SUWANU EUROPE

Deliverable 3.5 E-Learning through open online courses

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Actual delivery date:	19.05.2021		
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Dissemination level:	Public		
WP Leader:	BIOAZUL		
Version:	Template		

Target Region:	Germany
Responsible partner:	TTZ Bremerhaven

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1 Introduction

Water scarcity is a global problem which is not only limited to traditional dry areas. Indeed, 17% of European territory suffers from water scarcity and 46% of the European population lives in water stressed places.

The problem is especially acute in Southern Europe where there is a growing water demand mainly from the agriculture and tourism sectors. Agricultural production in Europe represents the highest water use accounting for 36% of the total annual water use and 75% in the Mediterranean region.

Water reuse represents an advantageous approach, particularly relevant for the agricultural sector. This approach can not only, alleviate the water demand and complement the traditional water resources, but also provide many additional benefits from farmers. For instance, offers lower cost compared to other solutions, reliability of supply regardless the season, climatic conditions and associated water restrictions, and nutrient contribution of the treated wastewater that can supplement or replace the use of conventional fertilizers.

However, fundamental barriers to a wider implementation remain to be addressed, such as the limited awareness of the benefits, low acceptance of water reuse solutions, poor coordination of the professionals and organizations involved in the water reuse scheme.

SuWaNu Europe aims to overcome these barriers and boost the innovation of the sector by presenting and disseminating the existing and upcoming knowledge and skills in the field of water reuse in agriculture within relevant stakeholders such as farmers, farming advisory groups, practitioners, academics and public interested on this field. Specifically, WP3 was designed as a powerful tool to successfully achieve this objective, to facilitate the implementation and create the capacity and competencies needed to implement these results.

Task 3.5 focuses on the development of a Massive Open Online Course that allows the participants to get practical knowledge about the use of reclaimed water for agriculture. The course aims to introduce and explain the most relevant aspects in the most understandable way to the interested parties.

This document provides a detailed overview of the methodology and activities carried out in order to successfully develop the E-learning course. The first section presents the organization team, followed by a description of the methodology, the course content and dissemination strategy. Afterwards, the material and activities for the successful preparation of the E-learning course, the outcomes and the conclusions are presented.

2 Executive summary

SuWaNu Europe aims to boost the implementation of technological innovations and practices of the water reuse in the agricultural sector, by collecting and analysing previous and upcoming information, promoting the knowledge exchange, and displaying successful practices among target stakeholders.

To facilitate the achievement of those objectives, one of the most suitable tools nowadays to effectively disseminate information and to reach high number of interested parties, is through E-Learning courses. As part of WP3, task 3.5 addresses to develop the strategies and pertinent actions to successfully create a robust online course, that gives the opportunity to the public interested in this field, to acquire significant knowledge and the most important concepts related to the use of reclaim water in agriculture.

As a result, the E-Learning course: *Practical knowledge about use of reclaimed water for agriculture*, was effectively built up. The course is free of charge and all the interested parties can access to it with previous registration. The original version of it is in English. However, 8 versions in different languages are available: Spanish, Portuguese, French, Italian, Flemish, German, Bulgarian and Greek, to reach a greater audience.

The present document describes the detail strategy, methodology and activities executed to successfully achieve the objectives of Task 3.5 and its correspondent results.

3 E-learning course organization team

The development of the course is leaded by TTZ Bremerhaven and the module course leaders are: UCO and CECU in charge of the module for consumers and general public, CONSULAI for agricultural practitioners and food industry, TTZ for water technology developers and ANETH for oriented public authorities on strategic planning for water reuse implementation. Table 1 depict the course modules and the module leaders.

Table 1 E-Learning course Module Leaders

E-learning Module Leaders		
Module	**Name**	**Leader Partner**
MC 0.0	Introduction	BIOAZUL
MC 1.0	The Role of Reclaimed Water in the Green Deal Approach	UCO & CECU
MC 2.0	Water Reclamation Approaches	TTZ
MC 3.0	Reclaimed water for sustainable agriculture	CONSULAI
MC 4.0	EU Framework for Water Reclamation	ANETH

4 E learning course methodology

The methodology designed for the correct execution of Task 3.5 involved different stages, particularly planned to comply with the objectives of the task and to guarantee the successful development of the E-Learning course and its dissemination. Figure 1 outlines the methodology implemented.

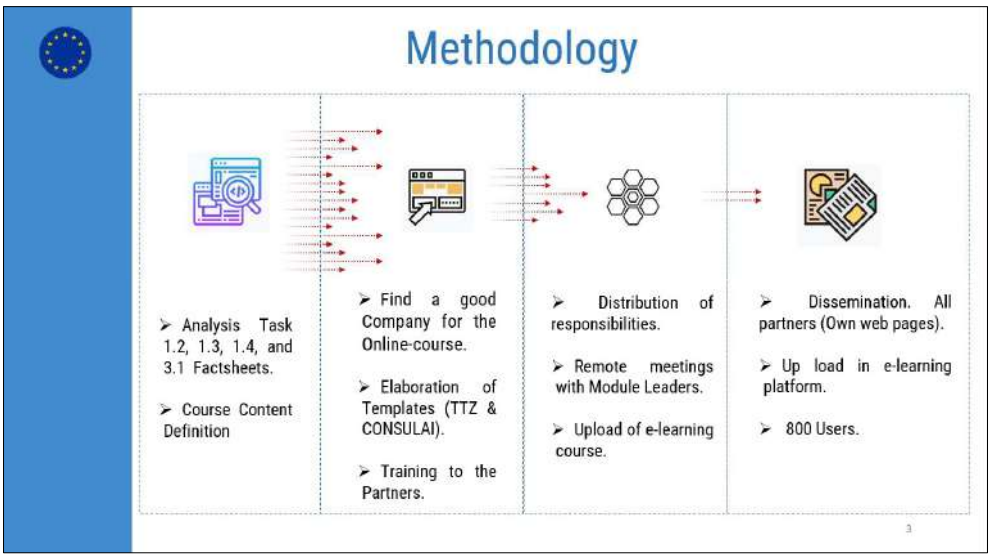

Figure 1 E-Learning course methodology

The initial step of the strategy involved analysing the outcomes of the Task 1.2, 1.3, 1.4 and 3.1. Specifically, consisted of collecting and reviewing the existing knowledge, material and results achieved in the former European and national research projects, networks and private initiatives focussing on all themes related to the implementation of treated wastewater. Along with information from local actors including information and data on irrigation practices, water treatment technologies, governance and administrative procedures, organizational schemes, environmental and economic impacts. Additionally, analysing the success stories, in this case, Israel and Cyprus and identifying the best practices to enhance user's acceptance.

After targeting the main outcomes and relevant knowledge and carrying out the analyses mentioned before, the course content was defined according to the stakeholders needs. The complementary material per module was defined, in this case a series of fact sheets per Module were designed. The content and the complementary material were defined as follows:

Module	Video Topic	Name	Complementary material
0.0 - Introduction	VT 0.1	About SuWaNu Europe	-
	VT 0.2	About the online course	-
	VT 0.3	Needs and potential of EU Water Reclamation	-
1.0 - The Role of Reclaimed Water in the Green Deal Approach	VT 1.1	Water reclamation in agriculture: Environmental Benefits.	FS 5.1: Environmental benefits of irrigation with reclaimed water
	VT 1.2	Public perception and consumer acceptance	FS 5.3: Public perception and consumer acceptance of agricultural products irrigated with reclaimed water
	VT 1.3	How to improve public perception	FS 5.5: Communicating the use of reclaimed water for agricultural irrigation E.g. how to transfer a positive image of using reclaimed water
2.0 - Water Reclamation Approaches	VT 2.1	Water quality requirements for reclamation	FS 3.1: Reclaimed Water quality requirements
	VT 2.2	Conventional and nature based technologies for water reclamation processes	FS 4.4: Nature based options for water reclamation processes" and FS 4.5: Other technologies for water reclamation
	VT 2.3	RichWater: Innovative membrane bioreactor for water reclamation	FS 3.1: Reclaimed Water quality requirements and FS RichWater
	VT 2.4	Contaminants of emerging concern	FS 3.2: Contaminants of emerging concern (policies, technologies to remove them, efficiency, impacts in agricultural crops)
3.0 - Reclaimed water for sustainable agriculture	VT 3.1	Effects of reclaimed water on crop quality and yield	FS 1.2: effects of reclaimed water on crop quality and yield
	VT 3.2	Irrigation equipment and DSS adapted for water reclamation	FS 1.3: Irrigation equipment adapted to the use of reclaimed water (e.g. drippers)" and FS 1.4: Decision support systems to monitor irrigation patterns and fertilization needs when using reclaimed water
	VT 3.3	Organoleptic studies of agricultural products irrigated with reclaimed water	FS 5.2: Organoleptic studies of agricultural products irrigated with reclaimed water
	VT 3.4	Cost benefit analysis and feasibility water reclamation	FS 2.1: Costs benefits analysis and feasibility of using reclaimed water and FS 2.3: Water and fertilizer savings when using reclaimed water
	VT 3.5	Water reuse initiatives in agriculture in Europe	FS 2.5: Water reuse initiatives in agriculture in Europe
4.0 - EU Framework for Water Reclamation	VT 4.1	New EU Regulation on reclaimed water for agricultural irrigation	FS 6.1: New EU Regulation on reclaimed water for agricultural irrigation
	VT 4.2	Water Reuse Risk Management Plans	FS 6.2: Water Reuse Risk Management Plans
	VT 4.3	Water Governance and Strategic Planning for Water Reclamation	FS 6.3: Water resources governance (e.g. how to incorporate reclaimed water into integrated water resources management)" and FS 6.4: Strategic planning for the use of reclaimed water in agricultural irrigation (the planning process to develop SUWANU EUROPE action plans)
	VT 4.4	Confronting Barriers for Water Reclamation in Agriculture	FS 6.5: Confronting barriers for agricultural irrigation with reclaimed water and promoting synergies in geographical clusters

Figure 2 Course content and complementary material

Furthermore, it was established that for the course evaluation, each video topic responsible should prepare a set of questions relevant to their theme. The defined questions types were: multiple choice or True/False questions. Once all the questions were completed, the preparation of the module exams was possible. In order to obtain the course certificate the students must approve the 4 module exams. The Exam certificate was design by CONSULAI and can be found in the material course preparation section.

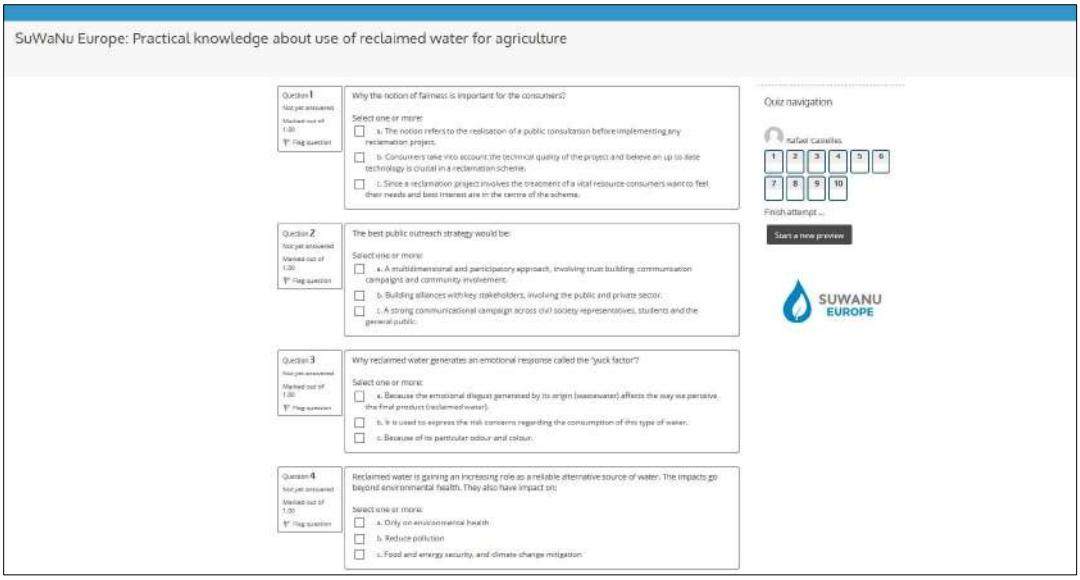

Figure 3 Overview Module examination

After the completion and definition of the course content, the following step consisted of finding the most convenient online platform where the E-learning course was going to be launched.

For the selection of the possible platforms, the companies must fulfil some required quality standards and offer a convenient Cost-Benefit relation. The following were the final platforms selected:

Figure 4 E-Learning course quoted Platforms

After quoting and analysing the offers of the different platforms, the company BrainsPro was selected. BrainsPro is a Spanish company, which presented the most convenient features for our E-learning course such as, a plain tariff, unlimited number of users, follow up reports, flexibility for the design and management, easy data controlling, continuous and personalized assistance.

On the other hand, one of the key elements that ensure the successful development of this task, was the proper management and coordination of the activities required, including meetings, follow up activities, check lists, among others. Besides, the design and preparation of all the material and trainings needed to ensure the quality of the E-Learning course. This activities were successfully led by our partner TTZ.

A detailed Gant Chart was previously prepared by the task leader TTZ. The chart depicts the schedule of the project, activities and deadlines as follows,

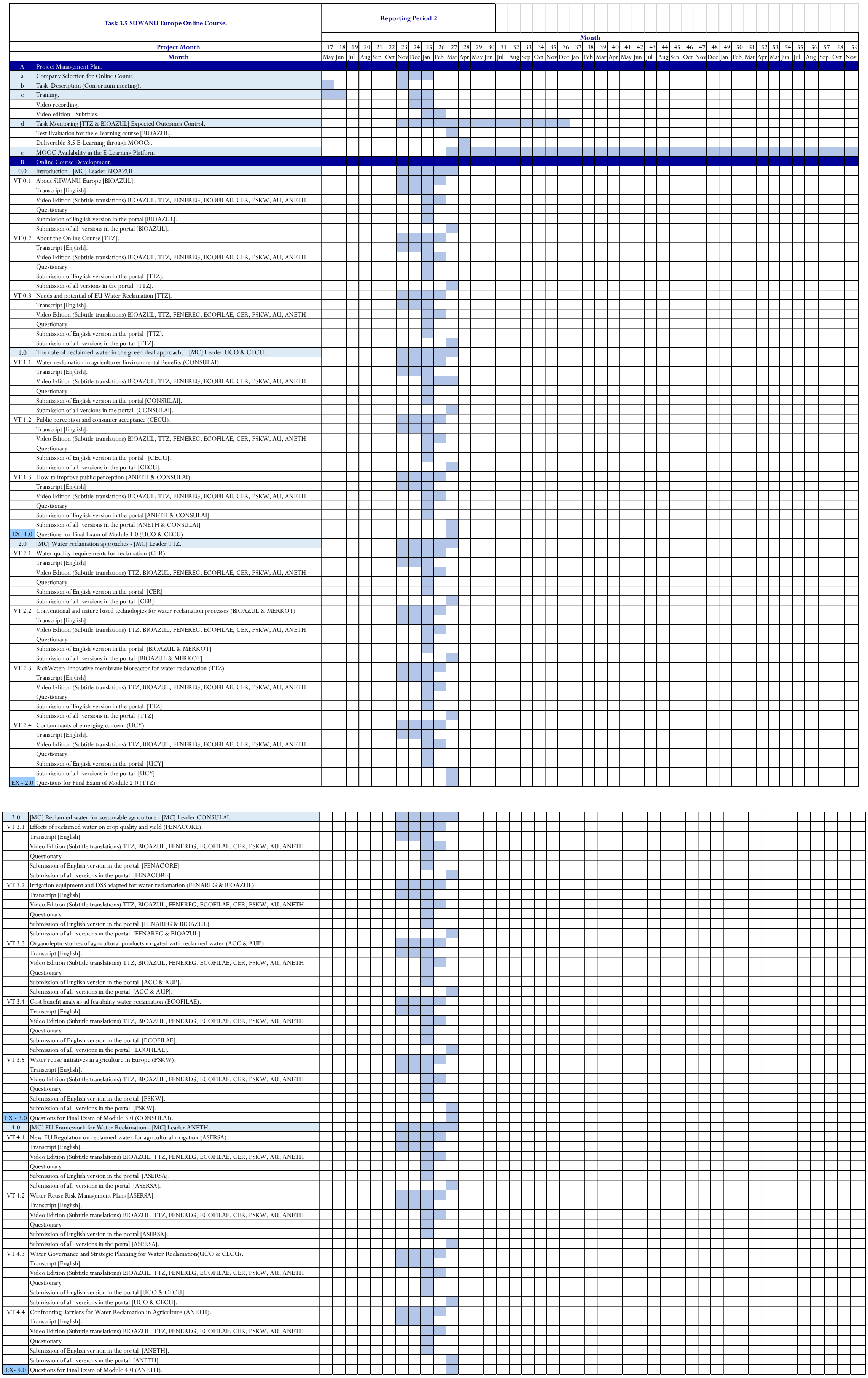

Figure 5 Gantt Chart Task 3.5

Accordingly, to ensure the homogeneity of the course, an adequate formatting, and layouts for the material to be used within the E-learning course framework, were designed. The elaboration of suitable templates that follows the SUWANU style was developed considering the inputs and opinions of all the partners, to achieve the best possible version. Templates for the video topic presentations, video topic transcripts and video topic questions were developed.

It was determined that the most convenient and clear communication approach was through pre-recorded video presentations. This audio-visual tool allows the message to be exposed in a more effective way, besides capturing the student's attention and giving the possibility to stop and review the video topics when needed. The length of the videos recommended was between 5-10 minutes to ensure the complete students attention.

Therefore, it was essential to provide adequate training and recommendations to the partners. A series of tutorials in video format and as written guidelines were elaborated to provide the presenters specific course of action regarding the video recording process and to explain as clear as possible, step by step, how to manage the presentations, record voice and image, save and upload the videos, etc. The software used for this purpose was OBS (Open Broadcaster Software), a free and user-friendly software suitable for recording videos and live streaming.

The templates, tutorials and additional material developed are shown in detail in the material and activities section and in annexes.

Furthermore, several remote and Q&A sessions with the module leaders and translation responsible were coordinated and carried out to support the video recording process as well as the translation process.

Table 2 E-learning Course translation responsible

E-learning Course translation	
Language	**Responsible Partner**
Spanish	BIOAZUL
Portuguese	FENAREG
French	ECOFILAE
Italian	CER
Flemish	PSKW
German	TTZ
Bulgarian	AU
Greek	ANETH

SUWANU internal area was the platform used to save and to access to all the trainings, recorded videos and completed documents. The consortium partners, as well as BrainsPro representatives, could access to download information, upload/download the video topics and the different documents related to the task. BIOAZUL contributed with the management of this platform in a very supportive way.

