

## **Proposal to Build online Training Modules to Support the Climate Change Risk Management Advance Level Programs**

India is slowly and steadily climbing the global economic ladder and reached the top five position. Such levels also enhance our vulnerabilities to global concerns and threats. Such vulnerabilities manifest in the form of direct and indirect threats. The climate change has become the biggest recognized threat to the global community. We as a nation need to be aware of the nuances and take measures to protect ourselves not just from the threat but also an equal partner to the global response to the climate change risk. The Conference of the Parties (COP), in an international climate meeting held every year. COP means the countries who are party to the international treaty called the United Nation Framework Convention on Climate Change (UNFCCC). India is a party to the COP and the next COP28, will be held in United Arab Emirates (UAE).

The World Economic Forum has been publishing very scary reports on the impact of climate change risk. Most of these reports are based on studies undertaken at a macro level and specific locations studies published by researcher locally. India in the tropical waters has very unique characteristics and cannot be driven by these reports. We have to build our own mechanisms to undertake climate change risk assessment specific to our locations and priority areas. We have to be party to the global discourse on climate change management before we accept the international norms. Most of the west driven narratives are suited to their interests and many time in contrast to our requirements.

The Underwater Domain Awareness (UDA) Framework being progressed by the Maritime Research Centre (MRC), Pune is well placed to manage the challenges & opportunities, arising out of climate change risk within the country. It can also potentially bring the nations within the region together and keep the extra-regional powers at bay. India can potentially ensure its leadership role by presenting itself as a capacity & capability building partner for the nations in the region. The digital oceans through implementation of effective UDA framework will bring, far more transparency and ensure enhanced governance. Within the nation itself, the decision makers and the stakeholders need to be sensitized about the challenges and opportunities.

An initiative led by the Capacity Building Commission (CBC), to build an effective mechanism for climate change risk assessment and mitigation strategy for the tropical waters of the Indian Ocean Region (IOR) and beyond, can significantly ensure true implementation of the SAGAR vision. The UDA framework comprising of policy & technology intervention along with acoustic capacity & capability building will be the key to this initiative. The earlier ten modules dealt with appreciating the broad UDA framework and the core areas of applications. This series of twelve advance modules will address the specific climate change risk management requirements, particularly for the tropical waters.

## **Proposal**

The sensitization of the stakeholders and policy makers on the relevance and nuances of the Climate Change Risk Management is a critical first step. At a time when the **Blue Economy Policy** is being announced, the **Climate Change Risk Management** will be a major requirement. A series of E-learning modules has been planned to provide a convenient and effective knowledge enhancement for the policy makers and stakeholders. The modules will address the various aspects of the climate change risk assessment and mitigation in the tropical waters of the Indo-Pacific region. It will cover both marine as well as freshwaters challenges and opportunities. The beneficiaries will include policy makers at the central, state and the local levels, the community representatives, support groups, foundations working on the ground, regulators, enforcement agencies and more. The list of the twelve modules is provided below:

## **Modules**

### **(a) Basics of the Climate Change Risk.**

The global community recognizes that the industrialization has had catastrophic impact on the global warming. The target is to achieve the temperature rise to be contained within 1.5 degree centigrade of the pre industrial era. Scientist use the average temperature in the period 1850 to 1900 as the reference. The enthusiasm to increase industrial production using fossil fuel has triggered the rapid global temperature rise. The climate change risk has to be quantified and correlated with our own developmental priorities. The socio-economic, socio-cultural and socio-political aspects also need to be factored before we jump into the global chase.

### **(b) Global Status and Concerns.**

India is no more an insignificant player in the global power play. We have a central role in the entire global discourse on varied issues. Multiple ministries have to gear up to the global concerns and strategic way forwards. Global bodies are taking important decisions to understand and counter climate change, however it is possible that many of these decisions may not be relevant to us. Our internal mechanisms have to be aligned to the global thought process in the globalized world order. Synergy among the government departments and policy makers is critical in the fast-changing global order.

### **(c) Climate Change Risk Assessment.**

The global concern is valid, however we need to build our own risk assessment mechanism for two important reasons. The first and foremost is to ensure no classified data goes out to the international community at the cost of our own interest. The second important reason is that when we participate in the high table, we should have precise inputs on our own condition. The global frameworks will have to be shaped with our interest being included and not being driven by the west and their agenda. The digital transformation will be the only way forward driven by the UDA framework.

**(d) Impact on Communities and Livelihood.**

India boasts of a very diverse mix of communities with very unique socio-cultural and socio-economic character. The diversity is the essence of our civilizational roots and has ensured the continuity of the traditional practices. The rapid urbanization and climate change risk has the potential to put many of the communities at risk of extinction. Migration from their natural habitats is a major threat to their continuity as a community with unique practices and livelihood. Precise assessment of the impact on the communities will ensure policy interventions to safeguard their survival.

