



Open-source compendium

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ReNature

**promoting Research Excellence in NAture-based soluTions for innovation,
sUstainable economic GRowth and human wEll-being in Malta**



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Table of Contents

Preface	4
Summary	4
1. Identifying the ReNature Nature-based solutions Compendium case-studies	5
1.1. Online searches and invitation to submit case-studies to the ReNature Nature-based solutions Compendium	5
1.2. Stakeholder interviews	6
2. Design and structure of the Open-source compendium	8
3. Establishing a platform for collaboration through the ReNature Nature-Based Solutions Compendium.....	11
4. Conclusion.....	12
5. References	13
6. Appendix 1 - References from the Compendium case-studies.....	14

Preface

WP5 aims to bring together results from previous work packages and create a transition from theoretical knowledge and good practices in advanced research institutions to actual future application. Hence, part of this WP will be the creation of an open-source compendium which will be shared openly online to enable the co-creation of knowledge, foster capacity-building at a national scale and share the develop tools as an example of good practice for practitioners and the research community.

The compendium shall be integrated into the official ReNature website (www.renature-project.eu).

Summary

This document explains the process of preparation of the open-source compendium including the method of gathering of information and the compilation of the data into a more user-friendly format with specifically defined search capabilities.

1. Identifying the ReNature Nature-based solutions Compendium case-studies

The collection of information for the ReNature Nature-Based Solutions open-source compendium has followed a two-stage process, which entailed:

1. Online searches for local examples of the implementation of nature-based solutions in Malta. Identified initiatives were then contacted and asked to provide further information.
2. Dedicated interviews with key stakeholders during which they were asked to provide the ReNature team with further information about the implementation of nature-based solutions, the limitations and the opportunities for uptake of nature-based solutions initiatives.

1.1. Online searches and invitation to submit case-studies to the ReNature Nature-based solutions Compendium

An initial search for Nature-based solutions in Malta was carried out via the search engine Google and using the following search terms:

- nature-based solutions,
- green roofs,
- green walls,
- noise and wind pollution,
- trees planted,
- climate change, and
- health and well-being.

Each term was entered individually along with the word Malta. This search returned many responses relating to nature-based solutions, climate change mitigation and adaptation from companies, non-governmental organizations and national authorities. In many cases, the identified initiatives had websites and social media (e.g. Facebook) pages which were consulted with prior to contacting them individually. In some cases, the initiatives were contacted via a designated email address or, otherwise, through social media.

The ReNature team also invited key stakeholders to submit examples of nature-based solutions from Malta which have been applied to alleviate species environmental or socio-economic challenges in Malta. For this purpose, the stakeholders were provided with a promotional flyer containing information about nature-based solutions and inviting stakeholders to submit case-studies to the ReNature compendium (Fig. 1). The flyer detailed what information was requested by the project including examples along with contact details for the submission of the case-studies. The flyer was also distributed to stakeholders and attendees at a Training Course and Thematic Workshop held at MCAST in May 2019, and uploaded to the ReNature website, and distributed via the project social media accounts.

Respondents were generous with their information and in some instances, responses provided the name of other individuals and/or organizations, institutions and/or non-governmental organizations who had installed nature-based solutions.



Figure 1. The ReNature nature-based compendium flyer was sent and handed out to key stakeholders to invite them to submit case-studies for inclusion in the online compendium.

1.2. Stakeholder interviews

Key stakeholders from policy and business were identified from the Maltese Islands, and were invited to participate in semi-structured interviews. A total of 7 semi-structured interviews with key stakeholders working in the environmental, water, planning, infrastructure, culture, and tourism sectors in Malta were carried out. The interview questionnaire and methodology were approved by the ethics committee of the Malta College of Arts, Science and Technology and informed consent was obtained from all participants. The participating authorities were considered as being key players in the promotion of mainstreaming and uptake of nature-based solutions at a national level. In the case of business stakeholders, we have identified large businesses that make a significant contribution to the national GDP and which already have an ongoing environmental programme, focusing on monitoring of environmental impacts and the mitigation of these, and have a history of corporate social responsibility action that promote improvement in societal well-being and the environment. These interviews followed on a workshop with environmental stakeholders from Malta, Cyprus, Sicily and Sardinia to identify knowledge needs to implement nature-based solutions in Mediterranean islands. The workshop followed a modified Delphi process to identify existing knowledge needs, as described in Grace et al. (2019). During the workshop, the need for a more precise definition of NBS, the identification of NBS that are adapted to the Mediterranean climate, or which can be retrofitted to existing building and built-up areas, approaches that increase the use of NBS in urban plans, and the cost-benefit analysis of NBS were identified as the priority knowledge needs for the mainstreaming of NBS.