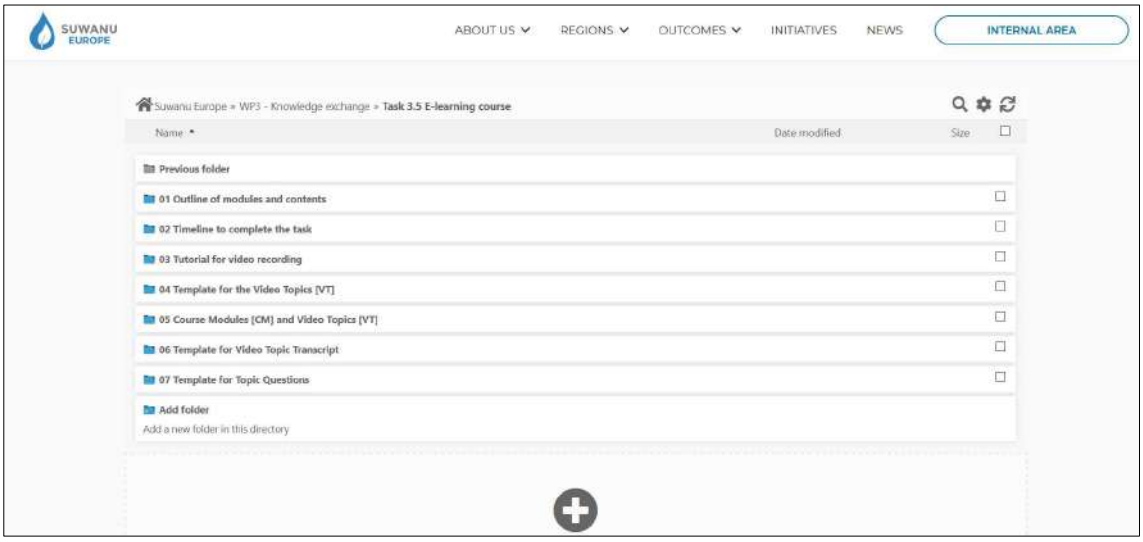

Figure 6 Internal Area SUWANU- Task 3.5

To keep track of the task activities and deadlines, monthly meetings were carried out. In this meetings, updated checklists of the videos and activities to be done were presented, as well as the assignment of new duties and improvement opportunities regarding the quality of the videos, presentations, layout of the course in the platform etc.

Finally, when all the videos, transcripts and topic questions were ready, BrainsPro was able to upload and launch the E-Learning Course in English and in the translated versions. All the versions of the course will be available for 2 more years after the end of the project.

Numerous online meetings took place in which the consortium partners actively participated, with the main objective of preparing an ambitious plan for the dissemination of the course. The plan included the promotion of the E-Learning course via social media, SUWANU webpage, all consortium partner's webpages, LinkedIn, Facebook, Youtube, and Instagram and during the workshops, conferences, and webinars, among others.

Figure 7 Consortium partners

Figure 8 Consortium partners 2

5 E-Learning Course Programme

The Course content was decided to be divided into 4 Modules, each module contains submodules and a module exam.

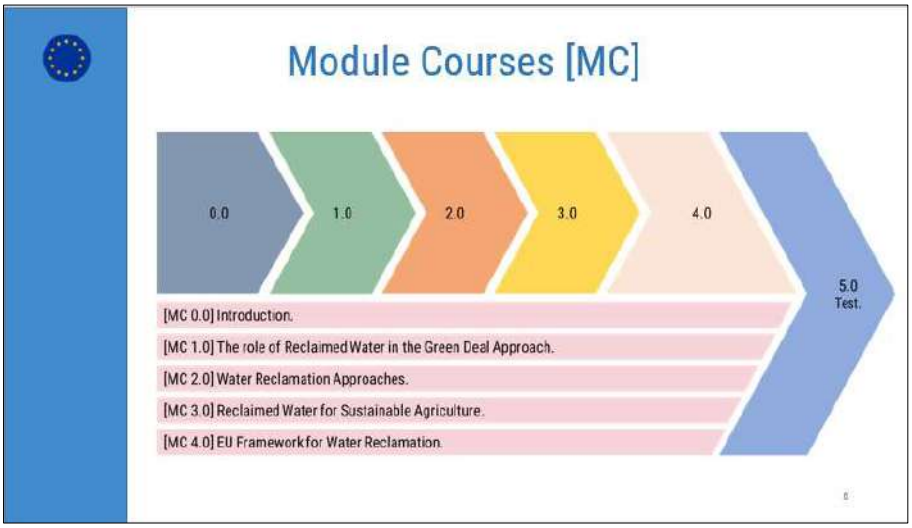

Figure 9 E-Learning course Modules

Module 0 – Introduction

This module will provide initial information about SUWANU Europe and basic concepts of water reclamation. As well as its development potential in our society.

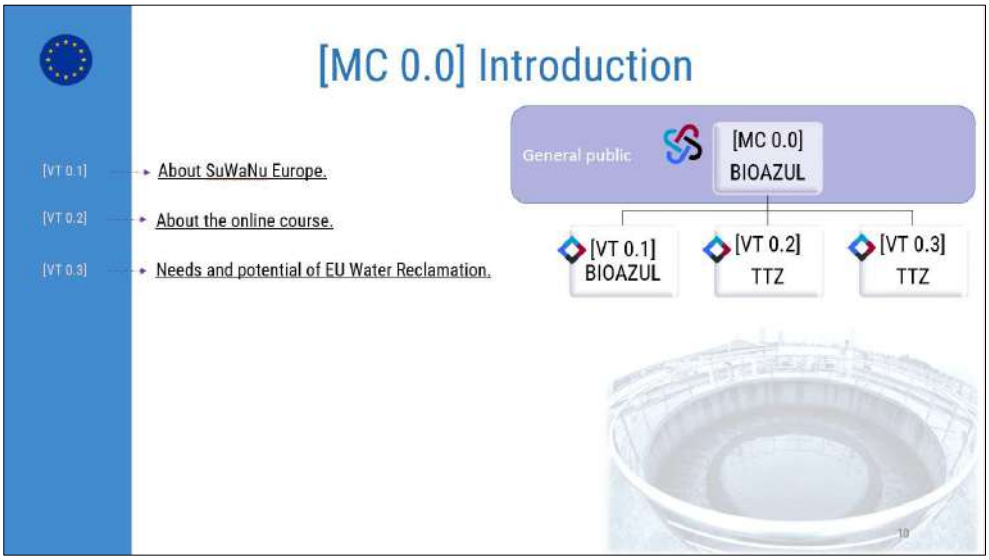

Figure 10 Content Module 0

Module 1 – The Role of Reclaimed Water in the Green Deal Approach

Module 1 presents the environmental benefits of the reclaimed water in agriculture and its connection to the green deal. Along with insights regarding the public perception and acceptance and how the positive image of water reclamation can be improved.

Figure 11 Content Module 1

Module 2 – Water Reclamation Approaches

In this module, advanced and nature-based technologies used in water reclamation for agriculture are explained, along with the correspondent quality requirements. Furthermore, the challenges and possible solutions faced in water reclamation are reviewed.

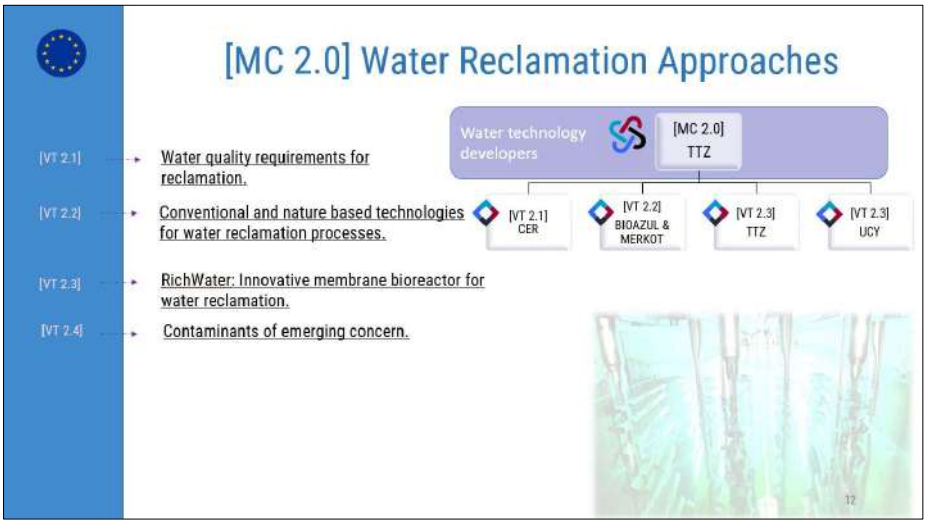

Figure 12 Content module 2

Module 3 – Reclaimed water for sustainable agriculture

In this module main topics related to the operation of water reuse initiatives in agriculture are explained. Including irrigation equipment, effects of reclaimed water on crop quality and yield, feasibility, and the costs benefits.

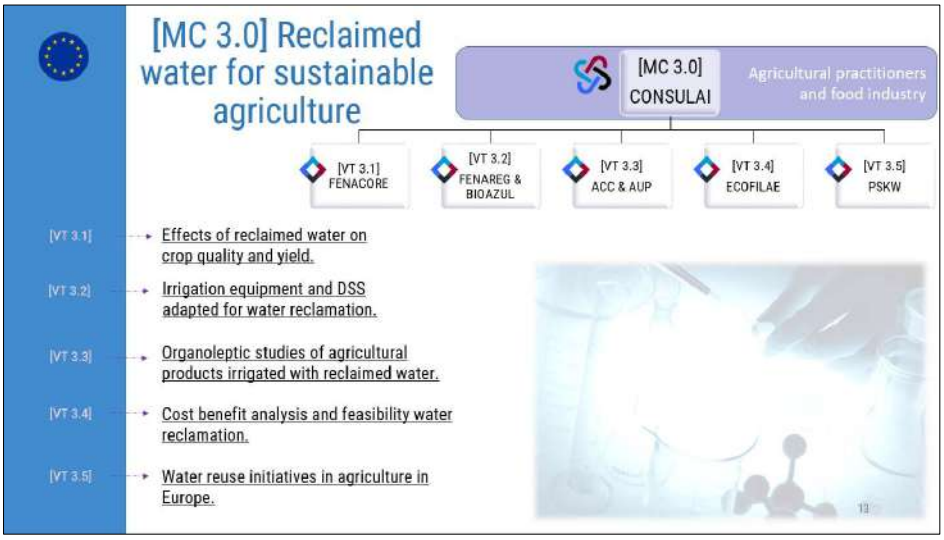

Figure 13 Content module 3

Module 4 – EU Framework water Reclamation

This module presents the new EU regulation and strategic plans of reclaimed water for agricultural irrigation. Additionally, provides information about how water reclamation can be incorporated into integrated water resources management.

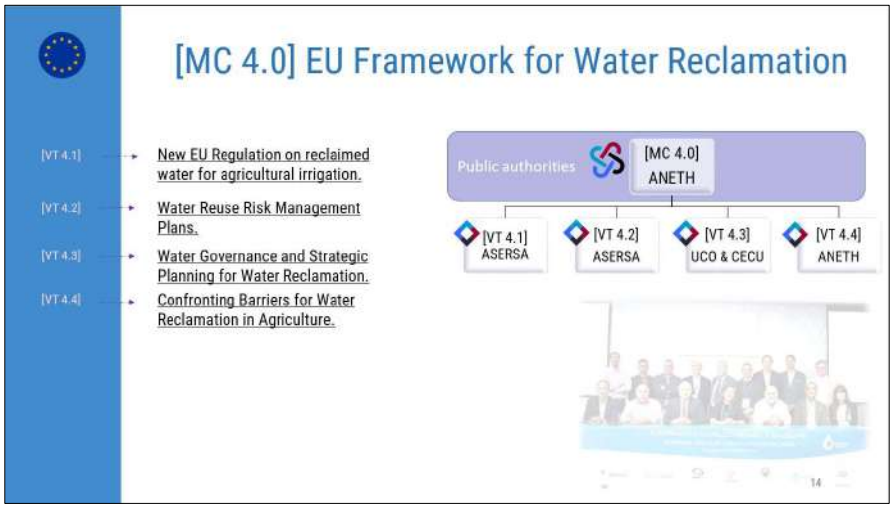

Figure 14 Content Module 4

Final Exam and certification

The video topic questions were grouped and a final exam per module was prepared. The students must present and approve all the module exams to obtain the certificate.

Figure 15 Course certificate

6 E-Learning Course dissemination

The dissemination of the E-learning course follows an ambitious plan developed jointly with all the consortium, after several online meetings and is executed mainly through the social media and webpages of SUWANU and all consortium partners. Additionally, in all the conferences, workshops, and webinars the E-Learning course have been advertised.

Finally, the course is shared and promoted within the project contact network, among practitioners, stakeholders, farmers, academics and interested parties.

The objective is to reach a high number of participants using the appropriate communication channel and language (At least 400 users). Thus, the training course is developed in English and translated into the languages of the 8 targeted countries.

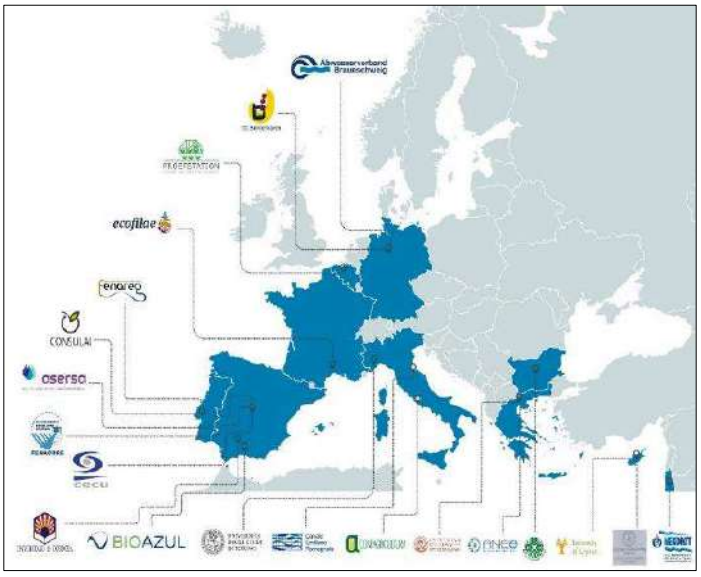

Figure 16 Targeted countries and consortium partners

7 Material and activities for the E-learning course preparation

To establish a noteworthy E-Learning course, preparation was one of the most influential parameters. Therefore, a complete package of material and activities were elaborated and an overview of them is shown in this section.

At first, the design and preparation of the strategy and methodology and its subsequent examination was made through a presentation in programmed online meetings with the partners.

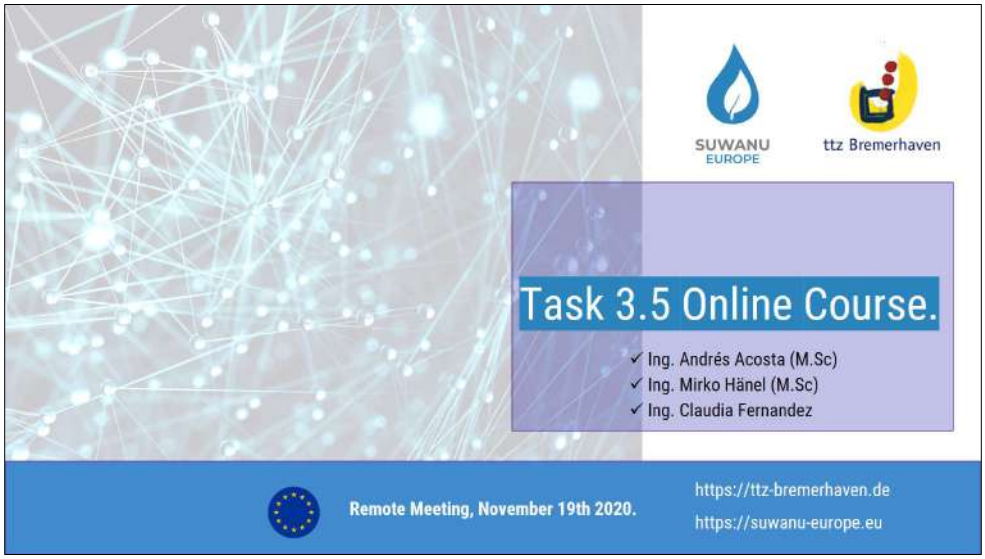

Figure 17 Presentation of the task methodology

After receiving the feedback from the partners, minor modifications were applied. The final strategy was set up and presented to the partners in a second meeting.

Figure 18 Second meeting, presentation final strategy

Considering the audio visual and complementary material required, the following are the tutorials, guidelines, training videos, among others, developed to ensure the correct understanding and the uniformity of the course.