The traditional livelihood practices have been under tremendous stress leading to large scale rural to urban migration. The industrialization was the initial trigger for this migration, however the climate change impact due to industrialization can be the death nail for the traditional livelihood practices. Retaining traditional livelihood has to be a priority to ensure balance in the society and also countering large scale migrations. The climate change impact on livelihood needs to be assessed precisely and followed by policy and technology interventions to counter the same. Unequal economic growth among different sections of the society will have internal security manifestations. Corporate vs local community confrontation is a common issue.

**(e) Sea Level Rise and its Impact.**

India with its over 7,500 km coastline and good network of rivers across the heartland is also vulnerable to water level rise. Resilience to such episodes and sustained levels will require macro and micro level interventions. The precise assessment and prediction of futuristic events will be the key. The extreme weather events have been causing devastating impact on the coastal and riverine regions and the communities. Good appreciation of the dimensions and the dynamics is critical for policy and technology interventions.

**(f) Impact on Sustainability.**

Climate change risk has been a major cause of extreme weather events, putting the entire governance mechanism out of gear. The short-term measure as disaster relief and rehabilitation on a regular basis puts the mechanism of long-term planning and sustainability a non-starter. This becomes a vicious cycle and a never-ending curse. Many of such events are very new to our traditional governance system and demand new approach with a nuanced way forward. Modelling and Simulation (M&S) for the climate change risk assessment and precise appreciation of the sustainability aspect will be critical.

**(g) Impact on Freshwater Resources and Quality.**

Freshwater is the most scarce and critical resource for human survival. The climate change is making this resource even more vulnerable from multiple dimensions. Resource availability is an issue, however the more critical danger is the

quality of the available water. As we speak, the water resource shortage is of the order of 20% and if we continue in the same manner, it could be short by 80% in less than a decade. Urgent measures are inescapable. Climate change will make this problem far more grave. Global figures will not be relevant for us and we have to build our own data collection system and the response mechanism.

**(h) Extreme Weather Events and the Response Mechanism.**

The extreme weather events have been a major concern of the climate change risk management. The slow degradation of the traditional systems and rapid urbanization has made the impact even more severe. Complete breakdown of the traditional practices had accelerated the degradation of the response mechanism to the extreme weather events. The climate change has enhanced the frequency of these extreme weather events and thus we need to develop an innovative response mechanism to counter the new challenges. This year as well, there is a prediction of El Nina.

**(i) Net Zero Carbon Emission and the Role of the Oceans**

The oceans are the biggest carbon sink and we need to make sure the governance mechanism ensures its continuity as a climate regulator. The global community is proposing many measures for achieving net zero carbon levels, however most of these have more of a commercial business model and may not be viable for the developing nations with limited budget availability. Nature driven models with minimal human interventions are the most viable measures. Many of our west driven models encourage replacement of the existing models with modern science and technology. We need to encourage traditional practices and use modern science & technology as an enabler.

**(j) Climate change Mitigation and role of Multilateral organization.**

Multilateral engagements in Underwater Domain Awareness (UDA) hold significant potential for fostering climate resilience by simultaneously addressing maritime security and environmental sustainability. Collaborative UDA efforts can establish early warning systems for extreme weather events, enabling timely responses to protect coastal populations. Additionally, the deployment of UDA technologies facilitates continuous monitoring of environmental parameters, aiding in the detection of climate change impacts on marine ecosystems. Such initiatives contribute to sustainable resource management, combat illegal fishing practices, and enhance search and rescue operations during disasters. The sharing of UDA data among participating nations promotes international cooperation, fostering trust and collaboration in addressing transboundary challenges posed by climate change. Capacity-building initiatives further ensure that all regional actors possess the technical capabilities needed to contribute effectively to climate resilience efforts. This integrated approach recognizes the interdependence of maritime security and environmental sustainability, providing a comprehensive strategy for building

resilience against climate risks in the Indian Ocean region. Therefore, it is important to investigate how UDA can be integrated into broader strategies for climate resilience, adaptation, and disaster risk reduction, considering the increasing frequency and severity of climate-related events

### **The Potential Participants**

The potential participants for the E-learning modules will include:

- (a) The Fisheries Department.
- (b) The Water Resource Departments.
- (c) The Public Sector Undertakings (PSUs).
- (d) The Administrative Training Institutes under the Government of India.
- (e) Maritime Boards in all the nine Coastal States.
- (f) Environmental Regulators and Disaster Management Authorities.
- (g) Energy Regulators.
- (h) Surface Transport and Regulators.
- (i) Auditors and Science & Technology Departments.

The participants will be provided with significant amount of reading material, along with the presentation in the form of a video. The MRC runs a digital platform, named the UDA Digest and has two forms of contents. A series of short articles (1500 words), presenting the easy read content for quick appreciation of the UDA framework and its varied aspects. The second is the short reports, comprising of serious research outputs from in-house research fellows and senior domain experts. The short reports are 10,000 words, serious piece of research output with references and detailed scientific and analytic effort. These are all peer reviewed by the specific subject matter expert and the in-house research team.

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