports prepared in accordance with harmonized accounting and reporting procedures as follows:

1. Quarterly Work Plans and progress reports, describing progress, deliverables, achievements, challenges and results, no later than 4 weeks before the end of each quarter;
2. Annual narrative progress reports, to be provided no later than three months (31 March) after the end of the calendar year;
3. Annual financial statements and reports as of 31 December with respect to the funds disbursed to it, to be provided no later than four months (30 April) after the end of the calendar year;
4. Final narrative reports, after the completion of the activities in the approved programmatic document and including the final year of the activities in the approved programmatic document, to be provided no later than four months (30 April) of the year following the financial closing of the programme. The final report will give a summary of results and achievements compared to the targets; and
5. Certified final financial statements and final financial reports after the completion of the activities in the approved programmatic document and including the final year of the activities in the approved programmatic document, to be provided no later than six months (30 June) of the year following the financial closing of the Programme.

In accordance with the MOUNF MOU, the AA and PUNOs will be audited in accordance with their own financial regulations and rules and in accordance with the Framework for

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<sup>14</sup> The [Standard Progress Report](#) used by the ExCom agencies will be adapted for the purpose. Donor requirements should also be kept in mind. The reporting format will be approved by the PB.

auditing multi-donor trust funds as endorsed by UNDG<sup>15</sup>. At least one audit will be undertaken during the course of the programme however additional audits may arise as requested by PB. The timing of audits will be agreed with and coordinated by the PCU.

## 8. Legal Context or Basis of Relationship

The legal basis for the programme is the United Nations Development Assistance Framework (UNDAF) for the period 2011-2015 signed by the Government of Maldives and the UN Country team. The UNDAF provides the legal framework for all activities of UN in Maldives and consequently the programme is directly contributing to the achievement of UNDAF Outcome 9 being "Enhanced capacities at national and local levels to support low carbon life-styles, climate change adaptation, and disaster risk reduction". The activities of individual organisations under the programme will be governed by the applicable basis and other agreements of the agency. The basic relationship for the respective organisations is as in Table 2.

The responsibility for safety and security of the programme partners (national and local level) and its personnel and property, and the property of the PUNOs in the programme partner's custody, rests with the implementing partner. Consequently, the implementing partner shall:

- Put in place an appropriate security plan and maintain the security plan, taking into account the security situation where the programme is being carried out;
- Assume all risks and liabilities relating to the implementing partner's security, and the full implementation of the security plan;

The UNRC, on behalf of the PUNOs, reserves the right to verify that such a plan is in place, and to suggest modifications to the plan when necessary. Failure to maintain and implement an appropriate security plan shall be deemed a breach of this agreement.

The PUNOs agree to undertake all reasonable efforts to ensure that none of the funds received pursuant to this Joint Programme are used to provide support to individuals or entities associated with terrorism and that the recipients of any amounts provided by participating UN organizations do not appear on the list maintained by the Security Council Committee established pursuant to resolution 1267 (1999). The list can be accessed via <http://www.un.org/Docs/sc/committees/1267/1267ListEng.htm>. This provision will be included in all sub-contracts or sub-agreements entered into under this programme document.

Table 2: Basis for relationship for participating PUNOs

| PUNOs | Agreement  |
|-------|--|
| UNDP  | This Joint Programme Document shall be the instrument referred to as the Project Document in Article I of the Standard Basic Assistance Agreement between the Government of Maldives and the United Nations Development Programme, signed by the parties on 25 January 1978 in the Maldives  |
| UNOPS | The United Nations Office for Project Services (UNOPS) is a separate, self-financing entity established by United Nations General Assembly decision 48/501 of 19 September 1994 and provides, <i>inter alia</i> , services to United Nations organisations, entities, as well as International Financial Institutions and governments. Following the Agreement between the Government of the Maldives and UNOPS on the establishment of UNOPS office through the exchange of letters signed in December 2010, UNOPS began its operations |
| FAO   | The Government of Maldives was accredited to the Food and Agriculture Organization of the United Nations Representative's office in Sri Lanka in 1979.   |
| WHO   | Basic agreement between the World Health Organization and the Government of Maldives signed on by the Government of Maldives on 15 May 1966 in Colombo and the WHO on 23 May 1966 in New Delhi   |
| UNFPA | This Joint Programme Document shall be the instrument referred to as the Project Document in Article I of the UNDP Standard Basic Assistance Agreement between the Government of Maldives  |

<sup>15</sup> Agreed by Internal Audit Services of PUNOs and endorsed by UNDG in September 2007.

|          |  |
|----------|--|
|          | and the United Nations Development Programme, signed by the parties on 25 January 1978   |
| UNICEF   | The Basic Cooperation Agreement with the Government of Maldives was signed on 19 <sup>th</sup> April 1994.   |
| UN WOMEN | UN WOMEN is a non-resident agency for Maldives and implements projects through UNDP with representation in the UN Resident Coordinator Office. This Initial agreement was signed between UNDP and UNWOMEN in March 2011. |

## 9. Work plans and budgets

The initial work plan and budgets for the programme are included in Annex F – Workplan and Budget(s) and include indicative activities and annual resource requirements. In order to validate and ensure an effective startup, an Inception Phase will be undertaken during which rapid assessments will confirm assumptions of log-frame, review indicators, establish baseline and confirm targets to ensure alignment with national and local context and the needs of the beneficiaries. This phase will also include the establishment of the implementation structure of the programme and undertake detailed planning and will include,

- Establishment of programme governance structures
- Recruitment and contracting of CTA, PC and other PCU staff
- PCU office established in Laamu
- Joint work planning exercise and preparation of Annual Joint Work Plan and PCU procurement plans
- Inception workshop and preparation of Inception report

During this inception phase, detailed Annual Work Plans (AWPs) and Quarterly Work Plans (QWPs) will be prepared by the PUNOs in consultation with national and local partners. These will be combined in the joint work planning exercise that will ensure no overlap and that linkages and synergies are further exploited where possible.

A Joint Programme Inception Report will be prepared immediately following the joint work plan exercise and at completion of the inception Phase. The report will include:

- i. A detailed first year AWP divided in quarterly time-frames detailing the activities and activity-level progress indicators that will guide implementation during the first year of the programme;
- ii. Dates of specific field visit;
- iii. The detailed budget for the first full year of implementation, prepared on the basis of the AWP;
- iv. Time-frames for meetings of the PB, PTC and LWG;
- v. Monitoring and evaluation requirements to effectively measure performance during the targeted 12 month time-frame;
- vi. A more detailed narrative on the institutional roles, responsibilities, coordinating actions and feedback mechanisms of programme partners;
- vii. Progress to date on programme establishment and start-up activities and;
- viii. An update of any changed external conditions that may affect programme implementation;
- ix. Review and agree the TORs for the PB, PTC, LWG and composition of members confirmed;
- x. Review and agree the reporting mechanisms of the programme

The Inception Report will be circulated to programme partners, PUNOs and other members of the PTC who will be given a period of one calendar month in which to respond with comments or queries. The PB will then review and approve the proposed work plan and budgets and other recommendations of the Inception Report.

For subsequent years, a revised joint programme annual work plan and budget will be produced subject to the decisions of the annual/regular reviews. PUNOs, in consultation with the PCU, will prepare separate budgets, consistent with its procedures and covering

its assigned activities under the programme. The budget formats will be harmonized in accordance with MOUNTF MOU. The consolidated budgets will then be prepared. The PTC will review the work plan and consolidated budget and a report will be provided to the PB for their consideration. The PB subsequently approves the work plan and budget.

*PCU costs associated with PUNOs activities*

PUNOs budgets include all direct costs associated with delivery of their specific activities according to their rules and procedures. This includes procurement, internal PUNOs M&E (that which is not included in the LECReD M&E plan), reporting and audits, logistics (in so far as is required to deliver the specific activity). Due to the integrated nature of the programme, the PCU costs will include some additional direct costs related to the management overheads of integrated delivery of the PUNOs activities and which are detailed in the PCU TOR included in Annex D – Draft Terms of Reference (TOR). By consolidating these integration activities in the PCU, the overall effect is to reduce costs by avoiding duplication and enhancing the delivery of results by strengthening synergies and coordination. The PCU will also help to reduce direct costs of the PUNOs by facilitating shared resources, improving logistical information and networks, and supporting PUNOs' access to information and key stakeholders in communities. The PCU budget will therefore include the following additional direct costs (which are not otherwise included in the budgets of the PUNOs):

- costs considered external to the PUNOs specific activity but which are necessary to ensure coordination and synergies with other PUNOs or with the activities of the PCU;
- costs relating to the PCU's specific activities as defined in the TOR including joint planning and budgeting, knowledge management, communications, M&E (as defined in the M&E plan), and consolidation of reporting;

## **Annex A – Relevant Experience of Participating UN Organisations**

### United Nations Development Programme (UNDP)

As a pioneer for the LECRED concept, UNDP has been providing a leadership role in global discourse on climate change adaptation and low emission development and has paved the way to bringing low emission climate resilient development (LECRd) into mainstream development discourse.

UNDP Maldives currently has the largest climate change adaptation portfolio within all UNDP programmes in the Asia and the Pacific region. UNDP Maldives has done this by successfully leveraging the support of its substantial Bangkok Regional team to develop and implement multi-sectorial LECRED projects in the Maldives. UNDP Maldives has been a long-term partner of the Government, in climate change and environmental management, and also in Governance and poverty reduction. This has included supporting Maldives access global climate change support:

- Preparations for the first Rio Summit,
- First National Communications to the UNFCCC (including the first vulnerability assessments and national GHG Inventory), and
- National Capacity Self-Assessments (NCSA).
- National Adaptation Plan of Action (NAPA)

UNDP Maldives, has also assisted Maldives in its direct response to climate change including the establishment of a portfolio of LECRED projects including:

- *Atoll-based Ecosystem Conservation (AEC)* project since 2004, involved participatory approaches to atoll and island development planning and resource mapping, development of land-use and management plans for protected and managed areas; and led to the Atoll being declared as a UNESCO biosphere reserve and most recently the establishment of a conservation fund in partnership with private sector actors;
- *Building Capacity and Mainstreaming Sustainable Land Management (SLM) in the Maldives* (SLM) focussed on national and sub-national land-use planning and management including revisions to land-related laws and regulations, integrating SLM within broader environmental policy, developing a national land use map and a GIS-based land data management system for monitoring and evaluating land use in the islands.
- *Renewable Energy Technology Development and Application Project (RETDaP)* project included development of a renewable energy policy for the Maldives, renewable energy fund (FRESA), feasibility studies on different renewable energy options, and development of a tariff structure for renewable energy;
- *Solid Waste Management (SWM)* project led to the development of the national waste management policy and draft national waste management regulation, waste-to-energy feasibility assessments, and study on plastic recycling;
- *Integrating Climate Change Risks into Resilient Island Planning in the Maldives (ICCR)* project mainstreamed climate change considerations at the local level into coastal resources including assessment of coastal protection measures used in Maldives, guidelines for implementing coastal protection measures and a scaled down climate change scenario for the Maldives, and a climate change research strategy;
- *Integrated Water Resource Management (IWRM)* project is testing the IWRM system in 3 Maldivian islands and will bring in user-pay principles through willingness to pay surveys and involvement of communities in water management.
- *Disaster Risk Reduction and Management* since Tsunami response and recovery period in partnership with the National Disaster Management Centre (NDMC),

UNDP is supporting the strengthening of national and sub-national disaster response systems.

In addition, building on its wide geographical presence and deep knowledge of island communities, including Laamu, UNDP Maldives has been implementing a number of small grants facilities, which have supported many CSOs to address local level issues of waste management, energy efficiency, ecosystem conservation & sustainable use, awareness raising and coastal management.

Under the Managing for Development Results (MfDR) projects, UNDP has been working with national and sub-national entities on planning, results management and implementation of development activities, including the developments of the national development plans and adoption of MfDR principles into national planning and monitoring and evaluation by providing technical assistance in developing Results Frameworks and evaluation frameworks for the sectors identified in the national plan.

UNDP's Governance team has an extensive track record at the sub-national level in supporting the Government, through the Local Government Authority (LGA), including; review and revise the Decentralisation Act; training of local councillors and secretariat staff in project development and monitoring; participatory approaches to local development and financial planning; fiscal decentralization through the development of a fiscal formula. UNDP supported the LGA in developing over 200 Standard Operating Procedures (SOPs) and provided training for delivering for local councils, including an orientation curriculum and training modules for the local councillors. UNDP has also been supporting the women's participation in local governance through providing support to training of women candidates for local councils, developing SOPs for the Women's Development Committees and supporting capacity building and networking of local female elected officials.

#### United Nations Children's Fund (UNICEF)

Drawing on its track record in Maldives and support from their regional office, UNICEF has undertaken development of emergency preparedness and response plans for education and child protection sectors in Maldives. In 2012/13, UNICEF completed a capacity mapping exercise for the education sector to determine the current capacity of that sector to plan and respond to emergencies. In addition a road map was developed to support the development of a sector plan involving a wide range of stakeholder. In 2013, UNICEF conducted advocacy activities for school children and senior management and teachers from all schools in Male' to raise awareness on DRR and emergency planning. Implementing partners include the Ministry of Education (MoE), Ministry of Gender, Family and Human Rights (MGFHR), and National Disaster Management Centre (NDMC).

#### United Nations Office for Project Services (UNOPS)

##### *Water & Sanitation*

UNOPS implemented several infrastructure intensive water and sanitation projects in the Maldives on behalf of UNICEF after the tsunami of 2004. These include rainwater harvesting systems and the installation of reverse osmosis plants to counter the water shortages in various islands. Currently, UNOPS is implementing projects relating to water and climate change adaptation. One is an integrated water resource management funded by the Adaptation Fund to design and build a climate resilience model water system in three islands, which later can be replicated in other parts of the Maldives and other small low-lying nations similar to the Maldives.

The Global Environment Facility (GEF) has funded a global project on Integrated Water Resources Management in Atlantic and Indian Ocean Small Island Developing States

(IWRM AIO SIDS). The aim of the project is to strengthen the commitment and capacity of the participating countries to implement an integrated approach to the management of freshwater resources, with a long-term goal of enhancement of the capacity of the countries to plan and manage their aquatic resources and ecosystems on a sustainable basis.

UNOPS had implemented several projects in various islands of the Maldives on behalf of UNICEF, including installation of a vacuum system in 4 islands and also assisted in sealing off septic tanks. Also in 2010, UNOPS assisted the Government to conduct a comparative study on sewage systems, where Isdhoo of Laamu was also part of the sampling.

#### *Waste Management*

UNOPS interventions in the solid waste management sector in the Maldives had been mostly in providing technical assessments and consultation services to the Government. In 2010, UNOPS helped the Ministry of Environment and Energy carry out a Recycling Study. Also in 2012, UNOPS issued a report on possible methods of converting waste to energy that could be utilized at island level to turn bio-waste to energy

UNOPS as an organization encompasses a large portfolio of solid waste management projects, ranging from infrastructure based, waste to energy, capacity building, to technical assistance. In Sri Lanka, the European Union provided funds to UNOPS to implement the Environmental Remediation Programme (ERP). ERP covered the three main components of solid waste management, as well as tree planting and improvement of urban storm water drainage. A holistic approach to integrated waste management incorporated four main components, 1) infrastructure design and construction; 2) procurement; 3) Governance; and 4) Sustainable economic development. This experience has valuable lessons for the Maldivian context.

#### *Food and Agriculture Organisation of the United Nations (FAO)*

Since the early 1970's, FAO has provided assistance to the government through national and regional programmes to address the needs and priorities of the country. Direct support from FAO in the form of targeted Technical Cooperation Programme (TCP) projects totaled US\$9.5 million. Ministry of Fisheries and Agriculture (MoFA) is the implementing partner of FAO projects in the Maldives.

FAO has worked with the MoFA to support the development of small scale to commercial agriculture, which is now elaborated within the recently completed *Development of Agriculture Master Plan for Sustainable Food Security, Agriculture and Rural Development (2008-2010)*.

FAO regional project '*Sustainable management of the Bay of Bengal large marine ecosystem (Bangladesh, India, Indonesia, Malaysia, Myanmar, Sri Lanka, Thailand); 2009-2014*' is linked with a sustained resource base of good ecosystem quality and its activities include: 1) identifying sound policies leading to strengthening community based approaches to integrated coastal resources management, 2) empowering local communities to participate in processes and decisions associated with the development of sub regional and regional fisheries management plans and, 3) increasing options such as access to alternative livelihood opportunities.

FAO, through its regional '*Regional programme participatory and integrated agriculture, forestry and fisheries development for long-term rehabilitation and development in tsunami affected areas (Indonesia, Maldives, Sri Lanka Thailand (2006-2011)*', assisted Maldives establish the forest policy using appropriate policy tools and legislation in subjects such as assessing the role of mangroves and other coastal vegetation in mitigating the impacts of the tsunami, tidal surges and storms. FAO also helped identify

opportunities for community plantings, home gardens, agro-forestry, fruit trees and shade trees to restore and improve livelihoods. Tree planting activities were based on a livelihoods approach that addresses poverty alleviation and food security, human capacity building and environmental sustainability while minimizing vulnerability to future natural disasters. An integrated approach was taken to planning coastal and mangrove forest rehabilitation and tree planting. This was consistent with the highly integrated nature of the livelihoods of most of the people in the affected areas. Action was based on participatory principles involving all stakeholders including the private sector wherever feasible. The Forestry interventions were compatible with sustainable forest management practices taking into account the impact of changing climate variables. They were carried out within the context of integrated coastal area management and spatial planning that recognizes the multiple values of the natural resource base.

#### World Health Organisation of the United Nations (WHO)

WHO has a long history of providing technical assistance to the Republic of Maldives in the area of environmental health including reducing environmental hazards to health, delivery of occupational health programmes and services, and to address public health problems resulting from climate change. In particular, Climate change has been addressed by identification of preventive measures to minimize the impacts of climate change on islands, and through awareness programmes on preventing public health problems resulting from climate change<sup>16</sup>. This has include:

- Guidelines on rainwater harvesting;
- Materials for creating awareness on rainwater harvesting;
- Guidelines for schools on water, sanitation and hygiene education;
- Capacity building at island level for groundwater quality monitoring.
- Awareness materials related to occupational health and safety.

