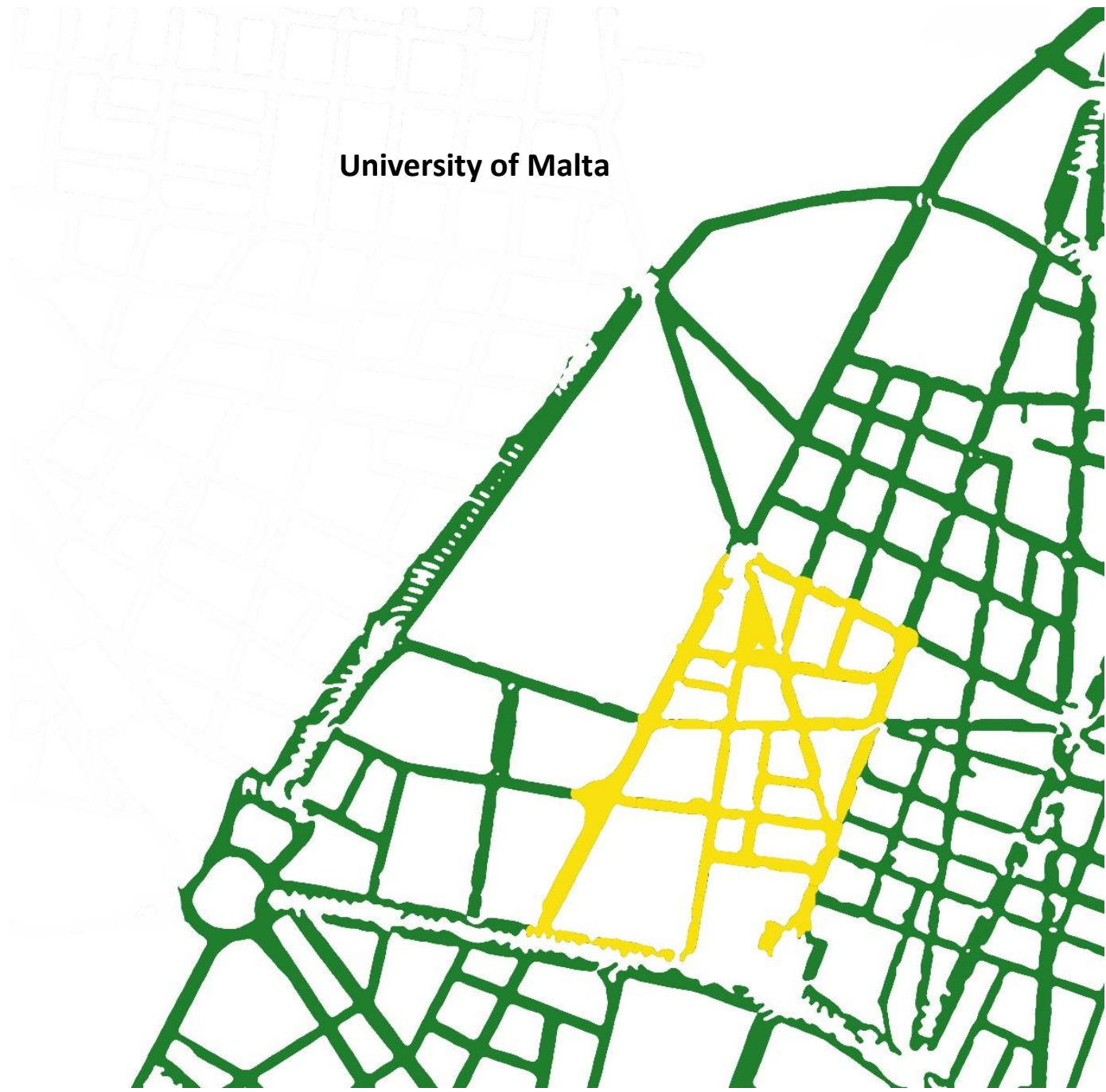




CESBA-MED

Deliverable 2.7.1- Project Results

University of Malta



Contents

- Introduction
- Training Course 1- Decision Makers
- Training Course 2- Professionals
- Content Slides
- Closure

Introduction

The project CESBA MED evaluated 10 case studies from all over Europe. A common sustainability assessment framework at an urban scale level was developed following the testing phase. This framework is intended to assess the development of energy efficiency plans for public buildings in the context of their surrounding neighbourhood.

The objective of this work package is to transfer project results as agreed in the communication plan. Therefore, broad dissemination of results was targeted via different mechanisms and fora through the organisation of specific events.

Training Course 1 – Decision Makers

Two courses were held: one for the decision makers (3hrs) and one for the technicians/professionals (4hrs). For the first course, the decision makers were targeted together with political persons and various stakeholders. The following modules were delivered:

- **Module 1:** The CESBA MED Generic Framework concept and the multi-criteria assessment methodology
- **Module 3:** Case studies analysis (integration of building and urban scales) with the focus targeting decision making

Training Course 2 – Professionals

For the second course professional individuals such as architects, civil engineers, planners, mechanical and electrical engineers etc., were targeted and the following modules were chosen for delivery:

- **Module 4:** The assessment criteria of the contextualized CESBA MED SBTool – Building Scale
- **Module 5:** Use of the contextualized CESBA MED SBTool – Building Scale
- **Module 7:** The assessment criteria of the contextualized CESBA MED SNTTool – Urban Scale
- **Module 8:** Use of the contextualized CESBA MED SNTTool – Urban Scale

A workshop was held for modules 4, 5, 7, and 8, and during this workshop the tool was taught to the participants and a fictitious sustainable audit was done.