- Presentation Layout

Figure 19 Presentation layout 1st slide

- Structure of the Video Presentation

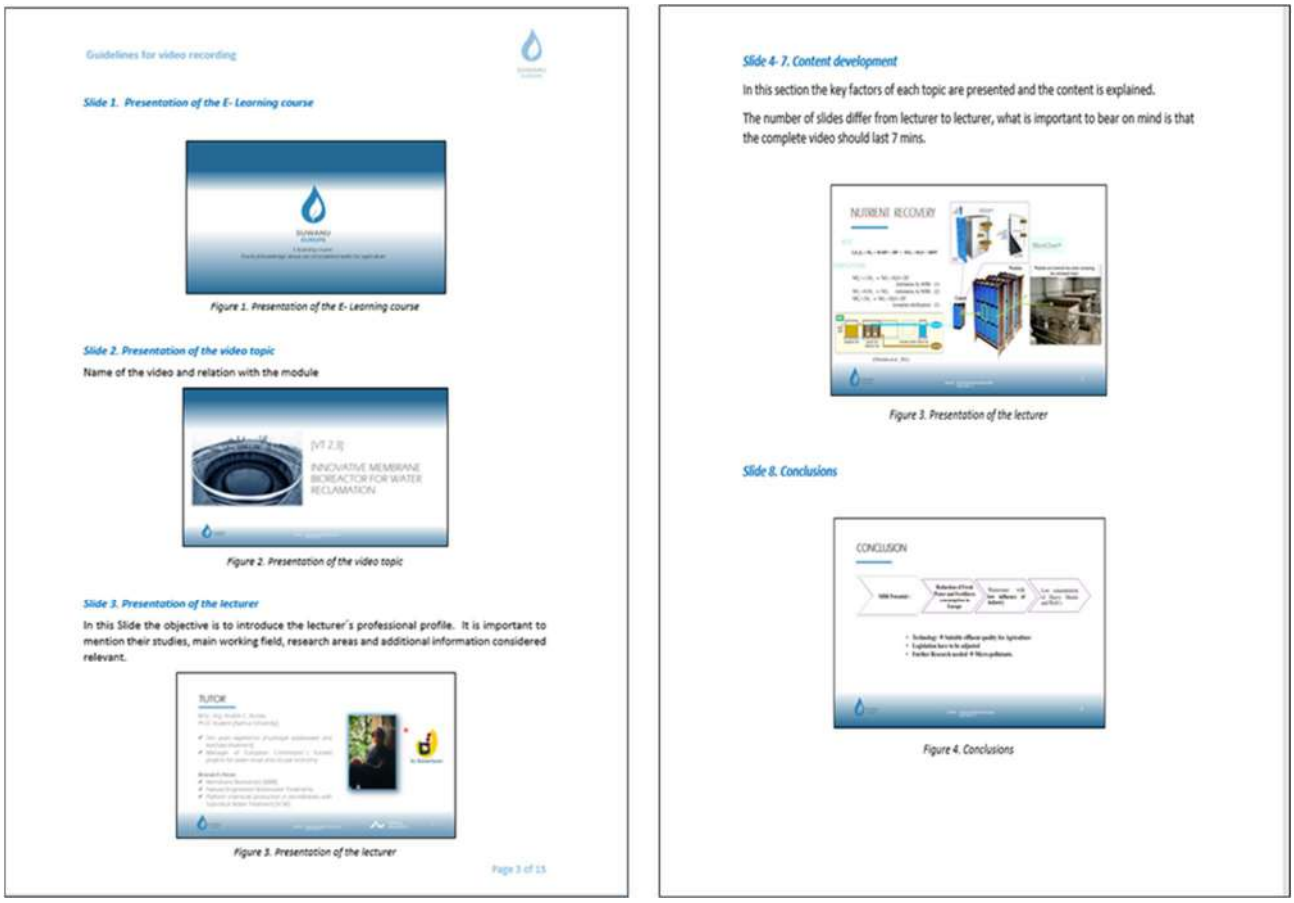

Figure 20 Structure of the Video presentation

- Video Topic Questions Layout

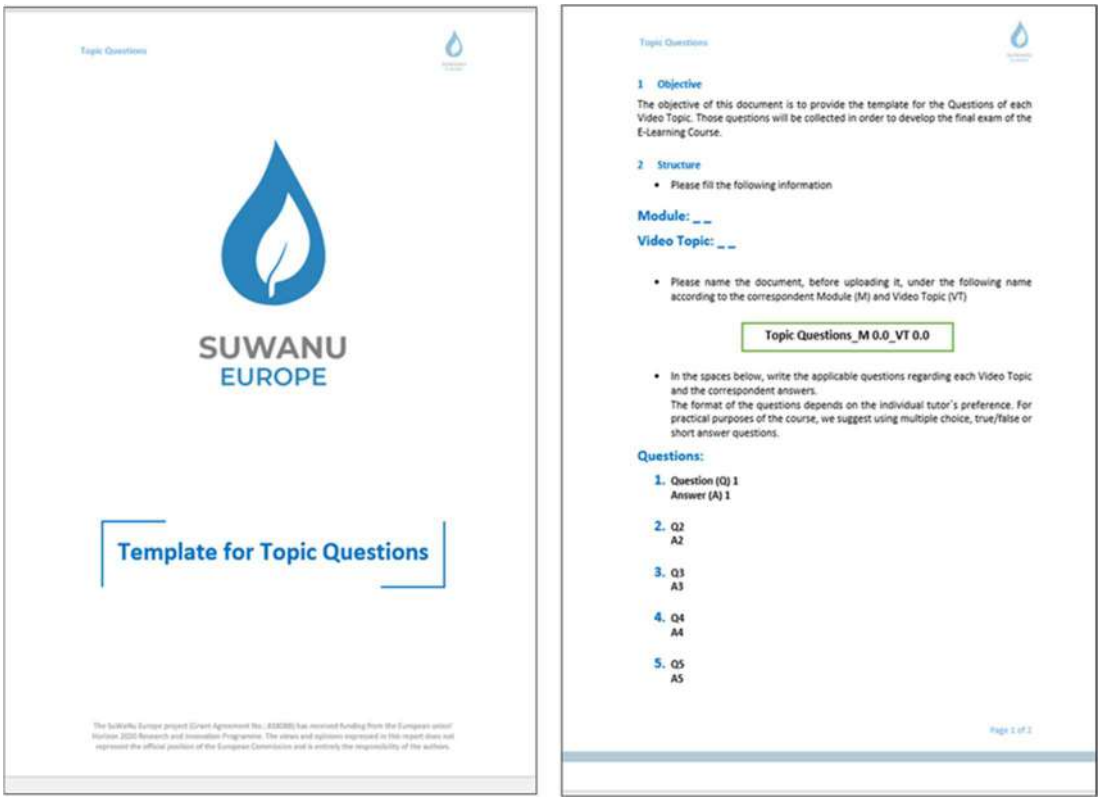

Figure 21 Video Topic Questions Layout

- Video Transcript Layout

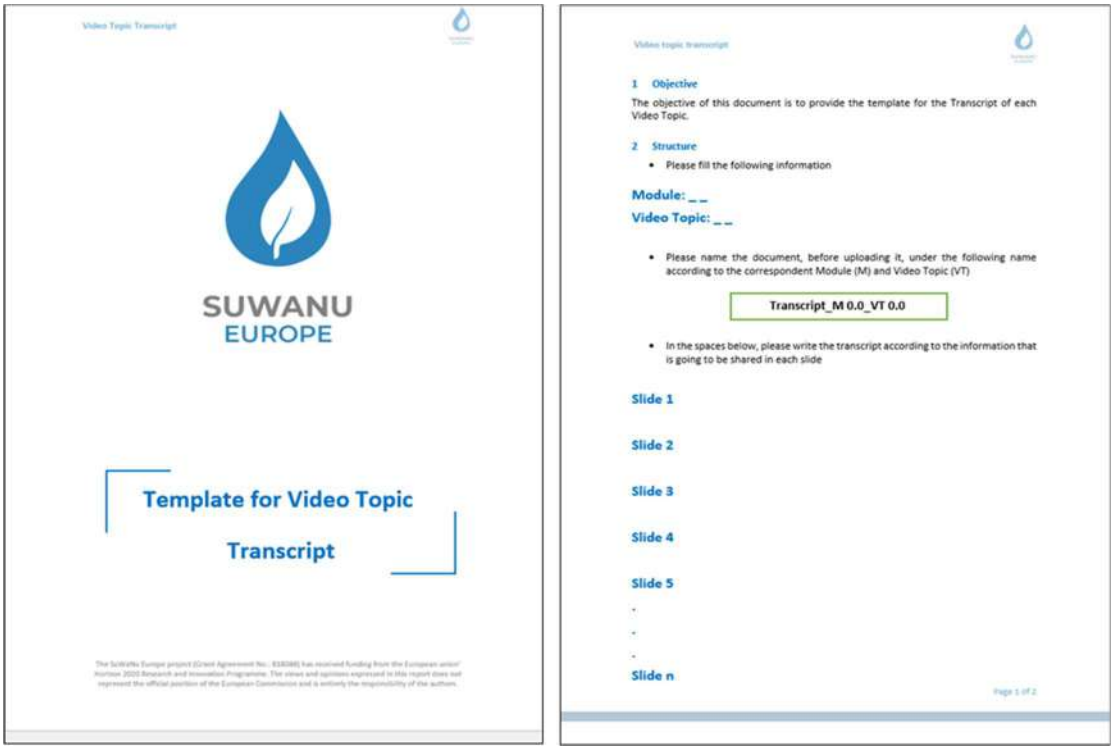

Figure 22 Video Topic Transcript Layout

- Guidelines for video recording (Annex II)

Figure 23 Guidelines for video recording Front page

- Tutorial 1 – How to install and use OBS

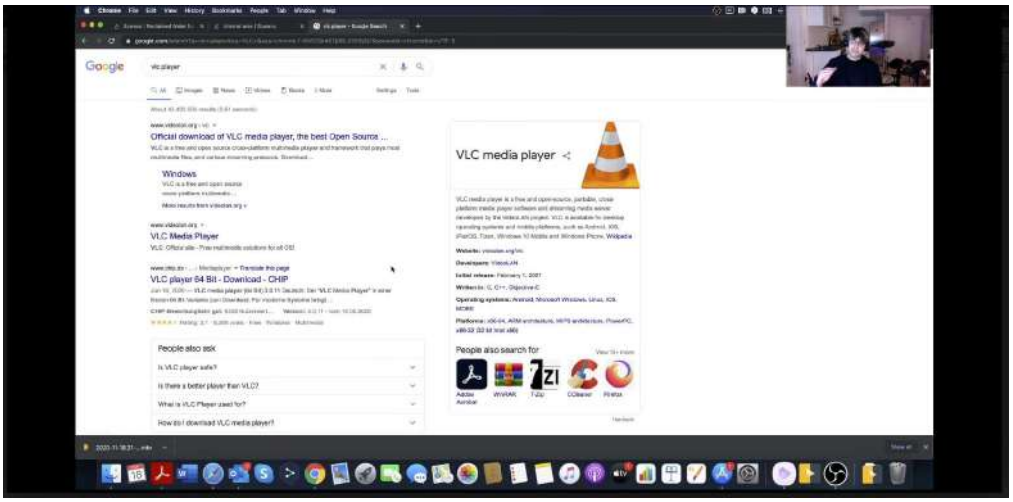

Figure 24 Video Tutorial 1

- Tutorial 2 – How to check the recorded video

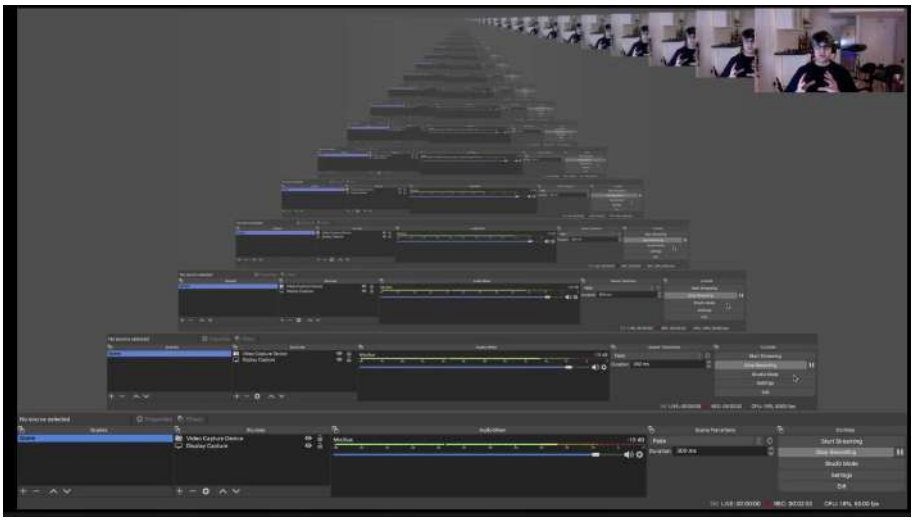

Figure 25 Video Tutorial 2

- Tutorial 3 – How to use the template for the Video Topics

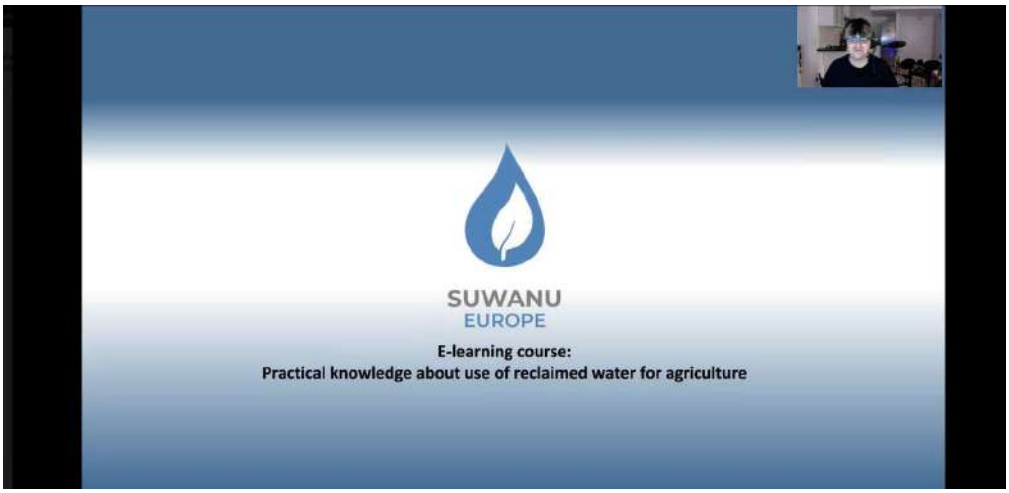

Figure 26 Video Tutorial 3

- Guidelines for translations

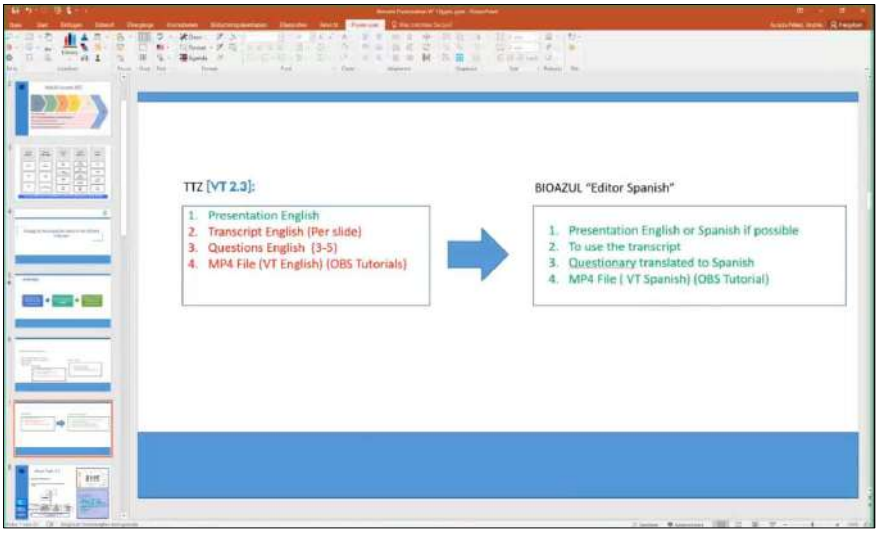

Figure 27 Presentation Guidelines for translations

Additionally, Monthly meetings for follow up the task were carried out

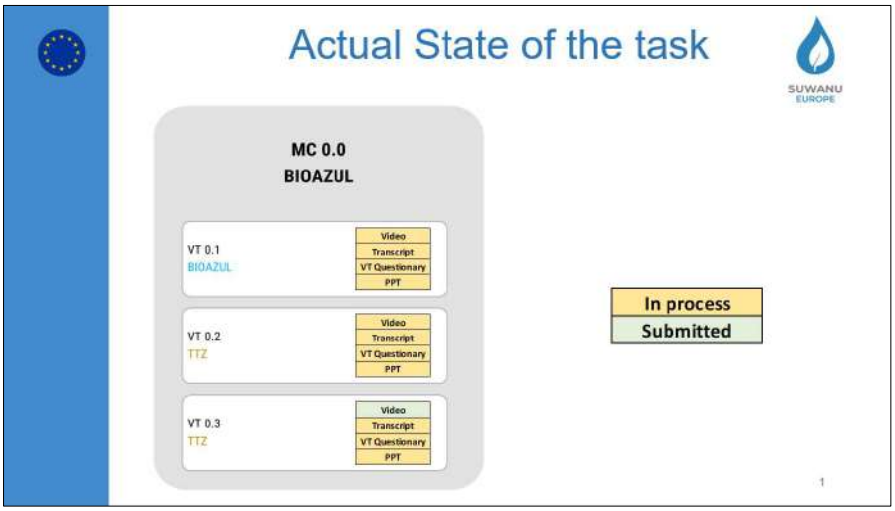

Figure 28 Follow up meeting- Presentation March 2021

- Periodic check lists

SUWANU EUROPE

	Submited
	On process
	Delay

CHECK LIST

		Deadline	Check List
0.0	Introduction - [MC] Leader BIOAZUL		
VT 0.1	About SUWANU Europe [BIOAZUL]		
	Transcript [English]	Month 23	
	Video Edition (Subtitle translations)		
	BIOAZUL - Spanish	Month 24	
	TTZ - German	Month 24	
	FENEREG - Portuguese	Month 24	
	ECOFILAE- French	Month 24	
	CER - Italian	Month 24	
	PSKW - Flemish	Month 24	
	AU - Bulgarian	Month 24	
	ANETH - Greek	Month 24	
	VT Questionary	Month 23	
	Submission [BIOAZUL]	Month 25	
VT 0.2	About the Online Course [TTZ]		
	Transcript [English]	Month 23	
	Video Edition (Subtitle translations)		
	BIOAZUL - Spanish	Month 24	
	TTZ - German	Month 24	
	FENEREG - Portuguese	Month 24	
	ECOFILAE- French	Month 24	
	CER - Italian	Month 24	
	PSKW - Flemish	Month 24	
	AU - Bulgarian	Month 24	
	ANETH - Greek	Month 24	
	VT Questionary	Month 23	
	Submission [TTZ]	Month 25	
VT 0.3	Needs and potential of EU Water Reclamation [TTZ]		
	Transcript [English]	Month 23	
	Video Edition (Subtitle translations)		
	BIOAZUL - Spanish	Month 24	
	TTZ - German	Month 24	
	FENEREG - Portuguese	Month 24	
	ECOFILAE- French	Month 24	
	CER - Italian	Month 24	
	PSKW - Flemish	Month 24	
	AU - Bulgarian	Month 24	
	ANETH - Greek	Month 24	
	VT Questionary	Month 23	
	Submission [TTZ]	Month 25	
1.0	The role of reclaimed water in the green deal approach. - [MC] Leader UCO & CECU		
VT 1.1	Water reclamation in agriculture: Environmental Benefits (CONSULAI)		
	Transcript [English]	Month 23	
	Video Edition (Subtitle translations)		
	BIOAZUL - Spanish	Month 24	
	TTZ - German	Month 24	
	FENEREG - Portuguese	Month 24	
	ECOFILAE- French	Month 24	
	CER - Italian	Month 24	
	PSKW - Flemish	Month 24	
	AU - Bulgarian	Month 24	
	ANETH - Greek	Month 24	
	VT Questionary	Month 23	
	Submission [CONSULAI]	Month 25	
VT 1.2	Public perception and consumer acceptance (CECU)		
	Transcript [English]	Month 23	
	Video Edition (Subtitle translations)		
	BIOAZUL - Spanish	Month 24	
	TTZ - German	Month 24	
	FENEREG - Portuguese	Month 24	
	ECOFILAE- French	Month 24	
	CER - Italian	Month 24	
	PSKW - Flemish	Month 24	
	AU - Bulgarian	Month 24	
	ANETH - Greek	Month 24	
	VT Questionary	Month 23	
	Submission [CECU]	Month 25	
VT 1.3	How to improve public perception (ANETH & CONSULAI)		
	Transcript [English]	Month 23	
	Video Edition (Subtitle translations)		
	BIOAZUL - Spanish	Month 24	
	TTZ - German	Month 24	
	FENEREG - Portuguese	Month 24	
	ECOFILAE- French	Month 24	
	CER - Italian	Month 24	
	PSKW - Flemish	Month 24	
	AU - Bulgarian	Month 24	
	ANETH - Greek	Month 24	
	VT Questionary	Month 23	
	Submission [UCO & CECU]	Month 25	
E - 1.0	Evaluation of Module 1 (UCO & CECU)		

Figure 29 Check list May 2021

- Guide for students

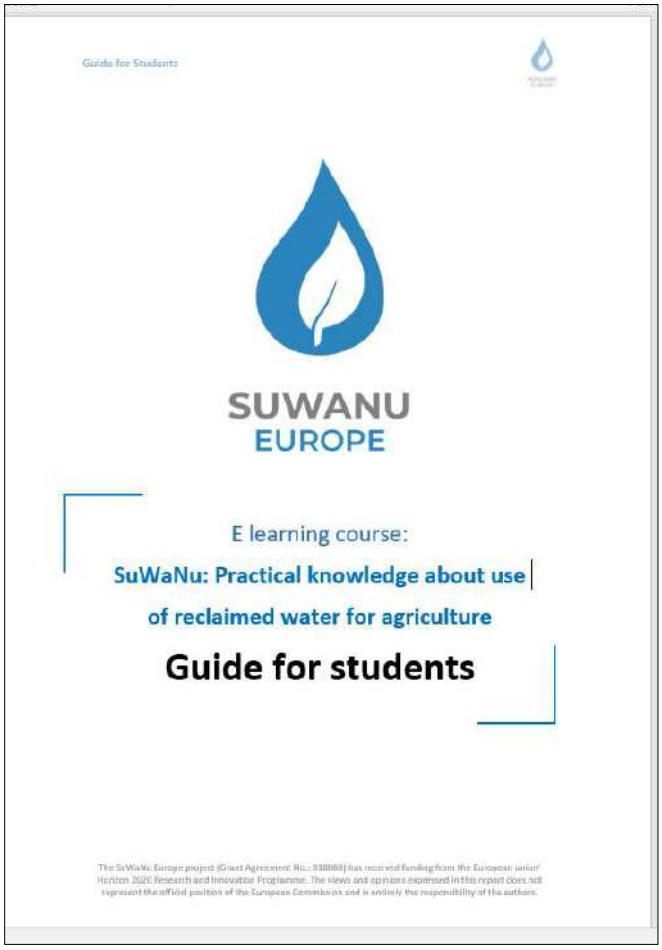

Figure 30 Guide for students cover page

8 Results

As result for the Task 3.5, the E-learning course was successfully uploaded and launched in the BrainsPro platform and can be accessed through the following link https://suwanu.mybrainspro.com/ .

