EVENT AGENDA
Validation Workshop of the Capacity Building Modules
"Online Capacity Building Programme on Sustainable Energy Solutions for Islands"
ECREEE-UNIDO-CIEMAT

12th October- 14.30-18.30 pm

Venue: Salon Ocean- Radisson Blu Hotel, Dakar

14:30	**Opening of the meeting (UNIDO/ECREE/CIEMAT)**
14:35-14:50	Research, Development and Innovation at CIEMAT. State of the Art of Renewable in Spain (Presentation by Mr. Enrique Soria, Director Renewable Energy (RE) Division, CIEMAT)
14:50-15:15	"Online Capacity Building Program on Sustainable Energy Solutions for Islands" Project (Mr. Félix M. Téllez, Senior Researcher, RE, CIEMAT)
15:15-15:45	Coffe break
15:45-17:00	Overview of Module's Contents, Comments and Validation Further discussion and Next Steps. (Mr. Enrique Soria and Mr. Félix Téllez)

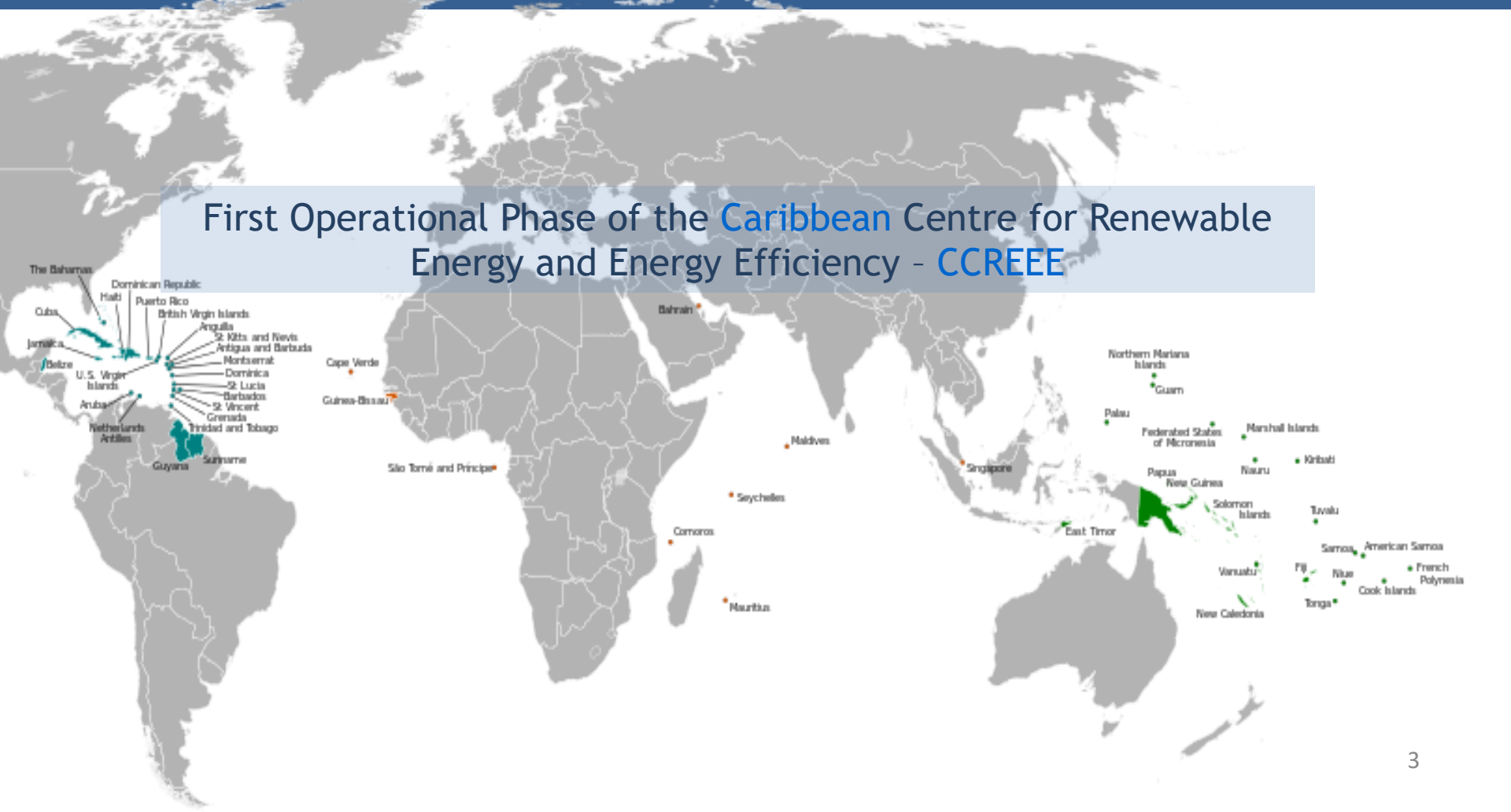
Key actors involved in the Project **(ECREEE, CCREEE, PCREEE, UNIDO, CIEMAT, AECID, …)**

