Annex 4 Draft Syllabus of the 1st training course

1. Essential subject 1: Climate Science

Module 1. Climate science and impact of climate change

1.1 Basics of climate change

Basics of climate change will be presented to provide an accurate understanding about climate change to the participants.

Training materials present:

i. What is weather and climate?
ii. What is climate change?
iii. Climate system and the factors affecting climate change (drivers)
iv. Climate variability.

1.2 Observed climate change (global)

Observed climate change in the world and their updates based on Intergovernmental Panel on Climate Change (IPCC) reports and WMO information.

1.3 Observed climate changes (regional)

Past and present weather/climate in the region will be presented with a focus on observed climate change. Those may be discussed based on the outcomes of PCCSP/ PACCSAP, their updates and recent findings.

Training materials present:

i. Observed climate change in the Pacific (e.g. outcomes of PCCSP/PACCSAP)
ii. Uncertainties and knowledge gaps

1.4 Impact of climate change on the Pacific region

Some of the key impacts of changing climate on the sectors such as water, biodiversity, food and natural resource, infrastructure, tourism and health.

Module 2. Projections of climate change

2.1 Projected climate change (global)

Climate projections given in IPCC's Assessment Reports (AR5/AR6) and special reports will be outlined.

2.2 Projected climate change (regional)

Regional to country-scale projection of climate change will be presented based on the results from regional climate models and downscaling. Interpretation of those outputs will be discussed.

2. Elective subjects: Climate change adaptation and mitigation options

A. Disaster Risk Reduction

Module 1. Understanding the vulnerability of structures

1.1 Basic knowledge of the vulnerability assessment of structures

Section 1.1 introduces methodologies, data/information to assess vulnerability of structures referencing examples including those in Pacific regions.

Training materials present:

- Overview of climate change impacts on building such as strong wind, flooding and focal points to assess vulnerability of buildings
- Outline of coastal disaster including coastal flooding, storm surge, wave & swell, and coastal erosion.
- Types of coastal protection structure/ rigid/ semi-rigid/ dynamic and offshore structures as well as non-structural measures and eco-based approaches.
- Design forces for coastal protection structure: tide/ storm surge/ waves/ other factors.
- Focal points to assess vulnerability of coastal protection structure: location/ management/ design condition/ related facilities

Module 2. Climate Change Adaptation and DRR activities focusing on structural approaches

2.1 Buildings

Section 2.1 provides an overview of the fundamentals of land use planning-principles and process. Then, from land use plans and zoning laws, how buildings are planned and designed considering disasters will be explained. Examples in Pacific regions are also introduced.

Training materials present:

- Overview on the broad strokes of land use planning and a micro focus on how to make buildings more resilient
- Recent updating building codes and their implications to improve resilience
- Case studies and challenges in implementing the building code, land use legislation, zooning and planning in the Pacific regions
- Capacity gaps in the construction industry to implement and build disaster resilient buildings

2.2 Coastal protection structure

Section 2.2 explains adaptation options of coastal protection including non-structural measures to respond projected climate change impacts. And examples in Pacific regions are also presented.

Training materials present:

- Projection of design force change due to climate change including sea level rise, cyclone & storm surge and wave & swell.
- Impacts to coastal protection structure by sea level rise/ intensification of cyclones, precipitation, and other factors.
- Adaptation options: development/ improvement of coastal structure/ non-structural measures
- Examples and challenges in the Pacific region as current coastal protection work and consideration for future climate change adaptation.

B. Ecosystem

Module 1. Understanding of climate risk and vulnerability of ecosystem

1.1 Basic knowledge of the vulnerability assessment of ecosystem

Section 1.1 introduces methodology to assess vulnerability of ecosystems for community resilience, Ecosystem and Socio-Economic Resilience Analysis and Mapping (ESRAM).

Training materials present:

- Understand and have an overview of climate change impacts on ecosystems and assess the vulnerability of ecosystem;
- Learn about and appreciate Ecosystem and Socio-Economic Resilience Analysis and Mapping (ESRAM) as an assessment tool for ecosystem vulnerability assessments;
- Understand that ecosystem vulnerability to climate change impacts has implications for community resilience; and
- Appreciate the role of natural ecosystems to build climate change resilience.

