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Introductory Note

The primary objective of this workbook is to assist Maltese secondary school students sitting for the SEC Environmental Studies exam, based on the Learning Outcomes Framework. This workbook focuses primarily on the Geography component of this subject, tackling the following subject foci:

- Climate and ecosystems
- Tectonic activity, rock formation and weathering
- Water and landforms
- Resources, waste management and climate change

Through the assessment practice presented in this workbook, students will be able to achieve the following Learning Outcomes, derived from the above-mentioned subject foci:

LO1. I can demonstrate an understanding of weather and climate processes and their association to ecosystems and biodiversity.

LO2. I can describe the composition of the Earth's structure and the factors leading to plate movement, volcano formation and rock weathering.

LO3. I can demonstrate an understanding of the hydrological cycle and describe the formation of river and coastal landforms.

LO4. I can differentiate between renewable and non-renewable resources, demonstrate an understanding of soil formation processes and different terrestrial and marine farming processes and sources of sea pollution and demonstrate knowledge of challenges associated with waste management and global climate change.

A total of 50 worksheets are found in this workbook, each having a variety of differentiated tasks targeted at MQF Level 1, 2 and 3. These tasks are intended to serve both as assessment and exam practice in view of the MATSEC exam. Each worksheet contains the subject focus, the Assessment Criteria covered, and the total marks. At the end of each subject focus, a revision worksheet encompassing the majority of the assessment criteria may be found, together with a checklist containing success criteria to self-assess whether the learning objectives have been achieved. To further consolidate the subject material, revision worksheets covering all four subject foci are presented at the end of this workbook.

FOCUS AREA 1

CLIMATE AND ECOSYSTEMS

THIS FOCUS AREA INCLUDES THE FOLLOWING WORKSHEETS:

1. MEASURING WEATHER
2. FACTORS THAT AFFECT CLIMATE
3. THE DIFFERENT TYPES OF RAINFALL
4. CLIMATIC REGIONS
5. TOURISM IN VARIOUS CLIMATIC REGIONS
6. ECOSYSTEMS
7. MALTESE ECOSYSTEMS AND SPECIES
8. THREATS TO MALTESE ECOSYSTEMS
9. BIODIVERSITY: THREATS AND CONSERVATION
10. SPOTLIGHT ON A NATURE RESERVE
11. NATURA 2000
12. REVISION

WORKSHEET 1 Assessment Criteria covered: 1.1a - 1.3b

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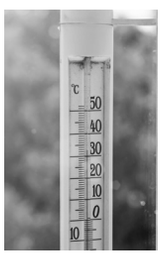
MEASURING WEATHER

1. What is the difference between weather and climate? (2 marks)

2. State whether the following statements are referring to 'weather' or 'climate'. (4 marks)

	WEATHER	CLIMATE
a) Today the temperature is 25°C.		
b) Typically, June's rainfall is below 10 millimetres.		
c) The skies are clearing now.		
d) We can't go for a picnic tomorrow. It will be raining.		
e) This winter should be colder than the previous one.		
f) This has been the warmest summer in the past 25 years.		
g) February is wet and cold.		
h) Days usually start as sunny in a tropical rainforest with showers in the later afternoon.		

3. a) The following pictures display various weather instruments. Label them correctly. (5 marks)


b) Complete the following table by inserting the weather element, weather instrument and measurements accordingly. (7 marks)

Weather element	Instrument	Measurement/Units
i) Temperature		
ii)		millimetres
iii)	Wind vane	N/A
iv) Wind speed		

4. Complete the 7-day weather chart by checking the weather forecast for the Maltese islands. (7 marks)

	General conditions	Temperature	Wind direction	Wind speed
Sunday				
Monday				
Tuesday				
Wednesday				
Thursday				
Friday				
Saturday				

CHECKPOINT!

Check your understanding by completing the following table containing the success criteria for Subject Focus 4: Resources, Waste Management and Climate Change.

Learning Objective 4: I can differentiate between renewable and non-renewable resources, demonstrate an understanding of soil formation processes and different terrestrial and marine farming processes and sources of sea pollution, and demonstrate knowledge of challenges associated with waste management and global climate change.

Tick the correct column which corresponds to the following:

 : I have a very good understanding of this concept and can easily explain it.

 : I have a good understanding of this concept and need little or no assistance.

 : I have a basic understanding of this concept and require some assistance.

 : I have no understanding of this concept.

Worksheet		Assessment Criteria				
31	Renewable and non-renewable resources	I can differentiate between renewable and non-renewable resources.				
		I can identify different characteristics of renewable and non-renewable resources.				
32	Renewable energy in the Maltese islands	I can describe Malta's use of renewable energy.				
		I can discuss the use of alternative sources of energy in Malta.				
		I can discuss the EU and Malta's national targets on renewable energy resource usage.				
33	Soil composition and formation	I can recognise the importance of soil as a resource.				
		I can discuss the importance of soil as a resource.				
		I can name factors leading to soil formation.				
		I can describe factors which lead to soil composition.				
		I can label a simple soil profile diagram.				
		I can describe the soil horizons in a soil profile.				
		I can mention the different Maltese soils.				
		I can describe the characteristics of Maltese soils.				

Worksheet		Assessment Criteria	😀	🙂	😐	☹
34	Soil erosion and conservation	I can define soil erosion and soil conservation.				
		I can describe physical and human causes of soil erosion.				
		I can describe measures of soil conservation.				
		I can discuss aspects of soil conservation in SDGs 11, 14 and 15.				
35	Different types of farming	I can differentiate between arable, pastoral and mixed farming.				
		I can describe the challenges of farming in Malta.				
		I can recognise and explain different traditional field irrigation methods (e.g. irrigation, natural springs).				
		I can recognise the environmental damage brought about by using pesticides and fertilizers.				
36	Different farming methods	I can describe the importance of field terracing, rubble walls, irrigation, crop rotation and greenhouses.				
		I can describe the purpose of crop rotation.				
37	Organic farming	I can describe the characteristics of organic farming.				
		I can discuss the advantages and disadvantages of organic farming.				
38	The sea: uses and pollution	I can list some basic uses of the sea for food, transport, recreation and economic activities.				
		I can list sources of sea pollution.				
		I can discuss sources of sea pollution.				
39	Fish farming	I can define what fish farming is.				
		I can indicate areas where fish farming is practised in the Maltese islands.				
		I can discuss positive and negative impacts of fish farming.				
40	The impacts of quarrying	I can define quarrying.				
		I can differentiate between hardstone and softstone quarry.				
		I can describe the different types of pollution caused by quarrying.				
		I can describe ways how disused quarries can be reused or rehabilitated.				

Worksheet		Assessment Criteria	😀	🙂	😐	☹
41	The different types of waste	I can mention and explain different types of waste.				
		I can define the 3Rs.				
		I can list reasons for Malta's waste problem.				
		I can describe solutions to Malta's waste problem.				
		I can explain how waste can be changed into a resource.				
42	Climate change, global warming and the Greenhouse effect	I can define climate change, global warming and the Greenhouse effect.				
		I can identify the differences between global warming and climate change.				
		I can draw a diagram about the Greenhouse effect.				
		I can describe how the greenhouse effect leads to rising global temperature.				
		I can describe the human activities which cause global climate change.				
		I can discuss the impacts of climate change on the environment and how to reduce them.				
43	Ozone layer	I can define the ozone layer.				
		I can describe human activities which destroy the ozone layer.				
		I can explain why the ozone layer needs to be safeguarded.				