The following images present an overview of the English, German, and Bulgarian versions. The remaining 6 versions can be found in the following months.

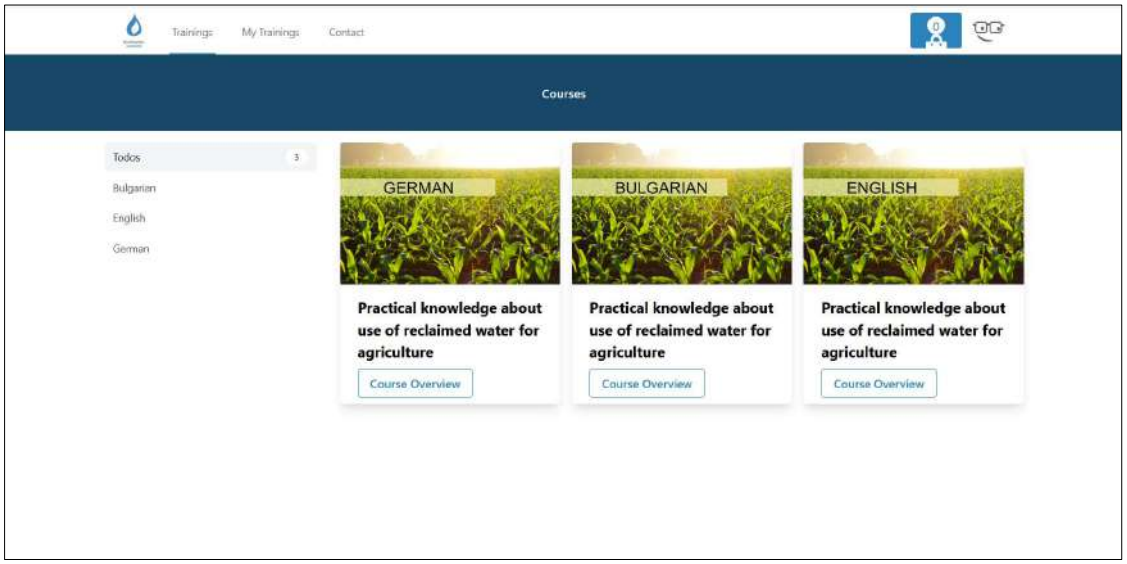

Figure 31 SUWANU E-Learning course access page

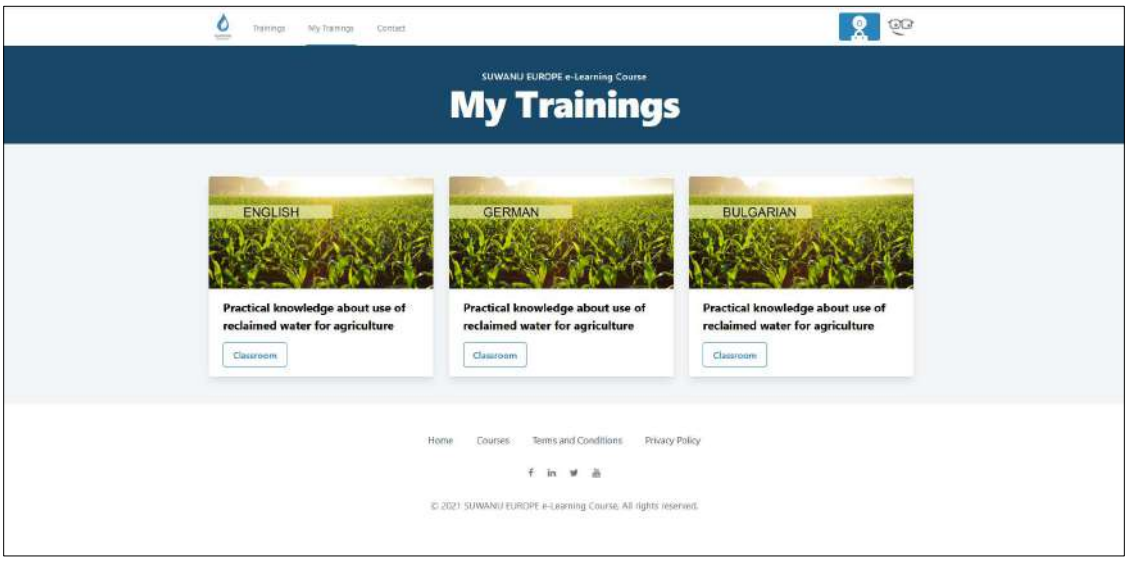

Figure 32 SUWANU E-Learning course classroom

In the access page of each course a presentation of the course, its objectives, the syllabus as well as the methodology are presented to the users.

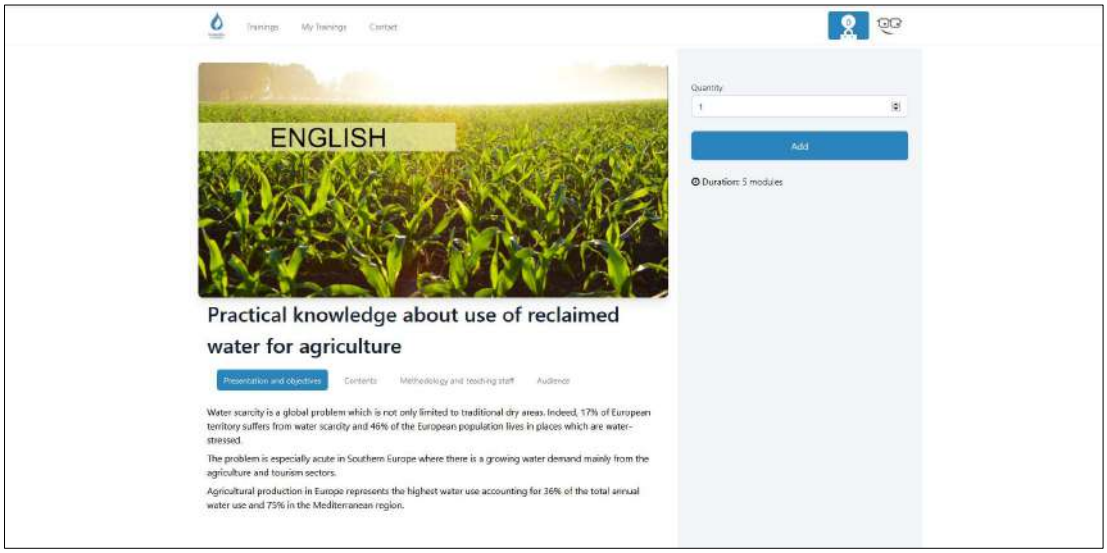

Figure 33 SUWANU E-Learning course English version

Image 34 depicts the main panel of the course. All the modules and the certificate are available to be accessed in this board. In addition, the guide for students can be also accessed here. The objective of this guide is to introduce the course and help the users to easily go through the course.

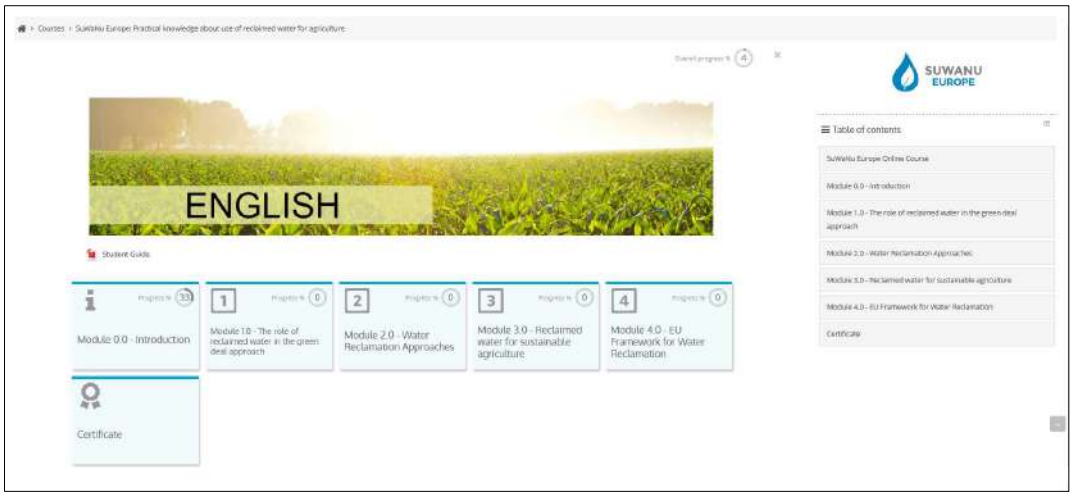

Figure 34 SUWANU E-Learning course Main Board

Below an overview of the video topics, complementary material and module exam of the modules are presented,