In the current 2012-2013 biennium WHO supported local authorities to conduct awareness campaigns on mosquito borne diseases, strengthening surveillance of non-communicable and communicable diseases, development of clinical protocols and guidelines following with training of health providers, assessment of hospitals for actions in emergencies, assessment of water quality and campaign on waste management. Technical expertise was provided to the Ministry of Health to develop a National Strategic Plan on vector control and jointly with the Ministry of Environment national meeting to develop a Safety Plan for Provision of safe water was conducted.

Globally WHO is supporting member states to strengthen health systems, increase climate resilience of communities, and to prepare for changes in health and disease burdens related to climate<sup>17</sup> and several global projects<sup>18</sup> and <sup>19</sup>. This included the developed of research protocols to assess the relations between climate change and human health, with focus to diarrheal diseases and vector-borne diseases like malaria and dengue<sup>20</sup>.

In order to decrease impact of climate change on health WHO Regional Office for South-East Asia (SEARO) developed the Regional Strategy for Protecting Health from Climate Change. The Strategy will assist member states, including Maldives, in developing,

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<sup>16</sup> WHO Country Cooperation Strategy for the Republic of Maldives 2013-2017; WHO Country Office for Maldives; 2013

<sup>17</sup> <http://www.who.int/globalchange/en/>

<sup>18</sup> <http://www.who.int/globalchange/projects/adaptation/en/index.html>

<sup>19</sup> <http://www.euro.who.int/en/what-we-do/health-topics/environment-and-health/Climate-change/publications/2009/protecting-health-from-climate-change-leaflets/protecting-health-from-climate-change-a-seven-country-initiative-in-the-eastern-part-of-the-who-european-region>

<sup>20</sup> [http://searo.who.int/entity/climate\\_change/documents/sea\\_ehc\\_en/index.html](http://searo.who.int/entity/climate_change/documents/sea_ehc_en/index.html)

strengthening and/or updating their national strategies on climate change and health, and their national plans on protecting health from climate change<sup>21</sup>.

### United Nations Entity for Gender Equality and the Empowerment of Women (UN WOMEN)

UN Women's engagement with in the Maldives targets women, which are highly vulnerable to climate change. Their experience in Maldives includes:

- Gender and Women Human Rights Training of Trainers on gender and socialization, situation of women and girls in the Maldives, gender concepts, CEDAW, UNSCR Women Peace and Security resolutions, gender analysis and mainstreaming in policies, institutions and budget, domestic violence and roles of women development committees. Maldivian context specific training modules were developed for these workshops, such as case studies, a quiz based on statistics and group work based on existing national policies and budgets. Additionally, key gender concepts and materials were translated into Dhivehi. Refresher training was conducted to build on past trainings and strengthen capacity of gender trainers on gender equality and women's human rights issues, as well as to deepen their understanding on key subject's gender mainstreaming (gender analysis and gender responsive budgeting), result-based management and M&E, human rights based approach, and sexual and reproductive health and rights, leadership skills. Some of the trainers have been instrumental in conducting gender sensitization sessions to local councilors, WDCs and government ministries and others and also are strong gender advocates.
- Support to Maldivian Red Crescent Society:- session was conducted to high school female students on the issue of gender and disaster issues on the day of International Disaster Response Day, as the theme was visible of women and girls.

UN Women regional offices are undertaking various initiatives related to gender and climate change that UN Maldives can draw lesson learnt and seek technical expertise. These include:

- In Bangladesh, UNWOMEN is using an area-based approach and focusing on the community level, UNWOMEN supporting mainstreaming of women's issues and rights into climate change discourse and mitigation strategies and responses. This includes alternative livelihood options including 'green sector' business for women. The programme has three interlinked components: qualitative research on existing situation, identifying the priorities of women living in the vulnerable areas; capacity building of community women in 'green business'; and strengthening local and national institutions and creation of platform for dialogues on gender concerns in climate change dialogues for policy changes.
- In Vietnam, UN WOMEN is implementing a Programme 'Strengthening women's capacity in disaster risk reduction to cope with climate change' (2010-2016) which includes capacity building of women leaders and strengthening women's participation in DRR and DRM; awareness raising among men and the rest of the community on disaster preparedness and early response, and their behaviour change; and improving dialogue among grassroots women and policy makers on climate change and natural disasters.

### United Nations Population Fund (UNFPA)

UNFPA is well positioned to provide support in the establishment of hubs for climate and development related data collection and management, with a focus on the integration of population data (particularly census data and social survey data) in development planning and disaster risk reduction associated with emerging climate impacts, together

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<sup>21</sup> [http://searo.who.int/entity/climate\\_change/documents/sea\\_ehc\\_575/en/index.html](http://searo.who.int/entity/climate_change/documents/sea_ehc_575/en/index.html)

with a wide range of stakeholders. Over the last four years, UNFPA has concentrated on building knowledge, methods and capacity in the area of Geographic Information Systems and spatial analysis for climate impacts, in partnership with governments, NGOs and researchers.

Key UNFPA work in Maldives related to proposed activities:

- UNFPA has a long history of supporting the Department of National Planning of the Ministry of Finance and Treasury as the National Statistic Organization for the implementation of Population and Housing Censuses. UNFPA has provided technical support all aspect of Census taking, from planning, definitions, quality assurance and analysis.
- UNFPA provided technical and financial support to the Ministry of Health for the successful implementation of the Demographic and Health Survey.
- Last year, UNFPA trained four professionals on the use of population and housing census data for local development planning, including one statistics officer from South Huvadhu Atoll Office and UNFPA also supported training of 40 Atoll and National officers on use and collection of demographic, migration, social, economic data and geospatial structures and of 8 DNP staff on Population projections.
- For the last three years UNFPA has provided support to development of legislation, of database integration and training of DNP staff on the transition to increasing relying on registers for census information.
- Following the 2004 Tsunami UNFPA provided technical and financial support to carry out vulnerability and poverty assessments, and currently UNFPA provides support to the development of disaster preparedness plans of the Ministry of Health to prepare adequate response in the area of Reproductive Health.

Key UNFPA work at global level relevant to the proposed activities includes:

- Knowledge development as contained in: 1) *Population Dynamics and Climate Change* on the broad set of linkages between population dynamics and data and climate change mitigation and adaptation<sup>22</sup>; and 2) *The Demography of Adaptation to Climate Change*, a detailed examination of the data foundations and critical indicators of climate vulnerability and adaptation, with particular focus on spatial analysis of social and demographic data, in conjunction with other types of data, to understand and act on climate vulnerability<sup>23</sup>.
- Development of methods for data analysis and integration using Geographic Information Systems (GIS). These methods are presented in *The Demography of Adaptation to Climate Change*, stemming from a census manual UNFPA developed. Furthermore, UNFPA has developed a web platform, *POPClimate*<sup>24</sup>, which provides an online interactive community for analysts, planners and policy makers to learn and generate approaches to GIS and spatial data for adaptation and to exchange work and feedback. These experiences are highly relevant to the proposed data project, and indeed the platform could provide a hub for stakeholders within Maldives to develop and share progress on data to support LECReD and DRR.
- Capacity building for data integration and analysis within National Statistical Offices and other Government departments and ministries through training in Geographic Information Systems (GIS), census and survey data collection and analysis, and application of data for policy development and implementation. UNFPA, one of the lead agencies on data in the world, has strong partnerships with National Statistical Offices and is well experienced in capacity building for data infrastructure. UNFPA has successfully piloted spatial data for climate change approaches in Indonesia, with full support and contribution from government, local research institutions and UN partners. These pilots provided highly localized data on social, demographic and infrastructural components of vulnerability to local and national governments for

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<sup>22</sup> <http://www.unfpa.org/public/op/edit/publications/pid/4500>

<sup>23</sup> <http://www.unfpa.org/public/home/publications/pid/13218>

<sup>24</sup> <http://www.popclimate.net>

adaptation planning. Currently, efforts are under way to scale up and integrate the results in National Adaptation Plans.

- Coordination with the UN system on spatial data for climate analysis via leadership of an initiative of the Working Group on Climate Change under the Chief Executives Board (CEB) High Level Committee on Programming (HLCP). Eleven UN and international organizations participated in a side event at the 17<sup>th</sup> Climate Change Talks in Doha in 2012 in support of this spatial data initiative. Such coordination will help to situate the proposed data activities within the full array of LECReD and DRR data needs across multiple stakeholders and sectors.

## Annex B - Risk Analysis

| # | Description  | Date Identified    | Type                      | Impact & Probability   | Response  | Owner                         |
|---|--|--------------------|---------------------------|--|---|-------------------------------|
| 1 | Diffuse support for programme as a consequence of changes in key personnel after elections       | Prodoc development | Political                 | <p><b>Probability – medium</b></p> <p>Changes in key political context may lead to changes in national and local development priorities;</p> <p>Changes in commitment may weaken governance and participatory and inclusive approach</p> | <p>Pro-active engagement with new officials to introduce benefits of programme;</p> <p>Prioritise low key activities until after elections in order to maintain low profile and reduce risk of capture of kudos by politicians;</p> <p>Focus on shared benefits from LECReD approach driven by local needs;</p> | PB, UNRC, CTA, PC             |
| 2 | Delayed delivery due to postponed or disrupted local planning cycle due to post-election turmoil | Prodoc development | Political, Operational    | <p><b>Probability – medium</b></p> <p>Disruption in planning cycle could lead to deferred, delayed or cancelled local level planning leading;</p>  | <p>Structure no-regret actions and small grants to ensure some results outside of planning process;</p> <p>Focus on shared benefits from LECReD approach driven by local needs;</p>   | PB, UNRC, CTA, PC             |
| 3 | Low expectations of local planning leads to low participation                                    | Prodoc development | Organizational, Political | <p><b>Probability – high</b></p> <p>Past experience has lowered expectations that local planning will be needs driven or lead to results</p>   | <p>Awareness raising and effective communications strategy;</p> <p>Adoption of Laamu Working Group approach;</p> <p>Participatory approach of the programme;</p>  | PB, PTC, CTA, PC, LWG         |
| 4 | Limited capacity of local councils creates delivery bottlenecks                                  | Prodoc development | Operational               | <p><b>Probability – high</b></p> <p>Overloaded and understaffed councils are unable to engage effectively in the programme and delays or increased costs ensue</p>   | <p>Joint work plan that takes into account local partner capacity;</p> <p>Capacity development and support for improved systems and procedures;</p>   | PC, CTA, UN Agencies          |
| 5 | Data for climate profile is not available or is more costly than anticipated                     | Prodoc development | Operational               | <p><b>Probability – high</b></p> <p>The preparation of useful climate profiles will be dependent on</p>  | <p>Consider multiple sources and combine a bottom-up and top-down data gathering and identify least cost option;</p>  | PB, PTC, PC, CTA, UN Agencies |

|   |  |                    |             |  |  |                  |
|---|--|--------------------|-------------|--|--|------------------|
|   |  |                    |             | access to good meteorological, demographic, and sector data relating to GHG mitigation and vulnerabilities. Lack of data will cause delays or require costly measures to ensure delivery; Some data owners may not be willing to give access or may charge a high price; | Establish locally appropriate data gathering and analysis tools to reduce cost and improve scalability; Ensure high level engagement on data governance arrangements;                  |                  |
| 6 | Difficult communications between islands and Male causes coordination problems                       | Prodoc development | Operational | <b>Probability - medium</b><br><br>Many of the councils do not have access to email and in some cases phone services are intermittent. Sharing documents or arranging meetings at short notice can be problem.   | Assist LGA with training and roll-out of their communications system to improve internet access to councils; Establish a programme office at the local level with PC and coordinators; | PC, CTA          |
| 7 | Lost opportunities due to weak coordination with other climate change and renewable energy projects. | ProDoc development | Operational | <b>Probability - medium</b><br><br>Most other climate change initiatives are working at the national level and may miss local-level connections.   | Include other representatives from other programmes in PTC;<br><br>Clear responsibility for PTC to ensure coordination and linkages;   | PB, PTC, CTA, PC |
| 8 | Lack of Government commitment on climate change due to shift in national policy after elections.     | ProDoc development | Political   | <b>Probability - low</b><br><br>Maldives is highly vulnerable to climate change including key economic sectors. Whilst emphasis may shift slightly it is unlikely commitment will disappear.   | Pro-active engagement with new officials to introduce benefits of programme;   | PB, CTA, PTC     |

## Annex C – Results Framework for LECReD Joint Programme

|   |   |
|---|---|
| <b>National Development Priorities:</b> Protect and preserve the natural environment to ensure prosperous economic development and healthy communities; reduce green house gas emissions and achieve carbon neutrality; promote renewable energy technology applications; build institutional framework for DRR and climate change adaptation |   |
| <b>UNDAF/JP Outcome 9:</b> Enhanced capacities at national and local levels to support low carbon life-styles, climate change adaptation, and disaster risk reduction   |   |
| <i>Outcome Indicator 1: Percentage reduction in Carbon emission in atolls and islands in Laamu</i><br>Baseline: 0%<br>Target: tbd%  | <i>Outcome Indicator 2: Percentage of atolls and island councils in Laamu undertaking low emission climate resilient development planning</i><br>Baseline: 0<br>Target: tbd |

| JP Outputs   | SMART Results (UNDP)   | Participating UN organization | Key (Sub) National Partner | Indicative Activities  | Resource allocation and indicative time frame (US\$,000) |      |      | TOTAL (US\$,000) |
|--|--|-------------------------------|----------------------------|--|--|------|------|------------------|
|  |  |                               |                            |  | Y1   | Y2   | Y3   |                  |
| 1. Partnership, coordination and participation platform for local LECReD planning and action is established<br><br><b>Indicator 1.1</b> Progress towards establishing the platform<br><br>Baseline: no platform<br>Target: 1) LWG convened by Feb 2014;<br>2) CSES published on website by April 2014;<br>3) CC Forum by Dec | 1.1 Legal and institutional arrangements for LECReD and DRM governance at local level clarified and more inclusive | UNDP                          | LGA (LC), MEE              | 1.1.1 Conduct review of existing legal and institutional arrangements for environmental, LECReD and DRM governance and produce capacity development "roadmap" recommendations and local language advocacy tools for use by local councils, WDCs, LGA, DNP, and line ministries | 73.3   | 0.0  | -    | 73.3             |
|  |  | UN WOMEN                      |                            | 1.1.2 Provide training on gender issues and the role of women in addressing climate change to Programme Board, PTC, LWGs, programme staff, and training of trainers for CBOs for training of local councils and community.   | 35.7   | 35.7 | 8.9  | 80.3             |
|  |  | UNDP                          | LGA                        | 1.1.3 Provide training to local councils, WDC, CSOs and community leaders on conflict mediation techniques, leadership, negotiation and consensus building whilst ensure participation of youth and women.   | 19.1   | 19.1 | 19.1 | 57.2             |
|  | 1.2 Public awareness and access to information on  | UNDP                          | LGA (LC), DPA              | 1.2.1 Undertake a detailed stakeholder survey and provide age and gender disaggregated quantitative and qualitative analysis of public information needs, information channels and access, and perceptions for LECReD and DRM.   | 72.8   | -    | -    | 72.8             |

|   |   |  |                                      |   |               |  |      |       |
|---|---|--|--------------------------------------|---|---------------|--|------|-------|
| <p>2014 and each year; 4) 20% increase in participation in CC Forum each year</p> <p><b>Indicator 1.2</b><br/>Proportion of local people surveyed that indicated LECReD planning is inclusive</p> <p>Baseline: tbd<br/>Target: tbd</p>                    | LECREd and DRM at local level strengthened                                    | UNDP   | LGA (LC), DPA, MEE                   | 1.2.2 Prepare and implement an age and gender sensitive Communication and Stakeholder Engagement Strategy (CSES) with clear M&E system using, amongst other things, community meetings, local media, existing public information channels, mobile phone and web-based services; to provide awareness raising and advocacy, updates on programme implementation, and up-to-date access to important environmental, LECReD and DRM related information. | 68.0          | 90.7   | 90.7 | 249.3 |
|   |   | UNICEF                                       |                                      | 1.2.3 (as part of 1.2.2) Conduct age and gender specific advocacy on child-centered and community-based disaster risk reduction and climate change adaptation.  | 74.9          | -  | -    | 74.9  |
|   |   | UN WOMEN                                     |                                      | 1.2.4 (as part of 1.2.2) Conduct specific advocacy on gender and climate change and the role of women in local planning and LECReD.   | 23.4          | 31.2   | 23.4 | 78.1  |
| <p><b>Indicator 1.3</b><br/>Proportion of women and youth and female-headed households in targeted islands receiving training and support on reducing carbon emissions and building resilience to climate change</p> <p>Baseline: tbd<br/>Target: tbd</p> | 1.3 Inclusive platform for LECReD and DRM planning and management established | UNDP   | LGA (LC)                             | 1.3.1 Agree on TOR and establish a regular Laamu Atoll Climate Change Forum in accordance with CSES as a locally-led mechanism for multi-stakeholder dialogue (with linkages to national level), promotion of local investment and business opportunities, and to showcase local LECReD actions whilst ensure participation of youth and women.   | 44.9          | 59.9   | 44.9 | 149.8 |
|   |   | UNDP   | LGA (LC)                             | 1.3.2 Establish a multi-sector public/private Laamu Working Group (LWG) with agreed TOR and work plan; and involving local and national membership, as and when required, and including youth and women, to support the program activities.   | 13.4          | 17.9   | 17.9 | 49.2  |
|   |   | UNDP   | LGA (LC)                             | 1.3.3 (with 1.3.2) support multi-sector dialogue between islands, and between local and national levels on energy, coastal zones, marine resources, water and waste management, DRM, employment generation and local economic development   | 5.4           | 7.2  | 7.2  | 19.8  |
|   |   | UNOPS  |                                      | 1.3.4 (with 1.3.2) support multi-sector dialogue between islands, and between local and national levels on water resource and waste management.   | 55.4          | -  | -    | 55.4  |
|   |   | WHO  |                                      | 1.3.5 (with 1.3.2) support multi-sector dialogue between island, and between local and national levels on public health management and DRM  | 54.6          | -  | -    | 54.6  |
|   |   | UNICEF                                       |                                      | 1.3.6 (with 1.3.2) support multi-sector dialogue between island, and between local and national levels on child-centered and community-based WASH   | -             | 32.1   | -    | 32.1  |
|   |   | FAO  | MoFA                                 | 1.3.7 (with 1.3.2) support multi-sector dialogue between island, and between local and national levels on Agriculture   | 46.7          | 11.7   | -    | 58.3  |
|   |   | 2. Data and knowledge systems established or | 2.1 Data management system and tools | UNFPA   | DNP, LGA (LC) | 2.1.1 Prepare multi-stakeholder multi-sector LECReD and DRM data needs and data management capacity assessment | 61.5 | -     |