Project Coordination and Contacts at CIEMAT (Knowledge Management & Training Division):		**Event attendees from CIEMAT (Renewable Energies Division):**	
Mrs. Marisa Marco Arboli	marisa.marco@ciemat.es	Mr. Enrique Soria	Enrique.Soria@ciemat.es
Miss Lara de Diego Chica	lara.dediego@ciemat.es	Mr. Felix M. Tellez	Felix.tellez@ciemat.es
Miss Mirian Bravo Taranilla	mirian.bravo@ciemat.es		

- Research, Development and Innovation at CIEMAT
  - State of the Art of Renewable in Spain

Enrique Soria, Director Renewable Energy (RE) Division, CIEMAT

Online Capacity Building Programme on Sustainable Energy Solutions for Islands and Territories in the Pacific, Caribbean, Africa and Indian Ocean - (UNIDO Project Ref. SAP ID: 130200)



First Operational Phase of the Caribbean Centre for Renewable Energy and Energy Efficiency – CCREEE

Project CONTEXT: Small Island Developing States (SIDS)

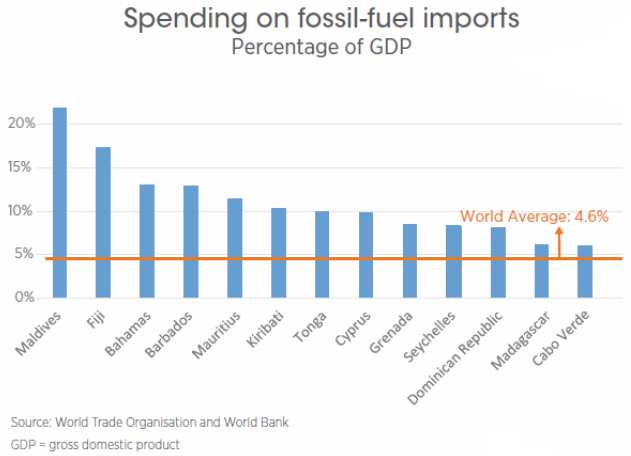
- **"Small Island Developing States (SIDS)** are maritime countries that tend to share similar sustainable development challenges, including small but **growing populations**, **limited resources**, remoteness, **susceptibility to natural disasters**, **vulnerability to external shocks**, **excessive dependence on international trade, and fragile environments**…."
- **"Embracing sustainability: Many SIDS now recognize the need to move towards low-carbon, climate resilient economies.**