Module 0 - Introduction

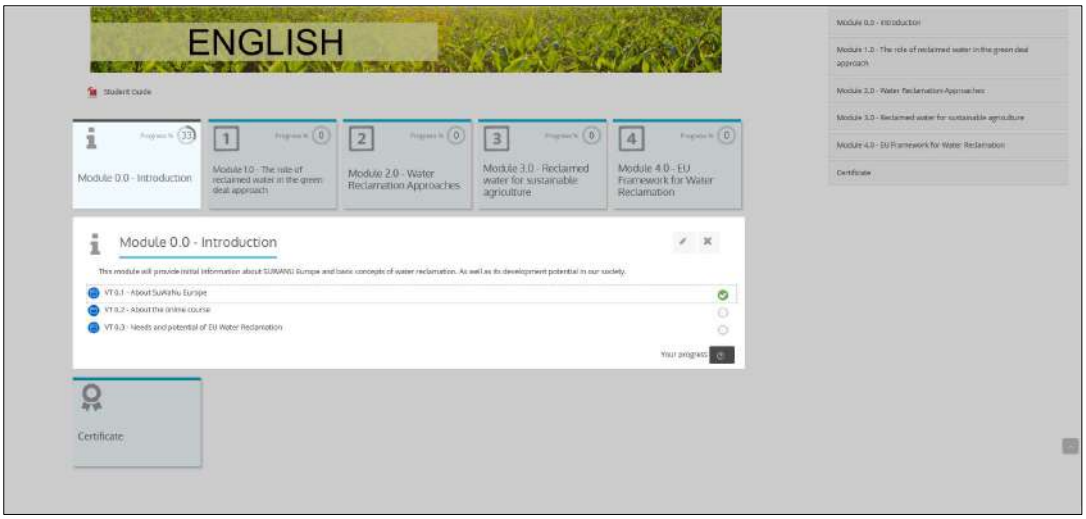

Figure 35 SUWANU E-Learning course content Module 0

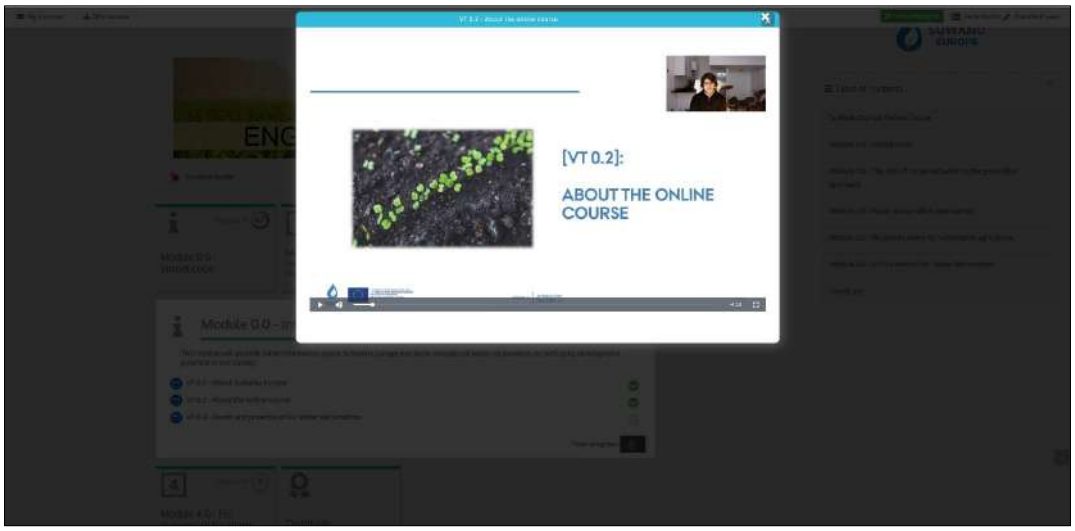

Figure 36 SUWANU E-Learning course VT 0.2

Figure 37 VT 0.3 –Needs and potential of EU Water Reclamation

Module 1 - The role of reclaimed water in the green deal approach

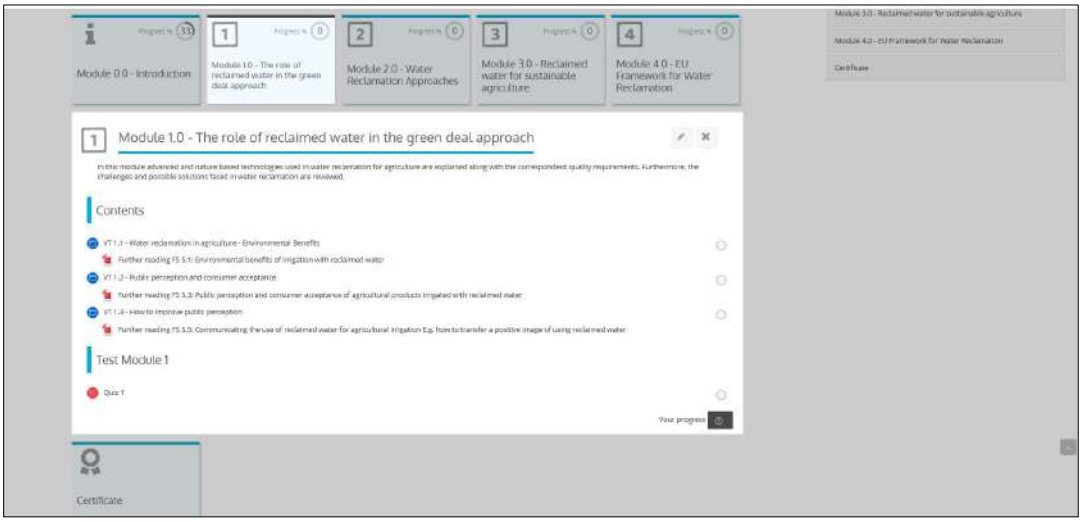

Figure 38 SUWANU E-Learning course content Module 1

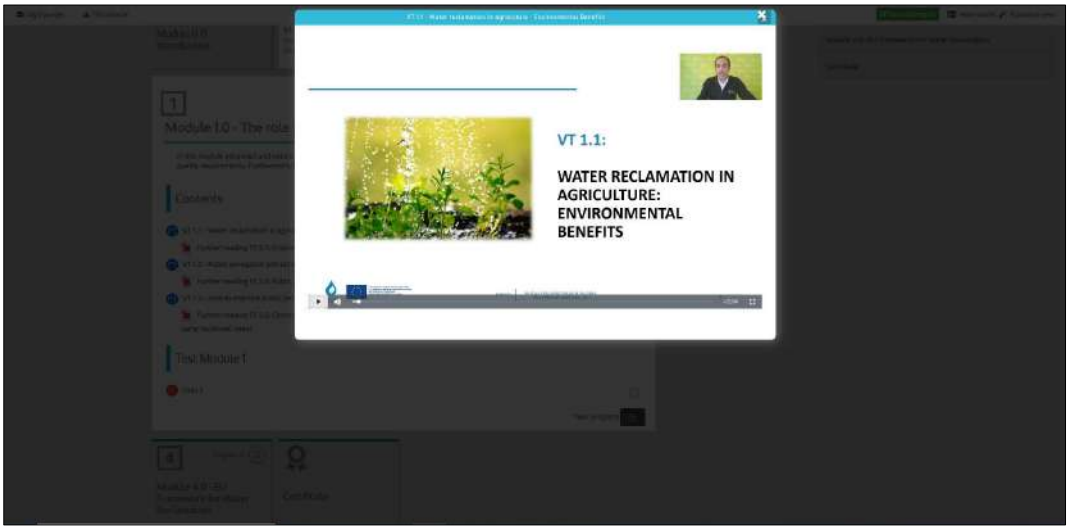

Figure 39 VT 1.1 Water reclamation in agriculture- Environmental Benefits

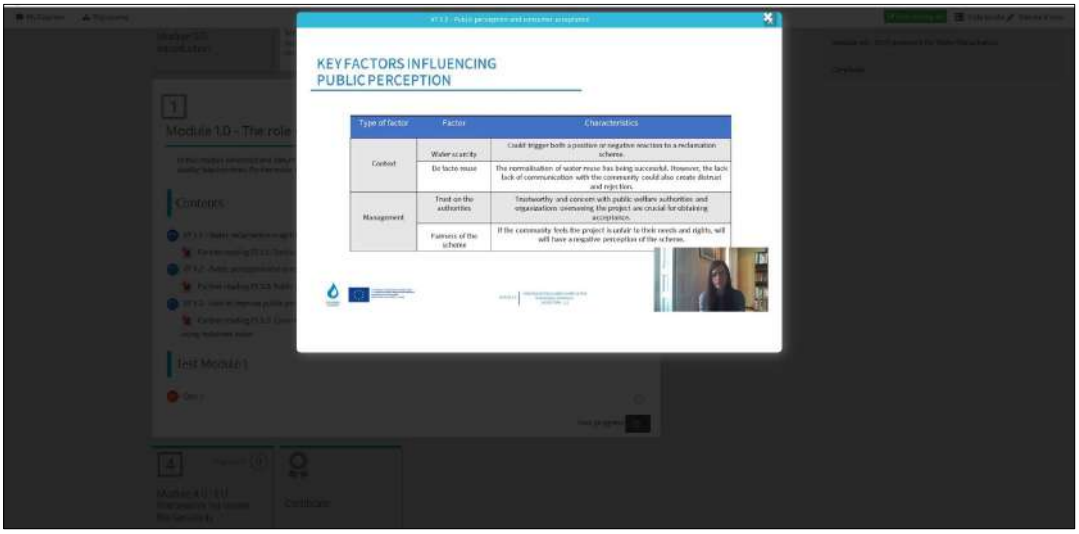

Figure 40 VT 1.2 – Public perception and consumer acceptance

Figure 41 VT 1.3 - How to improve public perception

Figure 42 VT 1.3 Complementary material

Module 2 – Water Reclamation Approaches

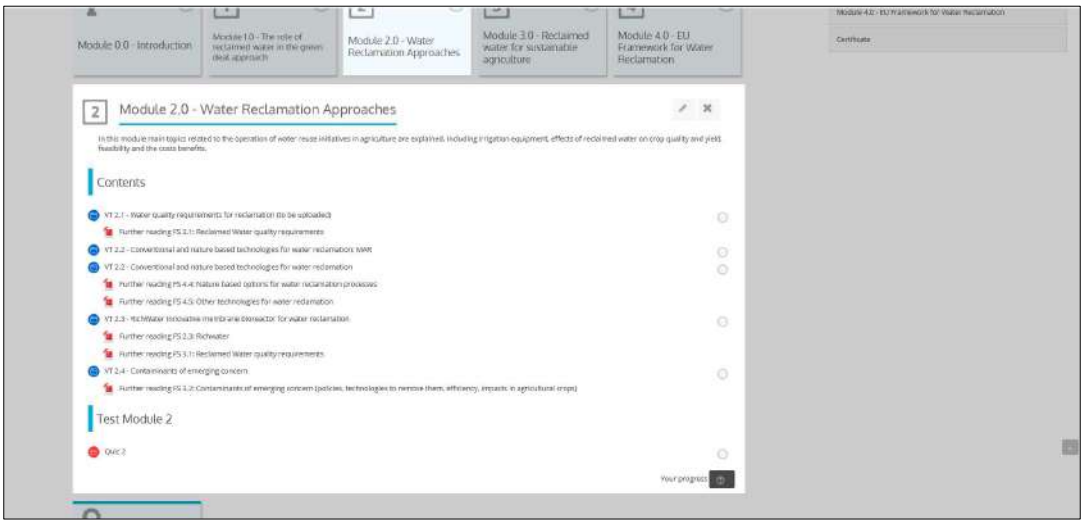

Figure 43 SUWANU E-Learning course content Module 2

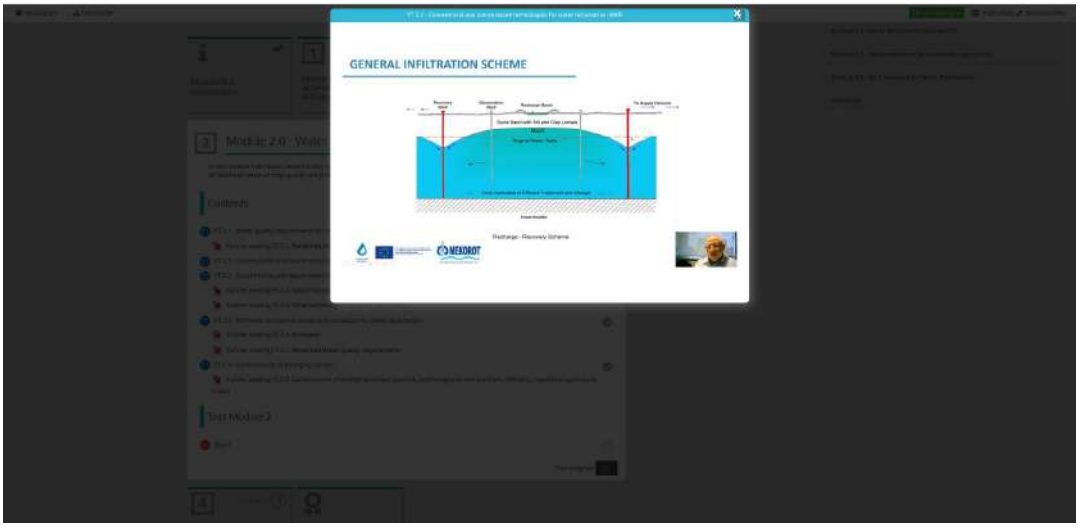

Figure 44 VT 2.2 - Conventional and nature based technologies for water reclamation: MAR

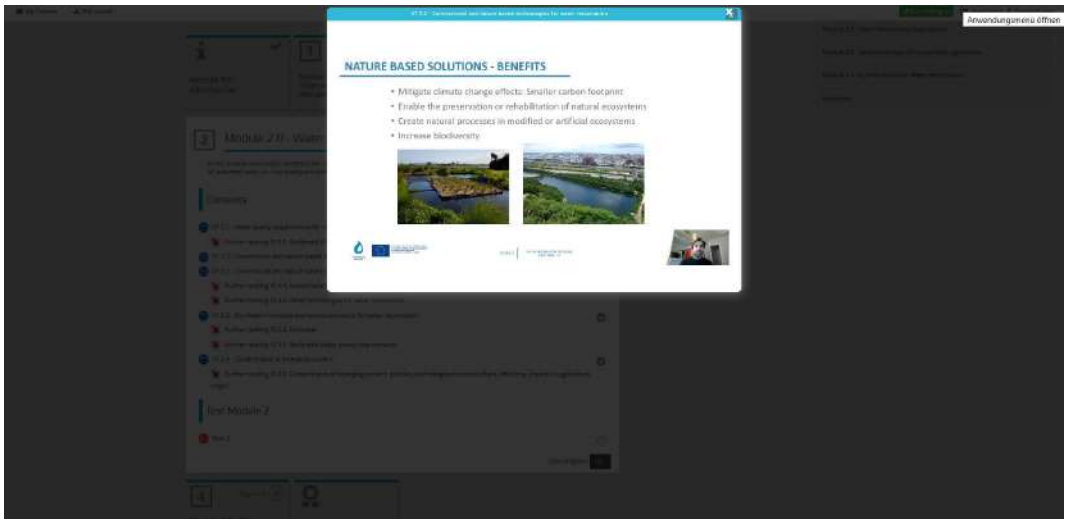

Figure 45 VT2.2 Conventional and nature based technologies for water reclamation

Figure 46 VT 2.4 - Contaminants of emerging concern

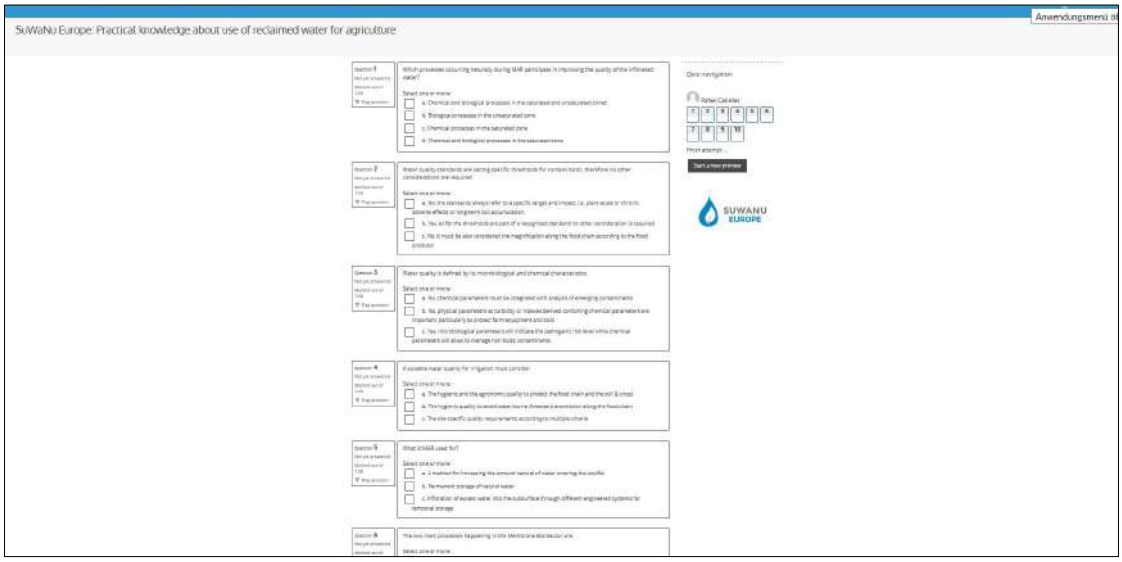

Figure 47 Module 2 Exam

Module 3 – Reclaimed water for sustainable agriculture

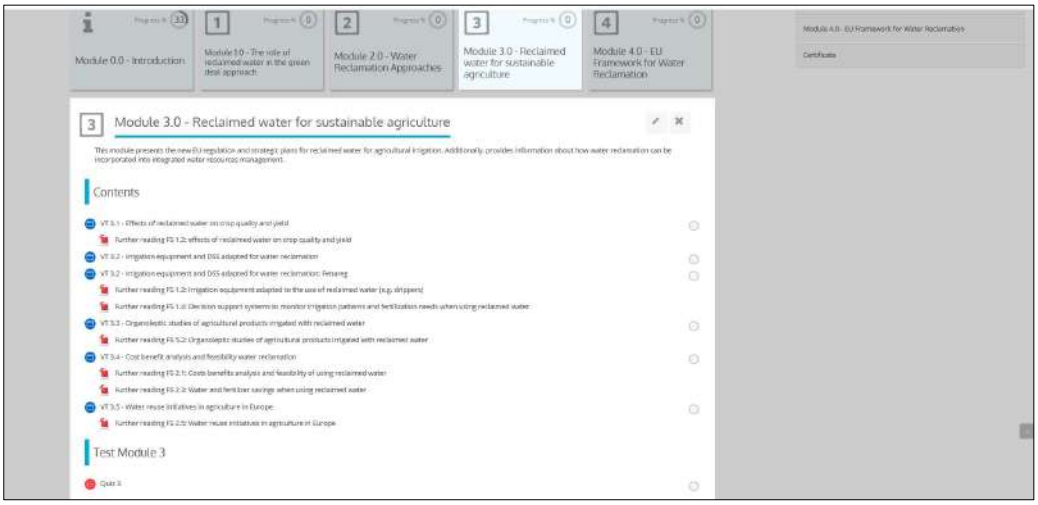

Figure 48 SUWANU E-Learning course content Module 3

Figure 49 VT 3.1 - Effects of reclaimed water on crop quality and yield

Figure 50 VT 3.2 - Irrigation equipment and DSS adapted for water reclamation: Fenareg

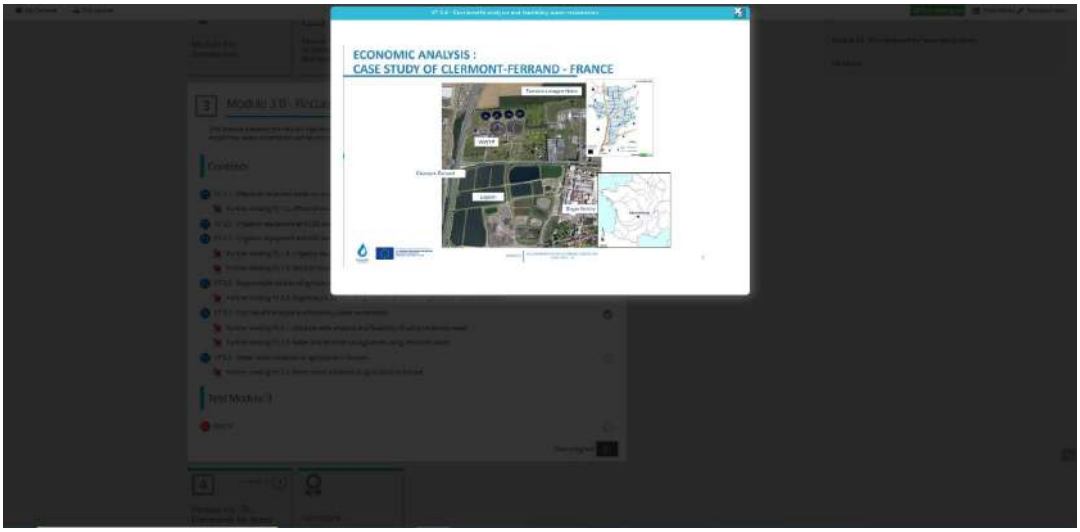

Figure 51 VT 3.4 - Cost benefit analysis and feasibility water reclamation

Sustainable **Water treatment** and
Agricultural reuse options in Europe

Info-package 2

Agricultural Advisory Services

Fact Sheet 2.5 – **Water reuse initiatives in agriculture in Europe: facts and figures**

SUWANU EUROPE is a H2020 project aiming to promote the effective exchange of knowledge, experience and skills among practitioners and relevant actors on the use of reclaimed water in agriculture. This factsheet is part of a total of 5 factsheets in Info-package 2 aimed at agricultural advisors, that describes the water reuse initiatives in Europe.

1. Introduction

In the light of the European Union's agreed proposal on minimum requirements for the reuse of water in the agricultural sector (COM/2018/337), it is relevant to understand to which extent, where and how this practice has found implementation in Europe. Previous work has been done in mapping water reuse schemes in Europe. The AQUAREC project (Bixio & Wintgens, 2006) and Water Reuse Europe (Water Reuse Europe, 2018) identified several European water reuse initiatives in agricultural, industrial or urban applications. The SuWaNu Europe project resulted in the largest collection of water reuse initiatives specifically intended for agricultural irrigation. Besides their identification and geographical distributions, information was retrieved on initiatives' size, implementation stage, water sources, farming systems, irrigation methods, water reclamation treatments, distribution systems, costs, user agreements... This resulted in overview maps, an online public database and an analysis report of existing practices and research projects reusing water for agriculture in Europe.

2. Water reuse initiatives in agriculture in Europe

A total of 79 initiatives using reclaimed water for agricultural irrigation in Europe were mapped. The collection needs to be considered as a non-exhaustive listing and evaluation of initiatives using reclaimed water in the agricultural sector. Initiatives were selected for their 'demonstrative character' referring to for example the possibility to visit the initiatives. The list contains representative and innovative cases that capture the wide variety of reuse possibilities across the countries in the SuWaNu Europe consortium.

3. Size of water reuse initiatives

The collected reuse initiatives differ in size. Figure 1 shows the annually reclaimed water volume used for irrigation across the initiatives, clearly identifying several hotspots in Europe. The largest ones are situated on the Spanish coast between the cities of Almeria and Valencia which counts 7 locations reusing water to irrigate more than 2,000 hectares. In the area to the East of Hannover in Germany, a concentration of three middle- to large-scale initiatives have found implementation. Furthermore, two reclamation plant reclaim Milan's urban wastewater to provide irrigation water to 28,000 hectares of agricultural land. The islands of Crete and Cyprus harbour a high concentration of middle-scale initiatives specifically intended for agriculture reuse. The Netherlands and Flanders (Belgium), the

Figure 52 Additional reading VT 3.5 -: Water reuse initiatives in agriculture in Europe

Module 4 – EU Framework for Water Reclamation

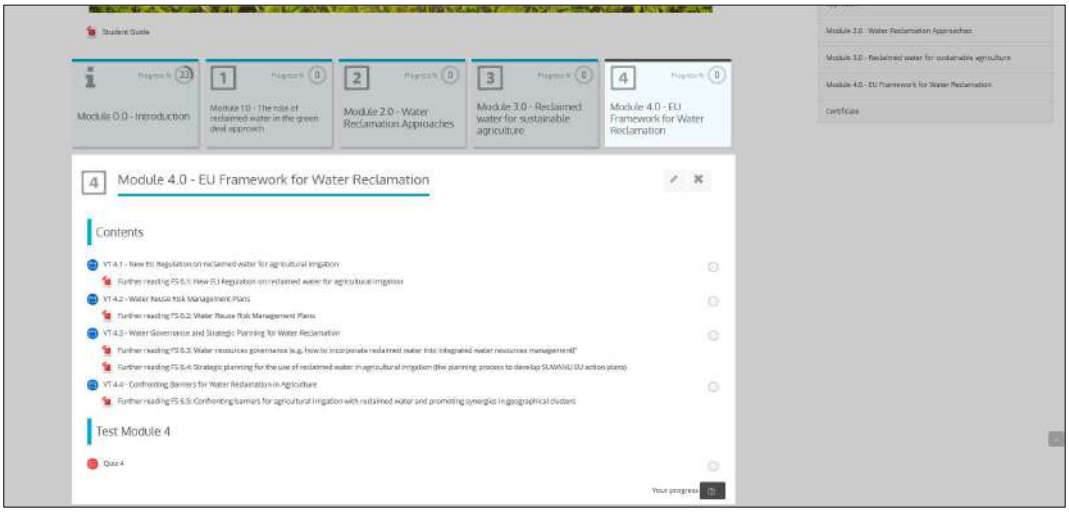

Figure 53 SUWANU E-Learning course content Module 4

Figure 54 VT 4.1 - New EU Regulation on reclaimed water for agricultural irrigation