|   |          |  |   |   |  |      |      |      |
|---|----------|--|---|---|--|------|------|------|
| <p>identified to support evidence-based planning and policy development for LECReD at the local level</p> <p><b>Indicator 2.1</b><br/><i>Proportion of LECReD data identified in DMP that is available to planners and stakeholders</i></p> <p>Baseline: tbd<br/>Target: 80% by end 2014; 100% by end 2015.</p> <p><b>Indicator 2.2</b><br/><i>Proportion of stakeholders identified in DMTP trained in utilization of climate data</i></p> <p>Baseline: 0%<br/>Target: tbd%</p> <p><b>Indicator 2.3</b> <i>Number of inhabited islands in Laamu which have up-to-date Climate Profiles indicating option and opportunities made available on website.</i></p> <p>Baseline: tbd<br/>Target: 4 largest islands by end 2014 and; all islands by end 2016.</p> | enhanced | UNFPA                                    | DNP, LGA (LC)   | 2.1.2 Prepare appropriate local-level multi-sector Data Management Plan (DMP) and Data Management Training Plan (DMTP) building on existing systems and promoting integration with national systems and standards and training from DNP, MEE, MoH and others. | 25.0   | 16.7 | -    | 41.7 |
|   | UNFPA    | DNP, LGA (LC)                            | 2.1.3 Support appropriate management arrangements, including the establishment of the Atoll Statistics and Planning Unit (ASPU) in accordance with DMP and provide training in accordance with DMTP to strengthen systems to generate and maintain data.  | 22.9  | 45.9   | 34.4 | 73.3 |      |
|   | UNFPA    | DNP, LGA (LC)                            | 2.1.4 Provide training and support to the ASPU and relevant National level planning and data agencies to ensure relevant local data, indicators, analysis and planning concepts are coordinated with national level systems and accessible by DNP, other key National entities and the public in general in accordance with the DMP.  | 29.2  | 38.9   | 29.2 | 97.3 |      |
|   | UNFPA    | DNP, LGA (LC)                            | 2.1.5 (with 2.1.1, 2.1.2, 2.1.3) support integration and linkages of climate change related population data sources and resources, in particular relating to national Census instruments and processes, and provide associated training   | 9.8   | 13.1   | 3.3  | 26.2 |      |
|   | UNDP     | MEE, Met Department, NDMC                | 2.1.6 (with 2.1.1, 2.1.2, 2.1.3) Prepare/identify participatory local level risk and vulnerability assessment guidelines (including for environmental, climate change and DRR related assessments), GHG inventory guidelines, and GHG budgeting guidelines and prepare/identify methodology and tools, and provide associated training for council and sector staff to implement. | 23.2  | 30.9   | 15.5 | 69.6 |      |
|   | UNOPS    |  | 2.1.7 (with 2.1.2 and 2.1.3) support integration of water related climate sensitive variables and resources into planning at local level.   | 47.0  | -  | -    | 47.0 |      |
|   | WHO      |  | 2.1.8 (with 2.1.2 and 2.1.3) support integration of public health, environmental health, and DRR related climate sensitive variables and resources into activities and provide associated training  | 81.3  | -  | -    | 81.3 |      |
|   | UNICEF   |  | 2.1.9 (with 2.1.2 and 2.1.3) support integration of LaamuInfo system and other community-based DRR related climate sensitive variables and resources into activities and provide associated training  | 28.5  | 14.3   | -    | 42.8 |      |
|   | FAO      | MoFA                                     | 2.1.10 (with 2.1.2 and 2.1.3) support integration of Agriculture related climate sensitive variables and resources into activities and provide associated training  | 53.5  | -  | -    | 53.5 |      |
|   |          | 2.2 Laamu Atoll Climate Profile prepared | UNDP  | MEE   | 2.2.1 Prepare LECReD baseline and set targets as identified in DMP and including inventory of development priorities and initiatives | 51.4 | 25.7 | -    |

|  |   |       |                |   |      |     |   |      |
|--|---|-------|----------------|---|------|-----|---|------|
|  |   | UNDP  | MEE            | 2.2.2 Undertake island level integrated energy resource assessment, and energy use survey and analysis and, if required undertake measurements or otherwise, characterize energy sources, energy use patterns for different stakeholders, and identify opportunities for renewable energy and energy efficiency measures in key sectors in accordance with DMP. | 65.3 | -   | - | 65.3 |
|  |   | UNOPS |                | 2.2.3 Review available information and if necessary conduct Integrated Water Resource Management (IWRM) and Waste Management (WM) assessment for each island and prepare Atoll IWRM and WM Plan in accordance with DMP.   | 83.3 | -   | - | 83.3 |
|  |   | UNDP  | DNP, MEE, MOFA | 2.2.4 Undertake survey/review of environmental resources including agriculture, fisheries, and biodiversity with emphasis on climate sensitive elements and prepare resource maps for the NGIS in accordance with DMP.  | 39.6 | -   | - | 39.6 |
|  |   | UNDP  | MoHI           | 2.2.5 Support councils to review status of landuse maps, assess vulnerable coastal zones and Environmental Protection Zones (EPZ) and other climate change considerations if required update landuse database in accordance with DMP  | 62.1 | -   | - | 62.1 |
|  |   | UNDP  | DNP, MEE       | 2.2.6 Conduct quantitative and qualitative assessment of economic and socially vulnerable groups and review of existing social and economic safety nets in accordance with DMP  | 32.1 | -   | - | 32.1 |
|  |   | UNDP  | MEE            | 2.2.7 Identify/develop localized climate change and demographic forecasts in accordance with DMP.   | 16.1 | -   | - | 16.1 |
|  |   | UNDP  | MEE            | 2.2.8 (from 2.1.4) Prepare risk and vulnerability maps and GHG inventory and budgets for select islands and atoll-wide in accordance with DMP   | 80.3 | -   | - | 80.3 |
|  |   | UNDP  | MEE            | 2.2.9 Prepare Laamu Atoll Climate Profile consisting of Atoll-wide as well as separate Island profiles  | 22.5 | 7.5 | - | 30.0 |
|  | 2.3 LECReDs options identified and analysed | UNDP  | LGA (LC), MEE  | 2.3.1 Identify LECReD options and opportunities for key sectors at island and atoll level and prepare appropriate financial and economic analysis (e.g. cost-benefit) and comparison  | 46.5 | -   | - | 46.5 |
|  |   | UNDP  | LGA (LC), MEE  | 2.3.2 Analyse potential synergies between sectors and between adaptation and mitigation options.  | 39.6 | -   | - | 39.6 |
|  |   | UNDP  | LGA (LC), MEE  | 2.3.3 Undertake analysis of institutional, governance and financial actions required to implement priority options and opportunities and determine viability.   | 15.0 | -   | - | 15.0 |
|  |   | UNDP  | LGA (LC), MEE  | 2.3.4 Identify options for financial, policy and legal instruments to address LECReD options and opportunities  | 12.8 | -   | - | 12.8 |

|   |   |        |                    |  |       |      |      |       |
|---|---|--------|--------------------|--|-------|------|------|-------|
| <p>3. Improved Local Level Planning and Management for LECReD</p> <p><b>Indicator 3.1</b> Number of backable LECReD policy or investment projects identified from planning</p> <p>Baseline: tbd<br/>Target: tbd</p> <p><b>Indicator 3.2</b> Proportion of targeted stakeholders trained in activities identified in CDAP.</p> <p>Baseline: tbd<br/>Target: tbd</p> <p><b>Indicator 3.3</b> Proportion of localized national policy, local regulations, development plans that include age and gender sensitive references to reducing emissions or climate change or climate change risks.</p> <p>Baseline: tbd<br/>Target: tbd</p> | <p>3.1 Guidelines, tools and systems identified or developed for local LECReD planning and management</p> | UNDP   | LGA (LC)           | 3.1.1 Prepare a guidance manual (based on 1.1.1, 2.1.2) for adopting national policy, standards or best practices into local level planning and management for councils and service providers.   | 11.0  | 11.0 | -    | 21.9  |
|   |   | UNDP   | LGA (LC), MEE      | 3.1.2 (with 3.1.1) Support to councils for preparation of guidelines for adopting national standards on buildings and energy efficiency  | 21.4  | -    | -    | 21.4  |
|   |   | UNDP   | LGA (LC), MEE      | 3.1.3 (with 3.1.1) Support to councils for preparation of guidelines for preventative measures for flooding and erosion  | 10.0  | 5.0  | -    | 15.0  |
|   |   | UNICEF |                    | 3.1.4 (with 3.1.1) Support preparation and/or implementation of community-based disaster response plans/SOPs in accordance with NDMC requirements and conduct training and emergency drills  | 42.8  | -    | -    | 42.8  |
|   |   | WHO    |                    | 3.1.5 (with 3.1.1) Support preparation of guidelines/SOPs for health facilities on mass casualty management, disaster preparedness and response capacity and conduct training and emergency drills   | 76.0  | -    | -    | 76.0  |
|   |   | WHO    |                    | 3.1.6 (with 3.1.1) Support preparation of local-level guidelines for planning health interventions based on WHO guidelines   | 60.0  | -    | -    | 60.0  |
|   |   | UNOPS  |                    | 3.1.7 Prepare guidelines for local level integrated water resource management that addresses waste water management, water resources management and groundwater contamination.   | 114.9 | -    | -    | 114.9 |
|   | <p>3.2 Capacity for integrated local development planning and management for LECReDs is strengthened</p>  | UNDP   | LGA (LC), MEE, EPA | 3.2.1 Identify/prepare participatory age and gender sensitive integrated LECReD and DRR planning methodology and where feasible integrate with existing local development planning approach and Environmental Impact Assessment methodologies. | 9.9   | 9.9  | -    | 19.8  |
|   |   | UNDP   | LGA (LC), MEE      | 3.2.2 (with 3.1) Prepare guidance materials and tools for preparation for LECReD planning, provide training of trainers, and facilitate trainers to conduct training for councils, WDC, CSO and community leaders.                             | 15.0  | 44.9 | -    | 59.9  |
|   |   | UNDP   | LGA (LC)           | 3.2.3 Provide training for councils on the development of bylaws, policy, standard operating procedures for bylaws and their enforcement.  | 11.1  | 11.1 | 11.1 | 33.2  |
|   |   | WHO    |                    | 3.2.4 Strengthen local councils to regulate public health (licensing, water quality) and health service providers to comply with health regulations  | 20.0  | 40.0 | -    | 60.0  |
|   |   | WHO    |                    | 3.2.5 Train council and health service personnel on communication, management, entomological and epidemiological surveillance, laboratory technology and disaster management.  | 20.0  | 40.0 | -    | 60.0  |
|   | <p>3.3 Integrated Atoll LECReD Plan developed and priority LECReD</p>                                     | UNDP   | LGA (LC), MEE      | 3.3.1 Support LGA and local councils in the preparation of the Local LECReD Development Plans (LLDPs) including the Policy and Investment Plans (PIP), while incorporating the agreed LECReD planning approach.                                | 11.1  | 11.1 | 11.1 | 33.2  |

|   |  |          |  |  |      |       |       |       |
|---|--|----------|--|--|------|-------|-------|-------|
|   | actions supported                                    | UNDP     | LGA (LC, WDC, CSO), MEE                        | 3.3.2 Facilitate capacity self-assessment for councilors, WDCs, CSO and sectoral focal points for integrated local planning and management for LECReDs and priority actions and prepare Capacity Development Action Plan (CDAP)  | 74.9 | -     | -     | 74.9  |
|   |  | UNDP     | LGA (LC), MEE                                  | 3.3.3 Support councils to prepare PIP including priority CDAP actions, policy developments, and priority investment projects, and; undertake preparation of backable project ideas with feasibility studies, identify sources of finance and/or capacity support, and undertake project concept marketing and partnership building.  | 96.3 | 48.2  | 48.2  | 192.6 |
|   |  | UNDP     | UNDP, UNOPS, UNICEF, WHO, FAO, UN WOMEN, UNFPA | 3.3.4 Support Programme Board to identify priority projects from actions identified in LLDP/PIP; assign PUNO and implementing Partner; and support PUNO and Implementing Partner to prepare project proposals for second Tranche support, and implement.   | -    | 39.6  | -     | 39.6  |
| <p>4. Practical local experience in LECReDs interventions leads to learning and promotes replication</p> <p><b>Indicator 4.1</b><br/><i>Proportion of Small Grant and no-regret projects replicated in local plans</i></p> <p>Baseline: none<br/>Target: tbd</p> <p><b>Indicator 4.2</b> <i>Number of lessons learned produced for specific audience and disseminated</i></p> | 4.1 Establish Laamu Atoll LECReD small grants Scheme | UNDP     | LGA, MEE                                       | 4.1.1 Establish a small grants facility to provide enabling grants for community-base organizations, councils and SMEs for 1) community-based disaster risk reduction projects, 2) locally appropriate low-cost coastal remediation and reef protection measures, 3) innovative low emission climate resilient income generating activities (including climate smart agriculture), 4) low cost behavior change initiatives for LECReD and DRR. | 99.9 | 199.9 | 199.9 | 499.7 |
|   |  | UNICEF   |  | 4.1.2 (with 4.1.1) Prepare/identify guidance materials and tools and provide training and support to relevant small grant projects.  | -    | 48.2  | -     | 48.2  |
|   |  | UNDP     |  | 4.1.3 (with 4.1.1) Prepare/identify guidance materials and tools and provide training and support to relevant small grant projects.  | 16.9 | 33.7  | 16.9  | 67.4  |
|   |  | UN WOMEN |  | 4.1.4 (with 4.1.1) Prepare/identify guidance materials and tools and provide training and support and promote women-focused small grant projects.  | 13.4 | 26.8  | 13.4  | 53.5  |
|   |  | FAO      | MoFA   | 4.1.5 (with 4.1.1) Prepare/identify guidance materials and tools and provide training and support to relevant small grant projects   | 72.8 | -     | -     | 72.8  |

|   |  |                            |  |  |        |        |       |        |
|---|--|----------------------------|--|--|--------|--------|-------|--------|
| <p>Baseline: 0<br/>Target: 1 lessons learned products on website by end 2014; 1 in 2015; 2 in 2016</p> <p><b>Indicator 4.3</b><br/><i>Proportion of study-tour participants who report learning lessons that they intend to use in their own work or life.</i></p> <p>Baseline: 0%<br/>Target: tbd%</p> | 4.2 "No regret" actions implemented in priority sectors  | UNDP                       | MEE  | 4.2.1 Prepare feasibility studies for the upgrade of electricity distribution networks and integration of an appropriate mix of renewable energy into select island(s); including detailed engineering studies and review of governance, financial capacity, procurement capacity and related capacity support for the project implementer, as required (in accordance with the requirements of the ADB SREP project <sup>25</sup> ) for financing via the SPREP Investment Plan | 165.9  | -      | -     | 165.9  |
|   |  | UNDP                       | MEE  | 4.2.2 Implement project in select islands to improve energy efficiency and demand response management and promote water saving practices for residential, commercial and government end-users by providing energy and water audits, awareness raising, and performance based subsidy on efficient technology retrofits.  | 166.9  | 222.6  | -     | 389.5  |
|   |  | UNOPS                      |  | 4.2.3 Implement immediate opportunities in select islands for improving the utilization of rainwater harvesting (RWH) by refurbishing and optimizing existing residential and communal facilities.   | 129.1  | 258.1  | -     | 387.2  |
|   |  | UNOPS                      |  | 4.2.4 Assist community and council or utility in select islands to develop solid waste management systems in accordance with waste regulations including: assignment of roles and responsibilities; establishment of user pay scheme; value adding through recycling and composting; training; household separation.   | 117.4  | 234.9  | -     | 352.3  |
|   |  | WHO                        |  | 4.2.5 Strengthen surveillance system at island and atoll levels to monitor climatic conditions related communicable and non-communicable diseases  | 20.0   | 40.0   | -     | 60.0   |
|   | 4.3 Knowledge products prepared and lessons disseminated | UNDP                       | LGA, MEE   | 4.3.1 Identify and document lessons learned in particular from small grants and no-regret actions targeting local and national level for showcasing at the Laamu Climate Change Forum and in accordance with the Communications Plan   | 17.3   | 34.7   | 34.7  | 86.7   |
|   |  | UNDP                       | LGA, MEE   | 4.3.2 Establish a series of issue-based learning opportunities through exchanges for decision makers from other Atolls and National level to share experience of LECReDs planning and interventions in Laamu   | 32.1   | 32.1   | 32.1  | 96.3   |
|   |  | UNDP                       |  | 4.3.3 Develop a knowledge management system to capture knowledge products and lessons learned and to promote programme results and replication.  | 17.4   | 69.4   | 69.4  | 156.2  |
|   | UNDP   |                            | Programme Cost (incl. Programme Management Unit) |  | 2017.0 | 1479.6 | 849.1 | 4345.6 |
|   |  |                            | Indirect Support Cost (7%)                       |  | 141.2  | 103.6  | 59.4  | 304.2  |
| UNOPS   |  | Programme Cost             |  | 511.3  | 460.8  | -      | 972.1 |        |
|   |  | Indirect Support Cost (7%) |  | 35.8   | 32.3   | -      | 68.0  |        |
| UNICEF  |  | Programme Cost             |  | 136.7  | 88.3   | -      | 225.0 |        |

<sup>25</sup> "Preparing Outer Islands for Sustainable Energy Development" project is a preparation project for SREP Investment Plan

|                     |  |                                     |        |        |        |        |
|---------------------|--|-------------------------------------|--------|--------|--------|--------|
|                     |  | Indirect Support Cost (7%)          | 9.6    | 6.2    | -      | 15.8   |
| UNFPA               |  | Programme Cost                      | 138.8  | 107.1  | 62.5   | 308.4  |
|                     |  | Indirect Support Cost (7%)          | 9.7    | 7.5    | 4.4    | 21.6   |
| UN WOMEN            |  | Programme Cost                      | 67.7   | 87.5   | 42.7   | 198.0  |
|                     |  | Indirect Support Cost (7%)          | 4.7    | 6.1    | 3.0    | 13.9   |
| FAO                 |  | Programme Cost                      | 161.6  | 10.9   | -      | 172.5  |
|                     |  | Indirect Support Cost (7%)          | 11.3   | 0.8    | -      | 12.1   |
| WHO                 |  | Programme Cost                      | 310.2  | 112.2  | -      | 422.4  |
|                     |  | Indirect Support Cost (7%)          | 21.7   | 7.9    | -      | 29.6   |
| Un-allocated Amount |  | Programme Cost                      | -      | 1200.0 | 770.0  | 1970.0 |
|                     |  | Indirect Support Cost (7%)          | -      | 84.0   | 53.9   | 137.9  |
| <b>Total</b>        |  | <b>Programme Cost <sup>26</sup></b> | 3343.3 | 3546.4 | 1724.3 | 8614.0 |
|                     |  | <b>Indirect Support Cost</b>        | 234.0  | 248.2  | 120.7  | 603.0  |
| <b>GRAND Total</b>  |  |                                     | 3577.3 | 3794.7 | 1845.0 | 9217.0 |

<sup>26</sup> Interpreted according to UNDG Harmonised Financial Reporting Guidelines [http://www.undg.org/archive\\_docs/8746-Harmonised\\_Financial\\_Reporting\\_to\\_Donors\\_in\\_JPs\\_-\\_Explanatory\\_Note.doc](http://www.undg.org/archive_docs/8746-Harmonised_Financial_Reporting_to_Donors_in_JPs_-_Explanatory_Note.doc)

## **Annex D – Draft Terms of Reference (TOR)**

### **Programme Board (PB)**

**Introduction:** The Programme Board (PB) is established to oversee and coordinate the operation of the LECReD Programme in accordance with the Programme Document.