The interview questions focused on understanding the usefulness of existing definitions in guiding organisations to identify nature-based solutions, the identification of nature-based solutions implemented by the organisation, the specific challenges tackled and the reasons for selecting a location when establishing nature-based solutions, and the relation to the sustainable development goals (SDGs). Results obtained from the interviews are used to provide evidence and guidance about the potential impacts and contributions of the tools and methods presented here in linking science to actual practice of nature-based solutions implementation. Stakeholders were asked to comment on how their specific nature-based solutions examples could feed into individual SDGs. Information they provided was included in the compendium, along with scientific and other references located during literature searches.

Stakeholders were also shown the compendium format on the ReNature website and given a chance to comment on the design and the information. All comments were positive and encouraging. Feedback from the authorities indicated that the compendium can provide an important tool for policy-making as it “will help us deliver the message as policy makers and prove that it can work”. Another stakeholder working in the environmental sector commented that the compendium “provides a platform for collaboration” whilst a stakeholder from the cultural sector also commented that the compendium is a tool that is “useful for knowledge sharing”, particularly if presenting “good practices and initiatives linked to (urban) greening” and to promote further collaboration through participation in European projects. Another stakeholder, this time from the business sector, commented that the ReNature nature-based solutions compendium is “helpful to see what others have done, what the problems are and the solutions”. A detailed analysis of the interviews responses is provided by Balzan et al. (in preparation), which (1) evaluates stakeholders’ perspectives, and challenges and opportunities for the implementation of nature-based solutions, (2) provides practical guidance for facilitating knowledge exchange and nature-based solution co-creation across the science-policy interface, and (3) provides an overview of methods that may be used for evidence-based interventions that apply nature-based solution in Malta.

The data retrieved from (1) the online term searches and (2) stakeholder participation was reviewed, and whenever each submitted case-study was considered as a nature-based solution, as defined by the IUCN¹, or as an example of green infrastructure that leads to cobenefits this was included in the ReNature Nature-Based Solutions Compendium. In the compendium a distinction between nature-based solutions and other forms of green infrastructure is made by clearly indicating which case-studies are considered as being nature-based solutions. Literature searches were carried out using Google Scholar and the websites of the authorities and other stakeholders in Malta to obtain further information about the specific case-study and its potential co-benefits. The bibliography used in the development of the compendium consisted of both grey and published scientific literature and is shown in Appendix 1 and on the case-study web pages. Information retrieval for was mainly limited to Malta or, in case of wider challenges such as climate change, at regional Mediterranean level.

¹ <https://www.iucn.org/commissions/commission-ecosystem-management/our-work/nature-based-solutions>. Accessed 27th November 2019.

2. Design and structure of the Open-source compendium

The ReNature Compendium is published on the project website (<http://renature-project.eu/compendium>). It consists of an interactive world map, search & filter box, as well as a list of results, which link to case study descriptions.

The search & filter box, located on the Compendium landing page, constitutes of a search field and five filters (Fig. 2). Users can filter results by the following criteria:

- Country
- City
- Nature-based solution (Yes/No)
- Benefits
- Sustainable development goals (SDGs)

