

Taxonomy for the Green Economy landscape

Deliverable: D1.1

Version number: Version 1.0

Dissemination level: Public

Date: 2014/05/30

7th EU Framework Programme

Accelerating progress towards the Green Economy (ENV.2013.6.5-1)

Grant agreement for: Coordination and support actions

Grant agreement no.: 603939

AUTHORS

Alexandros FLAMOS, Anastasia IOANNOU, and Sotiris PAPADELIS, Univeristy of Piraeus Research Centre

with thanks to all GreenEcoNet partners for their contribution.

PROJECT PARTNERS



DISCLAIMER

Neither the European Commission nor any person acting on behalf of the Commission is responsible for the use which might be made of the following information. The views expressed in this publication are the sole responsibility of the author and do not necessarily reflect the views of the European Commission.

Reproduction and translation for non-commercial purposes are authorised, provided the source is acknowledged and the publisher is given prior notice and sent a copy.

Contents

Summary..... 5

Introduction 6

Chapter 1 – The approach adopted for the GreenEcoNet taxonomy development 7

1.1. The conceptual framework behind the structure of a case study in the GreenEcoNet platform 7

1.2. The link between case studies and the GreenEcoNet taxonomy 8

1.3. Data sources for the development of the taxonomy for the private-sector part of the Green Economy11

1.4. Development of the taxonomy of the private-sector part of the Green Economy.....13

1.5. Validation of the taxonomy 18

Chapter 2 – Categorisation of strategies and initiatives towards the ‘Green Economy’20

2.1. Introduction.....20

2.2. Overview of existing approaches for the categorisation of initiatives and strategies towards the ‘green economy’20

2.3. Categorisation of initiatives and strategies towards the Green Economy24

References.....27

Annex I – Experts who provided feedback for the validation of the taxonomy29

Annex II – Case study Template.....30

Annex III – A ‘Policy-based’ categorisation approach according to “6 Is” categorisation format (OECD, 2012)38

List of Figures

Figure 1 Structure of a case study in the GreenEcoNet platform 7

Figure 2 Potential connections between different case studies.....10

Figure 3 Property graph with indicative properties for businesses and solutions.....10

List of Tables

Table 2. Categorisation of the technology property of the green solution.....16

Table 3. Categorisation of the benefit type of the green solution18

Table 4. Common categorisation approaches of green growth policies and strategies20

Table 5. Reasons to address and define a SC strategy21

Table 6. Action lines to achieve Sustainable Consumption and Production22

Table 7. Different options to categorise sustainable consumption23

Table 8. Categorisation of policy initiatives towards the Green Economy: summary table24

Summary

The development of the 'best practice' platform constitutes the cornerstone of the GreenEcoNet project aiming to connect and engage a global community of businesses, corporate and SME decision makers, policy makers and researchers in the transition towards the green economy paradigm. To this end, the platform will accommodate and maintain an updated database of case studies, 'best practice' interventions and examples produced through a knowledge exchange process among the users of the platform. For the collection of case studies to be searchable and traceable, a taxonomy of best green practices enabling the effective search and population of the GreenEcoNet database was developed, allowing for the semantic tagging by relevant categories.

The taxonomy encompasses the categorisation of the private sector part of the 'green economy', along with the initiatives and strategies towards the 'green economy'. Departing from a review of existing official classifications of economic activities, such as the International Standard Industrial Classification of All Economic Activities (ISIC), as well as of environmental products and services, such as the Environmental Goods and Services Sector (EGSS), this report extends into further literature for more specific classifications of multiple aspects of the private sector and green growth initiatives and strategies (such as research reports, scientific papers, sustainable technology handbooks, etc.).

The taxonomy of the private sector aims to allow for the effective population of the platform, by means of a 'case study' template which provides guidance to the users of the platform on structuring their case studies. For the construction of the template a two-stage approach has been adopted. During the first stage, the conceptualisation of the case study structure, the literature review and the development of the template took place. As a second stage of the template development, validation and feedback on the classification scheme was electronically received from a number of selected experts in the fields of business, academia and research covering various fields of the green economy. Subsequently, the taxonomy has been revised to incorporate the comments of the validators.

Introduction

This deliverable aims to develop a taxonomy for the private-sector actors that constitute the Green Economy landscape, as well as for the initiatives and strategies towards the "Green Economy". The outline of the report is presented below:

Chapter 1 explains the conceptual framework behind the structure of a case study in the GreenEcoNet platform, as well as the link between this structure and the GreenEcoNet taxonomy. Next, it presents the data sources that were utilized so as to explore the domain knowledge in the different sectors, technologies and services that constitute the private-sector part of the Green Economy. Finally, the GreenEcoNet taxonomy is presented, and the process used for its validation is documented.

Chapter 2 concerns the categorisation of strategies and initiatives towards the 'Green Economy'. The chapter presents first an overview of existing approaches for the categorisation of initiatives and strategies towards the 'green economy', and then the categorisation of initiatives and strategies towards the Green Economy for the GreenEcoNet database.

Annex I presents a list of the experts who provided feedback for the validation of the GreenEcoNet taxonomy.

Annex II presents the GreenEcoNet case study template.

Chapter 1 – The approach adopted for the GreenEcoNet taxonomy development

1.1. The conceptual framework behind the structure of a case study in the GreenEcoNet platform

The structure of the case studies was decided with the purpose of defining a priori what constitutes an eligible case study for the GreenEcoNet platform. To this end, the following set of conditions – that must all hold true – was derived:

1. Case studies should be replicable by other private actors. The GreenEcoNet platform should disseminate best practices and sustainable solutions to potential adopters.
2. Case studies should be related to the key activities or key resources in the corresponding firms' business model. This will minimize the chances that case studies of low significance (including attempts of “greenwashing”) will be included in the platform's database.
3. Case studies should have at their core a “green option” (called green solution in the web-platform). This can be defined as a physical artefact or a technological process, as well as a practice according to which this artefact/technology is used. This will facilitate the structuring of the database and to identify relationships between SMEs, practices and technologies both inside a case study and between different case studies.