Course Content

Part A: Introduction of project, aims, objectives and methodology.

Cesba Project General Partners

Part B: CESBA Toolkit- How to use the tool

Part C: Case Study Urban Scale- UM (University of Malta)

Part D: Case Study Building Scale- ICT Faculty

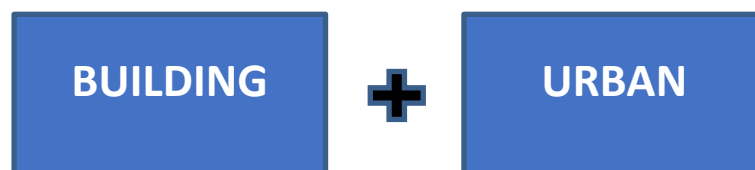
Part A

- **CESBA** - *Common European Sustainable Built Environment Assessments* represents a bottom-up initiative towards promoting a **harmonization of assessing the built environment on sustainability from buildings to neighbourhoods within regions** throughout Europe.
- Energy efficiency plans **do not account** for synergies that groups of buildings may offer
- The building scale approach is **not** optimal
- CESBA is a process towards **a new culture and standards** in Europe.



CESBA-MED Aim

- To **provide** public administrations by the CESBA MED transnational methodology and set of tools which will help them out in the planning of urban areas.
- This optimizes **energy planning measures** combining building and urban scale.



CESBA-MED Objectives

- To improve the quality of **energy efficiency plans** for **public buildings**
- The reinforcement of the capacities of public building stock owners
- To start up a **CESBA MED system** to improve the quality of energy efficiency plans.
- To provide a list of KPIs to be used by all partners. **CESBA-MED Passport**
- To test out this Sustainability Assessment Tool
- To provide training
- Capitalization



CESBA-MED Methodology

- Evaluate results obtained from **10 EU projects**, which assess energy efficient measures at neighbourhood scale.
- Capitalization of results to define **ONE** methodology and tool which would be suitable for the MED area and refurbishment of buildings at an urban scale.

CESBA-MED Expected Results

Expected Result	Description
CESBA SNTools	Informed implementation of energy efficient retrofit plans combining the building and the urban scale .
CESBA MED Passport	Set of common criteria to allow comparison of the performance of public buildings and urban areas in the different MED regions. KPIs should be the same to all partners.
CESBA MED Training System	A training system aimed at end users will be developed, tested and validated.
CESBA MED Network	Maximize the capitalization of the project's outcomes, their transferability and durability.

Project Work Packages and Timeframes

Work Package	Description	2016	2017					2018				2019			
		Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	
1.0	PROJECT MANAGEMENT														
1.1	Financial and administrative management														
1.2	Common management and communication framework														
1.3	Evaluative monitoring														
2.0	PROJECT COMMUNICATION														
2.1	Setting up common methodologies for actions														
2.2	CESBA Network														
2.3	Outreach														
2.4	Events														
2.6	Contribution to Programme communication														
2.7	Presentation of results														
2.8	WP Coordination														
3.0	TESTING														
3.1	Analysis of transnational methods and KPIs for the assessment of buildings and urban areas														
3.2	CESBA MED Local Committees														
3.3	Test of transnational assessment methods and indicators														
3.4	Evaluation of test results														
3.5	WP Coordination														
4.0	TRANSFERRING														
4.1	CESBA SN Toolkit														
4.2	CESBA MED Training System														
4.3	CESBA MED Sprint Workshop				1st					2nd					
4.4	CESBA MED Co-creation workshops														
4.5	WP Coordination														
5.0	CAPITALIZING														
5.1	CESBA MED Wiki														
5.2	CESBA Training in MED														
5.3	CESBA MED System														
5.4	CESBA MED Cities Network														
5.5	Sustainable MED Neighbourhoods Award														
5.6	WP Coordination														

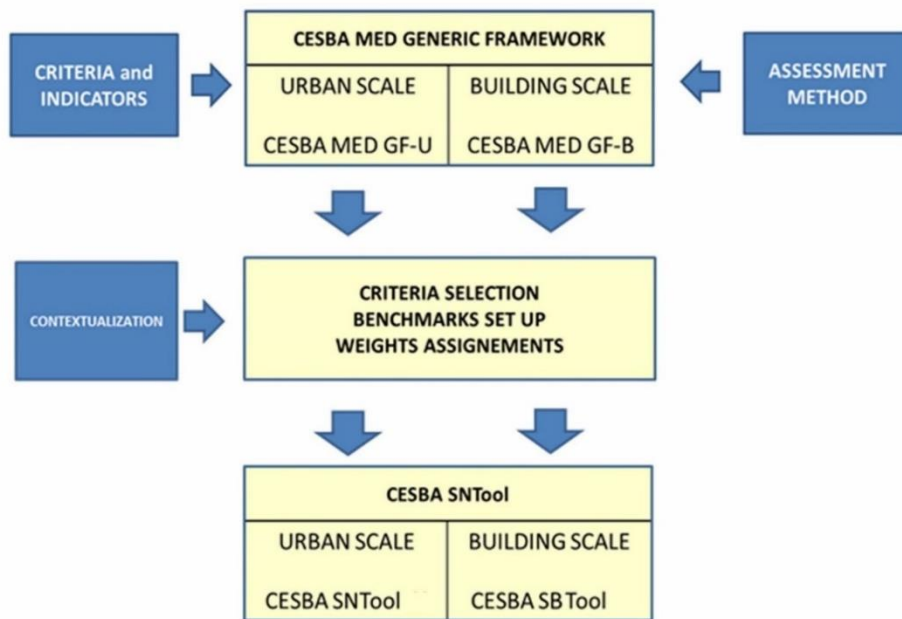
CESBA Sprint Workshop (Gozo)