Module 2. Ecosystem-based adaptation and mitigation

2.1 Terrestrial and freshwater ecosystems

Section 2.1 provides an overview of the fundamentals of ecosystem-based adaptation and mitigation in terrestrial and freshwater ecosystems Key principles, challenges, co-benefits, outcome indicators and means of verification and barriers and enablers on the options below will be explained. Examples in Pacific regions are also introduced.

Training materials present:

- Understand the concept of EbA and Ecosystem-based Management (EbM) in the context of terrestrial and freshwater ecosystems
- Acquire knowledge on the concept, benefits and co-benefits, elements of outcome indicators, issues and challenges of EbA and EbM options for forest and watershed & reservoir; and
- Learn about examples in the Pacific.

2.2 Marine and coastal ecosystems

Section 2.2 explains an overview of the fundamentals of ecosystem-based adaptation in marine and coastal ecosystems Key issues for success including, but not limited to, site and ecosystem characteristics, maximum biophysical thresholds, time frame and local community involvement on the 3 options below will be explained. Examples in Pacific regions are also introduced.

Training materials present::

- Understand the concept of EbA and EbM in the context of marine and coastal ecosystems;

- Acquire knowledge on the concept, benefits and co-benefits, elements of outcome indicators, issues and challenges of EbA and EbM options for marine and coastal ecosystem; and
- Learn about examples in the Pacific.

2.3 EbA implementation: Cross-cutting issues and Approaches

Section 2.3 provides an overview of EbA implementation and the fundamentals of cross-cutting issues and approaches. Key EbA implementation principles and crosscutting issues, challenges, co-benefit, barriers, and measures to address and managing a project for the long term will be introduced. Examples from the Pacific also will be introduced.

Training materials present:

- Understand the holistic EBM approach and the evolution of EbA to build climate change resilience;
- Appreciate that the resilience of natural ecosystems is important to community resilience;
- Able to formulate EbA options and priorities implementation activities;
- Learn from the case studies presented and appreciate the broad range of expertise required; and
- Realize that EbA implementation has cross-cutting implications and has to perceived in the long term.

C. Food system

Module 1. Understanding climate risks and vulnerability of food production systems

1.1 GHG emission from food production systems

Section 1.1 explain potential GHG emissions from food production systems and current GHG emissions and policies related to mitigate GHG emissions from food production systems in the Pacific.

Training materials present:

- Understand potential GHG emissions from food production systems
- Learn about the current GHG emissions form food production systems in the Pacific
- Understand Climate Change Mitigation Policies on Food production in the Pacific such as NDC and national climate change policies

Module 2. Climate mitigation and adaptation options for food production systems

2.1 The nexus of climate change, gender and agriculture and key international decisions under the United Nations Framework Convention on Climate Change (UNFCCC)

Section 2.1 provides an overview of the fundamentals of ecosystem-based adaptation and mitigation in terrestrial and freshwater ecosystems. Key principles, challenges, co-benefits, outcome indicators and means of verification and barriers and enablers on the options below will be explained. Examples in Pacific regions are also introduced.

Training materials present:

- Understand an overview of interlinkages between climate change, agriculture, food security, nutrition and gender
- Learn the concept and importance of Koronivia Joint Work on Agriculture
- Learn the importance of integrating gender consideration into climate policy and action through the Lima Work Programme on Gender and its Enhanced Gender Action Plan.
- Understand the significant role of women in food production and the negotiations under the UNFCCC to ensure the Pacific women are part of the decision-making process.

2.2 Adaptation and mitigation options of agriculture

Section 2.2 explains adaptation and mitigation options of food production systems including climate smart agriculture, and adaptation and mitigation co-benefits. Case studies in the PICs are also introduced.