A case study in the GreenEcoNet platform has the following structure:

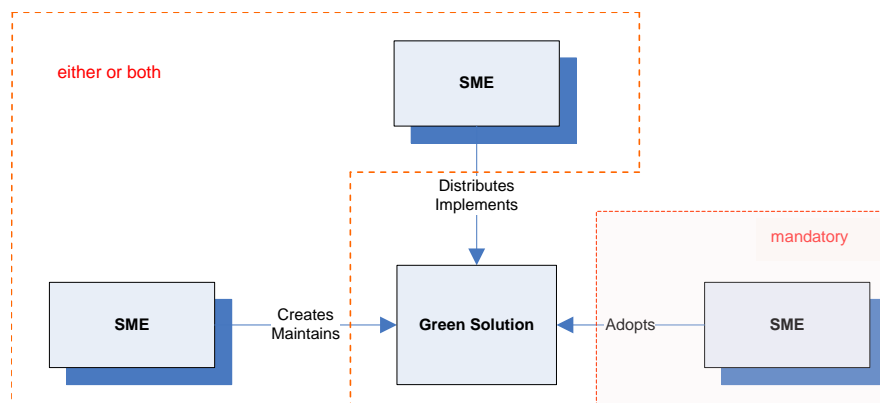


Figure 1 - Structure of a case study in the GreenEcoNet platform

A **green solution** can be one of the following:

- ⇒ A product, a technological process or a service that:
- 1) Improves operational performance, productivity or efficiency, while or because of reducing environmental risk and minimising waste, pollution and resource use;
 - 2) Facilitates compliance with environmental regulations.

- ⇒ An organisational method or business process for dealing with environmental issues by:
- 1) Preventing pollution through input substitution or a more efficient operation of processes;
 - 2) Focusing on the utility of products and services throughout the product's life cycle, rather than only on the value of selling physical products (Product Service Systems – PSS);
 - 3) Increasing efficiency or reducing waste through closed-loop collaboration (recovery, re-use or recycling);
 - 4) Measuring and monitoring issues of material use, energy, water and waste.

Furthermore, **businesses** can be categorised into one or more of the following categories:

1. Producers of green solutions;
2. Distributors and implementers (i.e. service providers) that support the end-users to adopt the green solutions;
3. End-users of green solutions seeking to embody resource efficient and environmentally beneficial technologies or business practices in the way they carry out their operations. In this case, a very important condition to the acceptance of a case study to be published is that it must include an end-user/adopter, so that the case study is not just an advertisement and the solution's adoption is shown to lead to demonstrable benefits.

Apart from the requirements that led to the case study structure, a set of assumptions were also influential:

1. Businesses will regard uploading case studies in the platform as an effective way to gain visibility for their products and services.
2. Solution producers and, even more, businesses offering integrated service packages (planning, conducting techno-economic assessments, equipment supply and installation) have also an incentive to upload case studies.
3. Businesses will be willing to provide detailed data for their green solutions, in order to make their categorisation and discovery easier.
4. Confidentiality issues will not prevent users to provide most of the data regarding solutions and their adopters or even if confidential information is not provided, the information/data regarding solutions and their adopters will be sufficient to showcase the relevant costs and benefits.

1.2. The link between case studies and the GreenEcoNet taxonomy

A collection of case studies by itself provides neither search abilities nor insights for business actors and policy makers. As a consequence, there was a need to provide metadata to the case studies that would be stored in the GreenEcoNet platform's database. If we only relied on full-text searches, we would not be able to know if a case study includes adequate detail to be interesting for someone who would read them not for 'educational' purposes but for finding solutions to adopt and integrate into their own business activities. To this end,

structured data provide the means to navigate in the GreenEcoNet platform's database, as well as to find possible connections between its case studies. This can be accomplished by adding properties that the different components of the case studies share. The categorisation scheme for the case studies was developed according to the following requirements:

1. Green solutions should be in the centre of the structure. Each case study is built around a physical artefact, a technological process or a service provided by or consumed by one or more businesses.
2. The assessment of replication potential should be facilitated. The GreenEcoNet platform will help businesses assess the costs and benefits of adopting the specific best practices and solutions.
3. A systems thinking approach should be employed. Businesses can collaborate around a green option, creating networks, value chains and other cross-sector relationships.

Regarding the last requirement, partnerships are regarded as collaboration around a green solution. The categorization scheme for the green solutions is, therefore, adequate as a way to catalogue business expertise and provided services, if combined with a collaboration type, such as:

- Joint product development partnership
- Technology partnership
- Channel partnership
- Material and components supply partnership
- Cooperation so as to close material loops.

One particularly flexible data representation model that can support the case study structuring is the *property graph*. The main abstractions in a property graph are nodes, relationships and properties.

- Nodes are placeholders for properties in the form of arbitrary key-value pairs. The keys are strings and the values can be arbitrary data types.
- Relationships connect nodes. Relationships are always directed that is, they always have a start node and an end node. Relationships have labels and properties. A relationship's label and its direction add semantic clarity to the connections between nodes.

The set of labels and properties for nodes and relationships, as well as their valid values will constitute the GreenEcoNet taxonomy. It should be stressed that the purpose of the taxonomy development is not to provide an exhaustive categorisation of the Green Economy, but to provide an operational categorisation scheme for structuring the case studies to be stored in the GreenEcoNet platform.

Property graphs make it easy to unite different case studies – each with its own particular entities, properties and relationships – in a way that not only makes each case study accessible, but also generates insight from the potential connections between them. An example of these potential connections is depicted in Figure 2.