**Roles and Responsibilities:** The PB will have the overall responsibility for Programme activities. It will provide strategic guidance and oversight and approve the Programme Document (including subsequent revision), Annual Work plans and Budgets. Revisions that result in a variation in cost of more than the programme tolerance of 10% will require approve of the PB. In this way the PB will govern the activities of all PUNOs and implementing partners under this programme. To the extent possible, the PB will undertake to use existing coordination mechanisms at a national and local level in Maldives for the process of planning and stakeholder engagement that the programme operations will require.

The primary responsibility of the PB will be to:

- Review and approve these Terms of Reference (TOR) and establish standard rules and procedures for the PB, PTC, CTA, PC and PCU, and amend them as necessary, in consultation with the AA.
- Appoint the CTA and PC.
- Review and endorse the Programme Document and Annual Joint Work plan and budget (based on those submitted by PUNOs); ensure their conformity with the requirements of the Joint Programme and UNDP Multi-Partner Trust Fund (MPTF); ensure the quality of programme documents to receive funding from the MPTF.
- Review and agree the Joint Programme requirements and priorities concerning, inter alia:
  - Programme management, including consistent and common approaches to programme costing, cost recovery, implementation modalities, result-based reporting and impact assessment;
  - Programme communications, including appropriate MPTF, UN Agency, Government and donor visibility;
- Ensure that consultation processes take place with key stakeholders in order to avoid duplication and overlap with other programmes
- Review findings of the summary audit reports consolidated by the AA; highlight lessons learned and periodically discuss follow-up by PUNOs on recommended actions with programme-wide impacts.
- Ensure all decisions of the PB regarding programme documents, periodic reports on progress and associated external evaluations will be made available to the general public; take all necessary steps to ensure the accuracy of such documents and that confidential materials are not disclosed;

**Structure and Composition:** The members of the PB will include: representatives of Government of Maldives (notably MEE, LGA and MoFT); United Nations Resident Coordinator (UNRC); Heads of PUNOs; One-UN Fund donor representative<sup>27</sup>; Laamu Atoll community; Private Sector (linked to Laamu); Laamu Women’s Development Committee. The PB will be co-chaired by the MEE and the UN Resident Coordinator. Heads of PUNOS are encouraged to delegate their representation to the PB to the United Nations Resident Coordinator. The PB will meet, at a minimum, twice a year although additional special meetings may be convened from time-to-time according to the

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<sup>27</sup> Currently this will be the Government of Denmark

requirements of the programme. Either Chairperson may convene the meetings and meetings will be in-person or via tele- or video- conferencing. To the extent feasible, PB meetings will be coordinated to coincide with MOUNF meetings. A Quorum of the PB will require both Chairpersons, or designates, and at least half of the other PB members. The UNRC's office will provide secretariat support to the PB with substantive support from the PCU. This secretariat support will include:

- Preparation and dissemination of agenda and minutes and arranging PB meetings;
- Liaising with the PTC on programme review and analysis and other matters;
- Documenting, communicating and ensuring follow-up on the PB's decisions particularly ensuring the timely signature and delivery of programme documents to the AA and MTFD;

The Chairpersons may invite observers to PB meetings, and these may include the CTA, PC, members of the PTC, LWG and PCU, and other relevant Government agencies, NGOs, civil society, other donors and development partners.

**Decision-making:** The PB will make decisions by consensus. All decisions will be duly recorded and all meeting minutes will be prepared and circulated within 5 working days of a PB meeting. The PB will take decisions on programme documents, including Programme Document revisions, work plans and budgets, upon receipt of written advice provided by the PTC, PC or CTA. The PB may task the PTC or CTA to undertake review or analysis on specific issues or on strategic matters to support PB decision-making.

### **Programme Technical Committee (PTC)**

The Programme Technical Committee (PTC) is established to support the operational coordination and technical quality of the Joint Programme. The PTC will be co-chaired by the Chief Technical Advisor (CTA) and a senior technical representative of Ministry of Environment and Energy (MEE), and include another 12-15 honorary members which include technical representatives of PUNOs, Government counterparts (including MoTC, MED, LGA, NCIT and sectorial ministries), PC, and representative of Laamu Working Group (see below). A quorum of at least 7 members or half of the membership, whichever is greater is required and decision-making is by consensus. The PB will oversee the PTC and the PTCs responsibilities will include:

- Ensuring the operational coordination of the programme and providing the PB with assurance on the technical quality of the programme outputs;
- Appointing the Laamu Working Group (LWG);
- Advising the management of the programme resources to achieve results according to Programme Document
- Ensuring alignment with UNDAF approved strategic priorities;
- Supporting establishment of the programme baseline and a sound monitoring and evaluation system;
- Ensuring adequate reporting mechanisms are in place;
- Ensuring effective and efficient integration of PUNOs activities including for the preparation of joint work plans, budgets, reports and other joint programme documents; ensuring that gaps or duplication are addressed; ensuring that management costs and overheads are minimized;
- Providing technical and substantive leadership regarding programme activities and provide technical review and advise to the PB as required;
- Establishing the communication and public information plan;
- Making pro-active recommendations to the PB on programme changes including budget revisions and re-allocations to ensure relevance, effectiveness and efficiency of the programme;
- Identifying lessons learned and proposing follow-up actions to the PB;

The Chair will also invite observers and these will include key stakeholders (particularly World Bank, ADB, and EC), gender and technical experts from outside the programme.

The Chair can invite from time-to-time other technical experts as observers to the PTC meetings. The PCU will provide all secretariat support to the PTC.

### **Chief Technical Advisor (CTA)**

The Chief Technical Advisor (CTA) will be a senior climate change adaptation and low emission development specialist with a track record in mainstreaming LECReD in sub-national level planning. They will be responsible for assuring that all programme results and management products are of the highest quality. To ensure objectivity, the CTA will be independent of the PCU and will focus on quality assurance and ensuring cohesiveness of the programme. The CTA substantively reports to the co-chairs of the PB and administratively reports to the UNRC. The CTA co-chairs the PTC and ensures that the strategic direction is maintained and that all key technical and operational decisions for all activities are implemented to a high standard in accordance with the Programme Document. The CTA will work closely with the PC and the PUNOs on a day-to-day basis to ensure effective overall delivery of results building on the sectorial level quality assurance provided by PUNOs. The CTA's responsibilities will include,

- Lead and manage programme technical delivery and quality with focus on results;
- Act as the UN's lead technical resource person on climate change and LECReD in Maldives ensuring UN's credibility and visibility in the country;
- Coordinate and collaborate with the regional centers or other technical support centers of the PUNOs to ensure effective support to the programme;
- Manage strategic project relations through liaising with individuals and institutions including government officials, PUNOs, international organizations, donors, civil society, media, and the private sector, under the supervision of the PB and in close coordination with the UNRC and PC.
- Provide technical backstopping to PCU, PUNOs, and the local level entities participating in the programme;
- Guide and support the PC and the PUNOs in the joint planning for the programme and ensure timely allocation and utilization of resources through approved budgets and with observance of appropriate financial and budget controls;
- Based on programme strategic requirements provide guidance on resource allocation, identify opportunities for efficiencies, and leverage additional resources to support programme expansion where possible;
- Identify and nurture key strategic alliances;
- Identify all significant risks and appropriate action and ensure the implementation of a programme-wide risk management strategy.
- Promote a broad inter institutional collaboration and networks of expertise;
- Advise PB on matters of strategic coordination with programme stakeholders including beneficiaries and partners, and undertake related action as needed.
- Support the development of a knowledge management system in conjunction with the PCU and in close coordination with PUNOs;
- Lead the substantive preparations for the PB, PTC, programme review and/or evaluation meetings to ensure informed and supported decision making; and support the follow-up on the implementation of the PB decisions and recommendations;
- Serve as the key public advocate for the project in international and national fora and with civil society and the private sector;

The CTA will be an experienced international LECReD planning expert who will support the PB, work closely with the PC, and provide substantive expert advice to all those involved in delivery of the programme. The CTA will be appointed for 2 years after which national counterparts in MEE, in particular the PTC co-chair, will take over this function. The CTA will initially be based in the offices of the UNRC in Male with regular travel to the Laamu Atoll although it is expected that the CTA will relocate to Laamu in the second year.

## **Project Coordination Unit (PCU)**

The Project Coordination Unit (PCU) will be established immediately upon commencement and will house the people responsible for implementation and coordination of all programme activities on a day-to-day basis. The Programme Coordinator (PC) will lead the PCU and will be responsible for management of all PCU staff and consultants of the programme. The PCU will:

- Lead the coordination and management of the joint work plan and budgets;
- Communicate and coordinate all ground activities in Laamu and ensure streamlined and effective coordination with local and national partners;
- Undertake compilation and preparation of all consolidated narrative reports based on individual reports from PUNOs;
- Coordinate with AA to ensure effective delivery of consolidated financial reports;
- Support harmonised reporting, budgeting and planning;
- Take appropriate measures to communicate the activities of the joint programme and to publicize the Programme ensuring appropriate visibility of donor, PUNOs, national and sub-national implementing partners;
- Implementation of knowledge management system including facilitation of knowledge products and lessons learned;
- Facilitate PUNOs access shared resources in order to reduce costs and improve logistics;
- Provide guidance and support to PUNOs for their logistical arrangements and community engagements;
- Develop and implement the monitoring and evaluation plan for the programme;
- Coordinate PUNOs security arrangements for the programme;

In addition to the PC (see TOR below), the PCU will include a team of 4 full-time staff with the following responsibilities:

1. Knowledge Management and Communications Specialist (KMCS) / Deputy PC – fulltime 3 year national position (NOB Level)
  - Support PC in coordination and management;
  - Serve as the programme’s knowledge management specialist working closely with all PUNOs and partners;
  - Communicate and publicize programme activities and oversee all communication related activities of the programme including Laamu Climate Change Forum and those identified in the Communication Strategy and Action Plan;
  - Coordinate identification, development and dissemination of knowledge products and lessons learned;
2. Monitoring and Evaluation, and Results Reporting Specialist (MES) – fulltime 3 year national position (G6 level)
  - Assist PC in the management of the programme and the delivery of results;
  - Ensure effective implementation of monitoring and evaluation plan, including the establishment of baselines and indicator tracking systems;
  - Where possible integrate monitoring activities with programme activities e.g. data collection
  - Undertake regular monitoring activities and data collection to ensure monitoring system informs programme management;
3. Community Engagement and Coordination Officer (CECO) – fulltime 2 year national position (G5 level)
  - Establish effective public and private sector coordination networks throughout Laamu;
  - Provide community mobilisation support to all programme activities;
  - Work with PCU, PUNOs, partners and others to assist in mobilising participation for all conferences, forums, workshops and meetings or other activities of the programme;

- Assist all programme partners with travel and other logistic arrangements in Laamu;
  - Facilitate and support community monitoring activities, surveys, consultations and other stakeholder engagements;
  - Establish detailed stakeholder and contacts database for all programme activities;
  - Assist with administration and monitoring activities of PCU and project staff;
4. Administration and Logistics Assistant (AFA) – fulltime 3 year national position (G4 level)
- Liaise with UNDP Operations Team and provide general admin support to ensure smooth running of the PCU;
  - Provide logistic support to PC, CTA and consultants for PCU and programme activities;
  - Ensures records and controls to ensure accuracy and reliability of the programme’s financial information and monitoring of budgets;
  - Organise control of budget expenditures by collating or preparing payment documents and compiling financial reports;
  - Maintain the programme’s disbursement ledger and journal;
  - Maintain programme documentation management and record system and archives;

The PCU office and all staff will be located in Laamu, if possible co-located with Atoll Council. However the PCU will be administratively part of the UNRC Office and operate on a cost recovery basis by UNDP. In addition to PCU support, UNDP will also provide support services to PUNOs that are presently utilising UNDP administrative (finance, HR and procurement) services on a cost recovery basis based on the local price list.

### **Programme Coordinator (PC)**

The national Programme Coordinator (PC) will be a programme management specialist and will be responsible for establishing, implementing and closing the programme. This includes, coordinating, supervising, managing, monitoring and facilitating evaluation of all aspects of the programme’s implementation including financial administration. The PC substantively reports to the co-chairs of the PB and administratively reports to the UNRC. The PC will have overall responsibility for the programme operations, including primary contact with programme sponsors and stakeholders and the PTC concerning programme performance. The PC’s responsibilities will include:

- Coordinating, managing and supervising all aspects of the programme in liaison with Government, PUNOs, local partners, PB, PTC, CTA, LWG and other stakeholders;
- Developing a detailed work plan for the Inception Phase.
- Establishing and managing the Programme Coordination Unit (PCU) team and its budget, and recruiting and coordinating consultants; identifying, establishing and maintaining the Laamu Atoll office, sub-offices and facilities as required;
- Facilitating establishment of PTC and LWG;
- Ensuring the establishment and implementation of the results monitoring system and the execution of evaluations in accordance with M&E plan; establishment of systems for the identification and management of issues and risks; tracking performance of programme implementation including a programme performance dashboard;
- Supervising the management of programme financial arrangements and budgets; Control and monitor expenditures and ensure an adequate management response of the resources provided for the programme;
- Supporting harmonised accounting, budgeting and reporting procedures;
- Validating that programme activities and outputs are in accordance with the Programme Document and work plan;

- Ensuring the preparation of all programme management products are timely and high quality; including preparation of joint work plans, budgets and reports;
- Informing and advising the PTC and PB on any issues likely to effect the financial resources or the scope of activities of the programme;
- Ensuring the programme management complies with all the procedural and contractual obligations of the MPTF, UNDG guidance on Joint Programmes, and the Programme Document
- Undertake all reporting requirements of the MPTF including aggregation of PUNO reports;
- Establishing the internal management procedures and practices required complying with UNDP rules and procedures, including procurement, tendering, contracting, reporting, editing and accounting.
- Provide support to UNRC office for secretariat support to PB; provide secretariat support to PTC;
- Ensure PCU staff receive adequate training and reasonable resources to execute their role and responsibilities;
- Ensure all institutional stakeholders are kept informed of programme progress and results;

The PC will be available full-time for the duration of the programme and will have a solid background in management of integrated development programmes preferably in the area of environmental resource management, climate change, local planning, or local economic development. They should have at least 10 years professional experience with at least 5 years lead experienced coordinating similar complex multi-sector programmes at the local and national level using participatory processes engaging national and local level governmental, community and private sector. Proven skills working at ministerial and local level are required. The PC will be appointed at the NOC level and based in Laamu Atoll with regular travel to Male.

### **Laamu Working Group (LWG)**

There is currently no multi-island multi-sector coordination group. The programme will always seek to work with existing structures to the extent possible. If an existing structure is not possible then a body will be established and otherwise called the Laamu Working Group (LWG). The LWG will promote micro-macro and cross-sector linkages of the programme and will seek to ensure effective coordination and support to the programme at the sub-national level. The initial LWG meeting will be chaired by the PC, after which a chair will be nominated from the group on a 12-monthly basis. The LWG will consist of 12-15 honorary members, including the PC, which are locally-based representatives from Island and Atoll Councils, Women's Development Committees, sector focal points, civil society, private sector and other key stakeholders closely linked to the implementation of the programme. Not more than 50% of members will be from Government. The CTA, technical experts and key sector focal points from line ministries will be associate members of the LWG and will provide support and guidance as required. A quorum of at least 7 full members or half of the membership, whichever is greater, is required and decision-making is by consensus. The LWG will meet in Laamu Atoll on at least a quarterly basis to review work plans and as required. The PC will act as secretary to the LWG and the PCU will provide secretariat support. A representative from the LWG will participate in the PTC. The LWG will:

- Assess how climate change and low emission development will affect different stakeholders and put forward priorities, risks, concerns, potential conflicts and trade-offs for the programme;
- Participate in monitoring and evaluation of the programme and assessment of impact in the local context;
- Provide guidance to the programme management especially with regards the quarterly and annual work plans, and promotion of participatory and inclusive process for LECReD planning;

- Support local-level coordination and representation to ensure the programme is needs driven and locally-focused; in particular, support the selection of priority geographic and thematic areas for the programme;
- Support stakeholder dialogue and engagement across key sectors and between local and national level on key programmatic, policy and investment issues;
- Host the Laamu Climate Change Forum

The LWG is a transitory arrangement that will take care not to replicate the existing sub-national structures but will work with these with the intention of supplementing sectorial coordination to ensure the programme's integrated approach is effective. The role of the LWG will ultimately be mainstreamed into local structures as a result of the strengthening of existing systems undertaken during the programme.