- Seminar/ Workshop organised by the University of Malta as a project partner, between **14th- 16th November 2018** in Gozo, Malta
- The participants engaged in a comprehensive exchange on **quality standards** for the future built environment, **implementation of policies** and the **involvement of users and new EU-project** applications.
- Parallel working sessions with a well-defined theme which focused on the latest challenges in the **built environment, circular economy, tools and indicators: their usage and the required necessary adaptations, energy renovation in buildings and pooling resources amongst others.**



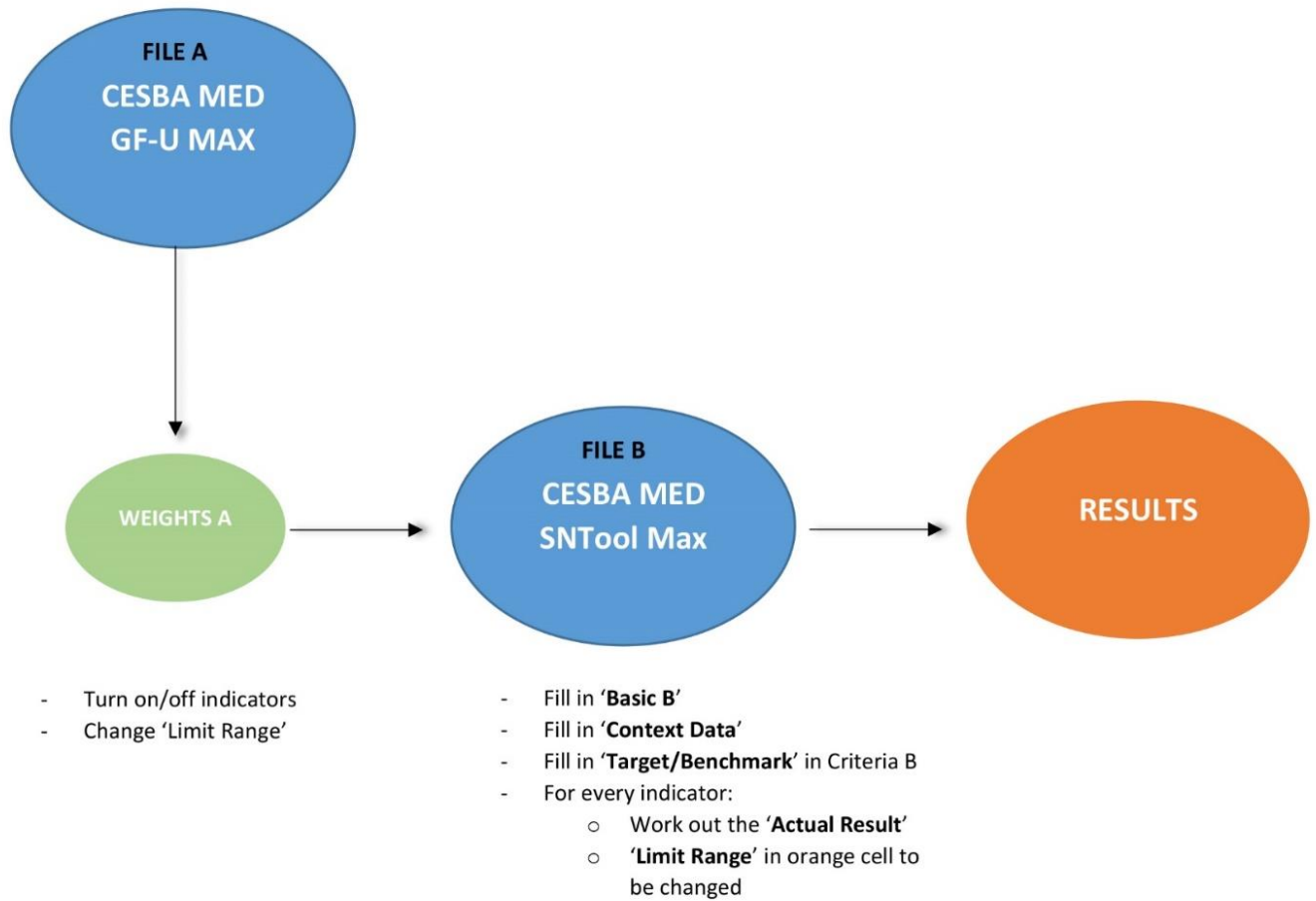
The CESBA print Workshop participants at Ggantija Megalithic temples in Gozo (2018)

Part B: Cesba Toolkit



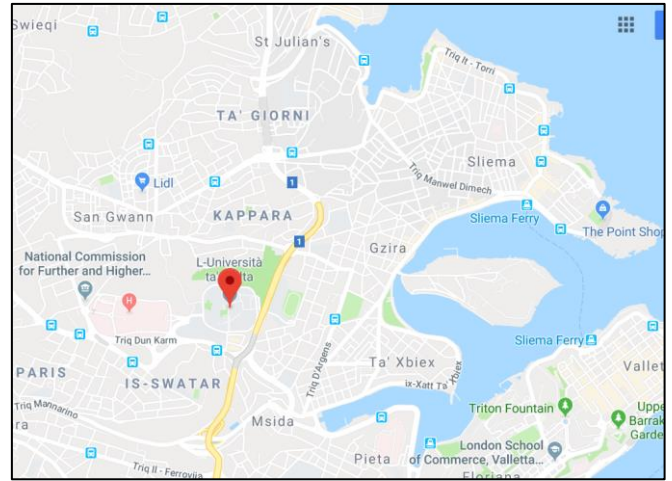
How does the tool work?