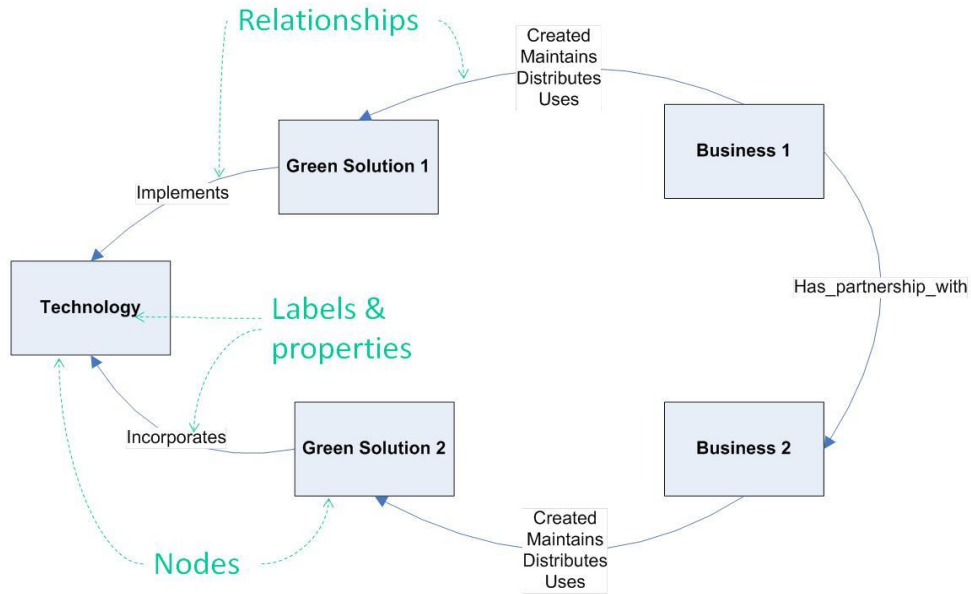


Figure 2 - Potential connections between different case studies

Furthermore, both the green solutions and the associated businesses in the GreenEcoNet platform's database are described by a set of properties. Data availability for these properties will make each solution, equivalently, each case study:

- Discoverable by the platform's users through the searching functionality of the platform,
- Easy to assess regarding suitability and fitness through the toolkit provided by the platform.

An example of a property graph that includes indicative properties for businesses and solutions is presented in Figure 3.

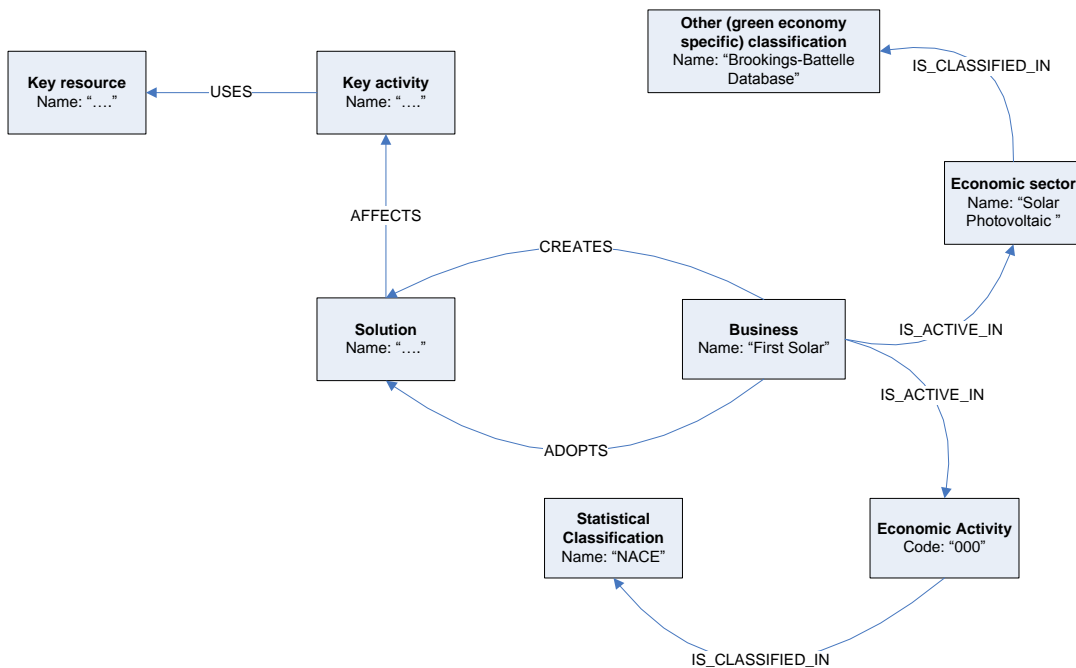


Figure 3 - Property graph with indicative properties for businesses and solutions

1.3. Data sources for the development of the taxonomy for the private-sector part of the Green Economy

Based on the above conceptual framework, a literature review was conducted in order to build the database's schemes of the private sector part of the green economy with the aim to allow the effective search and population of the case studies within the platform.

The starting point was a general purpose classification scheme, for the categorisation of the associated SMEs according to their economic activity. This would characterise the *industry type* property of the **actors**.

Data for industrial activities can be generally collected on the basis of national or international standard classifications, grouping the various economic disciplines. Existing official classification schemes that were considered include:

- The Statistical Classification of Economic Activities in the European Community (NACE).
- The Industry Classification Benchmark (ICB). It is an industry classification taxonomy launched by Dow Jones and FTSE in 2005.
- The Thomson Reuters Business Classification (TRBC). It is an industry classification of global companies; it is owned and operated by Thomson Reuters and is also the basis for Thomson Reuters Indices.
- The Global Industry Classification Standard (GICS). It is an industry taxonomy developed by MSCI and Standard & Poor's (S&P) for use by the global financial community. GICS is used as a basis for the S&P and MSCI financial market indices.
- The UK Standard Industrial Classification of Economic Activities (UK SIC 2007) (SIC) was first introduced into the UK by the Office for National Statistics in 1948 for use in classifying business establishments and other statistical units by the type of economic activity in which they are engaged.
- The International Standard Industrial Classification of All Economic Activities (ISIC), Rev.4, which is the international classification of productive activities, initiated in 1948 by the Department of Economic and Social Affairs of the United Nations Secretariat.

Further categorisation schemes were produced for the classification of the **green solution**. An initial meaningful property of the green solution was considered to be the *type of the green solution*.

Specific classifications that were reviewed to this end were the Environmental Goods and Services Sector (EGSS), the market-based classifications and the scheme of the Brookings-Battelle Database for the U.S. green economy.