## Annex E - Joint programme monitoring framework

| Expected Results (Outcomes & outputs)  | Indicators (with baselines & indicative timeframe)  | Means of verification                               | Collection methods <sup>28</sup> (with indicative time frame & frequency)     | Resp.    | Risks & assumptions <sup>29</sup>   |
|--|---|---|---|----------|---|
| <b>Outcome (UNDAF Outcome 9):</b> Enhanced capacities at national and local levels to support low carbon life-styles, climate change adaptation, and disaster risk reduction | <b>Outcome Indicator 1:</b><br><i>Percentage reduction in Carbon emission in atolls and islands in Laamu Atoll</i><br><br>Baseline: 0%<br>Target: tbd%  | Programme monitoring reports, end-user energy bills | Field visits, twice a year, activity specific ex-ante and ex-poste monitoring | PCU/UNDP | Ex-ante fossil fuel consumption records not available → activities must include ex-ante monitoring period.  |
|  | <b>Outcome Indicator 2:</b><br><i>Percentage of atolls and island councils in Laamu undertaking low emission climate resilient development planning</i><br><br>Baseline: 0<br>Target: tbd   | Council minutes                                     | From archive of council minutes once a year                                   | PCU/UNDP | Council minutes are not available → validate prior to signing MOU with council  |
| 1. Partnership, coordination and participation platforms for local LECReD planning and action is established   | <b>Indicator 1.1</b> <i>Progress towards establishing the platform</i><br>Baseline: no platform<br>Target: 1) LWG convened by Feb 2014; 2) CSES published on website by April 2014; 3) CC Forum by Dec 2014 and each year; 4) 20% increase in participation in CC Forum each year | Programme monitoring reports, Annual review report  | Report  | PCU/UNDP | Local election lead to diffuse engagement by key stakeholders → broad multi-stakeholder multi-sector participation with awareness raising and sensitisation |
| 1.1 Legal and institutional arrangements for LECReD and DRM governance at local level clarified and more inclusive   |   |   |   |          |   |
| 1.2 Public awareness and access to information on LECReD and DRM at local level strengthened   | <b>Indicator 1.2</b> <i>Proportion of local people surveyed that indicated LECReD planning is inclusive</i><br>Baseline: tbd<br>Target: tbd   | Public perception survey                            | Small sample survey, twice a year   | PCU/UNDP | People not willing to participate in survey → integrate survey into other community activities  |
| 1.3 Inclusive platform for   |   |   |   |          |   |

<sup>28</sup> As data management systems are established, primary data will be obtained wherever feasible using existing systems.

<sup>29</sup> Risk and assumptions underpinning monitoring framework. For programme risks see Annex B - Risk Analysis

|   |  |  |   |   |  |
|---|--|--|---|---|--|
| LECREd and DRM planning and management established  | <b>Indicator 1.3</b> <i>Proportion of women and youth and female-headed households in targeted islands receiving training and support on reducing carbon emissions and building resilience to climate change</i><br>Baseline: tbd<br>Target: tbd               | Training evaluation reports and programme monitoring reports, Annual Review Report | Every training activity, Field visits, twice a year | PCU/UNDP – collate reports;<br><br>All PUNOs – ensure training evaluation forms included in all training. | Participants do not complete training evaluation form → completion of evaluation forms a requirement of participation in training, assistance provided to complete forms.  |
| 2. Data and knowledge systems established or identified to support evidence-based planning and policy development for LECReD at the local level<br>2.1 Data management system and tools enhanced<br>2.2 Laamu Atoll Climate Profile prepared<br>2.3 LECReDs options identified and analysed | <b>Indicator 2.1</b> <i>Proportion of LECReD data identified in DMP that is available to planners and stakeholders</i><br>Baseline: tbd<br>Target: 80% by end 2014; 100% by end 2015.  | Programme monitoring Reports   | Field visits, twice a year                          | PCU/UNDP  | Data owners do not make data available to planners and stakeholders → Awareness raising and sensitisation of data owners during preparation of DMP, assess availability before inclusion in DMP and identify alternative sources where feasible. |
|   | <b>Indicator 2.2</b> <i>Proportion of stakeholders identified in DMTP trained in utilization of climate data</i><br>Baseline: 0%<br>Target: tbd%   | Training evaluation reports, Annual Review Reports                                 | Every training activity, Field visits, twice a year | PCU/UNDP – collate reports;<br><br>All PUNOs – ensure training evaluation forms included in all training. | Participants do not complete training evaluation form → completion of evaluation forms a requirement of participation in training, assistance provided to complete forms.  |
|   | <b>Indicator 2.3</b> <i>Number of inhabited islands in Laamu which have up-to-date Climate Profiles indicating option and opportunities made available on website.</i><br>Baseline: tbd<br>Target: 4 largest islands by end 2014 and; all islands by end 2016. | Website  | Website   | UNDP  | Website is not updated regularly or profiles are not provided to website → provide awareness raising and sensitisation on benefits of sharing information, train council staff in basic website content management.                              |
| 3. Improved Local Level   | <b>Indicator 3.1</b> <i>Number of</i>  | PIPs, CDAPs  | PIPs, CDAPs   | PCU/UNDP  | Unclear determination of “backable” LECReD   |

|  |   |   |  |  |  |
|--|---|---|--|--|--|
| <p>Planning and Management for LECReD</p> <p>3.1 Guidelines, tools and systems identified or developed for local LECReD planning and management</p> <p>3.2 Capacity for integrated local development planning and management for LECReDs is strengthened</p> <p>3.3 Integrated Atoll LECReD Plan developed and priority LECReD actions supported</p> | <p><i>backable LECReD policy or investment projects identified from planning</i></p> <p>Baseline: tbd<br/>Target: tbd</p>   | <p>projects → prepare criteria ex-ante and agree and disseminate (also to be used by PB to determine Tranch 2 funding priorities)</p> |  |  |  |
|  | <p><b>Indicator 3.2</b> <i>Proportion of targeted stakeholders trained in activities identified in CDAP.</i></p> <p>Baseline: tbd<br/>Target: tbd</p>   | <p>Training evaluation reports, Annual Review Reports</p>   | <p>Every training activity, Field visits, twice a year</p> | <p>PCU/UNDP – to collate</p> <p>All organisations involved in delivery of CDAP training activities – ensure evaluation forms and reports completed</p> | <p>Participants do not complete training evaluation form → completion of evaluation forms a requirement of participation in training, assistance provided to complete forms.</p> |
|  | <p><b>Indicator 3.3</b> <i>Proportion of localized national policy, local regulations, development plans that include age and gender sensitive references to reducing emissions or climate change or climate change risks.</i></p> <p>Baseline: tbd<br/>Target: tbd</p> | <p>Council minutes and records, policy regulations and plans</p>  | <p>Field visit, twice a year</p>                           | <p>PCU/UNDP</p>  | <p>Low risk that policy, regulations and plans are not publically available</p>  |
| <p>4. Practical local experience in LECReDs interventions leads to learning and promotes replication</p> <p>4.1 Establish Laamu Atoll</p>  | <p><b>Indicator 4.1</b> <i>Proportion of Small Grant and no-regret projects replicated in local plans</i></p> <p>Baseline: none</p>   | <p>Council minutes and records, and local development</p>   | <p>Field visit, twice a year</p>                           | <p>PCU/UNDP</p>  | <p>Low risk that local development plans are not available</p>   |

|  |   |   |  |  |
|--|---|---|--|--|
| <p>LECREd small grants Scheme<br/>4.2 "No regret" actions implemented in priority sectors<br/>4.3 Knowledge products prepared and lessons disseminated</p> | <p>Target: tbd</p>  | <p>plans</p>  |  |  |
|  | <p><b>Indicator 4.2</b> <i>Number of lessons learned produced for specific audience and disseminated</i></p> <p>Baseline: 0<br/>Target: 1 lessons learned products on website by end 2014; 1 in 2015; 2 in 2016</p> | <p>Lessons learned reports, Annual Review Report</p>              | <p>Website</p> <p>PCU/UNDP</p>   | <p>Low risk that lessons learned cannot be put on website</p>  |
|  | <p><b>Indicator 4.3</b> <i>Proportion of study-tour participants who report learning lessons that they intend to use in their own work or life.</i></p> <p>Baseline: 0%<br/>Target: tbd%</p>                        | <p>Participant evaluation survey, Programme Monitoring Report</p> | <p>Every training activity, Field visits, twice a year</p> <p>PCU/UNDP</p> | <p>Participants do not complete participant evaluation form → completion of evaluation forms a requirement of participation in activity, assistance provided to complete forms if necessary.</p> |

## Annex F – Workplan and Budget(s)

### Budget Breakdown by Agency

| (UNDP incl. Programme Management Unit) |  |               |   |        |        |
|--|--|---------------|---|--------|--------|
| PROGRAMME BUDGET                       |  |               | ESTIMATED UTILIZATION OF RESOURCES (US\$) |        |        |
| CATEGORY*                              |  | AMOUNT (US\$) | Year 1                                    | Year 2 | Year 3 |
| 1                                      | Staff and other personnel costs                          | 1096.3        | 480.8                                     | 458.6  | 156.8  |
| 2                                      | Supplies, Commodities, Materials                         | 213.3         | 101.9                                     | 63.5   | 48.0   |
| 3                                      | Equipment, Vehicles and Furniture including Depreciation | 165.3         | 84.6                                      | 51.6   | 29.1   |
| 4                                      | Contractual services                                     | 1343.7        | 719.6                                     | 359.5  | 264.5  |
| 5                                      | Travel   | 707.3         | 378.2                                     | 189.7  | 139.4  |
| 6                                      | Transfers and Grant Counterparts                         | 700.0         | 194.9                                     | 321.1  | 184.0  |
| 7                                      | General Operating and Other Direct Costs                 | 119.8         | 57.0                                      | 35.4   | 27.3   |
| Total Programme Costs                  |  | 4345.6        | 2017.0                                    | 1479.6 | 849.1  |
| 8                                      | Indirect Support Costs (7%)**                            | 304.2         | 141.2                                     | 103.6  | 59.4   |
| TOTAL                                  |  | 4649.8        | 2158.1                                    | 1583.1 | 908.5  |

| UNOPS                 |  |               |   |        |        |
|-----------------------|--|---------------|---|--------|--------|
| PROGRAMME BUDGET      |  |               | ESTIMATED UTILIZATION OF RESOURCES (US\$) |        |        |
| CATEGORY*             |  | AMOUNT (US\$) | Year 1                                    | Year 2 | Year 3 |
| 1                     | Staff and other personnel costs                          | 285.4         | 181.4                                     | 104.1  | -      |
| 2                     | Supplies, Commodities, Materials                         | -             | -   | -      | -      |
| 3                     | Equipment, Vehicles and Furniture including Depreciation | 276.4         | 92.1                                      | 184.2  | -      |
| 4                     | Contractual services                                     | 215.3         | 142.4                                     | 72.9   | -      |
| 5                     | Travel   | 94.8          | 48.7                                      | 46.1   | -      |
| 6                     | Transfers and Grant Counterparts                         | -             | -   | -      | -      |
| 7                     | General Operating and Other Direct Costs                 | 100.2         | 46.7                                      | 53.5   | -      |
| Total Programme Costs |  | 972.1         | 511.3                                     | 460.8  | -      |
| 8                     | Indirect Support Costs (7%)**                            | 68.0          | 35.8                                      | 32.3   | -      |
| TOTAL                 |  | 1040.2        | 547.1                                     | 493.0  | -      |

| UNICEF           |  |               |   |        |        |
|------------------|--|---------------|---|--------|--------|
| PROGRAMME BUDGET |  |               | ESTIMATED UTILIZATION OF RESOURCES (US\$) |        |        |
| CATEGORY*        |  | AMOUNT (US\$) | Year 1                                    | Year 2 | Year 3 |
| 1                | Staff and other personnel costs                          | 11.8          | 9.9                                       | 1.8    | -      |
| 2                | Supplies, Commodities, Materials                         | 39.0          | 33.1                                      | 5.9    | -      |
| 3                | Equipment, Vehicles and Furniture including Depreciation | -             | -   | -      | -      |
| 4                | Contractual services                                     | 79.0          | 39.3                                      | 39.7   | -      |

|                       |  |       |       |      |   |
|-----------------------|--|-------|-------|------|---|
| 5                     | Travel                                   | 39.0  | 21.4  | 17.6 | - |
| 6                     | Transfers and Grant Counterparts         | -     | -     | -    | - |
| 7                     | General Operating and Other Direct Costs | 56.3  | 32.9  | 23.3 | - |
| Total Programme Costs |  | 225.0 | 136.7 | 88.3 | - |
| 8                     | Indirect Support Costs (7%)**            | 15.8  | 9.6   | 6.2  | - |
| TOTAL                 |  | 240.8 | 146.2 | 94.5 | - |

| WHO                   |  |               |   |        |        |
|-----------------------|--|---------------|---|--------|--------|
| PROGRAMME BUDGET      |  |               | ESTIMATED UTILIZATION OF RESOURCES (US\$) |        |        |
|                       | CATEGORY*  | AMOUNT (US\$) | Year 1                                    | Year 2 | Year 3 |
| 1                     | Staff and other personnel costs                          | 165.2         | 108.0                                     | 57.2   | -      |
| 2                     | Supplies, Commodities, Materials                         | 37.9          | 29.6                                      | 8.3    | -      |
| 3                     | Equipment, Vehicles and Furniture including Depreciation | 32.5          | 24.2                                      | 8.3    | -      |
| 4                     | Contractual services                                     | 66.3          | 59.6                                      | 6.7    | -      |
| 5                     | Travel   | 106.6         | 78.9                                      | 27.7   | -      |
| 6                     | Transfers and Grant Counterparts                         | -             | -   | -      | -      |
| 7                     | General Operating and Other Direct Costs                 | 14.0          | 10.0                                      | 4.0    | -      |
| Total Programme Costs |  | 422.4         | 310.2                                     | 112.2  | -      |
| 8                     | Indirect Support Costs (7%)**                            | 29.6          | 21.7                                      | 7.9    | -      |
| TOTAL                 |  | 452.0         | 331.9                                     | 120.1  | -      |

| UNFPA                 |  |               |   |        |        |
|-----------------------|--|---------------|---|--------|--------|
| PROGRAMME BUDGET      |  |               | ESTIMATED UTILIZATION OF RESOURCES (US\$) |        |        |
|                       | CATEGORY*  | AMOUNT (US\$) | Year 1                                    | Year 2 | Year 3 |
| 1                     | Staff and other personnel costs                          | 111.9         | 43.2                                      | 42.2   | 26.4   |
| 2                     | Supplies, Commodities, Materials                         | 8.0           | 2.4                                       | 3.2    | 2.4    |
| 3                     | Equipment, Vehicles and Furniture including Depreciation | -             | -   | -      | -      |
| 4                     | Contractual services                                     | 57.8          | 34.1                                      | 15.0   | 8.7    |
| 5                     | Travel   | 40.0          | 19.9                                      | 12.9   | 7.2    |
| 6                     | Transfers and Grant Counterparts                         | -             | -   | -      | -      |
| 7                     | General Operating and Other Direct Costs                 | 90.8          | 39.1                                      | 33.8   | 17.8   |
| Total Programme Costs |  | 308.4         | 138.8                                     | 107.1  | 62.5   |
| 8                     | Indirect Support Costs (7%)**                            | 21.6          | 9.7                                       | 7.5    | 4.4    |
| TOTAL                 |  | 330.0         | 148.5                                     | 114.6  | 66.9   |

| FAO              |  |               |   |        |        |
|------------------|--|---------------|---|--------|--------|
| PROGRAMME BUDGET |  |               | ESTIMATED UTILIZATION OF RESOURCES (US\$) |        |        |
|                  | CATEGORY*  | AMOUNT (US\$) | Year 1                                    | Year 2 | Year 3 |
| 1                | Staff and other personnel costs                          | 22.5          | 21.3                                      | 1.2    | -      |
| 2                | Supplies, Commodities, Materials                         | 12.0          | 9.6                                       | 2.4    | -      |
| 3                | Equipment, Vehicles and Furniture including Depreciation | 14.0          | 14.0                                      | -      | -      |
| 4                | Contractual services                                     | 59.3          | 57.2                                      | 2.1    | -      |

|                       |  |       |       |      |   |
|-----------------------|--|-------|-------|------|---|
| 5                     | Travel                                   | 58.0  | 52.8  | 5.2  | - |
| 6                     | Transfers and Grant Counterparts         | -     | -     | -    | - |
| 7                     | General Operating and Other Direct Costs | 6.8   | 6.8   | -    | - |
| Total Programme Costs |  | 172.5 | 161.6 | 10.9 | - |
| 8                     | Indirect Support Costs (7%)**            | 12.1  | 11.3  | 0.8  | - |
| TOTAL                 |  | 184.6 | 172.9 | 11.7 | - |

| UN WOMEN              |  |               |   |        |        |
|-----------------------|--|---------------|---|--------|--------|
| PROGRAMME BUDGET      |  |               | ESTIMATED UTILIZATION OF RESOURCES (US\$) |        |        |
|                       | CATEGORY*  | AMOUNT (US\$) | Year 1                                    | Year 2 | Year 3 |
| 1                     | Staff and other personnel costs                          | 45.0          | 14.7                                      | 20.7   | 9.7    |
| 2                     | Supplies, Commodities, Materials                         | 48.0          | 15.8                                      | 21.4   | 10.8   |
| 3                     | Equipment, Vehicles and Furniture including Depreciation | -             | -   | -      | -      |
| 4                     | Contractual services                                     | 45.0          | 16.4                                      | 18.9   | 9.7    |
| 5                     | Travel   | 45.0          | 15.9                                      | 19.9   | 9.2    |
| 6                     | Transfers and Grant Counterparts                         | -             | -   | -      | -      |
| 7                     | General Operating and Other Direct Costs                 | 15.0          | 5.0                                       | 6.7    | 3.3    |
| Total Programme Costs |  | 198.0         | 67.7                                      | 87.5   | 42.7   |
| 8                     | Indirect Support Costs (7%)**                            | 13.9          | 4.7                                       | 6.1    | 3.0    |
| TOTAL                 |  | 211.9         | 72.5                                      | 93.7   | 45.7   |

\* Format based on 2006 UNDG Harmonized Budget Categories for Joint Programmes. Definitions for the categories can be found at: <http://www.undg.org/>

\*\* 7% calculated based on total Project Costs. Indirect support cost should be in line with the MOU and SAA . Indirect costs of the Participating Organizations recovered through programme support costs will be 7%. In accordance with the UN General Assembly resolution 62/209 (2008 Triennial Comprehensive Policy Review principle of full cost recovery). all other costs incurred by each Participating UN Organization in carrying out the activities for which it is responsible under the Fund will be recovered as direct costs.