- A decision needs to be taken whether the indicator is relevant or not.
- The assessment method & work out ratio/percentage need to be read, reviewed and calculated
- 2 Programs should be used (spreadsheet programs):
 - ✓ CESBA MED GF- U
 - ✓ CESBA MED SNTTool
- Benchmarks in GF-U- excel files need to be set and these are linked so that work can be carried out on one sheet and then the second sheet should be opened.
- SNTTool is opened and worked out ratio/percentage needs to be inserted
- The program gives weightings to each and every indicator



Part C: Case Study of Malta- Urban Scale

The University of Malta developed and applied the Tool (Urban and Building Tools) at the University of Malta Campus.



Data Needed to complete audit:

- A) Built Urban Systems: **AREAS** (Gross and Site Footprint), **Transport**
- B) Economic Structure & Value: **Costs, Employment, Land Values**
- C) Energy: **Electrical, Thermal, Primary energy demand, Renewables, Energy Recycling**
- D) Atmospheric Emissions: **GHGs**
- E) Non- Renewable Resources: **Water, Solid & Liquid Waste**
- F) Environment: **Recharge of groundwater, light pollution, air quality, noise, wind, green zones, ecological diversity**
- G) Social Aspects: **Safety & Accessibility, Traffic & Mobility, Communication Services, Public & Private facilities, Local Food, Management & Community Involvement, Society, Culture & Heritage**

Indicators Summary:

KPIs:
KPIs Ready: 14/19
Non-Relevant KPIs: 2/19
KPIs Pending Data: 3/19
SUMMARY:
Total Indicators: 178
Not Relevant: 74/178
Pending Data: 39/178
Indicators Done: 65/178

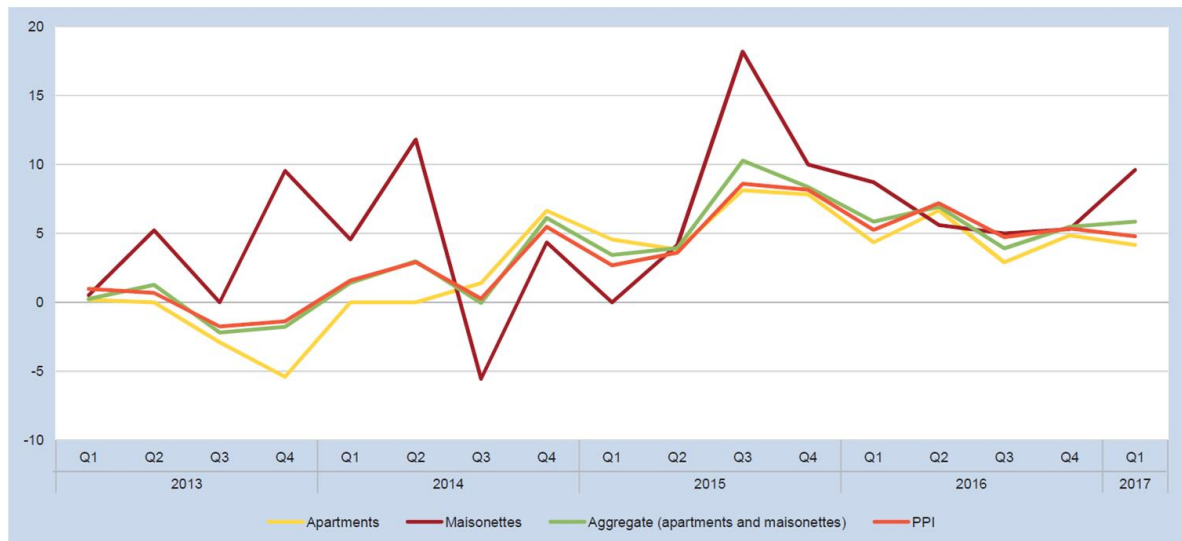
A) UM Areas

- Today the University has **14 Faculties, 8 Institutes, 12 Centres and 3 Schools.**
- UM was split into areas for the toolkit analysis



AREAS		
Units:	m2	ha
TOTAL LAND area:	270,153.00	27
Surface area of ecological and agricultural land:	75,479.00	7.54
Walkway/ Pedestrian areas:	32,169.00	3.2169

B) Economy



Annual Price Changes

Reference: NSO, Property Price Index, 2017

B1.4 Impact of land values on adjacent areas

- The main aim of this indicator is to assess the increase of the cost of the land with regards to the increase of cost of living. This is assessed over a 5 year period.

C) Energy

- C2 Renewable and Decarbonised energy**

C2.4: Share of renewable energy on-site, on total primary energy consumption for building operations.

Ratio of on-site renewable energy consumption to total primary energy consumption.

Result: 6.9%

C2.7: Share of electric energy generation from on-site renewable sources on final electric energy.

The share of renewable electric energy on final electric energy consumption expressed as a percentage.