EGSS produces the following categories:

- Environmental specific services consist of the output of environmental protection or resource management activities. Environmental specific services can be divided into environmental protection (EP) services and resource management (RM) services.
- Environmental sole purpose products (connected products) may be services or goods (durable or non-durable goods) that directly serve and have no use except for environmental protection or resource management. Connected products can be divided into EP-connected and RM-connected goods.
- Adapted (cleaner) and more resource efficient goods are less polluting or more resource-efficient than equivalent normal goods which furnish a similar utility. Their primary use is not an EP or RM one. Adapted goods can be divided into:
 - 'cleaner' goods, which are less polluting at the time of their consumption and/or scrapping compared to equivalent 'normal' goods;
 - 'resource-efficient' goods, which require fewer natural resources in the production and/or in the use stage.
- Environmental technologies are technical processes, installations and equipment (goods) and methods or knowledge (services), the technical nature or purpose of which is environmental. Environmental technologies can be classified as:
 - End-of-pipe technologies which are mainly technical installations and equipment produced for the measurement, control, treatment and restoration/correction of pollution, environmental degradation and resources depletion;
 - Integrated technologies are technical processes, methods or knowledge which are less polluting and resource intensive than an equivalent average technology; their use is less environmentally harmful than relevant alternatives. Integrated technologies can be:
 - ✓ 'cleaner' technologies, the purpose of which is to prevent pollution or degradation of the environment;
 - ✓ 'resource-efficient' technologies the purpose of which is the prevention of natural resource depletion by reducing the withdrawals of natural resources upstream (i.e. to obtain the same output with less natural resource input).

A subsequent categorisation scheme distinguishes the main categories of green technology sectors of the green solution, namely the *technology* property.

Examples of clean technology categorisations can be readily found in green business promotion websites. A number of available online taxonomies were reviewed in order to cluster the technology property of the green solution. A relevant example is the 'cleantech'

taxonomy proposed by Kachan & Co¹ providing eight categories of clean technologies (Clean energy, Energy storage, Efficiency, Transportation, Air and environment, Clean industry, Water, Agriculture). Each element in a given category could be further decomposed.

In order to proceed to more detailed and qualified categorisations, sustainable technology handbooks and books were reviewed, such as the following:

- Handbook of Water and Wastewater Treatment Technologies, Water Quality and Treatment: A Handbook of Community Water Supplies American Water Works Association, which constitutes a comprehensive source of information on water quality, water treatment, and quality control technologies/techniques.
- Energy and Power Generation Handbook Established and Emerging Technologies, which covers aspects of power generation from all known sources of energy around the globe, including solar, wind, hydro, tidal and wave power, bio energy (including bio-mass and bio-fuels), waste-material, geothermal, fossil, petroleum, gas and nuclear.
- Handbook of Solid Waste Management and Waste Minimisation Technologies. It includes: solid wastes handling methods and management, technologies of incineration, volume reduction of solid wastes, etc.
- CIGR Handbook of Agricultural Engineering, a comprehensive collection of agricultural engineering reference material to the data of publication compiled by more than 190 authors from around the world. The handbook is composed of six volumes (Land and Water Engineering, Animal Production and Aqua cultural Engineering, Plant Production Engineering, Agro Processing Engineering, Energy and Biomass Engineering, Information Technology).
- Transportation Technologies for Sustainability, a book covering innovative sustainable transportation technologies and key developments in intelligent vehicle technology.

The literature above assisted the development of the categorisation schemes for different disciplines. The following section presents the taxonomy of the private sector and briefly summarises the guidelines underlying the classification.

1.4. Development of the taxonomy of the private-sector part of the Green Economy

The structuring of the taxonomy of the private sector part of the green economy was divided into the classification of actors and the classification of the green solutions according to a number of distinctive properties. A basic consideration was that the taxonomy was structured in order to form the basis for the development of the GreenEcoNet database's scheme, allowing for effective search and population and not with the view to constitute an exhaustive categorisation of the green economy's private sector. As previously stated, the taxonomy

¹ <http://kachan.com/about/cleaner-technology-definition-cleantech> (commercial website)

developed was subsequently accommodated in the 'case study template', which outlines the structure of the case study introduced into the platform.

The classification of the associated SMEs was conducted in accordance to a number of properties characterising the users (i.e. SMEs) of the platform:

Properties for SMEs:

- Name of the SME (unstructured text²)
- Description of the SME (unstructured text)
- Logo of the company (insert image)
- Industry type (categorisation of the *Industry type* property)
- Contact details of the SME (unstructured text)
- Country
- Address
- Role in the featured case study (categorisation of the *role* property of the associated SME)

As mentioned in the previous section, the International Standard Industrial Classification of All Economic Activities (ISIC), Rev.4 is used for the categorisation of the *Industry type* property of the associated SMES.

As outlined in the Description of Work for the GreenEcoNet project, businesses were also categorized as:

- a) 'producers' of products or services that improve environmental performance,
- b) 'users' and
- c) 'distributors/implementers' of such technologies and services.

Producers develop, create and sell products and services that are resource efficient and benefit the environment. Users seek to embody resource efficient, environmentally beneficial business practices in the way they carry out their operations, while distributors undertake the distribution, study/planning, and installation of the green solution. The user of the platform is requested to provide details of both the green solution users and provider SME in order to distinguish relationships/partnerships between actors.

However, more specific categorisation schemes appear in distinguishing properties for the green solution. As such, the following properties for the green solution were recognised:

Properties for green solutions:

- Name (unstructured text)
- Type (categorisation of the *type* property of the green solution)
- Technology (categorisation of the *technology* property of the green solution)
- Cost (unstructured text or drop down list with range of costs)
- Benefit type (categorisation of the *benefit type* property of the green solution)

² Meaning that the user will have to type this property (no categorizations/structured text are provided)

- Prerequisites (unstructured text)
- Benefits (unstructured text)
- Development stage (categorisation of the *development stage* property of the green solution)

The *type* property categorisation of the green solution is summarised in the following table:

Table 1. Categorization of the type property of the green solution

Type of the green solution	Sub-categorizations	
Technology	Raw Materials	
	Pre-fabricated Structures	
	Chemicals and Compounds	
	Products (Goods)	
	Machinery	
	Electrical Equipment	
	Electrical Power Generation Equipment	
	Automation (i.e. how equipment is used)	
	Infrastructure	
	Information Technology	
Service	Education	Behavioural Patterns
		Carbon Social Responsibility
	Organisational Methods	Development and Implementation of Environmental Management Systems
		Environmental Auditing
		Carbon Footprint Analysis and Monitoring
	Technical Consulting	Technology Assessment
		Resource Consumption Audit and Analysis
		Waste Stream Analysis and Waste Management
		Restoration and Rehabilitation
		Engineering Design / Installation
Green Business Model	Regulatory Compliance	Environmental Impact Assessment
		Risk Assessment (e.g. SEVEZO II, ATEX)
		REACH, CLP

Source: Adapted from classification of Environmental Goods and Services Sector (EGSS)

The *technology* property categorisation of the green solution is demonstrated in the following table:

Table 2. Categorization of the technology property of the green solution

Technology of the green solution	Sub-Categorizations	Activities included (but not limited to)
Materials	<ul style="list-style-type: none"> ▪ Bio-based Materials ▪ Nano-materials ▪ Glass Materials ▪ Chemical Materials ▪ Building Materials ▪ Ceramics ▪ Polymers ▪ Biodegradable Products 	Use of materials that are recycled, recyclable, reflective and non-toxic, can minimise consumption of raw materials and enable a continual reuse of limited natural resources, decrease waste and air pollution.
Industrial Processes	International Standard Industrial Classification of All Economic Activities (ISIC), Rev.4	Processes that minimise negative environmental impacts, conserve energy and natural resources, etc.
Energy Production	<ul style="list-style-type: none"> ▪ Conventional Energy ▪ Alternative Energy <ul style="list-style-type: none"> • Wind Energy • Solar Energy • Geothermal Energy • Tidal Energy • Bio-fuels • Biogas • Biomass Energy and Waste-to-Energy 	Manufacturing, production, construction, design, research, delivery, operation, storage and maintenance of wind, solar, biomass, hydro, geothermal, ocean, methane, and waste incineration as a fuel source.
Resource Efficiency	<ul style="list-style-type: none"> ▪ Energy Efficiency ▪ Fuel Efficiency ▪ Raw Material Efficiency ▪ Water Efficiency ▪ Land/Soil Efficiency ▪ Other 	Products, services and techniques supporting the sustainable management of energy productivity, material productivity, water productivity, CO2 productivity.
Agriculture and Fisheries	<ul style="list-style-type: none"> ▪ Food and Feed Management ▪ Land Management and Fertilisation ▪ Pest and Disease Management ▪ Aquaculture 	Products and services to conserve, and maintain, low carbon agriculture, land management, land and water engineering, animal production and aqua cultural engineering, plant production engineering, agro processing engineering, etc.
Protection of Natural Resources	<ul style="list-style-type: none"> ▪ Air Pollution Prevention and Mitigation ▪ Water Pollution Prevention 	Products and services to conserve, maintain, and improve natural resources and

	<ul style="list-style-type: none"> and Mitigation ▪ Soil Pollution Prevention and Mitigation ▪ Protection of Biodiversity 	environment.
Waste Treatment and Recycling	<ul style="list-style-type: none"> ▪ Solid Waste Management ▪ Waste Water Treatment ▪ Hazardous Waste Management ▪ End of Life Product Recovery ▪ Material Reclamation ▪ Waste Exchange 	Products and services providing information on water quality, as well as waste collection, waste (water) recycling and reuse, waste (water) generation or landfill area and waste (water) treatment.
Transportation	<ul style="list-style-type: none"> ▪ Vehicle Technology ▪ Vehicle Fuels ▪ Fuelling and Charging Infrastructure ▪ Traffic and Route Management ▪ Driving Patterns and Choice of Transport Modes 	Products and services covering innovative sustainable transportation technologies and developments in intelligent vehicle technology.
Building	<ul style="list-style-type: none"> ▪ Building Design ▪ Building Automation ▪ Insulation ▪ Lighting ▪ HVAC (heating, ventilation and air conditioning) 	Sustainable buildings incorporate a variety of activities which mainly include the design, construction, use, refurbishment, installation of energy efficient end use technologies, renovation of the building envelop through the installation of thermal insulation, replacement of insulating materials, etc.
Hospitality	<ul style="list-style-type: none"> ▪ Accommodation ▪ Travel and tourism ▪ Food and beverage service ▪ Sporting events 	Sustainable hospitality focuses on reducing the environmental, social and economic impacts of the hospitality sector, covering a number of sectors (lodging, restaurants, food and beverage operations, venues, events and meetings, and sporting events).

Source: Authors' elaboration

Moreover, a categorisation scheme was developed according to the *benefit type* property of the green solution, which relates to the strategic decision of an SME to participate in a market created as a result of regulatory forces or consumer demand that is shaped by their values of health, safety, localism and fairness.

Table 3. Categorisation of the benefit type of the green solution

Benefit type
Environmental Protection
Resource Efficiency
Protection of Public Health
Compliance with Regulatory Requirements

Source: Authors' elaboration

A last categorisation that was considered is the development stage property of the green solution. Three phases were composed in this respect, namely:

- Available
- Emerging
- Demonstrated in practice

In order to avoid the chance that the taxonomy becomes onerous, discouraging the user to carefully classify his case study, a base line taxonomy was constructed to accommodate the case study data and progressively allow additional complexity/rigorousness throughout the project, in parallel with the maintenance of the collection of case studies, 'best practice' interventions, and examples.

1.5. Validation of the taxonomy

Quoting the GreenEcoNet project Description of Work (DOW):

*'After a first preliminary draft of the taxonomy, a representative group of stakeholders will be defined in month 6 as a basis for receiving feedback. Their reviews will be electronically received and will be utilised to further elaborate the taxonomy. At any time of the development of the taxonomy, if corrections or extensions appear to be needed, they will be incorporated before its first version is delivered.'*³

To this end, the draft taxonomy was electronically sent to 21 experts coming from different backgrounds (business, academia, research) and covering various fields of the green economy (agriculture and forestry, air pollution, buildings, energy, resource efficiency, industry, land management and soil pollution control, materials, solid waste management, transportation, water and wastewater treatment/technologies). Finally, feedback was received from 8 stakeholders in total (see Annex I).