**Work Plan for Year 1, 2 and 3**

| Participating UN Organisation   | Activity   | Year 1 |     |     |     | Year 2 |     |     |     | Year 3 |     |     |     | Key Partner | Planned Budget  |                                 |                        |                        |                        |
|---|--|--------|-----|-----|-----|--------|-----|-----|-----|--------|-----|-----|-----|-------------|-----------------|---------------------------------|------------------------|------------------------|------------------------|
|   |  | Q 1    | Q 2 | Q 3 | Q 4 | Q 1    | Q 2 | Q 3 | Q 4 | Q 1    | Q 2 | Q 3 | Q 4 |             | Source of Funds | Budget Description              | Amount (Y1) (US\$,000) | Amount (Y1) (US\$,000) | Amount (Y1) (US\$,000) |
| <b>JP Outcome: Enhanced capacities at national and local levels to support low carbon life-styles, climate change adaptation, and disaster risk reduction</b> |  |        |     |     |     |        |     |     |     |        |     |     |     |             |                 |                                 |                        |                        |                        |
| <b>JP Output 1: Partnership, coordination and participation platform for local LECReD planning and action is strengthened</b>                                 |  |        |     |     |     |        |     |     |     |        |     |     |     |             |                 |                                 |                        |                        |                        |
| UNDP  | 1.1.1 Conduct review of existing legal and institutional arrangements for environmental, LECReD and DRM governance and produce capacity development "roadmap" recommendations and local language advocacy tools for use by local councils, WDCs, LGA, DNP, and line ministries |        |     |     |     |        |     |     |     |        |     |     |     |             | MOUNF           | (see separate budget breakdown) | 73.3                   | -                      | -                      |
| UN WOMEN  | 1.1.2 Provide training to PTC, TWGs, programme staff, Atoll and local councils, and conduct training of trainers for CBOs on gender issues and the role of women in addressing climate change.   |        |     |     |     |        |     |     |     |        |     |     |     |             | MOUNF           | (see separate budget breakdown) | 35.7                   | 35.7                   | 8.9                    |
| UNDP  | 1.1.3 Provide training to local councils, WDC, CSOs and community leaders on conflict mediation techniques, leadership, negotiation and consensus building.  |        |     |     |     |        |     |     |     |        |     |     |     |             | MOUNF           | (see separate budget breakdown) | 19.1                   | 19.1                   | 19.1                   |









|       |  |  |  |  |  |  |  |  |  |  |  |  |  |       |                                 |      |   |   |
|-------|--|--|--|--|--|--|--|--|--|--|--|--|--|-------|---------------------------------|------|---|---|
|       | and initiatives  |  |  |  |  |  |  |  |  |  |  |  |  |       |                                 |      |   |   |
| UNDP  | 2.2.2 Undertake island level integrated energy resource assessment, and energy use survey and analysis and, if required undertake measurements or otherwise, characterize energy sources, energy use patterns for different stakeholders, and identify opportunities for renewable energy and energy efficiency measures in key sectors in accordance with DaMP. |  |  |  |  |  |  |  |  |  |  |  |  | MOUNF | (see separate budget breakdown) | 65.3 | - | - |
| UNOPS | 2.2.3 Review available information and if necessary conduct Integrated Water Resource Management (IWRM) and Waste Management (WM) assessment for each island and prepare Atoll IWRM and WM Plan.   |  |  |  |  |  |  |  |  |  |  |  |  | MOUNF | (see separate budget breakdown) | 83.3 | - | - |
| UNDP  | 2.2.4 Undertake survey/review of environmental resources including agriculture, fisheries, and biodiversity with emphasis on climate sensitive elements and prepare resource maps for the NGIS   |  |  |  |  |  |  |  |  |  |  |  |  | MOUNF | (see separate budget breakdown) | 39.6 | - | - |
| UNDP  | 2.2.5 Support councils to review status of landuse maps, assess vulnerable coastal zones and Environmental Protection Zones (EPZ) and other climate change considerations if required update landuse database in accordance with DMP   |  |  |  |  |  |  |  |  |  |  |  |  | MOUNF | (see separate budget breakdown) | 62.1 | - | - |
| UNDP  | 2.2.6 Conduct quantitative and qualitative assessment of economic and socially vulnerable groups and review of existing social and economic safety nets in accordance with DMP   |  |  |  |  |  |  |  |  |  |  |  |  | MOUNF | (see separate budget breakdown) | 32.1 | - | - |

|   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |       |                                 |      |      |   |
|---|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|-------|---------------------------------|------|------|---|
| UNDP  | 2.2.7 Identify/develop localized climate change and demographic forecasts in accordance with DMP.  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | MOUNF | (see separate budget breakdown) | 16.1 | -    | - |
| UNDP  | 2.2.8 (from 2.1.4) Prepare risk and vulnerability maps and GHG inventory and budgets for select islands and atoll-wide in accordance with DMP  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | MOUNF | (see separate budget breakdown) | 80.3 | -    | - |
| UNDP  | 2.2.9 Prepare Laamu Atoll Climate Profile consisting of Atoll-wide as well as separate Island profiles   |  |  |  |  |  |  |  |  |  |  |  |  |  |  | MOUNF | (see separate budget breakdown) | 22.5 | 7.5  | - |
| UNDP  | 2.3.1 Identify LECReD options and opportunities for key sectors at island and atoll level and prepare appropriate financial and economic analysis (e.g. cost-benefit) and comparison |  |  |  |  |  |  |  |  |  |  |  |  |  |  | MOUNF | (see separate budget breakdown) | 46.5 | -    | - |
| UNDP  | 2.3.2 Analyse potential synergies between sectors and between adaptation and mitigation options.   |  |  |  |  |  |  |  |  |  |  |  |  |  |  | MOUNF | (see separate budget breakdown) | 39.6 | -    | - |
| UNDP  | 2.3.3 Undertake analysis of institutional, governance and financial actions required to implement priority options and opportunities and determine viability.                        |  |  |  |  |  |  |  |  |  |  |  |  |  |  | MOUNF | (see separate budget breakdown) | 15.0 | -    | - |
| UNDP  | 2.3.4 Identify options for financial, policy and legal instruments to address LECReD options and opportunities   |  |  |  |  |  |  |  |  |  |  |  |  |  |  | MOUNF | (see separate budget breakdown) | 12.8 | -    | - |
| <b>JP Output 3: Improved Local Level Planning and Management for LECReD</b> |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |       |                                 |      |      |   |
| UNDP  | 3.1.1 Prepare a guidance manual for adopting national policy, standards or best practices into local level planning and management for councils and service providers.               |  |  |  |  |  |  |  |  |  |  |  |  |  |  | MOUNF | (see separate budget breakdown) | 11.0 | 11.0 | - |
| UNDP  | 3.1.2 (with 3.1.1) Support preparation of guidelines for adopting national standards on buildings and energy efficiency  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | MOUNF | (see separate budget breakdown) | 21.4 | -    | - |
| UNDP  | 3.1.3 (with 3.1.1) Support preparation of guidelines for preventative measures for flooding  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | MOUNF | (see separate budget breakdown) | 10.0 | 5.0  | - |

|        |   |  |  |  |  |  |  |  |  |  |  |  |  |       |                                 |       |      |      |  |
|--------|---|--|--|--|--|--|--|--|--|--|--|--|--|-------|---------------------------------|-------|------|------|--|
|        | and erosion   |  |  |  |  |  |  |  |  |  |  |  |  |       |                                 |       |      |      |  |
| UNICEF | 3.1.4 (with 3.1.1) Support preparation and/or implementation of community-based disaster response plans/SOPs in accordance with NDMC requirements and conduct training and emergency drills               |  |  |  |  |  |  |  |  |  |  |  |  | MOUNF | (see separate budget breakdown) | 42.8  | -    | -    |  |
| WHO    | 3.1.5 (with 3.1.1) Support preparation of guidelines/SOPs for health facilities on mass casualty management, disaster preparedness and response capacity and conduct training and emergency drills        |  |  |  |  |  |  |  |  |  |  |  |  | MOUNF | (see separate budget breakdown) | 76.0  | -    | -    |  |
| WHO    | 3.1.6 (with 3.1.1) Support preparation of local-level guidelines for planning health interventions based on WHO guidelines  |  |  |  |  |  |  |  |  |  |  |  |  | MOUNF | (see separate budget breakdown) | 60.0  | -    | -    |  |
| UNOPS  | 3.1.7 Prepare guidelines for local level integrated water resource management that addresses waste water management, water resources management and groundwater contamination.                            |  |  |  |  |  |  |  |  |  |  |  |  | MOUNF | (see separate budget breakdown) | 114.9 | -    | -    |  |
| UNDP   | 3.2.1 Identify/prepare participatory integrated LECReD and DRR planning methodology and ensure integration with existing local development planning methodology   |  |  |  |  |  |  |  |  |  |  |  |  | MOUNF | (see separate budget breakdown) | 9.9   | 9.9  | -    |  |
| UNDP   | 3.2.2 Prepare guidance materials and tools for preparation for LECReD planning, providing training of trainers, and facilitate trainers to conduct training for councils, WDC, CSO and community leaders. |  |  |  |  |  |  |  |  |  |  |  |  | MOUNF | (see separate budget breakdown) | 15.0  | 44.9 | -    |  |
| UNDP   | 3.2.3 Provide training for councils on the development of bylaws, policy, standard operating procedures for bylaws and their enforcement.   |  |  |  |  |  |  |  |  |  |  |  |  | MOUNF | (see separate budget breakdown) | 11.1  | 11.1 | 11.1 |  |

|      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |       |                                 |      |      |      |
|------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|-------|---------------------------------|------|------|------|
| WHO  | 3.2.4 Strengthen local capacities to regulate public health (licensing, water quality) and health service providers to comply with health regulations  |  |  |  |  |  |  |  |  |  |  |  |  |  | MOUNF | (see separate budget breakdown) | 20.0 | 40.0 | -    |
| WHO  | 3.2.5 Train council and health service personnel on communication, management, entomological and epidemiological surveillance, laboratory technology and disaster management.  |  |  |  |  |  |  |  |  |  |  |  |  |  | MOUNF | (see separate budget breakdown) | 20.0 | 40.0 | -    |
| UNDP | 3.3.1 Support LGA and local councils in the preparation of the Local Development Plans including the Policy and Investment Plans, while incorporating the agreed LECReD planning approach.   |  |  |  |  |  |  |  |  |  |  |  |  |  | MOUNF | (see separate budget breakdown) | 11.1 | 11.1 | 11.1 |
| UNDP | 3.3.2 Facilitate capacity self-assessment for councilors, WDCs, CSO and sectoral focal points for integrated local planning and management for LECReDs and prepare Capacity Development Action Plan (CDAP)   |  |  |  |  |  |  |  |  |  |  |  |  |  | MOUNF | (see separate budget breakdown) | 74.9 | -    | -    |
| UNDP | 3.3.3 Support councils to prepare Policy and Investment Plan including priority CDAP actions, policy developments, and priority investment projects, and; undertake preparation of backable project ideas with feasibility studies, identify sources of finance and/or capacity support, and undertake project concept marketing and partnership building. |  |  |  |  |  |  |  |  |  |  |  |  |  | MOUNF | (see separate budget breakdown) | 96.3 | 48.2 | 48.2 |
| UNDP | 3.3.4 identify, against UN criteria, priority activities identified in local Development Plans and support councils, prepare project proposals for second phase support and disburse funds to each Agency to implement.  |  |  |  |  |  |  |  |  |  |  |  |  |  | MOUNF | (see separate budget breakdown) | -    | 39.6 | -    |

**JP Output 4: Practical local experience in LECReDs interventions leads to learning and promotes replication**







|                    |               |               |               |
|--------------------|---------------|---------------|---------------|
| UN WOMEN           | 72.5          | 93.7          | 45.7          |
| FAO                | 172.9         | 11.7          | -             |
| WHO                | 331.9         | 120.1         | -             |
| Unallocated amount | -             | 1284          | 823.9         |
| <b>GRAND TOTAL</b> | <b>3577.3</b> | <b>3794.7</b> | <b>1845.0</b> |

## Annex G – Situation Overview for Laamu Atoll

During preparation of the programme in 2011 and 2012 a desk review, and a series of community consultations, workshops and field visits were undertaken to characterize key issues for LECReD in Laamu Atoll. The following is a summary of these findings that describes the situation in terms of sector and thematic areas and identified aspects where an integrated approach may be beneficial.

### Energy

Climate resilient development must allow for economic growth and improved livelihoods without adding to greenhouse gas emissions. It must also accommodate the energy needs of the country in the face of high, and potentially rising and volatile, oil prices.

Currently there is limited understanding on how to best transition the country away from fossil fuel-based energy towards renewable energy sources. The energy component of LECReD will not only translate into real benefits for the population of Laamu in the form of reduced energy bills but it will also inform the broader national strategy on solutions for the outer islands, and ultimately leverage significant private investments such as those outlined under the World Bank/ADB managed Scaling up Renewable Energy Program (SREP).

#### *Energy efficiency*

Measures to reduce emissions must first start with improving energy efficiency as it will firstly reduce spending on fuel and secondly reduce the capacity of renewable energy plants required. Research to date indicates that there are significant energy losses in both the power stations as well as the grid in Laamu. Energy loss in power stations occurs due to inappropriate sizing and incorrect operation. It is estimated that replacing the generators with new efficient units will save 25% of fuel consumption and that the payback of such replacement is only one to two years.

The full extent of the loss in the grid is not known. However, the loss in one system in Gan is estimated to be 23% while on other islands it is up to 35%. In parallel with reducing energy losses, it is important to reduce demand, in particular nighttime demand as nighttime electricity is significantly more expensive than

daytime electricity. The main reason for this difference is the cost of the battery system to store the energy. Research to date show that air conditioners, fridges and street lighting are the three largest users of domestic nighttime electricity. Replacement of that equipment will deliver significant benefits. In addition to replacing the equipment, there are different methods of cooling that will need to be reviewed. They range from making ice while power is plentiful and using it as an alternative to batteries, to making subtle alteration to fabric and insulation of buildings.

Demand from the public sector is also considerable and expenditure on energy across the nation significant. Any reduction in public sector demand will help relieve strained government finances. Given that most government buildings are occupied in the daytime, energy use at night should be a particular opportunity to target. The issues and techniques to use will be similar to those for the domestic sector, but the detail will differ.

#### *Renewable energy and the optimum mix*

There is consensus that the two most promising renewable energy sources in the Maldives are solar and wind, with solar sources providing a larger portion of the mix. The reason for this is that there can be many weeks where there is no wind while the sun shines every day. The exception is during the monsoon season when there is less sunshine in a day. However, finding right mix between solar and wind in different regions while trying to maximize power generation in light winds is complicated and will require careful analysis.

#### *Grid stability*

Current power stations grids are unprepared to receive renewable energy, as they are unable to receive dramatic

variations in loads. Dramatic variations can happen if for example a cloud departs or arrives and solar generation rises or drops to zero in matters of seconds. To mitigate this instability some form of energy storage is needed as well other equipment to stabilize the grid.

Table 3: Sector linkages for integration with energy area

| Work stream                | Linkage   |
|----------------------------|---|
| <b>Economic resilience</b> | Reduced spending on electricity by households in target communities, as well as by the country once the experiences developed in Laamu is scaled up, will free up money for other necessary spending, such as health and education which ultimately will contribute to the development of resilient communities |
| <b>Health</b>              | The replacement of inefficient and often dirty power stations will reduce air pollution currently experienced in the more dense islands   |

### Coast, flooding and biodiversity

#### *Coastal and rain-induced flooding*

The Detailed Island Risk Assessment of the Maldives (DIRAM 2007) indicated that coastal flooding, which is caused by swell waves and storm surges, is a climate risk to the Laamu atoll. Community consultations also confirmed that households and farmlands near the beach are more vulnerable to coastal flooding. Man-made actions have also exacerbated the impacts of coastal flooding. Sand mining for example reduces the natural elevation of the islands that in return provides protection against sea swell. Reclamation and the joining of islands through hard structures also exacerbate the impact of coastal flooding, as the channel between the islands is blocked causing swell waves to flood the island.

The Disaster Risk Profile of the Maldives (2006) indicated that the southern atolls including Laamu atoll, has greater rainfall compared to the northern atolls. In

community consultations, it was highlighted that in recent years, flooding due to rain has become more frequent and devastating. Due to the change in rainfall pattern and severity in the recent years, impacts of flooding to households, property, sewerage systems, roads and economic activities such as agriculture have increased.

The natural formation or the topography of the islands contributes greatly to the severity of flooding. Depending on the width of the island and other factors, efficiency of natural drainage of rainwater can vary from island to island. Also, the natural depth of the freshwater lens determines the amount of rainwater that can be absorbed before the island gets flooded. In islands where reclamation has taken place, the elevation is high but rate of rainwater absorption low causing the area to flood.

An increase in spreading of vector borne diseases such as dengue that could be linked to flooding has also been observed in the recent years.

#### *Erosion*

Erosion and accretion is a natural process of the islands. Naturally seasonal winds are the major cause of erosion. The perception of the majority of people in Laamu is that erosion has increased in the last few years; however data is not available to conclude whether climate change has exacerbated the natural effects of erosion.

Sand mining also aggravates the rate of erosion as it reduced the volume of sand in the beaches. While is not as common as it used to be, it is still done in some islands. Cutting down of trees near the coastline intensify the level of erosion.

Within the decade, the community of Laamu has observed an increase in the level of sea grass growth in the lagoons. This can lead to long-term erosion as the sand washed away by waves gets trapped in the lagoon by the sea grass and is not able to resettle naturally. Rising nutrient levels in the lagoon from could be responsible for the observed increase in sea grass growth. Possible reasons for

rising nutrient levels in the lagoon are dumping of waste near the coastline and sewage in the ocean.

Erosion is more of a concern for densely populated islands of Laamu, it is also a problem to settlements near the coasts of the larger islands. In some islands it is affecting economic activities as it is advancing to farmlands and harbors. In some islands, house construction and economic activities are taking place near the coast ignoring land use plans. In some islands erosion is advancing in to heritage sites that carry cultural and economic value. In some other islands communities suffer from psychological fear of sea level rising and inundating the islands.