Caribbean	Pacific	Africa, Indian Ocean, Mediterranean and South China Sea (AIMS)
Anguilla (eng)	American Samoa	Bahrain
Antigua and Barbuda (eng)	Cook Islands	Cape Verde
Aruba	Federated States of Micronesia	Comoros
Bahamas	Fiji	Guinea-Bissau[g][e]
Barbados	French Polynesia	Maldives
Belize	Guam	Mauritius
British Virgin Islands	Kiribati	São Tomé and Príncipe
Cuba	Marshall Islands	Seychelles
Dominica	Nauru	Singapore
Dominican Republic	New Caledonia	
Grenada	Niue	
Guyana	Northern Mariana Islands	
Haiti	Palau	
Jamaica	Papua New Guinea	
Montserrat	Samoa	
Netherlands Antilles	Solomon Islands	
Puerto Rico	Timor-Leste	
Saint Kitts and Nevis	Tonga	
Saint Lucia	Tuvalu[g]	
Saint Vincent and the Grenadines	Vanuatu[g]	
Suriname		
Trinidad and Tobago		
United States Virgin Islands[d][e][c]		

Project CONTEXT: Small Island Developing States (SIDS)

(From: https://en.wikipedia.org/wiki/Small_Island_Developing_States)

- **"Small Island Developing States (SIDS)** are maritime countries that tend to share similar sustainable development challenges, including small but **growing populations**, **limited resources**, remoteness, **susceptibility to natural disasters**, **vulnerability to external shocks**, **excessive dependence on international trade, and fragile environments**…."
- **"Embracing sustainability: Many SIDS now recognize the need to move towards low-carbon, climate resilient economies.**
- "SIDS often rely heavily on imported fossil fuels, spending an ever-larger proportion of their GDP on energy imports.
- **Renewable (energy)** technologies have the advantage of providing energy at a lower cost than fossil fuels and making SIDS more sustainable…"



Project Motivation. Need of Energy Transition

- Costly imports of fossil fuels, can burden island's budgets and inhibit investment in socio-economic development.
- In contrast, **indigenous renewable energy** resources and energy efficiency can reduce the dependence on imports while enabling the atmosphere for **local business** to be created **and** so, **employment opportunities**.
- Besides, islands are the best **scenario to proof** that isolated communities can **meet 100%** of their energy demand without greenhouse gas emissions (=**Sustainable Energy**).

Project Context: UNIDO -> (P)(E)(C)-CREEE

- The United Nations Industrial Development Organization (UNIDO) and the Sustainable Energy Island and Climate Resilience Initiative (SIDS DOCK), in close coordination with the regional organizations, **<u>are establishing a network</u> of regional sustainable energy centers in the Pacific, Caribbean, Indian Ocean and Africa.**
- Through regional methodologies and tools, **the centers assist Island Countries and Territories** to address existing barriers and strengthen drivers for sustainable energy markets, industries and innovation

PCREEE
Pacific Centre for Renewable Energy and Energy Efficiency
SE4ALL Centre of Excellence to Promote Sustainable Energy Markets, Industries and Innovation

CCREEE
CARIBBEAN CENTRE FOR RENEWABLE ENERGY & ENERGY EFFICIENCY

ECREEE
ECOWAS CENTRE FOR RENEWABLE ENERGY AND ENERGY EFFICIENCY

Context: UNIDO -> (P)(E)(C)-CREEE

- The centres focus on the up-scaling and replication of national efforts in the **areas of** capacity development, knowledge management and innovation, awareness raising, as well as investment and business promotion.
- Capacity building and skills certification are important areas of work of the centers

Further information is available at: http://www.sidsdock.org, http://www.pcreee.org, http://www.ccreee.org, http://www.ecreee.org and http://www.se4allnetwork.org.

Project Motivation. First joint activity

- As a first joint activity, the PCREEE, the ECREEE and the PCREEE are developing an "Online Capacity Building and Certification Program on Sustainable Energy Solutions for Islands and Territories in the Pacific, Caribbean, Africa and Indian Ocean".
- The activity is implemented with **financial support of the Spanish and Austrian Governments**

- **The centers will be the owners and direct beneficiaries of the program**
- The final beneficiaries are experts from the public and private sector, which are benefiting from the online trainings.
- To increase the impact and sustainability of the program, it is envisaged to make the online course **part of the curricula** of existing sustainable energy master programs of the University of Cape Verde in Mindelo (UNIVC), the University of West Indies (UWI) and the University of the South Pacific (USP).