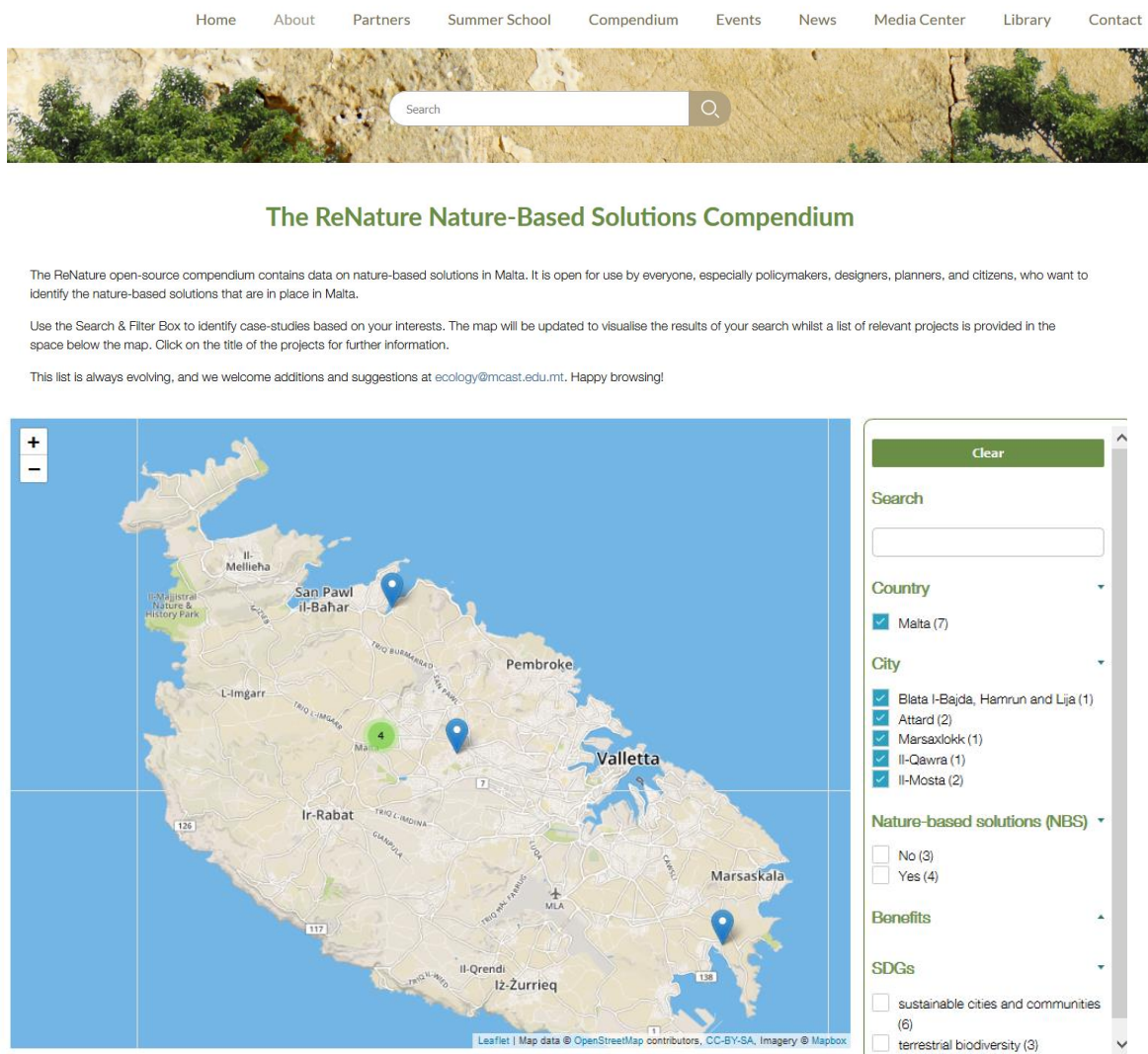


Figure 2. ReNature Compendium search and filter fields.

Once users have selected their desired criteria, the respective results are shown in a list below (Fig. 3).

SEARCH RESULTS

Displaying 31 matching elements

Tree planting project in Blata l-Bajda, Hamrun and Lija

Establishing Nature and Heritage Parks in Malta's Grand Harbour areas for nature-based tourism and education

Establishing an experimental green roof in association with a greywater recycling system

Providing nature-based recreation, tourism and access to cultural heritage whilst protecting and conserving natural heritage.

Providing forage for honey bees and surface water management

Constructing a demonstration green roof

Friends of the Earth Malta

Grow 10 trees project

Reforestation of the Ta' Qali national park

Reforestation at is-Salina Nature Reserve

Introduction of rare species to Wied il-Ghasel

Planting of trees and shrubs in various urban gardens and local councils in Malta and Gozo

Reforestation of the Mizieb Woodland

Reforestation of L-Ahrax tal-Mellieha Woodland

Increasing biodiversity in Wied Musa through the planting of indigenous trees and shrubs

LIFE+ Life Saving Buskett: Ecological restoration of valley watercourse and other habitats at Buskett

Planting of a variety of trees and shrubs at the Marsascala Family Park and the Xrobb l-Għagin Nature Park

Habitat restoration and removal of invasive alien species at Bahar iċ-Ċagħaq

Ecological restoration at Wied Blandun

Ecological restoration of abandoned land in the Swatar urban area

Ecological restoration of Wied Hesri

Ecological restoration of Wied iċ-Ċawlsli

Figure 3. Compendium results list.