The draft taxonomy was circulated to stakeholders for validation during the months January-February 2014. Experts in various fields of the green economy were requested to provide feedback on the categorisation schemes and evaluate the content of the case study template with regard to:

- a) The completeness of the categories and subcategories of various themes (with emphasis

³ Page 5 of 31

on categorisations relating to the particular field of expertise of each expert);

- b) The ability of questions to gather useful information for SMEs interested in adopting the green solution;
- c) The occurrence of overlaps between questions, misconceptions, not properly defined categorisations or other objections on the content of categorisations and/or questions and/or other possible comments.

Their feedback was collected, assessed and incorporated where appropriate and the final draft of the case study template (see Annex II) was circulated to the consortium.

In the upcoming months, through collection of case studies, it may be necessary to incorporate corrections or extensions to this first version. A procedural manual is, therefore, delivered in month 22 (March 2015) as a guidance for the maintenance and extension of the taxonomy.⁴

⁴ Please refer to deliverable D1.2 "Procedure manual for the maintenance and extension of the taxonomy"

Chapter 2 – Categorisation of strategies and initiatives towards the ‘Green Economy’

2.1. Introduction

The aim of this section is to provide a categorisation scheme of the various initiatives and strategies towards the ‘green economy’, so that the GreenEcoNet platform’s database will be populated. After its population, the database will be a useful tool to both businesses and policy makers alike.

2.2. Overview of existing approaches for the categorisation of initiatives and strategies towards the ‘green economy’

This section gives an overview of current literature concerning how different authors have organised the content of green growth strategies and individual policy instruments (sustainable consumption and production) in order to analyse their characteristics and impacts.

The OECD ‘Guidebook to the Green Economy (Issue 3)’ includes an extensive review of over 30 recent publications and papers using different categorisation schemes for grouping green growth policies. Mostly encountered categorisations, according to the Guidebook, include four main ‘approaches’:

Table 4. Common categorisation approaches of green growth policies and strategies

Approach	Categorisation of...
Outcome-based or Pathway Approach	(i) the desired outcome or pathway
Policy-based Approach	(ii) the ‘type’ of policy measure
Sector-based or Capital-based Approach	(iii) the target sectors or types of ‘capital’
Mixed Approach	(iv) a mixed approach adopting a combination of approaches

Source: OECD, 2012

The typology adopted by the paper itself constitutes a ‘policy-based approach’ which draws upon six categories that use an intuitive format based around “6 Is”: Internalising; Incentivising; Institutions; Investment; Information; and Inclusion for summarising the policy measures. Within these six categories, a consolidated list of 20 green economy and complementary policy sub-categories is outlined (see in Annex III the detailed table).

Adell et al. (2009) in their report on Sustainable Consumption Strategies in the European Union for the EUPOPP project, have categorised strategies for sustainable consumption and production on **content-wise** aspects, focusing on:

- (a) the reason the strategies were developed,

- (b) the way they pursue/define sustainable consumption,
 - (c) the fields of policy covered and
 - (d) the types of policies and instruments covered,
- as well as on **policy-scope** aspects, evaluating
- (a) the type of strategy or policy,
 - (b) the level of definition of objectives, actions and instruments as well as
 - (c) the institutionalisation (share of responsibilities, targets, indicators and monitoring).

The categorisation scheme for the reasons to address and define an SC strategy, proposed by the Ecoinstitut Barcelona, distinguishes the following categories:

Table 5. Reasons to address and define a SC strategy

Reasons to address and define a SC strategy	Social and economic growth decoupled from environmental impact
	To reduce the impact of C&P mostly on the environment
	To reduce the impacts of our way of life (C&P)
	To reduce the impacts of C&P felt at global scale
	To improve the economic system and industry competitiveness
	To improve human welfare and living standards
	To shift to a knowledge and service based economy
	To make production system more socially responsible
	To guarantee future P&C possibilities
	To create a vision for SC&P for future developments
	To tackle S&P in a systematic and active way
	To further promote SC&P internationally

Source: Ecoinstitut Barcelona, 2009

The report categorises strategies according to the main guidelines defined at the World Summit on Sustainable Development (WSSD) and considers that sustainable consumption and production is achieved by:

- Improving production processes and the performance of products, from an environmental point of view in most cases
- Promoting the demand of green products
- Informing and training consumers/citizens in order for them to make conscious decisions when purchasing resources, goods or services

- Reducing environmental impacts (resource degradation, pollution and waste)
- Greening the market, that is to say, making green products available for all consumers,
- Improving waste management and recycling of products,

Another way to organise SCP policies, proposed by the Ecoinstitut Barcelona, is by means of *general lines of action*, responding to the question: ‘How is SCP intended to be achieved?’

Table 6. Action lines to achieve Sustainable Consumption and Production

Action lines to achieve Sustainable Consumption and Production	Improve production processes
	Improve product performance
	Promoting the demand of green products
	Info + training to consumers/citizens for conscious decision making
	Reduce resource degradation, pollution and waste
	Integrate SCP into other policies and monitoring
	Well-being of human activities and healthy surroundings
	Greening the market, make green products available
	Improve waste management and recycling
	Creation of employment in the environment sector
	Promote SCP at international level
	Change of values/behaviors and reduce (material) consum.
	Production of quality, health and safe products
	Improve systems performance (urban and infrastructures)
	Social and environmental responsible investments
Preserve heritage and biodiversity	

Source: Ecoinstitut Barcelona, 200)

The report also recognises that due to the broadness in scope of SC, it is difficult to identify exactly which *fields of policy* are affected. The main policy areas addressed in order to group measures and instruments are summarised as follows: product and industry, green public procurement policy and consumer policy, followed by energy and climate, environmental management, waste, transport, education and research.

With regard to the **policy-scope** aspect, the report categorises the various policy instruments in the following categories:

- Regulatory instruments, which oblige their addressees (citizens and organisations) to comply with government rules, under the threat of sanctions (e.g. bans, mandatory standards and permit requirements).
- Economic instruments, which basically involve the distribution or levying of resources, thus making certain behaviours more or less financially attractive. Examples include

taxes or tax exemptions, subsidies or loans, levies or charges, tradable permits and public procurement.