Project Motivation

- The online capacity building program responds to the urgent need for **affordable training and certification program**s on sustainable energy in islands.
- **Lack of capacities are a major barrier** for the creation of sustainable energy markets and industries:
  - Without a considerable **strengthening of capacities**, most of the small island developing countries and territories will not **achieve their sustainable energy targets** in the Intended Nationally Determined Contributions (INDCs) [*for reductions in greenhouse gas emissions that almost all the countries signed after the UNFCCC, held in Paris (Dec. 2015)*]
  - Quality issues and the perception that solutions are not mature (partly due to weak innovation and productive capacities of the domestic sustainable energy industry) have been a backdrop for various renewable energy technologies (e.g. solar thermal, SHS)
  - The lack of domestic energy businesses has led to severe sustainability and maintenance issues in various islands.
  - **the domestic value and job creation effects along the value remains often very limited**. Equipment and services continue to be imported.

Project Motivation

Technical knowledge is required to establish a critical mass of

- **policy makers**,
- **project financiers**
- **engineers,** and
- **university and R&D communities**

who will be **able to manage all aspects of sustainable energy development and implementation**

Stakeholder group	Capacity needs
Policy makers in the renewable energy and energy efficiency sectors and the energy sector in general.	• Developing and operationalize coherent, comprehensive and evidence based policies, laws and regulations that create a level playing field for RE&EE technologies • Implementing rural energy planning • Negotiating power purchase agreement (PPAs) with independent power producers (IPPs) and setting viable feed-in tariffs • mainstreaming climate resilience and gender
Policy makers from non-energy sectors	• Basic design of renewable energy systems • Integrating renewable energy components into their sectors
Entrepreneurs, project developers, equipment manufacturers, consultants and industry support bodies	• Development of vocational and higher education courses adapted to the RE&EE requirements and languages of the region • Certification for conducting energy auditsd • Identifying, developing and packaging a pipeline of potential RE&EE investment projects • Negotiating viable power purchase agreement with investors • Preparing quality business plans that are consistent with existing financing mechanisms • Identifying and developing potential CDM projects • Mobilizing and structuring investments in RE&EE projects • Mainstreaming climate resilience of energy infrastructure and gender
Utilities	• Ability to tender RE&EE projects • Negotiate power purchase agreements (PPAs) • Integrate RE generation in the grid
Recipients/buyers of energy services and technologies	• Willingness and ability to pay for the services or technologies • Ability to assess the energy implication or cost in daily choices and decisions such as selecting electric equipment
Recipients/buyers of energy services and technologies	• Willingness and ability to pay for the services or technologies • Ability to assess the energy implication or cost in daily choices and decisions such as selecting electric equipment
Academia and research community	• Increase capacities and expand the curricular offer in the field of low carbon technologies, energy efficiency and climate change mitigation actions and to promote the implementation of sustainable energy solutions in the target regions

The Project

"Online Capacity Building and Certification Program on Sustainable Energy Solutions for Islands and Territories in the Pacific, Caribbean, Africa and Indian Ocean"

Participating Institutions

- UNIDO subcontracted (CIEMAT) to develop the and hand-over the "**Online Capacity Building and Certification Program on Sustainable Energy Solutions for Islands and Territories in the Pacific, Caribbean, Africa and Indian Ocean**."
- CIEMAT will develop and execute the activities in **close partnership with UNIDO, SIDS DOCK, CCREEE, PCREEE and ECREEE**.
- The assignment **will require further consultations and collaboration** with the **University of the South Pacific and PacTVET, the University of Cape Verde, the University of West Indies and the Energy Unit of the CARICOM Secretariat**
- **Besides** the participation of experts from the different research departments of the **CIEMAT, other Spanish R&D&I institutions are involved** in the preparation of the Modules. All of them are centers of excellence in the field of energy, energy efficiency and the environment.