To visualize the case studies, there is an interactive world map (Fig. 4), integrated on the Compendium main page. Each case study coordinates are pinned on the map, which enables users to easily find and select a case study by its location. Upon mouse click, location pointers show a link to each case study description (Fig. 5).

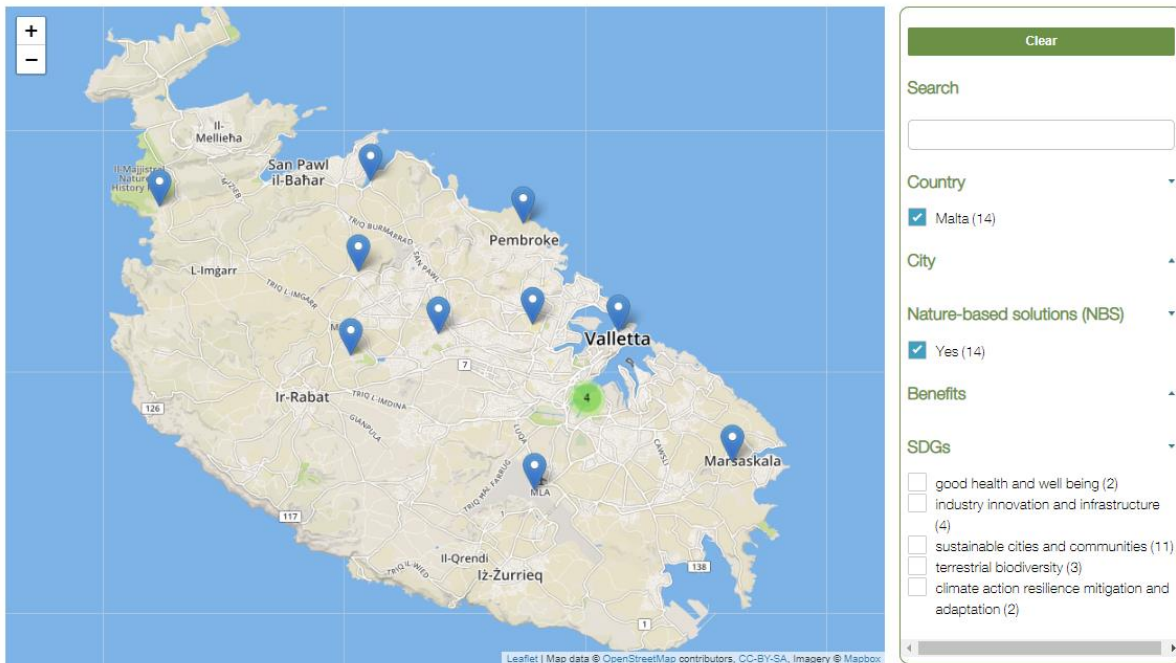


Figure 4. ReNature Compendium map with nature-based solutions.