Result: 16.4%

D) Atmospheric Emissions

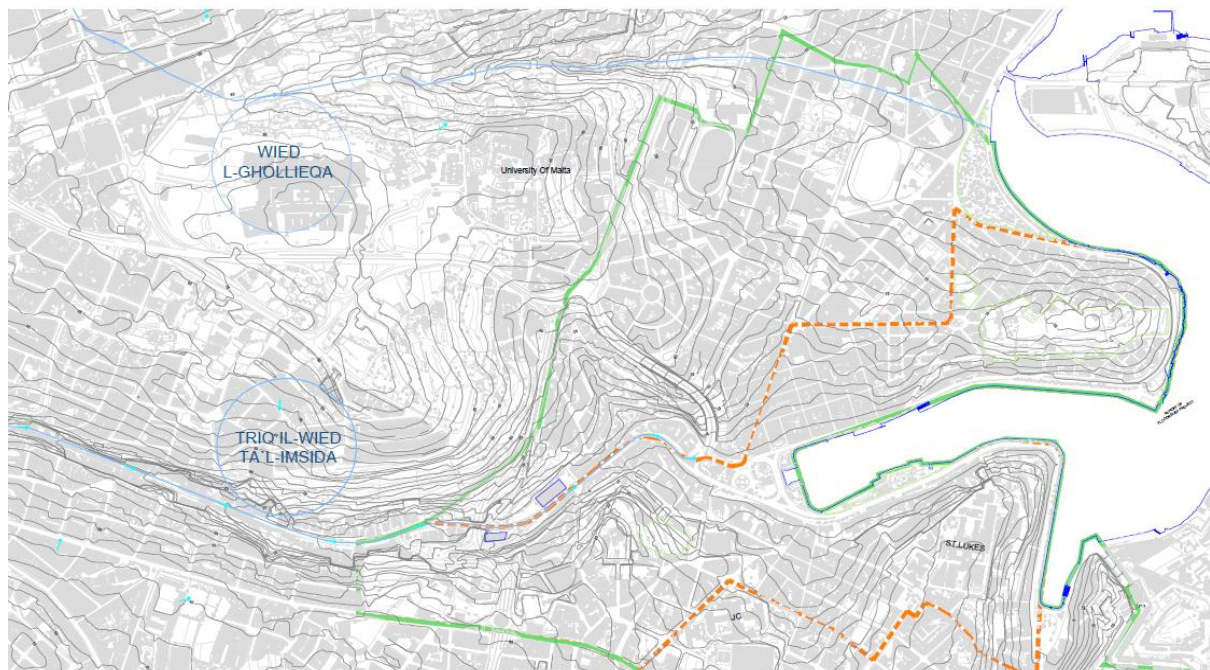
- **D1: Atmospheric Emissions**

D1.2: GHG emissions from energy used for all purposes in building operations.

Since in Malta, energy is generated from one source (Enemalta Power Station), then the GHG emissions from energy is equal to that of the power station. This result is proportioned according to the energy used (calculated by Enemalta).

Result: 5120 tonnes; or 76.5 kg/m²;

E) Non-Renewables (Water)



F) Non-Renewables

- a. E1.1: **Availability** of a public municipal water supply.
- b. E1.4 **Re-use of rainwater** in non-residential building.
- c. E1.5 **Re-use of stormwater**.
- d. E1.7 Consumption of **potable water** for non-residential building systems.
- e. E2.1 Solid waste and recycling **collection points**.
- f. E2.2 **Separate collection** and disposal of **solid waste and recycling**.
- g. E2.3 **Solid waste from construction and demolition** projects retained in the area for re-use or recycling.



G) Environment

- F1.1 Impact of **construction activities** on natural features
- F1.2 Impact of construction activities on **landscaping** on **soil stability** or **erosion**.
- F1.3 **Recharge of groundwater** through permeable paving or landscaping.
- F1.4 Changes in **biodiversity**.
- F1.7 Impact of local building user population on **peak load capacity** of public transport system.
- F1.8 Impact of private vehicles used by the local population on **peak load capacity** of the local road system
- F2.10 Ambient **daytime noise** conditions.

- F2.11 Ambient **night-time noise** conditions.
- F3.1 Green zones & recreation areas **availability**.
- F3.2 Green zones & recreation areas **accessibility**.
- F3.3 Green zones & recreation **areas density**.
- F3.6 **Tree coverage** for shade and management of local ambient temperatures.
- F3.7 **Green roofs**.
- F3.10 **Ecological diversity** in the area.



Noise (Experiment conducted at the University of Malta):

3 Different sites:

	Location:	Notes:
Site A:	Porta Cabin Carpark 3	Next to field. Close proximity to air condition.
Site B:	IT Services	Next to ringroad and close to a busy road
Site C:	Quadrangle	Pedestrian area giving access to main canteen of UM. Busy with students and staff.

Results:

Time:	Noise (dB) Site A	Noise (dB) Site B	Noise (dB) Site C
7:00- 17:00	52.41		
9:00- 14:00		65.1	
10:00- 11:00			56.58
22:00- 7:00	56.60		