Roles of CIEMAT (Knowledge Management and Training Division) in the project:

- Project management and coordination
- Desing, development and implementation in colaboration with the Project Counterparts
- Methodology and Quality Assurance
- Modules virtualization: production of learning materials, multimedia and digital contents
- Moodle E-learning Platform administrator and manager
- Responsible for Web Design
- IT Support provided by the Computer Service of CIEMAT- Unit of Development of Applications and Computer Systems

- (in M1): Spanish Office of Climate Change (OECC)
- (in M7): University of Alcalá de Henares (UAH) Robotics Services and Technologies for Road Safety
- (in M8): Technological Institute of the Canary Islands (ITC) Renewable Energy Department

The Scope of activities

- The program **will be based on the deliverables of the "UNIDO Online Renewable Energy Capacity Building Program for Latin America**", which was developed by CIEMAT in 2014 for the UNIDO's Observatory for Renewable Energy in Latin America and Caribbean in the framework of t he Initiative "Sustainable Energy For All".
- It was developed in three languages, with 100% online format and self-study (self-study modality), hosted on the Observatory Website:

  http://www.renenergyobservatory.org/applications/cbponre.html

- Some of the modules of this training program will be **updated and adapted to the specific island realities**.
- And **four new modules** which are of particular importance for SIDS **will be added**, resulting **a total of 9 modules**.
- (The selection of modules was made by UNIDO, from a catalog sent by CIEMAT, and after consultation with the 3 Centers in which this training program will be hosted)

On-lIne CB on RE - MODULES
M1. General introduction into Island Energy and **Climate Change Mitigation** and Resilience (NEW)
M2. **Solar Thermal Systems** and Applications for water heating and industrial process heat (updated)
M3. Grid-connected and decentralized **Photovoltaic Systems** (updated)
M4. **Efficient Energy** use and thermal optimization **in buildings** and industry (updated)
M5. **Geographic Information Technologies** and Renewable Energy (NEW)
M6. **Bioenergy**. Anaerobic digestion of organic waste to energy solutions (updated)
M7. **E-mobility** (NEW)
M8. **Minigrids**, Grid Stability in Insular Power Systems and Energy Storage (updated)
M9. **Ocean Energy** (NEW)

Principal Features

- The course is being generated **to be installed in the web platforms of the three centers** (CCREEE, ECREEE and PCREEE), **that will be the owners and direct beneficiaries**
- **Open Online Access:** the Program aims to be **widely disseminated** specially among key stakeholders (organizations, companies and governments) for the public sector, private sector and civil society of the Islands regions
- **Designed** to be offered **both in self-study or tutored mode**
- The training program will be **available in English, Spanish and Portuguese**
- It will be **hosted** in a platform of online training, in this case **Moodle**
- Starting date of the subcontract (Project): 1/7/2017
- Duration: 15 months (ending 30/9/2018)

CB Structure and Learning Materials

The training program is offered **at 2 speeds of study**, aimed at two types of audience or approach to renewable energies by this route

- **Module's General Overview: 1st Speed**

TARGET AUDIENCE	General public
OBJECTIVE	To provide an overview of each technology
LEARNING MATERIAL	Video presentation and multimedia content
DEVELOPMENT SITE	Temporarily on the CIEMAT's servers, on the LMS Moodle 3.1.6
FINAL SERVERS	ECREEE, CCREEE and PCREEE Websites

While the **Module's General Overview, or 1st Speed** has no associated practical activities and assessment tests, the **Module's Specialized training or 2nd Speed**, includes various activities to overcome and the recognition of learning and progress by a certificate of achievement.