Training materials present:

- Understand climate smart agriculture approaches on:
  - Improved soil carbon, soil health and soil fertility under grassland and cropland as well as integrated systems, including water management;

- Improved nutrients use and manure management towards sustainable and resilience;
- Improved livestock management systems
- Improvement of facilities for cultivation, storage and primary processing

2.3 Adaptation options of coastal fisheries

Section 2.3 provides an overview of adaptation options of coastal fisheries. Examples from the Pacific also will be introduced.

Training materials present:

- Understand adaptation concepts and experiences in Pacific coastal fisheries

2.4 Climate information services

Section 2.4 provides an overview of adaptation options utilizing climate information services. Examples from the Pacific also will be introduced.

Training materials present:

- Understand the concept of Climate Information Services(CIS) and acquire knowledge on the concept and benefits of climate services of available examples in the Pacific
- Learn about a national example of CIS which support resilient food production systems Section 2.3 provides an overview of adaptation options of coastal fisheries. Examples from the Pacific also

D. Tourism

Module1. Understanding of risks of climate change impacts on tourism sector

1.1 Basic knowledge of business implication of climate change

Section 1.1 explains basic knowledge of business implication of climate change.

Training materials present:

- Understand the relations between climate change and business activities.
- Learn about physical risks on business activities and benefits of physical risk identification and assessment.
- Comprehend observed impacts of climate change on tourism sector in the Pacific.

1.2 GHG emissions from the tourism sector

Section 1.2 explains the current GHG emissions and NDC related to mitigate GHG emissions from the tourism sector in the Pacific.

Training materials present:

- Understand the current GHG emissions form the tourism sector in the Pacific.
- Learn about the sectors including tourism in NDCs in the Pacific with taking example of Samoa.

Module 2. Opportunities of the tourism to respond to climate change

2.1 Possible options for tourism sector to respond to climate change

2.1.1 Ecosystems-based approaches: coast, ocean, lake, forest, and mountain

Section 2.1 explains ecosystem-based approaches with focus on marine, coastal and terrestrial ecosystems as one of the possible options for the tourism sector to respond to climate change.

Training materials present:

- Understand the concept of EbA and the relevant approaches such as Nature-based Solutions and Ecosystem-based Management.
- Comprehend the importance and benefits of mainstreaming EbA and other related concepts into into climate change and sustainable development and (touristic) sector policies, taking examples in the Pacific.

2.1.2 Resilient and low-carbon infrastructures, facilities and Information management

Section 2.1.2 explains resilient and low-carbon infrastructures, facilities and information management.

Training materials present:

- Understand the latest global and regional efforts including PSTPF and what that entails for key stakeholder groups.

- Lean about practical opportunities where tourism can contribute to resilience building and GHG emission reduction in the built environment and transport.

2.1.3 Business risk management and recovery

Section 2.1.3 explains climate risk identification/assessment

Training materials present:

- Understand climate-related risks to be considered in relation to your business activities.
- Learn about the steps to identify and assess climate-related risks.
- Comprehend climate risk management in your business activities.

2.2 Enhancing mainstreaming climate change in the national tourism strategy and plan

Section 2.2 explains mainstreaming climate change in the national tourism strategy and plan.

Training materials present:

- Understand the importance of alignment of national tourism develop policies and plans with existing tourism climate change frameworks for a sustainable and resilient tourism sector.

E. Water

Module 1. Adaptation and mitigation options

1.1 Technical solutions for safe water access from water source to households

This lecture explains Pacific freshwater sources, including groundwater, surface water and rainwater, and their assessment, development, monitoring and management.

Training material presents:

- How to identify and manage water resource? tools, surveys and data.
- What innovative technologies, devices and tools are available to deliver and monitor safe water for households
- cases: Ecological Purification Systems (EPS) in Fiji
- How renewable energy can be used to reduce use of fossil fuels? & What innovative devices and solutions are available to encourage water and energy saving?
- Use of Climate Information Services

1.2 Community-based management for rural safe water access: Case study in Samoa

This lecture explains case of community-based management of water schemes in Samoa. The series of lecture materials will present the key themes, institutions, challenges, solutions and plans of rural water schemes including village water committees and the Association.

