CTCN
CLIMATE TECHNOLOGY CENTRE & NETWORK

CTCN Technical Assistance
Request Submission Form

Please fill in the form in the grey spaces, by following the instructions in italic.

Requesting country:	***Mauritius***

Request title:	***Climate Change Vulnerability and Adaptation Study for the Port of Port Louis***

Contact information:

{Please fill in the table below with the requested information. The request proponent is the organization that the request originates from, if different from the National Designated Entity (NDE).}

	National Designated Entity	**Request Applicant**
Contact person:	*Mrs. S.L NG YUN WING*	*Mr. Shekur Suntah*
Position:	*Director of Environment*	*Director General*
Organization:	*Ministry of Environment, Sustainable Development, and Disaster and Beach Management (MOESDDBM)*	*Mauritius Ports Authority*
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Technology Needs Assessment (TNA):

{Select one of the three boxes below:}

☒ *The requesting country has conducted a TNA in August 2013*

☐ *The requesting country is currently conducting a TNA*

☐ *The requesting country has never conducted a TNA*

TNA prioritized coastal zone as a key sector for adaptation, however, the Port Area was not deeply investigated due to limited expertise. Furthermore the new government program laid emphasis on the expansion of the port and also to make it climate resilient.

CTCN Request Incubator Programme:

{Please indicate if this request was developed with support from the Request Incubator Programme:}

☐ *Yes*

☒ *No*

Geographical focus:

{Select below the most relevant geographical level for this request:}

☐ *Community-based*
☐ *Sub-national*
☒ *National*
☐ *Multi-country*

{If the request is related to the sub-national or multi-country level, please indicate here the areas concerned (provinces, states, countries, regions, etc.)}

Theme:

{Select below the most relevant theme(s) for this request:}

☒ *Adaptation to climate change*
☐ *Mitigation to climate change*
☐ *Combination of adaptation and mitigation to climate change*

Sectors:

Port Sector (transport, coastal zones, infrastructure, cross-sectorial)

Problem statement *(up to one page):*

{Please describe here the difficulties and specific gaps of the country in relation to climate change, for which the country is seeking support from the CTCN. Please only provide information directly relevant to this request, and that justifies the need for CTCN technical assistance.}

Mauritius, as a small island developing state, is highly vulnerable to the adverse impacts of climate change. In fact, according to the latest World Risk Report 2014[1], Mauritius is ranked as the 14th country with the highest disaster risk and 7th on the list of countries most exposed to natural hazards. The effect of climate change in Mauritius is already palpable with temperature records showing a warming trend. The Intergovernmental Panel on Climate Change (IPCC) 2007 report concludes that average ocean temperature from surface to a depth of 700 meters has warmed up, though land surface temperature has increased more than ocean water temperature. Average temperature has risen by 0.74°C – 1.1°C (1961-1990 mean) and projected to rise further than 2°C by 2061 -2070. Sea levels in the southwest Indian Ocean based on ocean data measuring instruments for the period 1950-2001 shows a rise of around 1.5 mm/yr at Port Louis and 1.3 mm/yr at Rodrigues, (Source :Church, *et al.*, 2006). Analysis of Port Louis data for the period 1987-2007 gives a mean sea level rise of 2.1 mm/yr for the 10 years in question (Source: Mauritius Meteorological Services), however, figures of sea level rise from the University of Hawaii indicate a mean sea level rise of 5.6 mm/yr for the period 2003-2012 (Source: MOESDDBM, Sea Level Centre, University of Hawaii). Sea level rise projection is in the order of 1m by 2100 for southern oceans as an accelerating trend is being observed. The frequency of extreme weather events, heavy rain, flash floods, storm surges and high swells have increased significantly. According to scenarios established in the Disaster Risk Reduction Strategic Framework and Action Plan [MOESDDBM, 2013] high coastal risk for storm surges appears in correspondence of Port Louis area from Baie du Tombeau to Baie de la Grande Riviere.

[1] Garschagen (Dr.) M. et al. (2014). World Risk Report 2014 - *Focus: The city as a risk area.* Bündnis Entwicking Hilft (Alliance Development Works).

Climate change is anticipated to have a significant impact on coastal and port infrastructure. Port Louis harbor is exposed to a number of combined risks from sea level rise including storm surge, flooding and more powerful and frequent winds that could produce stronger and longer waves thereby challenging the resilience of our port infrastructure whilst at the same time disrupting the supply chain. Sea level rise in particular will have multiple impacts. High sea level will mean that the elevation at which waves will impact on port infrastructure will increase, potentially undermining the structures and increasing the exposure of decks, wharfs, piers and heavy handling equipment to significant wave action. This will also increase corrosion rates and material degradation. Flow-on effects that will potentially influence the port operating environment are also likely. For example, increased flooding events may result in increased siltation within the port, requiring more frequent dredging operations. Only recently port operations had to be stopped on various occasions due to high swells, strong winds and cyclonic conditions. The Mauritius Container Terminal (MCT) has in particular shown to be vulnerable to changing climatic conditions such as high swells, strong wind gusts and storm surges resulting in stoppage of operations for several days. For instance in 2013 the port has had to stop operations for a total of 21 days due to bad weather resulting in a shortage of revenue of around 3.9 billion rupees at national level. Similarly in 2014 port operations had to be suspended for 10 days due to adverse weather conditions which financially represented a shortage in revenue amounting to 1.9 billion rupees for the country (MEXA/MPA).
The effects will be particular acute if proper mitigation and adaptation strategies are not identified and put in place. Climate change is highly context specific, so generic adaptation actions cannot be adopted without appropriate site-specific investigation. In view of the above the need to undertake a location-specific climate change vulnerability assessment for the Port of Port Louis is felt and same should be followed by an adaptation strategy.