- **Module's specialized training: 2nd speed**

TARGET AUDIENCE	Professionals in the sector, academics and postgraduates
OBJECTIVE	To provide technical and detailed view and quality specialized training for qualify and skilled personnel
LEARNING MATERIAL	Complete learning materials including: • Educational Didactic Guide • Video Presentation • Multimedia Content • Extensive Documentation • Case Study • Final Assessment Test • Achievement Certificate
DEVELOPMENT SITE	Temporarily on the CIEMAT's servers, on the LMS Moodle 3.1.6
FINAL SERVERS	ECREEE, CCREEE and PCREEE Websites And E-Learning Platform

moodle

- ✓ Learning Management System (LMS)
- ✓ MOODEL
- ✓ Open Source Learning Platform

Characteristics of the Modules

Module's General Overview: 1st Speed:

TARGET AUDIENCE	**General public**
OBJECTIVE	To provide an overview of each technology
LEARNING MATERIAL	Video presentation of the Module, multimedia content including a self-assessment test
FUTURE SITE	Website of ECREEE

•**Video presentation** by the expert author of each module: consists of a brief presentation of the state of the art of the technology and aims to give a global view, and motivates the participant to complete the program.

Multimedia content (animated presentation in Scorm) including a 5 questions self-assessment test, which will allow track the progress and the overcoming of this learning element. Its objectives are to encourage reading of the documents of the course in a pleasant way, to facilitate understanding of the concepts and activities and promote the retention of the key ideas of the course.

Characteristics of the Modules

<u>Module's Specialized training: 2nd speed:</u> equivalent to 20 teaching hours

TARGET AUDIENCE	**Professionals in the sector, academics and postgraduate students**
OBJECTIVE	**To provide a more technical and detailed view** of each of the modules.
LEARNING MATERIAL	Complete learning materials including **video presentation** multimedia content, **extensive documentation, a case study** and **final assessment test** aimed at providing practical experience in each of the renewable technologies as well as to assess the progress of the participant and acquire the achievement certificate
FUTURE SITE	ECREEE platform accessible through the Centre's Website

Participant profile: Technical level. Decision makers, project financiers, engineers and policy makers and developers of energy plans

Characteristics of the Modules

Module's Specialized training: 2nd speed: equivalent to 20 teaching hours per module

The **learning material** that compose each module of the 2nd speed modality are 1) Educational Guide, 2) Presentation/Explanatory Video, 3) Extensive Documentation, 4) A Case Study, 5) Self-Assessment tests, 6) Additional documentation

Educational Guide including:

(already availables for the 9 modules)

- Objectives. In order to specify the general and specific objectives of the module.
- Structure. The module program and a conceptual map of the contents.
- Methodology and activity plan. Aimed to explain the student how to study and address the different learning materials and also to provide the specifications needed to address each activity.
- Evaluation criteria for each activity.
- Information about the certificate to be obtained.

Characteristics of the Modules

Module's Specialized training: 2nd speed: equivalent to 20 teaching hours

The training elements that compose each module of the 2nd speed modality are 1) Educational Guide, 2) Presentation/Explanatory Video, 3) Extensive Documentation, 4) A Case Study, 5) Self-Assessment tests, 6) Additional documentation

- **Video presentation** by the expert author of each module, which consists of a brief presentation of the state of the art of the technology and an introduction to the module.
- **Multimedia content** (interactive presentation in Scorm) **including a 5 questions self-assessment test,** which will allow track the progress and the overcoming of this learning element. Its objectives are to encourage reading of the documents of the course in a pleasant way, to facilitate understanding of the concepts and activities and promote the retention of the key ideas of the course.

Characteristics of the Modules

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- **Extensive documentation** (PDF format). It integrates all study contents that the participants must learn to achieve the objectives of the course and it is designed to facilitate the understanding of the subject, resulting comprehensive, practical and didactic. It can be complemented with bibliography, glossary, appendices and any other documentation that is relevant to the learning.
- **A case study focused on the Island countries and territories,** presenting the statement and the right solution for the participant to check the resolution between it and his/her own answer. In addition, the participant must respond appropriately a few questions about the case study in order to assess their learning and record their progress. As also an element for the evaluation of the course, essential for the final diploma.