- Communicative instruments aim to influence the addressees via information and persuasion. Examples include labelling, disclosure of information about product or producer performance, and communication campaigns.
- Procedural instruments and instruments of societal self-regulation include negotiated agreements, voluntary programmes, corporate social responsibility (including environmental management systems) and self-regulation by groups of addressees.

Another policy-based classification was introduced by OECD (A Framework for Assessing Green Growth Policies). The report develops a classic taxonomy of green growth policies by distinguishing policy instruments into *market-based instruments*, aiming at addressing market failures mainly through price signals, and *non-market approaches*. The first category includes environmentally-related taxes, charges and fees, tradable permits, and subsidies for reducing pollution, while *non-market approaches* can be divided into separate categories covering direct environmental regulations, active technology support policies and voluntary approaches including information-based instruments.

As far as sustainable consumption is concerned from a broader consumer-perspective approach, Hertwich et al. (2003) have introduced classifications for grouping examples of sustainable consumption. Classifications that could be considered for the purposes of categorising the green strategies and initiatives towards the green economy are the classification according to *lifestyles and functions* (based on UNEP's proposal to use 'life' functions and adding lifestyle) and the classification according to the *observed mechanism*.

Table 7. Different options to categorise sustainable consumption

Categorisation options		
Sustainable consumption practices categorisation	Functions	<ol style="list-style-type: none"> 1. Lifestyle 2. Life functions (housing, mobility, nutrition, clothing, leisure, education, health)
	Observed mechanism	<ol style="list-style-type: none"> 1. Locating person in a more sustainable set-up (e.g. move from a suburb to a city) 2. Changes in infrastructure (e.g. subways instead of roads) 3. Changing behaviour (e.g. habits and routines, preferences, values, cultural perspectives) 4. Availability of and access to sustainable products and services (a. affecting impact during production and disposal, b. affecting impact during use) 5. Intensifying the use of products (use less products) (a. longer life cycles (durability, reuse, repair), b. more users (sharing)) 6. Shaping careers

Source: Edgar Hertwich et al. (2003) 'Examples of Sustainable Consumption: Review, Classification and Analysis'

2.3. Categorisation of initiatives and strategies towards the Green Economy

Following the review of a number of green growth strategy and initiative categorisations, a set of seven meaningful ways to categorise a green growth initiative was obtained. In Table 8 the seven categories are summarised.

- As such, policy initiatives can be initially categorised according to their *regional scope*, e.g. taking place in a **EU, Member State or community level**.
- A further categorisation could distinguish the *document type* of policy initiative; to this end, a meaningful categorisation of the EU legislation and policy documents could reflect whether the initiative refers to a Roadmap, white/green paper, thematic strategy, EU Directive, EU regulation, voluntary instrument with EU coverage, etc.
- On the other hand, national and regional policies could constitute national legislation transposing the directives, national legislation which goes beyond the EU Directives, national strategies, regional strategies or regional development programmes (RDP)⁵. Each initiative of this category corresponds to a specific set of tools employed for the attainment of its goals. Consequently, initiatives were also categorised according to the relevant *policy instruments type*.
- A number of thematic categorisations have been introduced to frame the field of sustainable development in the literature. The corresponding categorisation refers to the *Thematic field of application* as included in Table 8. Relevant examples under this grouping are related to the green economic activity categories developed in Chapter I.
- A number of other categorisation schemes were also found to be meaningful in terms of abstracting useful information, namely the activity coverage of the initiative, the principal policy objectives, the strength of the incentive or regulation, along with the implementation timeline of the policy initiative.

Table 8. Categorisation of policy initiatives towards the Green Economy: summary table⁶

Strategy/initiative category name ^a	Subordinate level category ^b	Short description ^d
1. Regional Scope <i>Europe, Member state, Regional level^f</i>	1.1 Document Type <i>Europe: Roadmap, white/green paper, thematic strategy, EU action plan, EU Directive, EU regulations, voluntary instruments with EU coverage.</i> <i>National and regional policies: National legislation transposing the directives, national legislation</i>	The region and the types of policy plans taken place on EU, national, and regional level. e.g. A Green Paper usually outlines initial ideas in order to stimulate debate. Thematic

⁵ Partly adopted by the GREECO project, 'Territorial Potentials for a Greener Economy', ESPON (2013).

⁶ Partly adopted by the APRAISE project, D3.1, 'Taking stock of environmental policies and existing interactions', FP7 (2012).

which goes beyond the EU Directives, National strategies, Regional strategies, Regional development programmes (RDP)

strategies are then followed by Action Plans, and, sometimes, by Directives or Regulations – which unlike the former are of a legislative nature.

2. Thematic field of application

Materials, Industrial Processes, Energy Production, Resource Efficiency, Agriculture and Fisheries, Protection of Natural Resource, Waste Treatment and Recycling, Transportation, Buildings, Hospitality
Another option would be according to UNEP's suggestion to utilise the 'life functions'.

Thematic categorisations indicating the particular field of sustainable development

3. Activity coverage of initiative

Cross cutting policy initiatives
End use sectors (e.g. Residential, tertiary, industry)

Criteria/requirements stating who will fall under the scope of the measure. Cross-cutting (or horizontal) measures address more than one sector.

4. Principal policy objectives

Build local and regional demand for sustainable practices, products and services; Strengthen local and regional supply by supporting the creation, development and attraction of sustainable businesses and clusters; Engage people in the green economy

It refers to the promotion of investments and behaviour changes to build demand for green products and services, creation, development and attraction of sustainable businesses and clusters, Building skills for the green economy and engage communities in the process.

5. Strength of the incentive or regulation

- *Mandatory*
- *Voluntary*

Distinguishes whether the policy initiative is mandatory or voluntary

6. Type of policy instrument

- *Economic instruments (e.g. subsidies and soft loans, tax incentives, levies, trading systems)*
- *Public procurement*
- *Voluntary agreements*
- *Regulation / command-and-control (e.g. standards and mandatory labels, prohibition of products/ practices, application constraints)*
- *Information and education (e.g. professional training and qualification, rating and labelling programs, public information campaigns)*

The set of relevant tools (policy instruments) employed for the attainment of the initiative's goals.