Past and ongoing efforts *(up to half a page):*

{Please describe here past and on-going processes, projects and initiatives implemented in the country to tackle the difficulties and gaps explained above. Explain why CTCN technical assistance is needed to complement these efforts, and how the assistance can link or build on this previous work.}

The MPA has started the preparation of a new Port Master Plan since September, 2015 which caters for the requirements of the port for the next 25 years, taking into consideration new opportunities such as transshipment, bunkering, seafood, cruise and ocean related businesses. Messrs Royal Haskoning has already been appointed as consultants for the preparation of the Port Master Plan study which will be completed by mid 2016.

The Port Master Plan consultants will be required to prepare a traffic forecast and make recommendations for port infrastructure required to handle the future traffic and propose a land use plan. In this respect the port infrastructure to be constructed need to be designed whilst taking into consideration the impact of climate change. If considered economically and financially viable, break waters will have to be constructed to protect the existing and forthcoming port facilities against wave impact. So far no specific study has been carried out on the impacts of climate change on port infrastructure and to ensure the medium and long term sustainability of the port the CTCN technical assistance to carry out a climate change vulnerability and adaptation study for this vital economic sector is needed to complement the port planning process that is on-going.

Assistance requested *(up to one page):*

{Please describe here the scope and nature of the technical assistance requested from the CTCN and how this could help address the problem stated above and add value vis-à-vis the past and on-going efforts. Please note that the CTCN facilitates technical assistance and is not a project financing mechanism.}

Technical assistance is requested from CTCN to procure consultancy services to conduct a climate change vulnerability and adaptation study for the Port of Port Louis and to assist with the implementation of adaptation options and their monitoring. The scope and nature of the technical assistance are as outlined below:

- **Review existing national plans and strategies directly or indirectly related to the port sector in the context of climate change and projected impacts with a view to identify opportunities and options to address gaps and needs required to fill them.**
- **undertake a location-specific climate risk assessment for the Port of Port Louis, both land-based and sea-based, that will identify current vulnerabilities and future risks, analyse and evaluate the risks, identify and prioritise adaptation options using a multi-criteria analysis and set a monitoring baseline.**
- **Formulate an action plan for the implementation of adaptation options in relation to climate change for the port sector with specific action targets and time frames**
- **Identify capacity building needs of engineers, marine personnel and other cadres of the port sector, on climate change, vulnerability assessment monitoring and evaluation and adaptation technologies.**
- **Recommend appropriate construction standards, codes, specifications and climate-resilient legislations for the port infrastructure and develop adaptation guidelines to assist the port authorities.**

Expected benefits *(up to half a page):*

{Please outline here the medium and long-term impacts that will result from the CTCN technical assistance, including how the assistance will contribute to mitigate and/or adapt to climate change.}

The medium and long-term impacts that will result from the CTCN technical assistance can be summarized as follows:

1. In the medium term it will provide capacity building for future change through awareness raising, skill development, data collecting and monitoring and research

2. Long term impacts will include the implementation of adaptation initiatives such as technological, engineering change, planning, design, legal/regulatory, insurance/financial measures and management system change.

The assistance of the CTCN in the conduct of the vulnerability and adaptation study will contribute to mitigate and adapt to climate change by:

(i) Enhancing the resilience of our port infrastructure which is the main asset for our on-going and future economic development

(ii) Ensuring that climate changes are incorporated in future design specifications such as sea level rise and storm surges into all port infrastructure elements.

(iii) Mitigating the impact of climate change through proper climate resilient spatial planning of the port.

(iv) Enabling more targeted investment in technology and equipment such as gantry loaders, shore cranes etc that will adapt to future climate changes

(v) Identifying areas where upgrading of infrastructure including port facilities, storage areas and navigation systems are required.

(vi) Identifying risks that cannot be mitigated and need to be outsourced to a third party.
(vii) Ensuring that emergency preparedness and response plans include specific risks related to climate change and related to port operations.

Post-technical assistance plans *(up to half a page):*

{Please describe here how the results of the CTCN technical assistance will be concretely used by the applicant and national stakeholders, to pursue their efforts of resolving the problems stated above after the completion of the CTCN intervention (list specific follow-up actions that will be undertaken).}

The results of the CTCN technical assistance will be used to ensure the long term sustainability and resilience of the Port. It will complement the Port Master Plan. The outcome of the study will guide port planners and developers on the safety margins to be adopted whilst taking into consideration their economic and technical viability. Since the study will complement the Port Master Plan the same mechanism for monitoring and evaluation will be in place.