Figure 55 VT 4.4 - Confronting Barriers for Water Reclamation in Agriculture

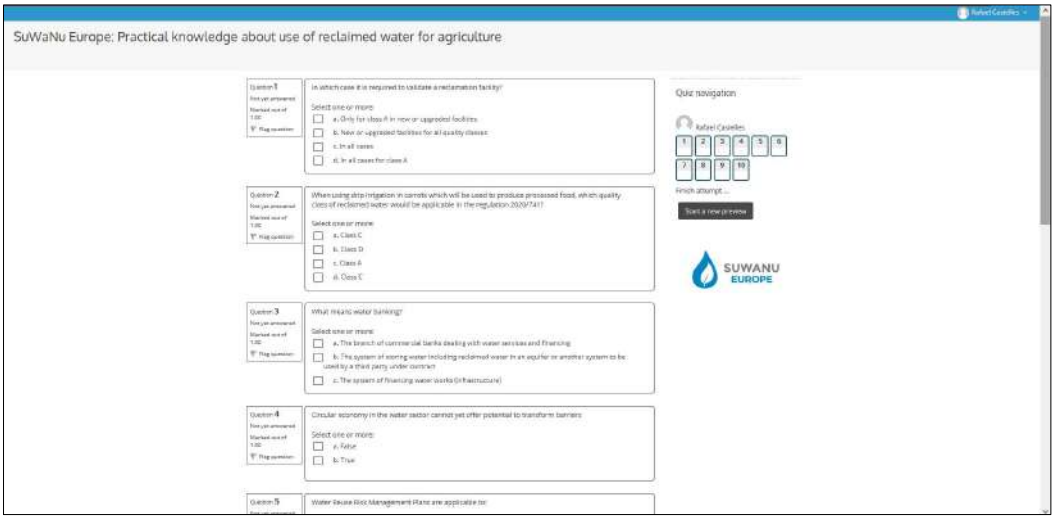

Figure 56 Exam Module 4

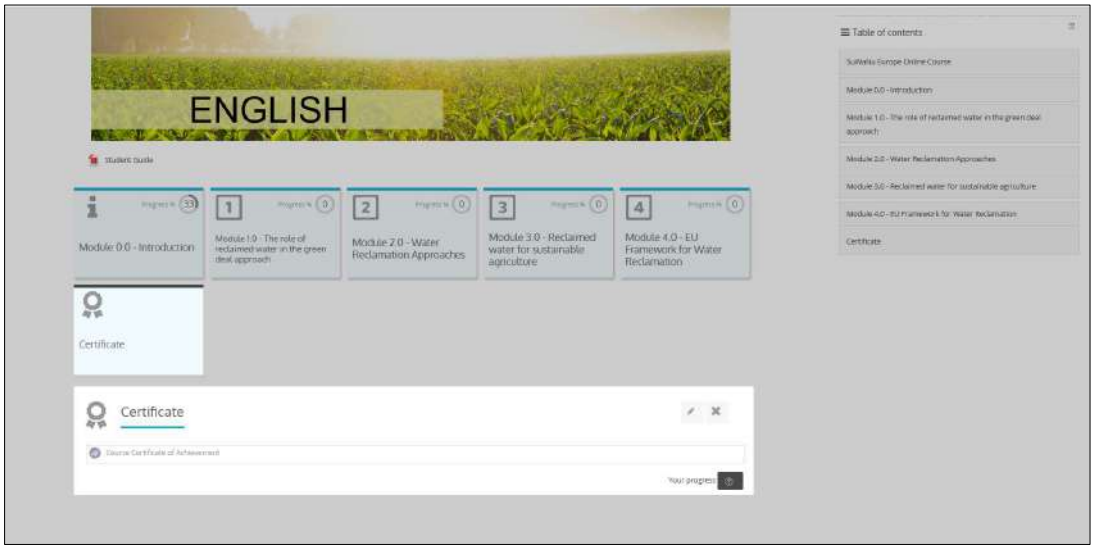

Figure 57 SUWANU E-Learning course certificate

9 Conclusions

The strategy stated for the development of the Task 3.5 was effective and the right communication tools and means were successfully recognised.
The main concepts were accurately addressed and as result, a complete and solid course was developed, with the available budget.

The course consisted of 4 modules: an introductory module, which contains 3 videos providing initial information about the course, SUWANU Europe and basic concepts of water reclamation, module 1 - the role of reclaimed water in the green deal approach, contains 3 videos and 3 factsheets presenting the environmental benefits of the reclaimed water in agriculture and its connection to the green deal, module 2 - water reclamation approaches consists of 5 videos and 6 documents to go deeper into the topic of advanced and nature-based technologies used in water reclamation for agriculture, module 3 - reclaimed water for sustainable agriculture with 6 videos and 7 additional documents, presents the main topics related to the operation of water reuse initiatives in agriculture, and module 4 - EU Framework for Water Reclamation containing 4 videos and 5 factsheets, introduces the new EU regulation and provides information about how water reclamation can be incorporated into integrated water resources management. The course includes 4 exams, one per module that must be approved in order to get the course certificate.

The task strategy and the development of the course was executed in approximately 8 months with a dedication of minimum 10 hours per week. The expertise, cooperation, effort, and joint work of all the partners was strongly demonstrated in a remarkable outcome: e-Learning open-source course for practical knowledge about use of reclaimed water for agriculture.

It is expected that more than 400 users are going to take part in the course and within the 2 years more and more people became interested, and this will serve as a gateway to keep increasing awareness and interest in the use of reclaimed water in agriculture.

The e-learning course will be disseminated through our social media, twitter, Facebook, LinkedIn. Our consortium has signed an agreement to publish the online e-learning course in their web pages.

10 Annexes

Annex I: SUWANU E-learning course Work plan

Annex II: Guidelines for video recording

Task 3.5: SUWANU Europe Online Course.

- ✓ Modules – Courses [MC] & Video Topics [VT].

- Tittle.
  - ➢ SuWaNu Europe: Practical knowledge about use of reclaimed water for agriculture.

- Introduction.

Module Course [MC] number:	0.0	Module Course [MC] tittle:	Introduction
[MC] Leader:	BIOAZUL	Participants:	BIOAZUL → [VT 0.1] TTZ → [VT 0.2] TTZ → [VT 0.3]
Total Video Topics	3.0	Language:	English.
Starting Month	23 to 27	Year Month	November 2020 to March 2021

Objectives.

- ✓ To inform the users about SUWANU Europe.
- ✓ To contextualize the users about the online course´s content.
- ✓ To provide the basic concepts of water reclamation. Involving definitions, the needs and its potential in our society.

Video Topics [VT]:

VT 0.1: About SuWaNu Europe.
BIOAZUL is responsible for this VT; it is a brief description about our project and our consortium.

Appreciation: It is recommend that the VT should involve people (max 2 interview camera view) describing the topic. A representative field in the background (e.g., treatment plant or agriculture field) is desired. The video can be complemented with images or videos to explain better the topic.

VT 0.2: About the online course.
TTZ is responsible for this VT; it is a brief description about our online course.
Appreciation: It is recommend that the VT should involve people (max 2 interview camera view) describing the topic. A representative field in the background (e.g., Research laboratory or Library) is desired. The video can be complemented with images or videos to explain better the topic.

VT 0.3: Needs and potential of EU Water Reclamation.
TTZ is responsible for this VT; it is a brief description about the basic concepts of water reclamation and why is it relevant for Europe.
Appreciation: It is recommend that the VT should involve people (max 2 interview camera view) describing the topic. A representative field in the background (e.g., Institute Laboratory, library, treatment plant or agriculture field) is desired. The video can be complemented with images or videos to explain better the topic.

Description of work.
About the duration of the videos:
[VT 0.1] → 5 min.
[VT 0.2] → 5 min.
[VT 0.3] → 5 min.

About the transcript and the recording of VTs (From Month 23 to 25).
BIOAZUL and TTZ should elaborate the transcripts and the recording of the videos in English (i.e, deadline month 23).

About the translation of VTs.
The partners will receive a specific training on video edition on Month 25. The following partners will be in charge to edit the videos deadline Month 27: BIOAZUL [Spanish], TTZ [German], FENEREG [Portuguese], ECOFILAE [French], CER [Italian], PSKW [Flemish], AU [Bulgarian] and ANETH [Greek].

- These partners need to allocate the translated subtitles to the video coherently.
- The Module Course Leader [MC] BIOAZUL will lead the partners in charge of the translation to support each VT leader.
- Each VT leader is in charge for the videos submission of all the edited versions in the portal [x9 VT versions]

Module Course [MC] number:	1.0	Module Course [MC] tittle:	The role of reclaimed water in the green deal approach.
[MC] Leader:	UCO and CECU	Participants:	CONSULAI → [VT1.1] CECU → [VT1.2] ANETH → [VT1.3]
Total Video Topics	3.0	Language:	English.
Starting Month	23 to 27	Year Month	November 2020 to March 2021

Objectives.
UCO and CECU will be responsible for a Module Course targeting consumers and public in general. This is the first module course of the online course. Therefore, the objectives are:

- ✓ To present the environmental benefits of the reclaimed water in agriculture and its connection to the green deal.
- ✓ To present the public perception and acceptance of reclaimed water.
- ✓ To explain how is it possible to improve the acceptance and the positive image of water reclamation.

Video Topics [VT]:

VT 1.1: Water reclamation in agriculture: Environmental Benefits.
CONSULAI is responsible for this VT. Fact-sheet referenced *"FS 5.1: Environmental benefits of irrigation with reclaimed water".*
Additional work: To name or reference that water reclamation can affect positively the Green Deal.

VT 1.2: Public perception and consumer acceptance.
CECU is responsible for this VT. Fact-sheet referenced *"FS 5.3: Public perception and consumer acceptance of agricultural products irrigated with reclaimed water".*

VT 1.3: How to improve public perception.
ANETH & CONSULAI are responsible for this VT. Fact-sheet referenced *"FS 5.5: Communicating the use of reclaimed water for agricultural irrigation E.g. how to transfer a positive image of using reclaimed water".*

Description of work.
About the duration of the videos:

[VT1.1] → 7 min.
[VT1.2] → 7 min.
[VT1.3] → 7 min.

About the transcript and the recording of VTs (From Month 23 to 25).
CONSULAI, CECU & ANETH should elaborate the transcripts and recording of the videos in English (i.e, deadline month 21).

About the translation of VTs.
The partners will receive a specific training on video edition on Month 23. The following partners will be in charge to edit the videos deadline Month 25: BIOAZUL [Spanish], TTZ [German], FENEREG [Portuguese], ECOFILAE [French], CER [Italian], PSKW [Flemish], AU [Bulgarian] and ANETH [Greek].

- These partners need to allocate the translated subtitles to the video coherently.
- Each VT leader is in charge for the videos submission of all the edited versions in the portal [x9 VT versions].
- The Module Course Leaders [MC] UCO and CECU will lead the partners in charge of the translation to support each VT leader.

Questions for Final Exam [EX 1.0]
UCO and CECU are responsible to upload on Month 27 a short set of questions for the MC 1.0, which summarizes the key concepts of the module course. Meetings with BIOAZUL and each VT leader are mandatory to prepare the questions.

Module Course [MC] number:	2.0	Module Course [MC] tittle:	Water Reclamation Approaches.
[MC] Leader:	TTZ	Participants:	CER → [VT2.1] BIOAZUL & MERKOT → [VT2.2] TTZ → [VT2.3] UCY → [VT2.4]
Total Video Topics	4.0	Language:	English.
Starting Month	23 to 27	Year Month	November 2020 to March 2021

Objectives.
TTZ will be responsible for a Module Course targeting water technology developer. Therefore, the objectives are:

- ✓ To present the reclaimed water quality requirements.
- ✓ To explain advanced and nature based technologies mostly used for water reclamation.
- ✓ To describe the challenge that water reclamation faces regarding emerging pollutants and the options available for their handle.

Video Topics [VT]:
VT 2.1: Water quality requirements for reclamation.
CER is responsible for this VT. Fact-sheet referenced *"FS 3.1: Reclaimed Water quality requirements"*.

VT 2.2: Conventional and nature based technologies for water reclamation processes.
BIOAZUL & MERKOT are responsible for this VT. Fact-sheet referenced *"FS 4.4: Nature based options for water reclamation processes"* and *"FS 4.5: Other technologies for water reclamation"*.

VT 2.3: RichWater: Innovative membrane bioreactor for water reclamation.
TTZ is responsible for this VT. Fact-sheet referenced *"FS 3.1: Reclaimed Water quality requirements"*.

VT 2.4: Contaminants of emerging concern.
UCY is responsible for this VT. Fact-sheet referenced *"FS 3.2: Contaminants of emerging concern (policies, technologies to remove them, efficiency, impacts in agricultural crops)"*.

Description of work.
About the duration of the videos.
[VT 2.1] → 7 min.
[VT 2.2] → 7 min.
[VT 2.3] → 7 min.
[VT 2.4] → 7 min.

About the transcript and the recording of VTs (From Month 23 to 25).
CER, BIOAZUL, MERKOT, TTZ and UCY should elaborate the transcripts and recording of the videos in English (i.e, deadline month 25).

About the translation of VTs.
The partners will receive a specific training on video edition on Month 25. The following partners will be in charge to edit the videos deadline Month 27: BIOAZUL [Spanish], TTZ [German], FENEREG [Portuguese], ECOFILAE [French], CER [Italian], PSKW [Flemish], AU [Bulgarian] and ANETH [Greek].

- These partners need to allocate the translated subtitles to the video coherently.
- Each VT leader is in charge for the videos submission of all the edited versions in the portal [x9 VT versions].
- The Module Course Leader [MC] TTZ will lead the partners in charge of the translation to support each VT leader.

Questions for Final Exam [EX 2.0]
TTZ is responsible to upload on Month 27 a short set of questions for the MC 2.0, which summarizes the key concepts of the module course. Meetings with BIOAZUL and each VT leader are mandatory to prepare the questions.

Module Course [MC] number:	3.0	Module Course [MC] tittle:	Reclaimed water for sustainable agriculture.
[MC] Leader:	CONSULAI	Participants:	FENACORE → [VT3.1] FENAREG & BIOAZUL → [VT3.2] ACC & AUP → [VT3.3] ECOFILAE → [VT3.4] PSKW → [VT3.5]
Total Video Topics	5.0	Language:	English.
Starting Month	23 to 27	Year Month	November 2020 to March 2021

Objectives.

CONSULAI will be responsible for a Module Course targeting agricultural practitioners and food industry. Therefore, the objectives are:

- ✓ To present the effects of reclaimed water on crop quality and yield.
- ✓ To explain the irrigation equipment adapted to the use of reclaimed water.
- ✓ To present the feasibility and the costs benefits of using reclaimed water for agriculture.
- ✓ The present the water rese initiatives in agriculture in Europe.

Video Topics [VT]:

VT 3.1: Effects of reclaimed water on crop quality and yield.

FENACORE is responsible for this VT. Fact-sheet referenced *"FS 1.2: effects of reclaimed water on crop quality and yield".*

VT 3.2: Irrigation equipment and Decision Support System (DSS) adapted for water reclamation.

FENAREG & BIOAZUL are responsible for this VT. Fact-sheet referenced *"FS 1.3: Irrigation equipment adapted to the use of reclaimed water (e.g. drippers)"* and *"FS 1.4: Decision support systems to monitor irrigation patterns and fertilization needs when using reclaimed water".*

VT 3.3: Organoleptic studies of agricultural products irrigated with reclaimed water.

ACC & AUP are responsible for this VT. Fact-sheet referenced *"FS 5.2: Organoleptic studies of agricultural products irrigated with reclaimed water".*

VT 3.4: Cost benefit analysis and feasibility water reclamation.

ECOFILAE is responsible for this VT. Fact-sheet referenced *"FS 2.1: Costs benefits analysis and feasibility of using reclaimed water"* and *"FS 2.3: Water and fertilizer savings when using reclaimed water".*

VT 3.5: Water reuse initiatives in agriculture in Europe.

PSKW is responsible for this VT. Fact-sheet referenced "*FS 2.5: Water reuse initiatives in agriculture in Europe".*

Description of work.

About the duration of the videos.

[VT 3.1] → 7 min.
[VT 3.2] → 7 min.
[VT 3.3] → 7 min.
[VT 3.4] → 7 min.
[VT 3.5] → 7 min.

About the transcript and the recording of VTs (From Month 23 to 25).

FENACORE, FENAREG, BIOAZUL, ACC, AUP, ECOFILAE and PSKW should elaborate the transcripts and recording of the videos in English (i.e, deadline month 19).

About the translation of VTs.

The partners will receive a specific training on video edition on Month 21. The following partners will be in charge to edit the videos deadline Month 25: BIOAZUL [Spanish], TTZ [German], FENEREG [Portuguese], ECOFILAE [French], CER [Italian], PSKW [Flemish], AU [Bulgarian] and ANETH [Greek].

- ➢ These partners need to allocate the translated subtitles to the video coherently.
- ➢ Each VT leader is in charge for the videos submission of all the edited versions in the portal [x9 VT versions].

- The Module Course Leader [MC] CONSULAI will lead the partners in charge of the translation to support each VT leader.

Questions for Final Exam [EX 3.0]

CONSULAI is responsible to upload on Month 27 a short set of questions for the MC 3.0, which summarizes the key concepts of the module course. Meetings with BIOAZUL and each VT leader are mandatory to prepare the test.

Module Course [MC] number:	4.0	Module Course [MC] tittle:	EU Framework for Water Reclamation.
[MC] Leader:	ANETH	Participants:	ASERSA → [VT 4.1] , [VT 4.2] UCO & CECU → [VT 4.3] ANETH → [VT 4.4]
Total Video Topics	4.0	Language:	English.
Starting Month	23 to 27	Year Month	November 2020 to March 2021

Objectives.

ANETH will be responsible for a Module Course oriented to public authorities and strategic planning for water reuse implementation. Therefore, the objectives are:

- ✓ To present the new EU regulation on reclaimed water for agricultural irrigation.
- ✓ To provide information about how water reclamation can be incorporated into integrated water resources management.
- ✓ To explain the water reuse risk management plans.
- ✓ To present strategic plans for water reuse to confront barriers for agricultural irrigation.

Video Topics [VT]:

VT 4.1: New EU Regulation on reclaimed water for agricultural irrigation.

ASERSA is responsible for this VT. Fact-sheet referenced *"FS 6.1: New EU Regulation on reclaimed water for agricultural irrigation"*.

VT 4.2: Water Reuse Risk Management Plans.

ASERSA is responsible for this VT. Fact-sheet referenced *"FS 6.2: Water Reuse Risk Management Plans"*.

VT 4.3: Water Governance and Strategic Planning for Water Reclamation.

UCO & CECU are responsible for this VT. Fact-sheets referenced *"FS 6.3: Water resources governance (e.g. how to incorporate reclaimed water into integrated water resources management)"* and *"FS 6.4: Strategic planning for the use of reclaimed water in agricultural irrigation (the planning process to develop SUWANU EUROPE action plans)"*.

VT 4.4: Confronting Barriers for Water Reclamation in Agriculture.

ANETH is responsible for this VT. Fact-sheet referenced *"FS 6.5: Confronting barriers for agricultural irrigation with reclaimed water and promoting synergies in geographical clusters"*.

Description of work.

About the duration of the videos.

[VT 4.1] → 7 min.
[VT 4.2] → 7 min.
[VT 4.3] → 7 min.
[VT 4.4] → 7 min.

About the transcript and the recording of VTs (From Month 23 to 25).
ASERSA, UCO & CECU, ANETH should elaborate the transcripts and recording of the videos in English (i.e, deadline month 23).

About the translation of VTs.
The partners will receive a specific training on video edition on Month 23. The following partners will be in charge to edit the videos deadline Month 27: BIOAZUL [Spanish], TTZ [German], FENEREG [Portuguese], ECOFILAE [French], CER [Italian], PSKW [Flemish], AU [Bulgarian] and ANETH [Greek].

- These partners need to allocate the translated subtitles to the video coherently.
- Each VT leader is in charge for the videos submission of all the edited versions in the portal [x9 VT versions].
- The Module Course Leader [MC] ANETH will lead the partners in charge of the translation to support each VT leader.