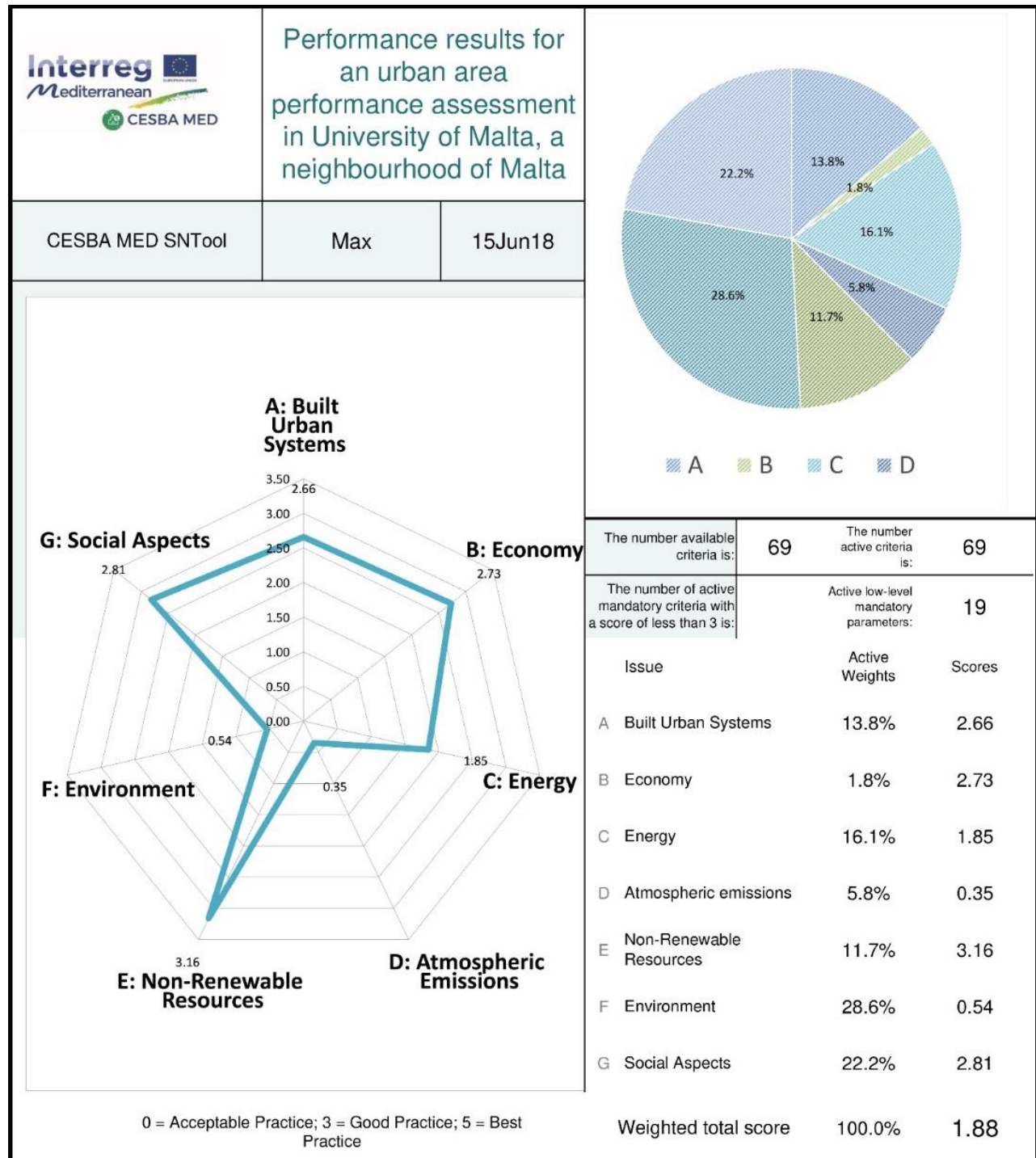
H) Social

- There are **8 spaces** all throughout the university where bicycle parking facilities can be found.
- **Bicycle sharing facilities** can also be found.
- UM has a high number of bicycle spaces. However, the number of bicycle spaces per population is considered to be quite low compared to other countries. Having said that, the bicycle parking facilities are rarely at full capacity and many time not even used.

Number of bicycle spaces	74
Population	14000
Percentage	0.53



Results with SN Tool



Part D: Building Tool Malta

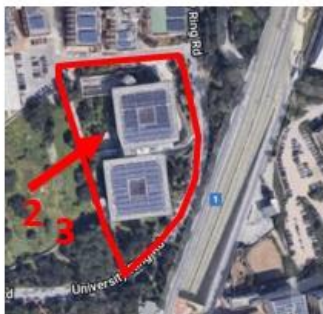
The ICT Faculty at the university of Malta was chosen as a case study for the SB tool.



Picture 1: East Elevation

Materials:

- Double Glazed Windows
- Fair Faced Concrete
- Copper Screen
- Tombak Roof
- Tombak Finish



Picture 2 &3 : West Elevation

Materials:

- Double Glazed Windows
- Fair Faced Concrete
- Copper Screen
- Tombak Roof
- Tombak Finish



Data needed for tool:

A: Site Regeneration And Development, Urban Design And Infrastructure

B: Energy and Resource Consumption

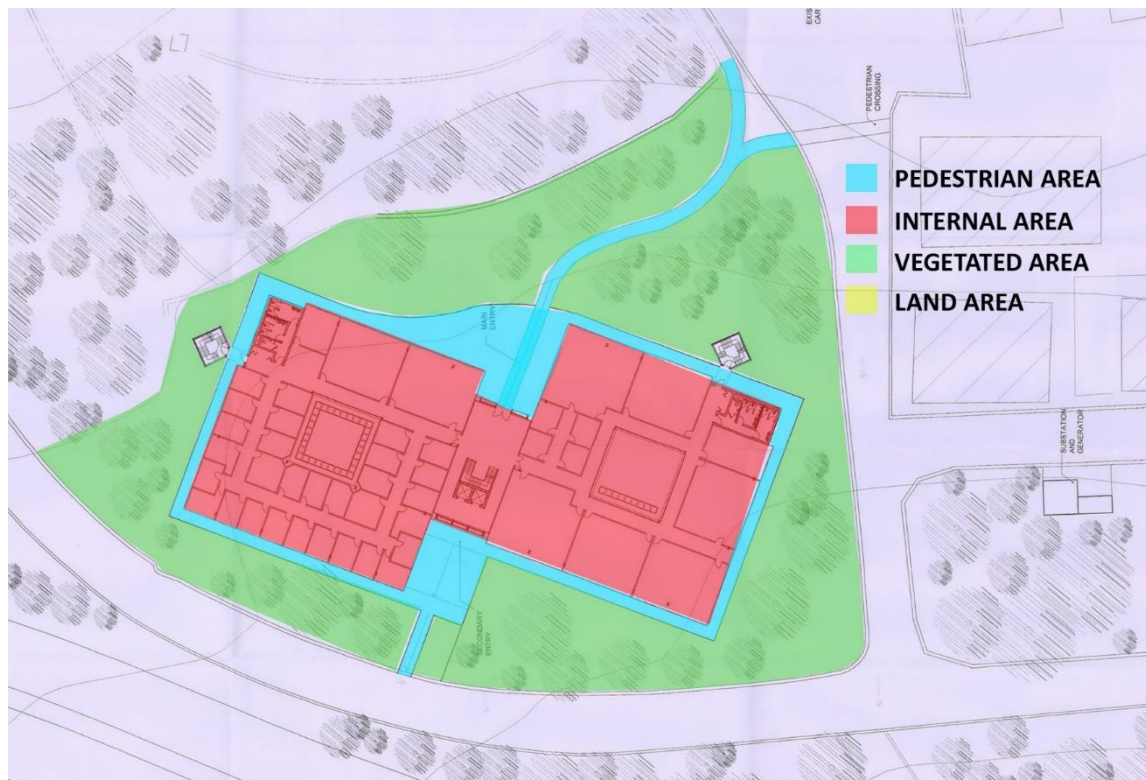
C: Environmental Loadings

D: Indoor Environmental Quality

E: Service Quality

F: Environment

G: Cost and Economic Aspects



Energy and Resource Consumption

- Primary energy demand
Result: 133.91kWh/m²
- Delivered energy demand
Result: 14.68kWh/m²
- Delivered electric demand
Result: 63.54kWh/m²

Deliverable 2.3.2 – Project Results

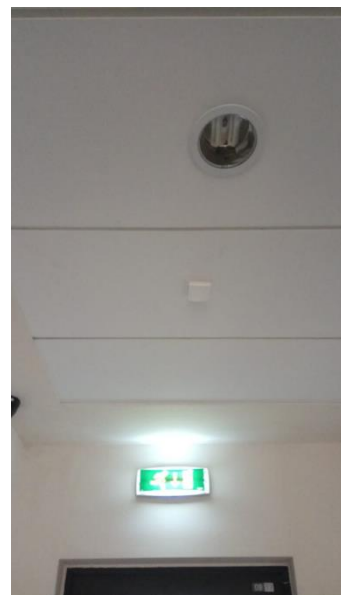
- Energy from renewable sources in total primary energy consumption- Solar Energy
Result: 12.40%
- Energy from renewable sources in total electric energy consumption
Result: 25.20%

Environmental Loadings

- Global Warming Potential
Result: 41.2 kgCO₂/ m².
- Impact on access to daylight or solar energy potential of adjacent property
Result: 0%
- Degree of atmospheric light pollution caused by project exterior lighting systems
Result: 5%

Indoor Environmental Quality

- TVOC concentration in indoor air
Result: 1474.4 ppm, Outside VOC: 3356.5 ppm
- CO₂ concentration in indoor air
Result: 447.8 ppm, 476.6 ppm outside