Key stakeholders:

{Please list in the table below the main stakeholders who will be involved in the implementation of the requested CTCN technical assistance, and what their role will be in supporting the assistance (for example, government agencies and ministries, academic institutions and universities, private sector, community organizations, civil society, etc.). Please indicate what organization(s) will be the main/lead counterpart(s) of CTCN experts at national level, in addition to the NDE.}

Stakeholder	Role to support the implementation of the assistance
Mauritius Ports Authority	*Provision of required logistics and office facilities for the conduct of the study*
Mauritius Meteorological Services	*Provision of meteorological data*
Ministry of Environment, Sustainable Development, Beach and Disaster Management	*Provision of past studies, published reports and other climate change related strategic reports and legislations*
Ministry of Ocean Economy, Marine Resources, Fisheries, Shipping and Outer Island(MOEMRFSOI)	*Provision of data with respect to marine resources and shipping activities*
Mauritius Oceanography Institute (MOI)	*Provision of past studies and published reports related to climate change*

Alignment with national priorities *(up to half a page):*

{Please demonstrate here that the technical assistance requested is consistent with documented national priorities (examples of relevant national priorities include: national development plans, poverty reduction plans, technology needs assessments (TNAs), LEDS, NAMAs, TAPs, NAPs, sectorial strategies and plans, etc.). For each document mentioned, please indicate where the priorities specifically relevant to this request can be found (chapter, page number, etc.).}

In the budget speech 2015-2016 for the Republic of Mauritius, the Minister of Finance and Economic Development announced the ambitious project of transforming Port Louis Harbour from a destination port to a regional hub (pp. 9 – 10 Budget Speech 2015-2016: Republic of Mauritius). This project will entail the development and expansion of the existing port infrastructure to make

Port Louis a hub for bunkering, seafood, transshipment, cruise and petroleum. The budget speech also highlighted the huge investments that are already being made to upgrade the port infrastructure to meet the challenges ahead. The Prime Minister of the Republic of Mauritius at the launch of the High Powered Committee on achieving the Second Economic Miracle and Vision 2030 confirmed in his speech of the long term strategic goal of Government to develop the Ocean Industry as a new pillar for economic development. He stressed on the potential of making Port Louis a major port in the region in view of its strategic location in the Indian Ocean and the vast Exclusive Maritime Economic Zone of Mauritius. To ensure that concrete actions are taken to implement the Prime Minister's vision, the National Ocean Council has been set up to drive and implement projects related to the ocean economy. It is an undeniable fact that the port sector will play a major role in the future development of Mauritius and therefore its sustainability in the long term and resilience towards climate change will need to be addressed. Therefore this request for assistance from CTCN is in line with the national priorities of the country as outlined above.

Development of the request *(up to half a page):*

{Please explain here how the request was developed at the national level and the process used by the NDE to approve the request before submitting it (who initiated the process, who were the stakeholders involved and what were their roles, and describe any consultations or other meetings that took place to develop and select this request, etc.)}

The project proposal was formulated by the MPA in collaboration with the MESDDBM and the other concerned stakeholders including the Meteorological Services, MOEMRFSOI and MOI. Meetings were held to consolidate/refine the proposal. The project was approved by the NDE based on the eligibility criteria specified in the CTCN NDE Manual (Requesting CTCN Assistance - NDE Manual, UNEP 2013) namely:

- ***Ensure project adapted to circumstances;***
- ***Ensure interest of country stakeholders;***
- ***Ensure involvement of country stakeholders;***
- ***Ensure efficiency of project;***
- ***Build national capacities; and***
- ***Ensure sustainability***

Expected timeframe:

{Please propose here a duration period for the assistance requested.}

3 – 4 Months

Background documents:

{Please list here relevant documents that will help the CTCN understand the context of the request and national priorities. For each document, provide weblinks if available, to attach to the submission form while submitting the request. Please note that all documents listed/provided should be mentioned in this request in the relevant question(s), and that their linkages with the request should be clearly indicated.}

Port Master Plan 2009

New Port Master Plan (2015 – 2040) (In Preparation – first draft will be available by early 2016)

Disaster Risk Reduction Strategic Framework and Action Plan [MOESDDBM, 2013], document not on line but can be provided to CTCN.

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Monitoring and impact of the assistance:

{Read carefully and tick the boxes below.}

☒ By signing this request, I affirm that processes are in place in the country to monitor and evaluate the assistance provided by the CTCN. I understand that these processes will be explicitly identified in the Response Plan in collaboration with the CTC, and that they will be used in the country to monitor the implementation of the CTCN assistance.

☒ I understand that, after the completion of the requested assistance, I shall support CTCN efforts to measure the success and effects of the support provided, including its short, medium and long-term impacts in the country.

Signature:

NDE name: Mrs. S.L NG YUN WING

Date: 24 February 2016

Signature:

THE COMPLETED FORM SHALL BE SENT TO THE CTCN@UNEP.ORG

Need help? The CTCN team is available to answer questions and guide you through the process of submitting a request. The CTCN team welcomes suggestions to improve this form.

>>> Contact the CTCN team at ctcn@unep.org