Questions for Final Exam [EX 4.0]
- ANETH is responsible to upload on Month 27 a short set of questions for the MC 4.0, which summarizes the key concepts of the module course. Meetings with BIOAZUL and each VT leader are mandatory to prepare the test.

- The course will be encrypted in a link and posted in the web links of the whole SUWANU Europe consortium.
- The course will be uploaded in 5 different e-learning platforms → It has to be corrected by the coordinator BIOAZUL with the officers. There is not enough budget to engage this task.
- BIOAZUL is in charge of the test evaluation and the certification of the course. Each Module Course [MC] has a leader, which should prepare a short set of questions for the module, which summarizes the key concepts of the module course.
- CONSULAI is in charge of the layout and design of the certification.

SUWANU
EUROPE

Guidelines for video recording

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SUWANU EUROPE

Table of Contents

1 Objective

The objective of this document is to provide the necessary guidelines and support for the successful development of the Task 3.5, the E-Learning course.

1.1 Calendar

Table 1. Calendar of deadlines for E- Learning MOOC

Dates	Task
Month 25(Jan/2021)	Submission of the English version in the portal
Month 25(Jan/2021)	Questions for Final Exam of the Module
Month 27(Mar/2021)	Submission of all versions in the portal (Spanish [BIOAZUL], English, Portuguese [FENAREG], French [ECOFILAE], Italian [CER], Flemish [PSKW], German [TTZ], Bulgarian [AU], Greek [ANETH].

2 Structure of the video

The Presentation of all the videos will be developed based on the template [**Task 3.5 Template for VTs of e-learning course SUWANU EUROPE**], the file can be found in the uploaded documents in the SuWaNu internal area: Folder WP3, Task 3.5.

The structure proposed is described below:

Slide 1. Presentation of the E- Learning course

Figure 1. Presentation of the E- Learning course

Slide 2. Presentation of the video topic

Name of the video and relation with the module

Figure 2. Presentation of the video topic

Slide 3. Presentation of the lecturer

In this Slide the objective is to introduce the lecturer´s professional profile. It is important to mention their studies, main working field, research areas and additional information considered relevant.

Figure 3. Presentation of the lecturer

Slide 4- 7. Content development

In this section the key factors of each topic are presented and the content is explained.

The number of slides differ from lecturer to lecturer, what is important to bear on mind is that the complete video should last 7 mins.

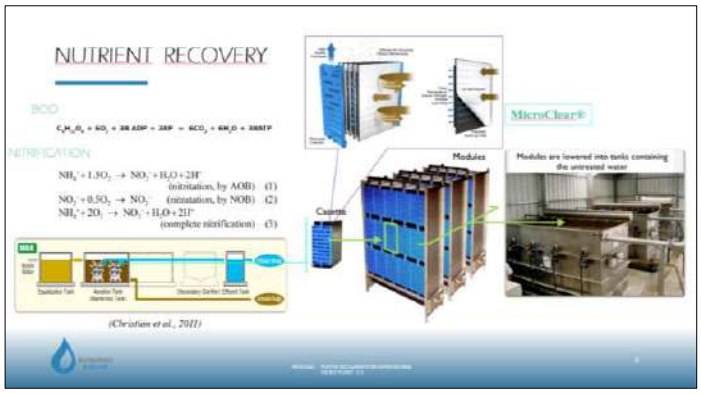

Figure 3. Presentation of the lecturer

Slide 8. Conclusions

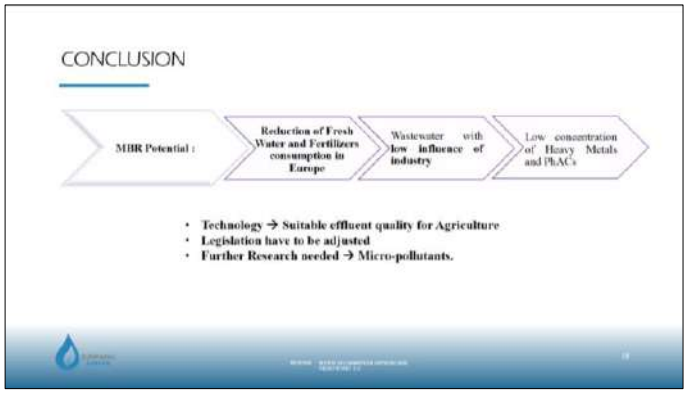

Figure 4. Conclusions

3 Materials and Recommendations

3.1 Materials

- Headphones with microphone
- Computer with Windows 7, 8, and 10, macOS and Linux
- Software for recording: OBS Studio (Free Download)
- Power Point Presentation of the corresponding topic
- Transcript of the presentation

3.2 Recommendations

- Prepare a structure of the speech, if needed make some notes of it as a guide for recording
- Please be concrete and clear
- Remove background noise when possible. Turn off devices and close doors and windows
- We highly recommend to close all other applications and keep open only the Presentation in Power Point and the Software to record

- Set up Your Microphone, before starting to record the audio please make sure that your microphone is plugged in and ready to record

4 Video Recording

The software selected for this purpose is “OBS STUDIO”. It is a free open-source that works across Windows 7, 8, and 10, macOS and Linux. The interface varies depending on the operating system of the computer. For practical purposes, this guideline will be carried out using Windows.

Step 1. Download and installation of the software “OBS STUDIO”

1. Download the software using the following link https://obsproject.com/
2. Open the web page and click on **Windows**

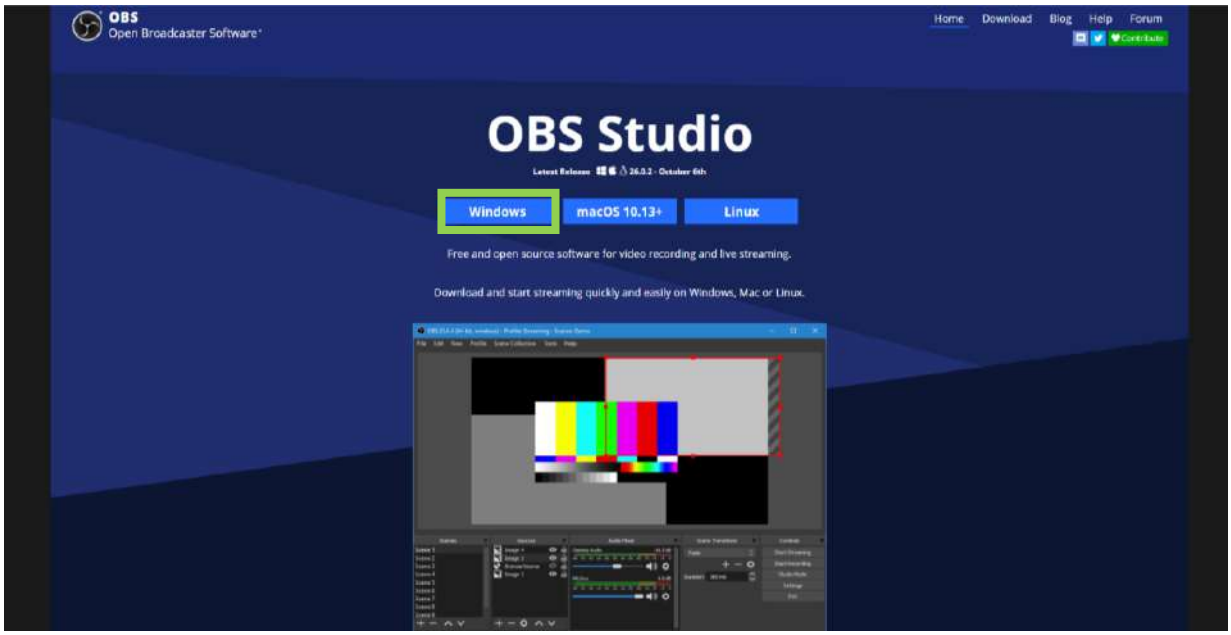

Figure 5. OBS Studio Download web page

3. Once the download is completed, open the file by clicking on it, as follows:

Figure 6. Downloaded file

4. A new window will pop up asking permission to run the installer, click **YES**.
5. OBS Studio installer will appear as follows, select **Next**

Figure 7. OBS Studio installer

6. The licence agreement will be displayed. Once you read it and agree click on **I Agree**

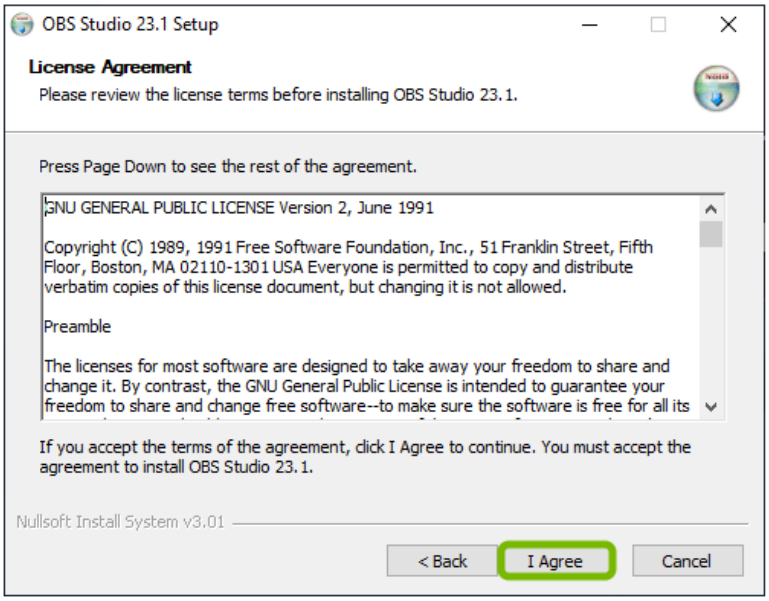

Figure 8. Licence agreement

7. The next window will set up the location where you would like to install OBS Studio. The default location is usually acceptable, click **Next**

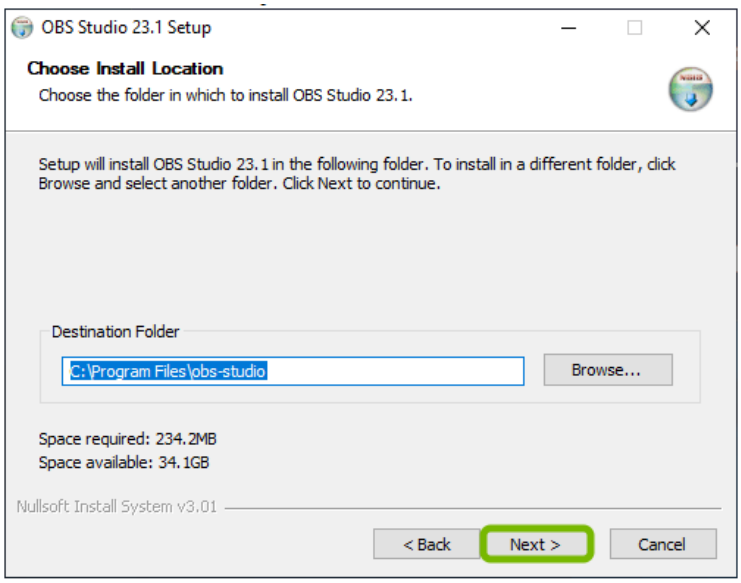

Figure 9. OBS Studio install location

8. The installer will ask you if you would like to install additional components. Uncheck all the components and select **Install**

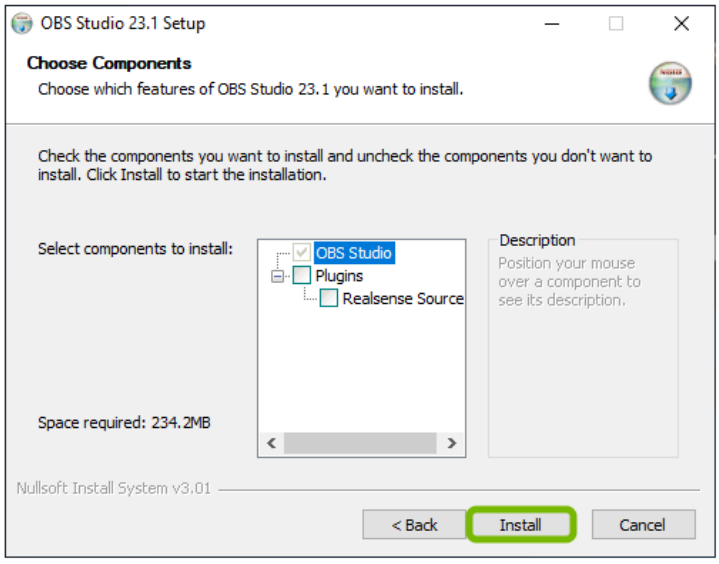

Figure 10. OBS Studio installer

9. The installation is completed. Uncheck Launch OB Studio and click **Finish**

Figure 11. OBS Studio installer Final step

10. Verify that the new icon appear on your Desktop for OBS Studio

Figure 12. OBS Studio icon

Step 2. Recording

1. Open the software OBS Studio. It can be seen that the interface shows 4 different windows at the bottom of the screen

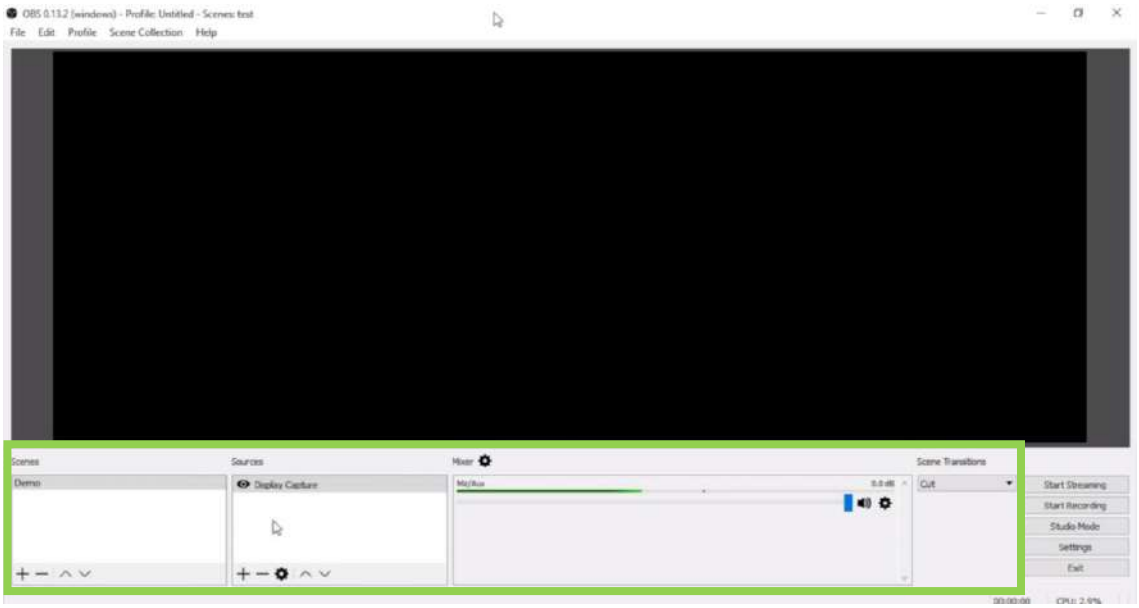

Figure 13. OBS Studio interface

In the first window, called Scenes you may already have a default scene. You can keep it or in case you would like to create a new one, simply remove the previous one using the **(-)** and add a new one using the sign **(+)** and then named it at your choice.

The second window called Sources is where the user tells the program which application to capture, in this case there is no source by default, so you need to create one:

- Click in **(+)** and select **Display Capture**, it will record everything that appears on your computer screen during the recording process.

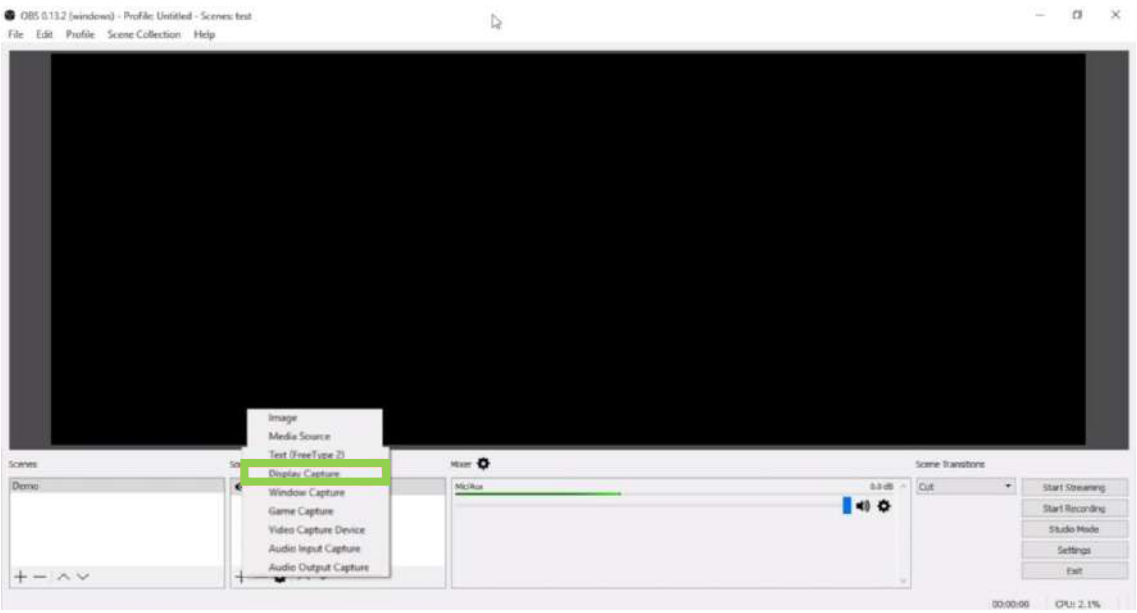

Figure 14. OBS Studio interface

Step 3. Settings configuration

Some important setting changes must be implemented and verified. For this purpose, click in the box called **Settings** located at the bottom right:

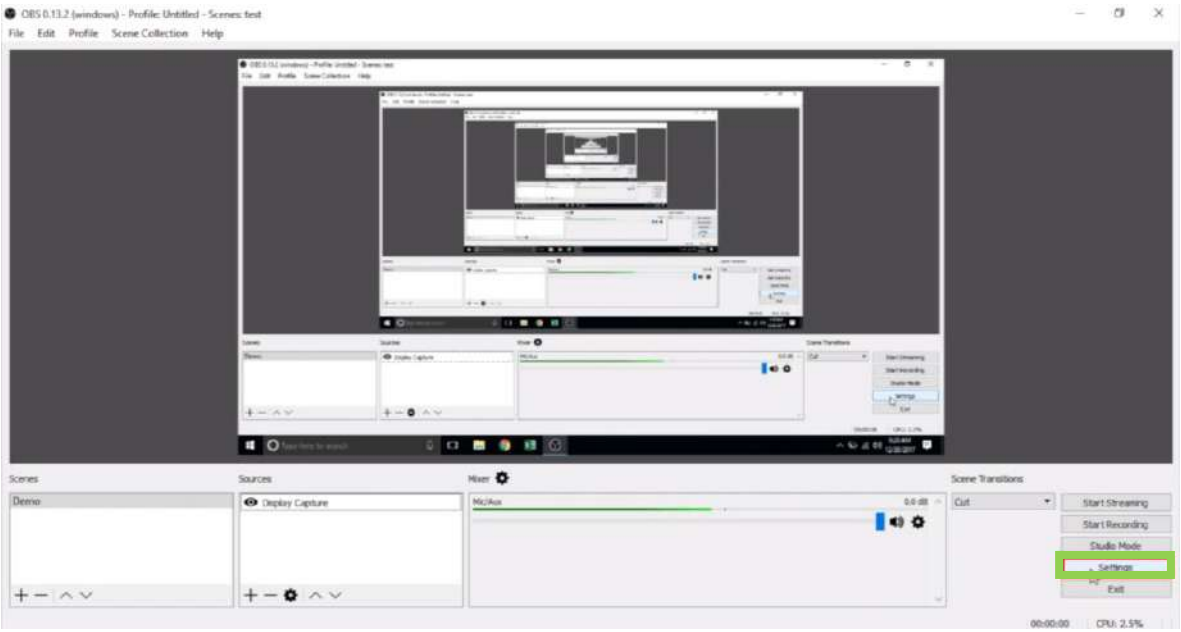

Figure 15. OBS Studio main window

Output Settings

After clicking in settings, select **Output** in the left menu. Here, some modifications need to be implemented.