Note that erosion is one of the four priorities identified in the atoll level consultations.

#### *Biodiversity*

The marine ecosystem and biodiversity of the lagoons, reefs and oceans is of critical importance to the livelihoods of most Maldivians. The reef in particular is of importance in providing the first line of defense against sea swells. In the long term, climate change induced ocean acidification might affect the biodiversity of the reefs that will be devastating to the tourism and fishing industry of Laamu. To compound matters, there is over harvesting of bait and other fish species that could have negative impacts on the fisheries industry.

Marine biodiversity also offer potential for the expansion of tourism offerings. The island of Gaadhoo for example is known for its extremely active breeding ground for turtles. Three years back, the community of Gaadhoo had a system within the community that allowed selected people to watch the breeding ground and in return earn an allowance by selling some turtle eggs. But, after a law was passed banning selling of turtle eggs, the community turtle watch program has ended. The community believes that without the turtle watch program, the turtles are in danger of being over harvested. Similarly, the island of Mabaidhoo is starting to develop a reputation for good diving in the atoll and

could be further developed to expand tourism offerings.

Terrestrial biodiversity is being adversely affected by vegetation clearance on a large scale. This vegetation is used by the fishing industry for fuel as well as a smoking agent. In addition to vegetation clearance, changes in the patterns of migratory birds have been noticed. Some birds that were seasonally seen in abundance in the past are now seldom seen. Climate change might be affecting the habitats of these birds and the capture of the birds by the local population compounds the problem further.

While there is limited awareness among the community on the concept of biodiversity itself they understand that many changes being brought about to the ecosystems around them are by climate change. They also accept that some activities by the community are affecting the ecosystems and that this could have devastating negative effects to the environment and the community in the long term.

#### *Policy and enforcement*

Several laws and guidelines have been passed on land use, coastal vegetation clearance, sand mining and conservation but the enforcement has not been effective. Furthermore, some laws and plans do not allow for local variations or do not offer an affordable alternative. For example current land use guidelines recommend a uniform minimum setback from the beach of 15 m where no development should occur. This does not allow for differences in vulnerability between the lagoon side and ocean side of an island and other unique island conditions such as geomorphology, wind and wave.

Similarly, at present there is a blanket ban on sand mining, however there is no affordable alternative for communities to build their homes. There is a ban on cutting vegetation which does not recognize that certain woods are required to get the distinct smoke flavor of Maldivian dry fish. Rather than a ban, it might be more productive to allow their use, but in a sustainable fashion.

Table 4: Sector linkages for integration with coastal, flooding and biodiversity areas

| Work stream                | Linkage   |
|----------------------------|---|
| <b>Economic resilience</b> | Identification of vulnerable zones would allow economic activities and housing to be located away from those zones or when there is no choice to adopt protective measures<br>Protection of marine biodiversity and heritage sites could improve livelihood opportunities<br>Identification of sustainable mechanisms for use of sand and vegetation would balance the need for protection of biodiversity and livelihood |
| <b>Health</b>              | Flood prone areas could be more vulnerable to diseases  |
| <b>Energy</b>              | Power distribution systems vulnerable to flooding because cables and distribution boxes are not installed at sufficient level in flooding areas. Energy sector to pay attention to flood prone areas identified   |
| <b>Local governance</b>    | Enforcement of laws will reduce vulnerability to erosion, flooding and loss of biodiversity   |
| <b>Waste</b>               | Dumping of waste in coastal areas could reduce resilience of coastal vegetation and reef to protect against swell waves   |

## Water and sanitation

### *Rainwater*

Households use rainwater for drinking and cooking and groundwater for washing. All households have one rainwater tank and in some cases two or three. As one tank is not sufficient to last households through the dry season, households cope by borrowing from their neighbors, buying bottled water or desalinated water or have water delivered by the government, which can take 10 days up to a month. Only if all these options fail, will households boil groundwater for the purpose of drinking

water. In the case of infants, the above “ranking” is moved up one step where rainwater is used for bathing and bottled water is used for drinking.

Bottled water consumption nationwide is increasing as a result of increased water shortages and while no data is available for Laamu, a lot of used water bottles were seen in the dumpsites and around settlements.

Households do not disinfect their rainwater but seem very conscientious about cleaning their roofs. Communities report that there are no problems with the quality of the rainwater. Some communities said they prefer to drink rainwater rather than desalinated water because it tastes better.

All islands have communal rainwater harvesting facilities; however some of them are not used because they are not cleaned regularly, due to the absence of a proper organizational structure for managing them and absence of funding. In some cases, facilities have been vandalized. There is also no organized distribution system within islands and families have to come to collect water from communal facilities on motorbikes or on foot. Some public facilities (schools, mosques) also do not have rainwater-harvesting facilities despite the available roofing. Some private and public houses do not have their roofs fully guttered presumably because they can collect enough water to fill existing tanks with less than full guttering. There are also individual rainwater tanks that are idle, either because the household cannot afford the base masonry to install them or their existing tank is sufficient. All of these present opportunities for easy interventions.

It should be noted that there are plans for the resort Six Senses Laamu to install communal rainwater tanks on many of the islands. At detailed planning stage, LECReD will coordinate planned activities to ensure synergy and no overlap.

### *Desalination*

Aside from the private and public rainwater harvesting facilities, there are

two operating reverse-osmosis desalination plants (Gan, Isdhoo) and one plant yet to be installed (Maavah). As capital and operational costs of desalination systems is much more expensive than rainwater harvesting, it is always prudent to optimize existing capacity first. The Gan plant is relatively large (90 ton) and serves as a “regional” plant serving other islands as well during the dry season. During the rainy season, the Gan plant operates only about three hours per day. Interventions consisting of increasing plant operations, installing piping system to communal points to increase access, as well as finding faster ways to get desalinated water to other islands could be examined.

The Maavah desalination plant is a donor-donated plant and is part of a large innovative communal rainwater-harvesting scheme currently being developed by the island council. This system will serve the local population as well as the large number of fishermen that uses Maavah harbor as a hub. User’s fees will be collected from the fishermen and used to cover operational costs and subsidize domestic users.

*Groundwater*

Groundwater in most islands is contained in thin water lenses located close to the surface with no impermeable layers making it very vulnerable to pollution. Compounding this is improper design and construction of the on-site sanitation system. Most septic tanks do not meet the requirement of being located at least 15 m away from the wells. In many households, the septic tanks do not have separate transpiration areas and the raw sewage is directly injected to the water lens with no treatment. Furthermore as government house plots are getting smaller, the septic tank are also getting smaller than the prescribed dimensions, resulting in treatment levels not to be met. These problems are further compounded during dry season when there is less recharge of the lenses from rain and the pollution becomes more concentrated.

Unfortunately there is no systematic monitoring of groundwater to determine

the extent of groundwater pollution; however a survey by the health clinic in Maavah found that 80% of the groundwater is polluted.

Due to the natural vulnerability of groundwater, Government’s long-term strategy is to install sewerage systems in all the islands and phase out septic tanks that release effluent into the ground water. There are two operating sewerage systems (Isdhoo and Danbidhoo), one recently completed system (which has not yet been put into operation at Fonadhoo) and one system planned for Gan. They are operated by the utility. No user fees are collected at present and operational costs are cross subsidized by electricity. In addition to the above planned and operating systems, there are negotiations underway for resort owners to install sewerage system in lieu of the premium ordinarily paid to secure the lease. It is expected that groundwater in islands with sewerage systems will improve with time.

*Water management*

Households systems, such as household rainwater harvesting and septic tanks, are the responsibility of individual households and should probably remain that way. Communal rainwater harvesting systems have historically been managed by island councils, albeit with problems while piped or more sophisticated systems such as sewerage systems or desalination plants are managed by the utility. This current arrangement is fragmented and as systems become more sophisticated and an integrated water resource approach is needed, an optimum delineation of roles and responsibility between households, island council, atoll council and utility need to be defined.

Table 5: Sector linkages for integration with water and sanitation areas

| Work stream | Linkage   |
|-------------|---|
| Health      | Poor water quality and groundwater pollution from inadequate sanitation are associated with increases in diarrheal diseases |
| Agriculture | Overuse of agricultural chemicals results in  |

|                       |   |
|-----------------------|---|
|                       | groundwater pollution   |
| Solid waste           | Increased use of bottled water during water shortages results in increased waste from disposable bottles  |
| Low emission develop. | Increased greenhouse gases from desalination and transport of water and water bottles due to water shortages. Burning fuel to boil water for infants also has a carbon cost   |
| Gender                | Women are primarily responsible for managing water at the household level. Having to walk to a communal water facility increases their workload especially in larger islands. |

### Solid waste management

Poor disposal of organic wastes create breeding grounds for rats and associated diseases. Mosquito-borne illnesses are also increased by improper waste disposal in any area with standing water, especially during the raining season. Toxic smoke inhalation from burning waste, particularly when conducted near communities, is another health concern. Finally, indiscriminate burning of plastic waste can cause cancer-causing dioxins to be released. It is also of note that deposition of air-borne particulates, including carcinogens from waste burning, may settle on agricultural fields, crops and soil surfaces with bioaccumulation risks for people who work in the fields and/or eat the produce.

Islands where fishing is the dominant economic activity (Maavah, Hithadoo and Konahandhoo) face an additional unique waste problem. Similarly to agricultural activities, it is estimated that one third of the fish catch becomes waste. In Maavah, which is a large fish-processing centre, it is estimated that ten tons of fish waste is generated per day during the high season. This waste attracts large amounts of flies such that people in surrounding areas cannot eat and workers in the health clinic nearby cannot apply disinfectant safely to patients. An increase in the occurrence of rashes, blisters, and itching and eye

problems has been noticed in these islands.

In addition to health impacts above, there is also the aesthetic and recreational impact. Due to waste disposal along coasts, communities no longer enjoy their local beaches even though their homes are less than a few minute walk to the coast. Instead, it is more common to travel to nearby uninhabited islands to enjoy the unsoiled coastal environment. The prevalence of waste along the coast will also impact the mid-market tourism market that is emerging as well as tourism offerings from the high-end market.

Poor waste management also impacts on Laamu's marine eco-systems, with floating plastics and debris posing a threat to marine biodiversity and the vibrant tourism industry it attracts.

At present there is no solid waste management system in any of the islands. There is no recycling or waste separation, at the household or at the dumping areas. The problem of poor solid waste management practices is very pervasive and such that solid waste is consistently one of the highest priorities (1st or 2nd) for all the stakeholders consulted, from the atoll council, island councils and the communities themselves.

#### *Island Waste Management Centers*

Island Waste Management Centers are facilities designed to process waste at the island level, serving as a temporary holding place until the waste is transported to the final disposal site that is the Regional Waste Centre. The main processing that could potentially take place at the island level are sorting of materials for recycling and composting of organic materials.

There are five centres (Isdhoo, Dhabidhoo, Mabaidhoo, Mundhoo and Fonadhoo) built by donors after the Tsunamis. All are currently unused, due to a combination of factors including the absence of management plans, including collection systems. Communities, especially women who manage household waste, find the centres to far too walk to

and too isolated, and therefore difficult to use regularly. Instead, when people take out the garbage and drop it in nearby bushes or along the coasts. The problem remains that there is no-one to collect it from the bushes or coasts and take it "away" as would occur in an urban setting such as Male'. A reassessment of the centers may determine that they could be utilized for temporary processing, composting and/or upgraded to serve another purpose, however, their ultimate utility rests on a sound waste management plan designed to suit the needs of the communities.

#### *Regional Waste Management Centre*

There is no existing or planned regional waste treatment facility for Laamu. Developing a Regional Waste Management Centre is a lengthy, expensive multi-atoll initiative. Most likely the LECReD program will not be able to address this need in the near- to medium-term. However, it is important to commence the dialogue and planning process to resolve the broader waste management context. Without a system in place, it will be difficult to sustain the waste management systems at an island level. There will always be a need for the uplift and final disposal of the residual waste, as well as the transport of the recycling materials to the market. This needs to occur in a coordinated and cost effective manner; with leadership at a national level. The LECReD programme will facilitate dialogue and commence the planning process to address the regional waste management picture affecting Laamu Atoll.

#### *Willingness-to-pay and user's fees*

Willingness-to-pay for services is a prerequisite when planning for solid waste management improvement, even if the revenue from user's fees will not recover the full cost, as Government and donors will not be able to pay for the full operational costs and capital costs indefinitely. It is important to have an early indication of willingness to pay, as without it, it will be very difficult to have sustainable operations. During the scoping mission, willingness-to-pay was gauged and most communities indicated some willingness to pay.

In Gan, a willingness-to-pay survey was undertaken four years ago. The result was communities were willing to pay MRF 30/HH/month for twice week collection and MRF50/HH/month for daily collection. The Island Council believed that the willingness-to-pay today could be MRF 100/HH/month for daily collection. In Dhabidhoo, the community indicated a willingness-to-pay of MRF 50-75/HH/month. The utility company is in discussion with the Island Councils to collect MRF 60/HH/month for waste services and is awaiting approval from Ministry of Finance.

Willingness-to-pay would have to be further determined during project implementation stage, along with developing appropriate fee collection structures and mechanisms.

#### *Composting*

To meet the challenge of low-emission climate resilient development, the need to divert as much waste as possible from the waste stream cannot be overstated. Composting is an integral element of solid waste management in any country with high organic waste such as the Maldives. In the case of Laamu, where organic waste is estimated to be around 60% of the total waste stream and five of the country's ten most productive islands are within the atoll, composting presents a great opportunity for reducing the waste and improving agricultural soils. There is also a need to increase the awareness of composting benefits both to the producers of the organic waste and the potential end users such as farmers, home-gardeners, and landscapers. Awareness campaigns would seek to demonstrate the comparative benefits of composting over imported organic and inorganic fertilizers using field trials as well as additional benefits including increased water holding capacity of soils, integrated pest management. There is also a need to streamline the processing within a larger waste management system, including the willingness to pay scheme. Communities are receptive to composting as long as the processing is not cumbersome.

#### *Household separation*

Household separation is useful but not a prerequisite. It will help ensure cleaner recyclables and compost that in return ensures higher diversion rates from the waste stream and higher sale value. Household separation becomes more important if one wants to introduce biological waste-to-energy processes, such as anaerobic digestion. During the scoping mission, some communities indicated willingness to separate waste, provided that facilities were provided (e.g., dry and wet bag). Composting segregated waste is much more cost effective as a system, with most contaminants removed from the waste stream prior to it entering the compost system. A further advantage of household separation is that it promotes taking responsibility at every household, rather than someone else 'taking care' of the waste.

#### Waste management

Under the recent decentralized framework, the function to provide waste services rests with island council. Island council in return may opt to delegate this service to the utility company.

Government is building two new sewage treatment plants (Fonadhoo and Maavah) which will be operated by the utility company. The utility company's increased presence (including labor, vehicle, equipment) in those islands could be utilized to increase waste services.

However, the South Central Utility is currently facing management and financial problems and its functions might be transferred to another utility. Consequently, neither the island council nor the utilities currently have the capacity to deliver waste services.

Table 6: Sector linkages for integration with solid waste areas

| Work stream                  | Linkage  |
|------------------------------|--|
| <b>Low emission develop.</b> | Solid waste burning is a significant contributor to greenhouse gas emissions (19%)<br>Organic waste could be converted to energy |

|                          |   |
|--------------------------|---|
|                          | (biogas), reducing fossil fuel use<br>Substitution/reduction of fertilizer with compost reduces greenhouse gases during production of fertilizer<br>Uncontrolled burning of waste in close proximity to vegetation could result in wildfires and associated emissions   |
| <b>Agriculture</b>       | Compost could be used to enhance organic profile and water holding capacity of agricultural fields and as a replacement to fertilizers in fields, home-gardens and in landscaped areas. This would decrease the negative impact of fertilizers on coastal ecosystem health and groundwater  |
| <b>Economic develop.</b> | Coastal pollution spoils the pristine environment expected by tourists, posing a threat to the tourism industry which relies heavily on the natural beauty of the Maldives<br>Potential for enterprise development for small scale businesses in waste collection and processing, and utilizing resources within the waste stream, such as collection processing, packaging, marketing, sale and distribution of compost. |
| <b>Health</b>            | Dumping site is ground for mosquito and other vector (rats) breeding<br>Burning waste creates harmful emissions with direct (e.g. inhalation) and indirect (e.g. deposition of carcinogens on crops and soils) health impacts   |
| <b>Water</b>             | Substitution/reduction of fertilizer with compost reduces fertilizer input, improving groundwater quality   |

|  |  |
|--|--|
|  | Improving waste management will reduce the potential for groundwater contamination from toxics such as dry cell batteries and medical wastes   |
| <b>Coasts, flooding and biodiversity</b> | Dumping of waste on vegetation on beach and its leaching could reduce resilience of vegetation and coral reef against erosion, sea swells and storms<br>Waste washed into lagoons and seas have impacts on marine biodiversity and tourism |

## Local Economy

### *Fishery*

Tuna catch is declining nationwide in the Maldives, including in Laamu Atoll, although the precise reason is unknown. While rising sea temperatures caused by climate change will affect migration of tuna and possibly tuna catch in the Maldivian waters, unsustainable fishing rates by foreign vessels just outside the Exclusive Economic Zone is also suspected of contributing to the decline.

In addition to the above general decline, the scoping mission identified the following issues:

- Destructive bait fishing by fishermen from other atolls which damages the coral reef ecosystem and juvenile bait fishes
- Ice availability limits the amount that fishermen can catch. While Horizon Fishery provides free ice to fishermen who sell to it, the amount of ice provided is not sufficient.
- Lack of harbor for vessels to dock on to.

### *Tourism*

While tourism was only introduced into Laamu Atoll recently, the sector offers a lot of potential in efforts to strengthen Laamu's economic resilience and diversify its economic base. Currently there is only operational resort in the atoll, Soneva Fushi (formerly part of Six Senses group). The recently opened mid-market Reveries

Boutique resort would also benefit the local economy with better job opportunities and market linkages. Laamu Asseyri project, a large mid-market tourism initiative currently under development, was conceived to cater for the growing calls to start mid-market tourism in the country. The project would consist of two resorts with 300 beds each, 79 guesthouses and recreational facilities.