Characteristics of the Modules

Module's Specialized training: 2nd speed: equivalent to 20 teaching hours

The training elements that compose each module of the 2nd speed modality are 1) Educational Guide, 2) Presentation/Explanatory Video, 3) Extensive Documentation, 4) A Case Study, 5) Self-Assessment tests, 6) Additional documentation

- **A self-assessment 20 questions test or Final Test**. Multiple choice test with 3-5 response options regarding a question and only one is correct. There are variants which include more than one valid answer. The time available to do it is 1 hour and there are two attempts for this activity. This Final Test, besides being an element to reinforce knowledge, to overcome it is necessary to receive the achievement diploma.
- **Additional documentation**: references, documentation, web links and articles of interest on its subject and related to it.

Certification/Accreditation

- **The Online Capacity Building Program** is based on **objectives and learning outcomes** that are addressed through a technical scientist content program equivalent to 20 hours approx. per module
- Within **Self-study** modality **online assessment tools** become essential to track the progress and the achievement of competencies and objectives.
- The 2nd Speed Program involves the study and improvement of the evaluation criteria of the module in order to achieve the established objectives and learning outcomes
- Once the evaluation criteria have been reached, a **Final Achievement Certificate issued by UNIDO, CIEMAT and the owner Centres** will be electronically available to be downloaded by the student
- **Further Accreditation** based upon professional qualifications, *TVET (Technical and Vocational Education and Training)* may be offered through a University or accredited training institution

Work Plan and Schedule

The project is organized into four main phases:

- **Phase I**. Program management
- **Phase II**. Design and development of the training contents. Modules translation into English and Portuguese.
- **Phase III**. Preparation of the final version of the e-learning modules. Setting the Virtual Platform in CIEMAT servers. Design and development of the Capacity building portal within the Regionals Centers Webpage. Linking to CIEMAT Virtual Platform.
- **Phase IV**. Transfer Know How: Train the trainers and Technical Management.

- (For Details see pp 29-31 of the "**Inception report**" issued in July/2017)

9. TABLE 1: PRELIMINARY TIME SCHEDULE. TIMING OF ACTIVITIES IN WEEKS FROM THE START OF THE ACTION

	MOUNTHS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
DELIVERABLES	Phase 1. TRAINING PROGRAMME MANAGEMENT															
a	FORMULATION OF THE INCEPTION REPORT															
b	ANALYTICAL REVIEW PAPER															
	Phase 2. DESIGN AND DEVELOPMENT OF THE TRAINING CONTENTS. MODULES TRANSLATION INTO ENGLISH AND PORTUGUESE															
c	ADAPTATION, TESTING AND QUALITY ASSURANCE OF 5 ALREADY EXISTING MODULES															
d	DEVELOPMENT, TESTING AND QUALITY ASSURANCE OF 4 NEW ISLAND TRAINING MODULES															
e	VALIDATION WORKHSOP AT PCREEE															
f	VALIDATION WORKHSOP AT CCREEE															
g	VALIDATION WORKHSOP AT ECREEE															
i	TRANSLATION INTO SPANISH AND PORTUGUESE															
	Phase 3. MODULES FINAL VERSION. VIRTUAL PLATFORM IMPLEMENTATION. CAPACITY BUILDING PRESENTATION INTO THE CENTERS WEBPAGE															
h	VIRTUALIZATION AND EDITION ACTIVITIES OF THE MODULES LEARNING MATERIALS															
	VIRTUAL PLATFORM INSTALLATION, DESIGN AND CONFIGUATION															
	CONFIGURATION OF THE CAPACITY BUILDING PROGRAM INTO THE REGIONAL CENTERS WEBSITES. TECHNICAL SUPPORT FOR THE MIGRATION OF CB PROGRAM TO REGIONAL CENTRES' MOODLE PLATFORM															
	Phase 4. TRANSFER KNOW HOW : TRAIN THE TRAINERS AND TECHNICAL MANAGEMENT															
j	DEVELOPMENT OF AN ONLINE TRAIN THE TRAINERS COURSE															
	DEVELOPMENT OF A MOODLE PLATFORM COURSE															
	1 WEEK ONLINE COURSE "TRAIN THE TRAINERS COURSE"															
	1 WEEK ONLINE COURSE "MOODLE"															

Thank you Very Much