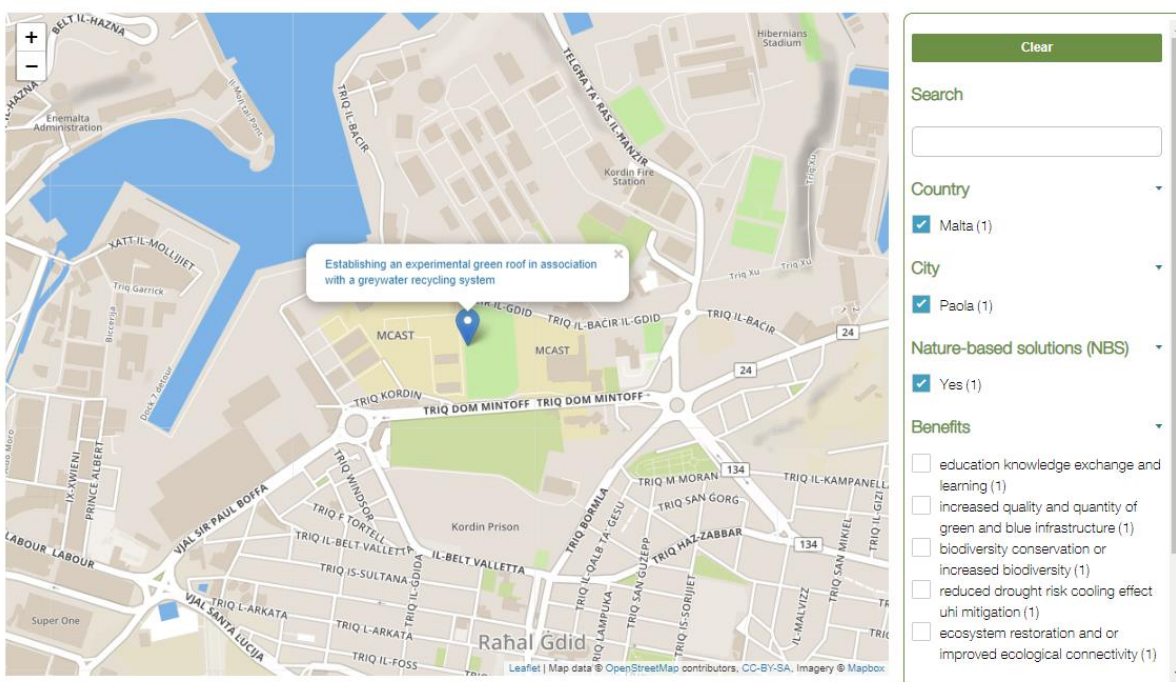


Figure 5. Location pointers, which link to case studies.

For each case study, there is a dedicated page, where the user can find detailed information about it (Fig. 6). This information consists of a **description**, including the case study's objectives, data about the **country**, **city**, **coordinates**, as well as **implementation period**. Information about the initiator of the **initiative** is provided. Each page contains a list of **benefits**, **problems** (if any) and **SDGs**.

Establishing an experimental green roof in association with a greywater recycling system

Country: Malta | City: Paola | Population: population

start: 2015 | Timeframe: 1 Year

Phase: Complete | Nature-based solutions (NBS) : Yes | Budget: N/A | Initiator: MCAST and the Global Water Partnership – Mediterranean (GWP-Med)

Website source: <https://mcast.edu.mt>

Latitude: 35.8772 | Longitude: 14.5059

BENEFITS

- ✓ reduced drought risk cooling effect uhi mitigation
- ✓ biodiversity conservation or increased biodiversity
- ✓ ecosystem restoration and or improved ecological connectivity
- ✓ increased quality and quantity of green and blue infrastructure
- ✓ education knowledge exchange and learning

SDGS

- ✓ industry innovation and infrastructure
- ✓ sustainable cities and communities

ORIGINAL PROBLEMS

- ✗ low air quality
- ✗ drought and heat risk
- ✗ low availability of green infrastructure
- ✗ negative environmental impacts on human health
- ✗ limited knowledge about biodiversity

Figure 6. ReNature Compendium case study page.

3. Establishing a platform for collaboration through the ReNature Nature-Based Solutions Compendium

Currently, the first published version of the Compendium database consists of 31 entries but it is envisaged that this will be expanded in the future, and stakeholders and the interested public are invited to submit additions and suggestions at ecology@mcast.edu.mt.

The publication of the ReNature Nature-based Solutions Compendium will be communicated on the ReNature project website and through the social media accounts of the project. As the coordinator of the project, the MCAST is also expected to disseminate this project outcome with collaborating institutions and key stakeholders in Malta, whilst these will be invited to submit suggestions and other case-studies for inclusion in the compendium. Hence the ReNature Nature-based Solutions Compendium will be considered as a dynamic document that will continue to be updated until the end of the project through the addition of case-studies to showcase good practices, support evidence-based implementation of nature-based solutions and to establish a platform for collaboration.

Open-source data generated in the creation of the ReNature Nature-based solutions compendium will be linked to the nature-based solutions knowledge sharing online tools, such as Oppla, the ThinkNature Platform or the Ecosystem Services Partnership (ESP), to ensure the long-term availability of this deliverable.

4. Conclusion

A dedicated open-source compendium was created, permitting the co-creation of knowledge through open-source innovation. This compendium will be shared openly online to enable the co-creation of knowledge, foster capacity-building at a national scale and share the developed tools as an example of good practice for practitioners and the research community.

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MT/28

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