The government is also building a Training Resort and with the introduction of mid-market tourism, Laamu atoll is also a focus of medical and health wellness tourism as seen as by the soon to be opened Green hotel in Kadhdhoo Airport. This would also support other related service industries like local tourist operators, tour guiding, transportation and local restaurants.

Through agro-tourism linkages, the sector can improve food security in two ways. First, directly for the tourism sector, which is a critical sector of the economy and increasingly vulnerable to food security and food price increases. And second, indirectly for the local population, by increasing income that will allow them to purchase food and absorb price increases of food produced elsewhere.

The sector also has potential to open employment opportunities for the service industry and youth in particular and widen market integration through value chain creation for other sectors like agriculture and fisheries.

### *Skills gap*

Although all these developments are coming into Laamu, there is no technical capacity within the atoll to cater to the needs of the sector. There is a mismatch between the available technical force and the skills needed for these industries. Fortunately, the Ministry of Human Resource, Youth and Sports is working on establishing a Job Centre in the atoll that would be managed by a local NGO.

### *Agriculture*

There are many significant challenges facing development of the agricultural sector in Maldives. First, there are critical resource constraints including availability

of arable land, poor soil quality, limited water and geographic isolation. Secondly, there is a lack of technical capacity to help farmers deal with day-to-day problems (i.e. pest outbreaks), diversify and expand into new markets (i.e. value-added product development), weak land management governance structures and limited data collection and analysis. Finally, there is limited awareness of climate-smart agricultural techniques that could sustainably enhance productivity.

Despite these challenges, farmers in Laamu grow a variety of crops with some of the most valuable being coconut, chilli peppers, watermelon and banana. Others include papaya, brinjal, taro, pumpkins, gourds, Chinese cabbage, red onions, eggplants, cucumber, mangoes, and a few others. Both the value and quantity produced in Laamu is on the rise. This follows a nation-wide push to increase agricultural productivity to enhance livelihood activities and increase food security. Agriculture is one of the strongest sectors in Laamu Atoll. Building on this foundation to overcome the challenges outlined above will serve to increase the resilience of local communities to climate and development challenges.

Laamu farmers suspect that climate change impacts are affecting their fields, but data to confirm the suspicions are scarce. For example, while less predictable monsoon seasons negatively affect farmers' ability to plan their cropping calendar, reports of changes to the monsoon are inconsistent. Some farmers have also reported flooding in their fields leading to crop losses, particularly among valuable crops like watermelon, but the extent of seasonal losses are uncertain. Furthermore, it is also unclear if downpours or saltwater intrusion cause the flooding from sea surges. All inhabited islands in Laamu report drought conditions during February and March. During this period, crops are watered by hand, but crop losses due to drought have not been recorded. In order to evaluate the impact of current and future climate factors on crop production, there is an urgent need for collection,

analysis and communication of agriculturally sensitive data.

It is also possible that pest outbreaks will become more common under changing climate regimes. In Laamu, pests are currently managed with a combination of chemical pesticides and integrated pest management techniques. While no pest introductions can be directly connected to climate change at this time, it is likely that new and emerging diseases will spread in new climate regimes. To this end, it is important to build the technical capacity for the identification, assessment of impacts and recommendations for management. A stronger emphasis on integrated pest management strategies would also provide techniques for overcoming pest outbreaks without relying heavily on chemical fertilizers.

#### *Land Resource Constraints*

While Laamu has land available for agriculture, the coral soils are deficient in key nutrients such as nitrogen. One possible way to overcome nutrient limitations and increase crop productivity is by using locally produced compost to build the organic profile. In addition to enhancing nutrient content, compost has the added benefit of increasing water-holding capacity and if done correctly, also offers some resilience to pest outbreaks. Furthermore, composting offers a readily available solution to the severe waste management problems facing the citizens of Laamu. More than 60% of the waste stream is organic material; rather than burning this waste or polluting shorelines, there is a great opportunity for turning this material into compost to benefit local food production systems.

#### *Value chain*

Laamu farmers and budding entrepreneurs are limited in their capacity to develop strong business models, honor contractual agreements or target production to meet demands of the markets. Most agricultural produce from Laamu is sold to the Male' market, some is traded locally, but very little is sold to the high-end tourist markets in the atoll. The resorts have reported that local produce is more expensive in Laamu than

the produce available in Male'. Therefore, while private companies could be sourcing their food from Laamu farmers, local prices are not competitive. There is also a gap between the market demand and supply. While the agricultural markets in Male' and tourist sector are strong, frequent gaps in quality, consistency and supply make it difficult for farmers to maintain contractual obligations with private sector partners.

Limited awareness on the value of forming cooperatives and/or small-medium enterprises also constrains sector growth. For example, at the time of writing, Dhabidhoo island was ranked as the seventh top supplier to the Male' market but there were no registered farmers on the island. Farmers have indicated they are not interested in forming cooperatives due to a lack of trust for management of financial resources. Furthermore, there is inefficient use of resources. Estimates indicate agricultural wastage could be as much as 30% of production. Limited technical capacity and large up-front investment costs prevent farmers from turning this waste into value-added products, such as chilli sauce, coconut oil and other products, taro chips, etc. Value-added product development is an opportunity to engage the younger generations who comprise 50% of the population, suffering high unemployment and consider agriculture as a second-class profession. In order to attract them to agricultural careers, new opportunities for small-medium enterprise development, including marketing strategies, product development, distribution, etc. may be one way to overcome this.

Limited technical capacity also prevents farmers from preparing strong proposals for accessing credit. Compounding this is high collateral requirements from lenders. Of note is that there are approximately equal numbers of registered men and women farmers in Laamu. Women play a significant role in the agricultural sector and therefore any successful development initiatives require their targeted inclusion when forming cooperatives or business models.

#### *Land governance*

Agricultural productivity is also affected by limited land management governance structures. This sometimes leads to conflicts over land access/rights. Farmers are reluctant to make financial investments to improve productivity because there is no guarantee that the land will remain under their management. Furthermore, it is also of note that the available agricultural land is not always used efficiently. For example, some productive land is idle while other land is used to produce crops that do not have high consumer demand.

#### *Climate Smart Agriculture*

Improving agriculture in Maldives may be achieved by focusing on species that are productive in the island context. This would include native and/or introduced species with established market value. Coconut is traditional agricultural crop, occurring naturally on most, if not all, islands in Maldives. Although coconut palms grow well in the sandy coral soils, improving soil nutrient quality could boost production. Composting and intercropping with nitrogen-fixing species is a viable option to improve soil nutrient content and increase productivity.

Chili plants are widely cultivated across Maldives. Chillies are one of the most common ingredients in Maldivian diets, and the plants are very productive on the islands with many farmers in Laamu focused specifically on chilli production. Several naturally occurring native plants add value to agricultural fields. For example, the "drumstick tree" (*Moringa oleifera*) may prove to be a promising agro-forestry species as it is salt-tolerant, nitrogen-fixing and leaves may be harvested and sold in agricultural markets. For example the iron-rich leaves of "Drumstick tree" are harvested for use in traditional dishes. There is potential to scale up the importance of this native plant in the market place. Climate-smart agricultural techniques such as intercropping with nitrogen-fixing species, reducing wastage, sustainably improving soil nutrient status and focusing on value-added product development from locally successful crops are key interventions for increasing resilience to climate change.

*Current and upcoming complementary initiatives*

Because of the importance of the agricultural sector for the nation as well for Laamu, Government has initiated a number of activities in the sector that is of relevance to the LECReD Programme. Of note, is the Ministry of Fisheries and Agriculture’s Agricultural Centre in Mendhoo, Laamu. This office is being relocated to Gan to improve access to its services for famers. It will provide training on Farmer Field School methods and Integrated Pest Management, organic farming and other trainings on introducing low risk chemicals to the Maldivian market. It will also have the added mandate of introducing commercial agriculture and new means of agricultural practices to the atoll.

The Agricultural Centre is also scheduled to receive assistance from International Centre for Research for Agroforestry (ICRAF) to undertake applied and adaptive research, including possibly climate change related research.

The Fisheries and Agricultural Diversification Project (FADIP) funded by the International Fund for Agricultural Development (IFAD) has been supporting MoFA in establishing value chain corporations in Maldives, including a project in Isdhoo to establish a cooperative.

Table 7: Sector linkages for integration with agriculture area

| Work stream  | Linkage   |
|--------------|---|
| <b>Waste</b> | Separation of organic material from waste streams would provide compost and reduce fertilizer inputs, therefore reducing greenhouse gas emissions associated with fertilizer production, increasing soil nutrient content and improving community and coastal ecosystem health/resilience. Reduction of waste volume would reduce |

|                |   |
|----------------|---|
|                | greenhouse emissions associated with burning carbon-rich organic waste and also reduce potential costs associated with transporting or processing waste.  |
| <b>Health</b>  | Control of pests via use of chemical pesticides leads to land, air and water contamination with implications for reduced community health and subsequently, increased vulnerability. Locally produced and consumed fruits and vegetables improve food security, nutrition and community health.   |
| <b>Economy</b> | Crop failure due to drought, flooding, poor land management, and pest outbreaks would have immediate impacts on local economy and food security. Limited technical capacity of farmers to expand productivity or engage in new livelihood activities limits market growth. Limited knowledge of the benefits of forming business partnerships, supply contracts or developing small-medium enterprises that market value-added products constrains potential growth of the local economy. |
| <b>Water</b>   | Drought and flooding may impact crop productivity. Inefficient use of freshwater resources to irrigate agricultural fields may exacerbate drought impacts and/or contaminate ground water lenses. It has been observed that pesticides are used without knowledge of proper application rates or safety regulations and unsurprisingly, communities suspect   |

|                            |   |
|----------------------------|---|
|                            | groundwater may be contaminated with pesticides, but data is lacking to confirm.  |
| <b>Governance</b>          | Land management issues; such as ownership, investment, conflict resolution or development constrain the growth of the agricultural industry on all islands.   |
| <b>Coasts and flooding</b> | Diverting organic waste streams to composting facilities for eventual use on agricultural fields or home gardens would remove 60% of the coastal waste pollution currently impacting the environmental health and quality of Laamu islands. Identification of "vulnerable zones" will help ensure that crops vulnerable to flooding will be situated away from vulnerable areas |

identified since the Gan regional hospital is not capable of diagnosing even some of the more common diseases. The insect vectors of these diseases are also highly sensitive to climatic conditions and extreme weather. Typhoid is almost endemic but flares up especially in rainy season along with other diarrheas.

The second way through which climate change affects health is through increased extreme weather patterns and natural disasters such as flooding and tsunamis. These events can have with damaging impacts on shelter, livelihoods, and availability of clean water, food and often direct physical and psychological impact on health. One very marked impact observed by communities in Laamu as well communities throughout the country is an increase in the frequency and severity of flooding, caused by both rain and sea swells. Flooding heightens the risk of diseases transmitted through water, insect vectors and rodents; damage homes; and disrupt the supply of essential medical and health services.

## Health

### *Climate change impact*

There are two major ways through which climate change can directly affect health. The first impact is through the changing patterns of disease burden and increased risks of communicable diseases, notably dengue and chikungunya. For example, a dengue outbreak was reported in early June 2011 with markedly higher number of cases as compared to previous two years. The peak of dengue transmission was historically believed to be in the later part of the year, from October to December. The outbreak of dengue in 2011 that began from May to June indicated that the transmission pattern has shifted to the middle of the year and that it was likely to be prolonged to the end of the year. In addition to dengue, chikungunya has also been reported to spread to all islands. This changing pattern of vector-borne infections is likely to be associated with longer and heavier rainfall as well as the rise in temperature.

Typhus and diarrhea area also increasing, although the precise pathogens cannot be

### *Environmental and social factors*

The above climate change impacts are exacerbated in communities with pre-existing long term stresses, such as limited clean water availability and poor waste management practices. Communities in Laamu report bad odor and increase in itching and other skin diseases when groundwater is used for washing and bathing during the dry season. This is most likely due to less rain entering the groundwater and therefore concentrating the levels of pollution from poor sanitation.

Burning of waste increases the risk of respiratory diseases, while dumping of waste provides a breeding ground for vermins such as rats and mosquitoes. Poor waste management is also responsible for large amounts of flies, increasing the risk of dysentery and enterocolities. Communities with a large amount of fish processing, such as those in Maavah, suffer from an even higher number of flies. Moreover, hospital waste is currently buried or burned. While in Laamu, the precise impact of medical waste disposal is not known, since there is no systematic monitoring of groundwater

quality, it poses a risk of groundwater pollution.

Malnutrition in children under five years, including stunting, has decreased significantly in the Maldives in the last two decades. However, a current national stunting rate of 19%, which is based on the Demographic Health Survey of 2009, is still quite high if Maldives' per capita income is taken into account. The figure for Laamu at 21% is slightly higher than the national average.

The Micronutrient Survey of 2007 found that the weaning and feeding practices of infants and children are a major factor for the continued malnutrition problem. For example, only 50% of infants are being exclusively breastfed. However, Laamu is one of the most agriculturally productive atolls in the country, the crops grown are quite varied and nutritious. This suggests that malnutrition may be caused by dietary habits rather than a lack of locally available nutritious foods.

#### *Capacity to address public health emergencies*

Programmes designed to control and prevent communicable diseases are vital in the context of climate change and changing disease patterns as well as emerging diseases. At present there is no capacity or strategy for surveillance of vector/entomological, air and water-borne diseases that could be affected by climate change.

Additionally, dependency on imports and tourism as the major economic driver increases volume of trade and travel, which in turn increases the risks for spread of diseases and other public health risks, whether they are biological, chemical in origin and whether they are transmitted by persons, goods, food, animals (including zoonotic disease risks), vectors (yellow fever, dengue, malaria) or environment (e.g. chemical spills or other contamination). In turn, in a Maldivian context, any known occurrence of event(s) of international public health concern potentially resulting in quarantine measures and travel restrictions will affect the national economy through reduced revenue from tourism and travel.

The capacity of the Maldives to address risks and concerns for national and international health security is weak and needs strengthening. The 2005 International Health Regulation (2005 IHR) is an international instrument specifically designed to help countries to build their capacity in detection, reporting and response to public health threats and emergencies so they can be contained as a source.

Licensing for restaurants used to be issued by the health centers with support from these community health workers. However, as a result of changes within the framework of decentralization of health sector, this task has been shifted to the island councils with no sufficient capacity in issuing these licenses as well as in monitoring and enforcing the conditions of the license.

#### *Disaster preparedness and response system*

The scoping visit found that there were no early warning and evacuation systems or shelters in Laamu. Since all the hospitals are single storey, they are unlikely to be able to provide shelters or even to function as hospitals in the event of disaster such as a tsunami or flood. Moreover, although hospitals built after 2004 tsunami can stand sea storms, many are fragile such as the one in Isdhoo. Police and civil defense department personnel have been trained on disaster management but not the health department personnel. The other relevant departments have no relationship with the health department. There is no standard operating procedure for managing disaster and training programme for the relevant staff of the health department. The Health department is not sufficiently capable to cater to the needs in the event of a natural disaster.

Systems need to be in place to provide quick and comprehensive health services as part of deployment of humanitarian assistance during disasters. This will include clinical services to address physical and mental trauma and provision of reproductive health services among others.

*Public Health, health care management and governance*

Following the enactment of the Decentralization Act in 2011, some of the functions of the primary health care (e.g. home visits, health education, and sanitation and mosquito control) were transferred to the island, city council and atoll levels. However this process was incomplete and consequently there is lack of clarity on roles, responsibilities and linkages in public health provision due to the on-going health sector reform.

Skills and resource management and planning at the island and atoll level are still weak. On one hand, the location of hospitals is appropriate, with requisite bed capacity (each health centre has between five to nine beds) and staff strength (e.g., the nurse population is about five to seven per health centre which is sufficient). However, there is lack of specialists and equipment, which is resulting in underutilization of health facilities, such as the Gan regional hospital. Bacterial culture is not done yet in the regional hospitals. Kits are available for diagnosing a few viral fevers such as dengue and chikungunya but there is risk of them running out of stock. None of the health centers or hospitals has good laboratory, ECG, ultrasound or radiological imaging machines. There is no post for a laboratory technician in health centers and life-saving medicines are not available. The expatriate medical personnel tend to deliver only basic services at the local facilities and refer cases with any possible risk of complications to the tertiary level hospitals. The absence of rigorous selection and induction training to ensure consistent service delivery standards leaves the expatriate doctors ill-equipped to tailor their services to the Maldivian context.

The perception is that weak capacity at the island level for comprehensive governance and planning means that health is left out of this planning process. The capacity of councils and other partners at the regional and local level need to be built to develop a culture of joint planning, accountable management and the inclusion of public health issues.

*Health promotion and community mobilization*

Providing health education and information to individuals, families and communities and empowering them to make decisions for their health can make a big difference in improving daily practices of individuals and communities in relation to hygiene, water and sanitation, nutritional choices, waste disposal and the avoidance of harmful practices (such as use of tobacco). This can positively impact public health programmes for prevention and control of communicable and non-communicable diseases.

Waste management in Laamu is one area where communities can make a tangible difference to health and wellbeing in the short term through individual and collective actions. It is important to make communities understand direct and indirect dangers of hazardous waste. Awareness programs including healthy dietary and feeding habits will also help the malnutrition problem and create demand for local produce.

Table 8: Sector linkages for integration with health areas

| <b>Work stream</b>          | <b>Linkage</b>  |
|-----------------------------|---|
| <b>Waste</b>                | Waste dumping is ground for mosquito and other vector (rats) breeding<br>Burning waste creates harmful emissions with direct (e.g., inhalation) and indirect (e.g., deposition of carcinogens on crops and soils) health impacts<br>For fishing communities, high amount of flies and pollution of coastal waters from fish waste associated with increase in eye and skin diseases |
| <b>Water and sanitation</b> | Polluted groundwater associated with itching and skin diseases  |
| <b>Coast and flooding</b>   | Flood prone areas are more vulnerable to diseases   |
| <b>Agriculture</b>          | Locally produced and consumed fruits and  |

|                                      |   |
|--------------------------------------|---|
|                                      | vegetables improve food security, nutrition and community health  |
| <b>Energy</b>                        | The replacement of inefficient and often dirty power stations will reduce air pollution currently experienced in the more dense islands   |
| <b>Local capacity and governance</b> | Lack of clarity on roles and responsibilities between island council and health clinics;<br>Planning at island level does not take into account health processes;<br>Health information system not able to provide necessary data for surveillance; |