Training material presents:

- Learn about context, institutions and initiatives of community-based management of water systems in Samoa
- Considers any relevant information and initiatives for each country's safe water access based on its own contexts and initiatives

1.3 Projects in the Pacific

"Enhancing the Climate Resilience of vulnerable island communities in Federated States of Micronesia" (Adaptation Fund)

"Managing Coastal Aquifers in Selected Pacific Small Island Developing States (SIDS)" (Global Environment Facility)

"South Tarawa Water Supply Project" in Kiribati (Green Climate Fund)

"Addressing Climate Vulnerability in the Water Sector (ACWA) in the Marshall Islands" (Green Climate Fund)

F. Health

Module 1. Understanding of risks of climate change impacts on human health and health services, and GHG emission from health service

1.1 Vulnerability and adaptation assessment

Vulnerability and adaptation assessment of health care facilities in the context of climate change

Training materials presents:

- Understand key concepts to assess climate risk and impacts and definitions of the important terms, such as exposure, hazard, vulnerability, and risk of climate change.
- Learn about observed and projected climate change and its impacts focusing on temperature rising, precipitation pattern change, sea level rise and tropical cyclones which are relevant to health systems in the Pacific.
- Understand the climate change impact on the health systems.

1.2 GHG emissions from health services

Training materials presents:

- Understand what activities health services undertake, what the scope of carbon emissions means.
- Understand how the carbon footprint is calculated and what actions can reduce carbon emissions from health services.

Module 2.Climate adaptation and mitigation options of health system

2.1 Health workforce: surveillance, assessment, risk communication and planning

Practicing Early Warning, Alert and Response Systems (EWARS):

(1) Surveillance for Outbreak Prediction

(2) Introduction of Outbreaks

(3) The WHO-Spatio-temporal EWARS Framework

(4) Risk mapping

2.2 Facilities and Infrastructure

Health system building blocks

Health service activities

Fundamental requirements for health system functions

Goals of climate resilience and environmental sustainability

2.3 Policies and regulation

Overview of international legal arrangements on climate change

3. Essential subject 2: Innovative climate change approaches and solutions and climate finance

A. Innovative climate change approaches and solutions

(TBD)

B. Climate finance and project formulation

Module 1. Strategies, policies and guidelines and supporting programs of climate finance

1.1 Basics of climate finance

Basic of climate finance will be presented to provide an accurate understanding about climate finance to the participants

i. Background and definition of climate finance

ii. Global landscape of climate finance: domestic budget, international public finance (including multilateral climate funds), private finance, blended finance

1.2 Strategies, policies and guidelines and supporting programs of Multilateral climate fund: Green Climate Fund ("GCF")

1.3 Strategies, policies and guidelines and supporting programs of Multilateral climate fund: Adaptation Fund (AF)

1.4 Climate finance landscape and lessons of the Pacific region

Module 2. Problem and Objective trees and Logical framework

Module 2 shows participants how to use problem trees and objective trees and how these are used to craft the logical framework. Training materials of this section explain:

- Problem tree analysis: defining core problem, direct causes and effects, secondary causes;
- Objectives tree: identify the means of achieving a desired result or output at the end of a project, indicating the longer-term outcomes and impacts that the project can contribute to; and
- Logical framework: identify goal, purpose, outputs, activities, inputs, design summary, performance targets, monitoring mechanisms, and assumptions and risks.

1.4 Exercise: Problem tree and logical framework development

Each country group executes problem tree analysis by identifying a core problem related to climate change mitigation/adaptation in the selected sector. This exercise is

followed by formulation of objective trees and development of a logical framework of the project/ program related to mitigation and/or adaptation activities that address the identified core problem which should include innovative approach that could be taken.

1.5 Presentations from the trainees (country group) on exercise output

Presentation of the exercise outputs. Virtual live sessions (4 sessions x 2 hours) on exercise outputs and feedback from experts
Consultations with experts and other participants to review the exercise outputs.