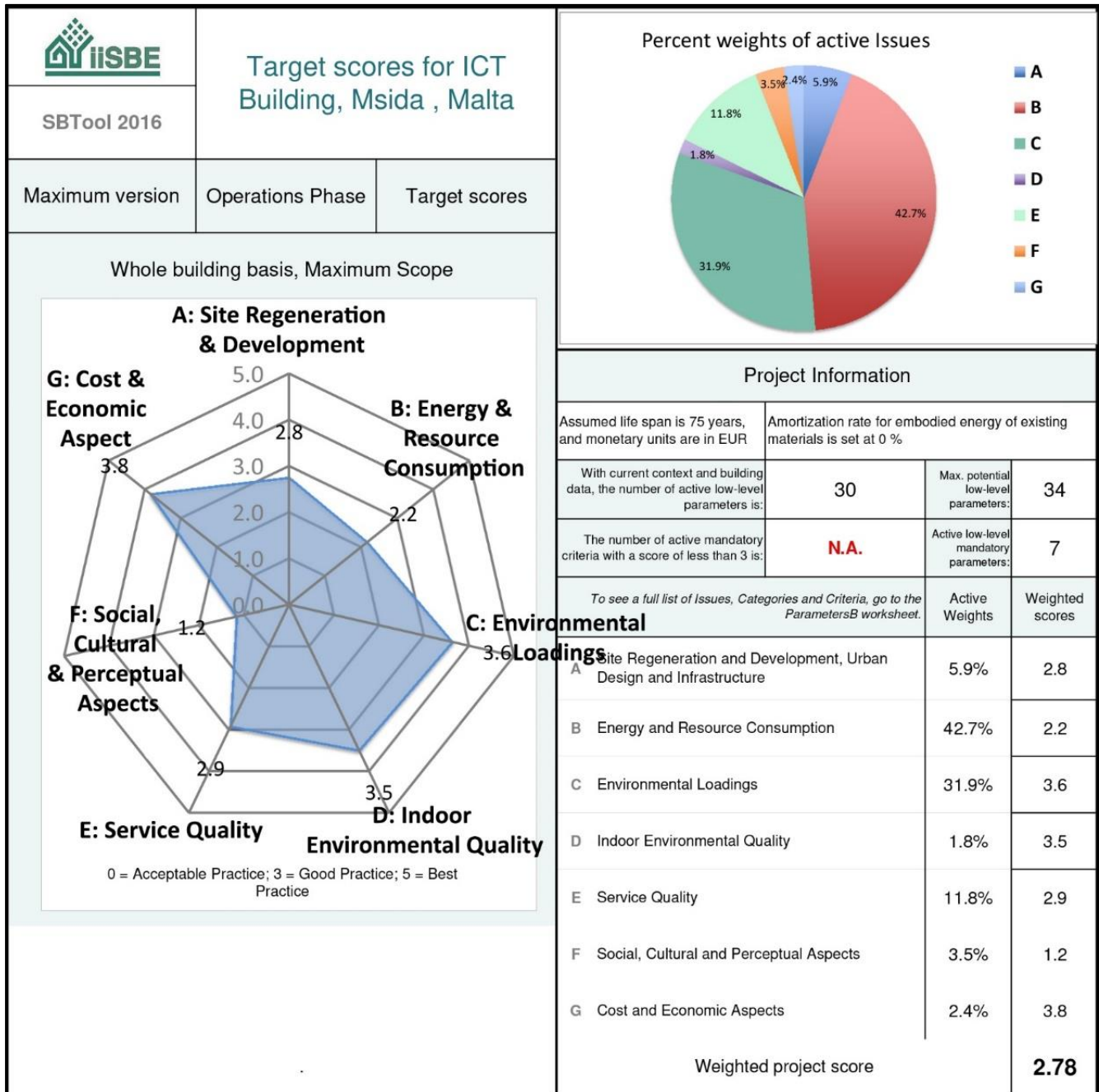


Service Quality

Survey with Users of Building + Likert Scaling

Are you satisfied with the thermal comfort of your office?	YES	NO
	71.43%	28.6%
Do you feel safe in the case of fire/smoke ?	YES	NO
	85.17%	14.83%
Do you ever remember a case of flooding ? If yes kindly describe the incident.	YES	NO
	0%	100%
Do you feel safe during the normal operation of the building?	YES	NO
	100%	0%
Are you satisfied with the control of lighting in your office?	YES	NO
	71.43%	28.6%
Are you satisfied with the control of heating and ventilation in your office?	YES	NO
	42.86%	57.14%

Results with SB tool



Conclusions

The University of Malta implemented the SN Tool and the SB Tool on Campus at the University of Malta. In addition the University hosted the CESBA Med Sprint Workshop in November 2019, in Gozo, Malta. Two Training Courses were organised, for Technicians and professionals and for decision makers.

The University of Malta also participated with the Cmapus cae study in the Neighbourhood award and is included in the Neighbourhood award publication.

In addition, Info days were organised and the project was presented to stakeholders including the Building Industry Consultative Council of the Government of Malta.

Furthermore the project results and the outcomes of the University case study were analysed and discussed during a seminar and during a co-creation Workshop. The University of Malta team organised training courses for technicians and decision makers.

The international conference presentations:

Conference presentations were delivered by the University of Malta team as follows:

- two presentations at Scilla **SBE 19 Conference** delivered by a University of Malta team delegate. One presentation consisted of an overview of the CESBA project; the second was a dedicated presentation on the University of Malta urban area case study and the building case study (SN Tool and SB Tool respectively).
- In addition there were presentations at the **Torino CESBA Conference**; one was a presentation on the Moodle CESBA Med e-Learning platform, while the other consisted in a presentation with the other project partners concerning the University of Malta's application of the tools and the experience in the project.

MEDIA: The University of Malta published articles in the media and also hosted an information Web Page, created on the University of Malta platform:

<https://www.um.edu.mt/newspoint/news/features/2018/03/cesbamedsustainablemedcitie>

[s](#)

<https://www.um.edu.mt/newspoint/news/features/2019/10/cesbamedsustainablemedcitie>
[s/ nocache](#)

<https://www.um.edu.mt/ben/constructmanage/projects/interregmedproject>

In addition, an article was written about CESBA Med and the Sprint Workshop by the Hon Minister for Gozo Dr. Justine Caruana:

<https://www.independent.com.mt/articles/2018-11-18/newspaper-opinions/Sustainability-is-our-way-to-the-future-6736199506>

The CESBA Med e -Learning Platform

In addition, the University of Malta developed the e-Learning Platform as an important tool for the training in the SN Tool and the SB Tool. The tool serves as an important legacy of the project.

The e-Learning platform is an important legacy of the CESBA Med Project. It shall be retained active at the University of Malta.

e-Learning Platform Link:

<https://cesba-med.research.um.edu.mt/moodle/course/index.php?categoryid=11>

Brochures and a manual have been developed concerning the application and use of the e-Learning Platform.

Applications of the Tools

The University of Malta team is engaged in applying the CESBA Med SN Tool and the B Tool to new case studies as a result of the interest in the tool by local stakeholders.

The University of Malta is also participating in the Level(s) programme developed by DG Environment of the European Commission