1. *Recording Path:* Is where the video is going to be saved in your computer. In order to not lose the video and to make it easier to find the file, click in **Browse**, and set your preferred location to save the final video.

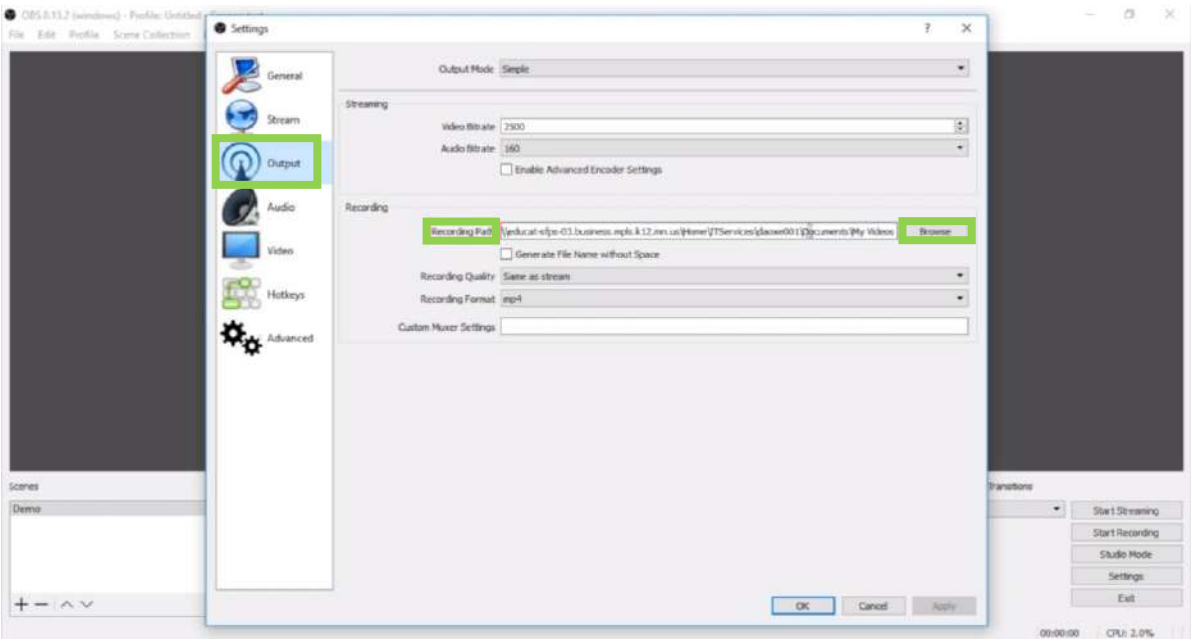

Figure 16. Output Settings

2. *Recording Quality:* Expand the options available in **Recording Quality** and select **High Quality, Medium File Size**

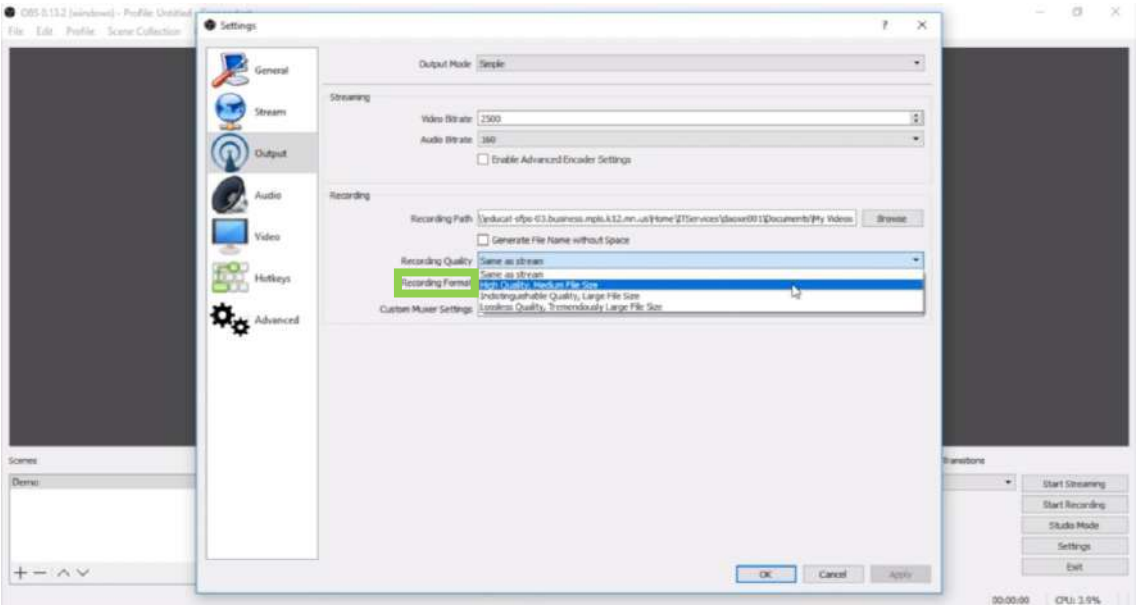

Figure 17. OBS Studio Recording settings

3. *Recording Format*: Select the option **MP4**

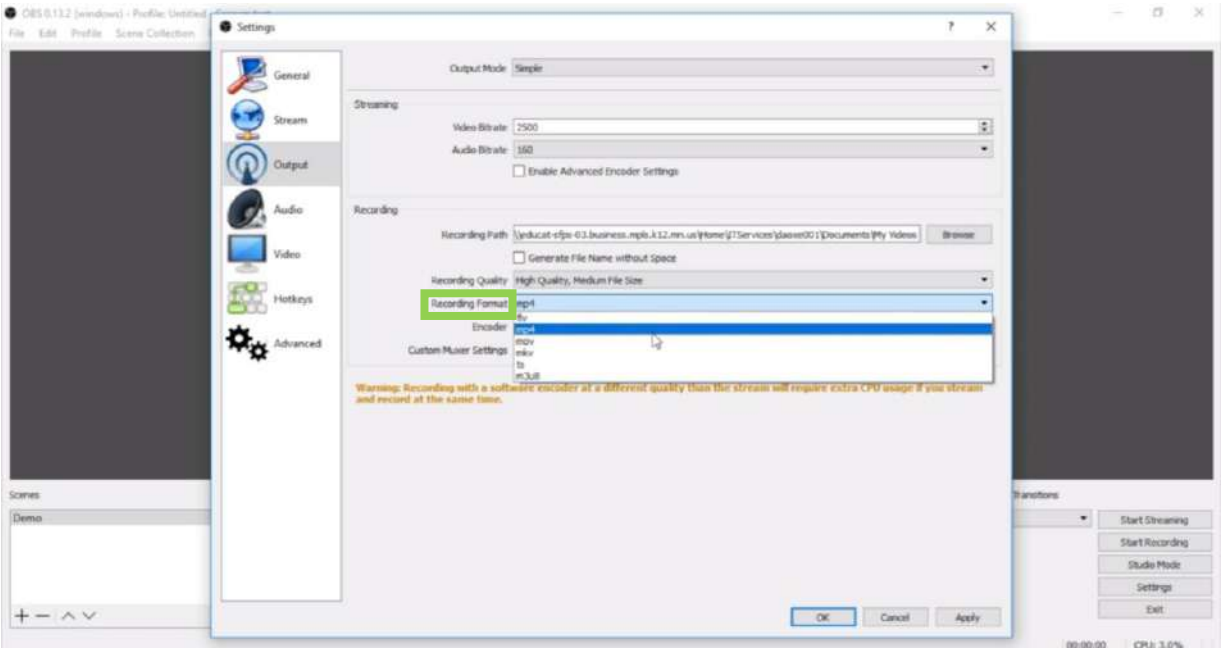

Figure 18. OBS Studio Recording Settings

4. To finalise and apply the modifications made for the Output, Click in **Apply**

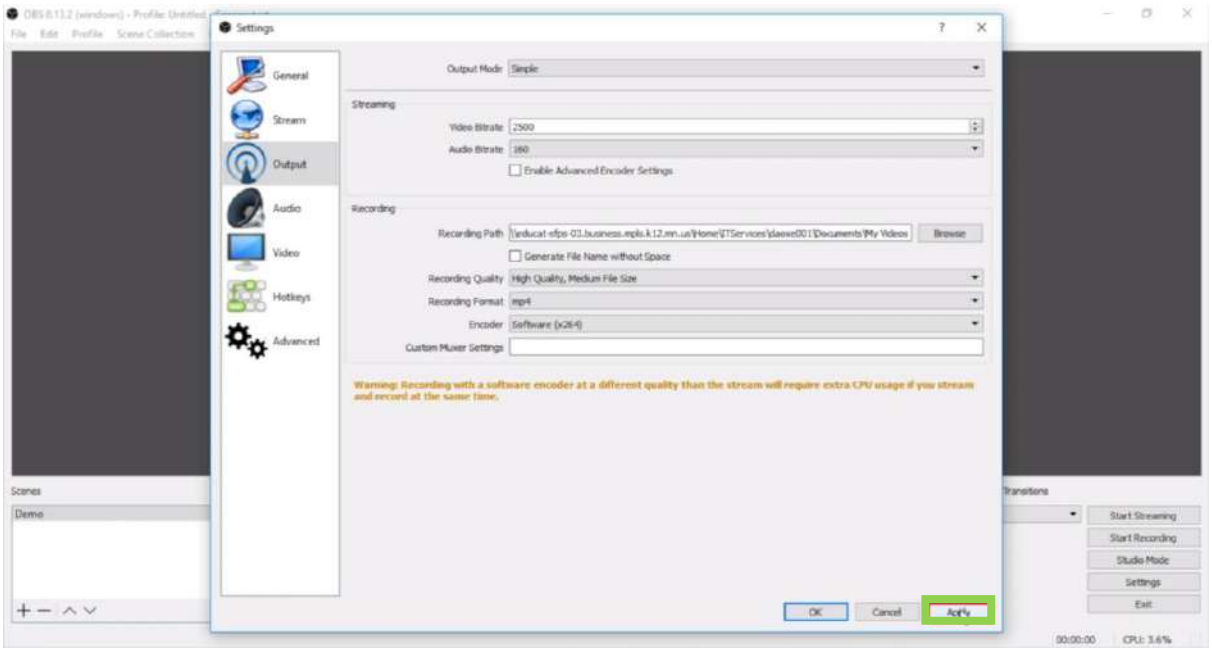

Figure 19. OBS Studio Recording Settings

Audio Settings

In order to configure the microphone, in the menu of Settings click in **Audio**. **Mic/Auxiliary Audio Device** and select the name of the external microphone you are using (e.g. in this case, the name of the microphone is: 3- Blue Snowball)

In case the user does not have an auxiliary microphone, select the option **Default**. This option enables the use of the internal microphone of the laptop.

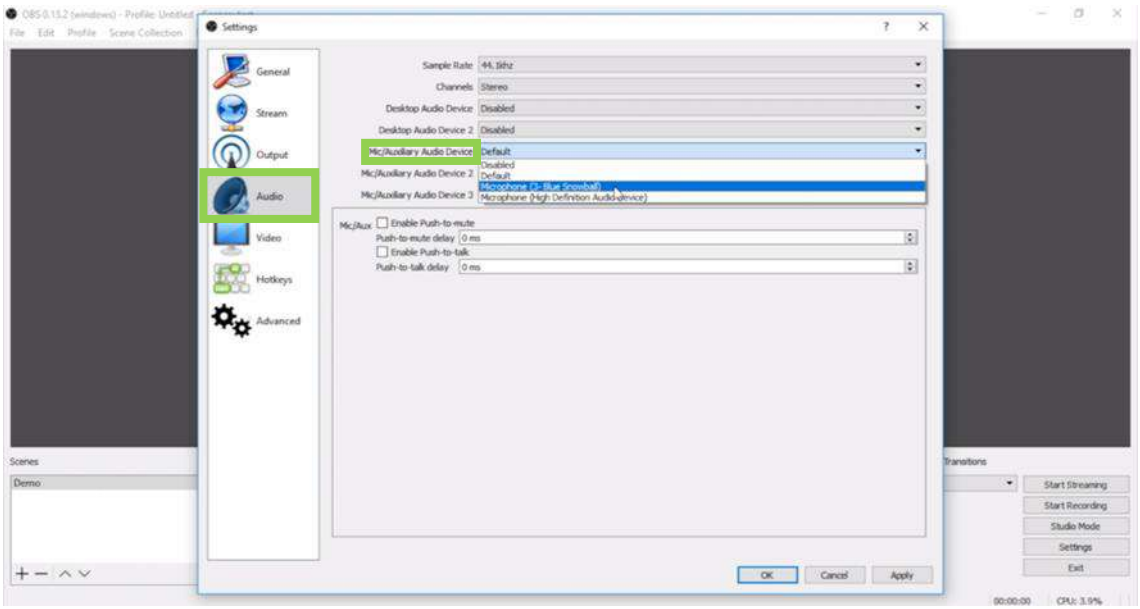

Figure 20. OBS Studio Audio Settings

Finally, click in **Apply** to save the modifications.

Now we are ready to start recording. Being located in the main window, click in **Start Recording**, minimize the window, open the presentation and start recording.

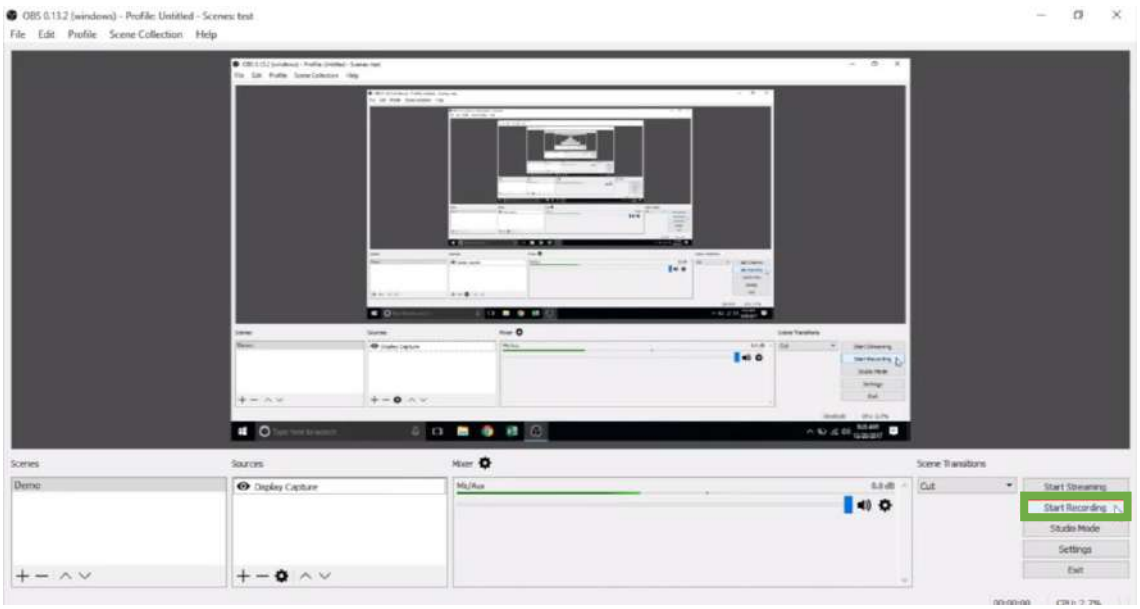

Figure 21. OBS Studio Interface for start Recording

When you finish recording your presentation, go back to the software and click **Stop Recording**.

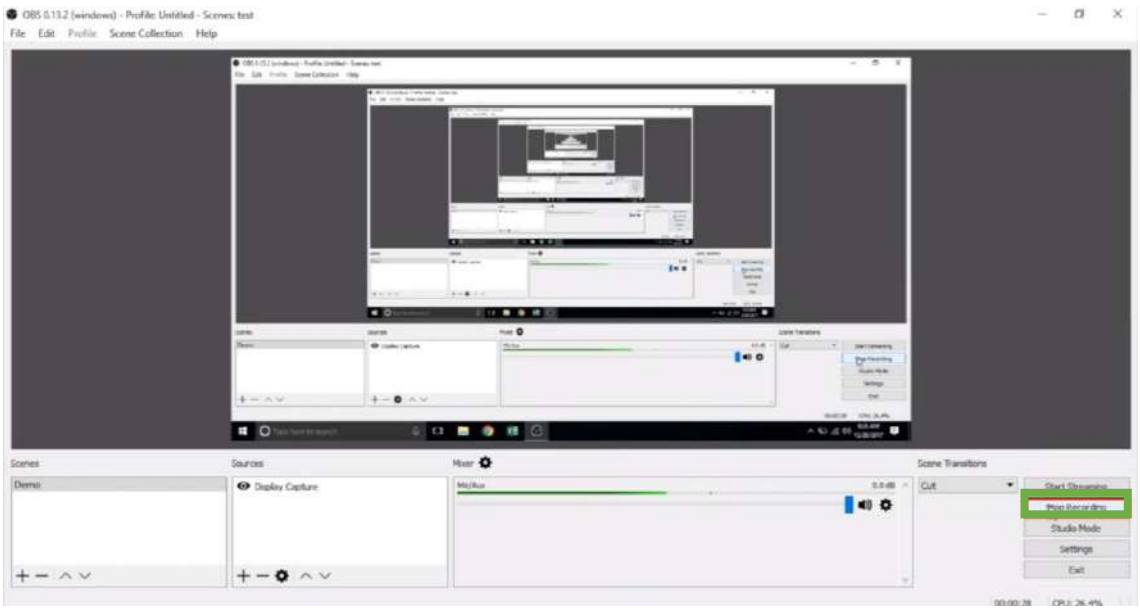

Figure 22. OBS Studio Interface for start Recording

The video will be automatically saved in the location previously specified by the user and is ready to be verified.