7. Implementation timeline of the policy initiative

Starting year – current stage

^aThe categorisation is composed of 2 levels moving from the parent category to subordinate categories. The first level is denoted by whole numbers and bold text (e.g., **1. Regional Scope**).

^bThe second level is denoted by decimal numbers and plain text (e.g., 1.1 Type of green growth policy according to regional scope).

^cThe third level is denoted by italic text and contains some illustrative examples.

^d'Short description' provides short explanations on each categorisation scheme.

References

McGraw-Hill, Inc. Handbook of Water and Wastewater Treatment Technologies, Water Quality and Treatment, Fifth Edition. American Water Works Association, 1999. Print.

K. R. Rao. Energy and Power Generation Handbook Established and Emerging Technologies. American Society of Mechanical Engineers, 2011.

Nicholas P. Cheremisinoff, Ph.D. Handbook of Solid Waste Management and Waste Minimization Technologies. Elsevier, 2002.

Ehsani et al., CIGR Handbook of Agricultural Engineering Transportation Technologies for Sustainability, edition 2013.

Edgar Hertwich, Michael Katzmayer, Examples of Sustainable Consumption: Review, Classification and Analysis, NTNU Program for Industrial Ecology Programme, Report no: 5/2004.

International Commission of Agricultural Engineering (CIGR, Commission Internationale du Génie Rural). Handbook of Agricultural Engineering (A collection of agricultural engineering reference material to the data of publication of more than 190 authors from around the world).

Aure Adell, Ana Alcantud and Bettina Schaefer (ECOI), EUPOPP Work Package 1, Deliverable 1.3: Sustainable Consumption, Strategies in the European Union, Final Draft, April 2009.

Cameron Allen, A guidebook to the Green Economy, Issue 3: exploring green economy policies and international experience with national strategies, UN Division for Sustainable Development, November 2012.

Ecoinstitut Barcelona, EUPOPP (Policies to promote sustainable consumption patterns), work package 1, deliverable 1.3: Sustainable consumption strategies in the European Union, April 2009.

Ehsani, Mehrdad, Wang, Fei-Yue, Brosch, Gary L. Transportation Technologies for Sustainability, Springer New York Dordrecht Heidelberg London, 2013.

De Serres, A., F. Murtin and G. Nicoletti (2010), "A Framework for Assessing Green Growth Policies", OECD Economics Department Working Papers, No. 774, OECD Publishing, <http://dx.doi.org/10.1787/5kmfj2xvcmkf-en>.

Alain de Serres, Fabrice Murtin and Giuseppe Nicoletti, Framework for Assessing green growth policies, Economics Department, OECD Working Papers No.774,

OECD (2013), Policy Instruments to Support Green Growth in Agriculture, OECD Green Growth Studies, OECD Publishing.

OECD (2012c), Water Quality and Agriculture: Meeting the Policy Challenge, OECD Studies on Water, OECD Publishing.

Joanneum Research (WP leader), APRAISE project, D3.1: Taking stock of environmental policies and existing interactions, December 2012.

Territorial Potentials for a Greener Economy, GREECO project, Applied Research 2013/1/20, Vol. 5. Policy options and recommendations, ESPON & TECNALIA, 2012.

Official national and international classifications of economic activities

Statistical Classification of Economic Activities in the European Community (NACE).

Dow Jones and FTSE, Industry Classification Benchmark (ICB), 2005.

Thomson Reuters, Thomson Reuters Business Classification (TRBC).

MSCI and Standard & Poor's (S&P), Global Industry Classification Standard (GICS).

Office for National Statistics, UK Standard Industrial Classification of Economic Activities (UK SIC 2007) (SIC).

Department of Economic and Social Affairs of the United Nations Secretariat, International Standard Industrial Classification of All Economic Activities (ISIC), Rev.4.

International Standard Industrial Classification of All Economic Activities (ISIC), Rev.4

Links

Cleantech taxonomy proposed by Kachan & Co: <http://www.kachan.com/cleantech-taxonomy-definition-defined>

Annex I – Experts who provided feedback for the validation of the taxonomy

Contact person	Position and affiliation	Relevance with the Green Economy/SME sector area	Email	Country/Region
Dr Patrick BÜKER	Stockholm Environment Institute of York	Plant ecologist who undertakes research in developed and developing countries on topics related to interactions between the atmosphere, biosphere and pedosphere, with a focus on assessing interrelated effects of various air pollutants	patrick.bueker@york.ac.uk	UK / Europe
Steve BROWN	STROMA NX	Managing Director	S.Brown@stromanx.im	Isle of Man (UK)
Dr Georgiopoulos Vasilios	GRESKO-Greek Energy Services Company	Energy services and products in buildings and ships	vgeorgio@gresko.gr	Greece
Dr Athanasios Kolios	Chief Executive of JCC Engineering Lecturer at Cranfield University	Offshore Renewable Energy Group Department of Offshore, Process and Energy Engineering	a.kolios@cranfield.ac.uk	UK
Dr. David Moisis	Kantor Management Consultants , Director of Energy and Infrastructure	Kantor helps businesses to create sustainable competitive advantage and succeed in achieving their goals	DEM@kantor-group.eu	Greece
Constantinos Ioannou	Administrative Director of HALYVOURGKI SA (Steel Production Industry)	Member of PCCI (Piraeus Chamber of Commerce and Industry)	cioannou@halyvourgiki.com	Greece
DR. Manos Chatzigeorgiou		Senior Energy consultant	manolis198115@yahoo.gr	Greece
Valentina CORSO	Dolce Inizio	green weddings and green events	vale.corso@tiscali.it	Italy

Annex II – Case study Template

GreenEcoNet Case Study Template

Please select and upload the appropriate data for your case study.

Uploading a case study allows you/your organisation to profile your experiences and network with other SMEs. Your experiences will also help to improve policy and research for supporting SMEs make the transition to greener economies.

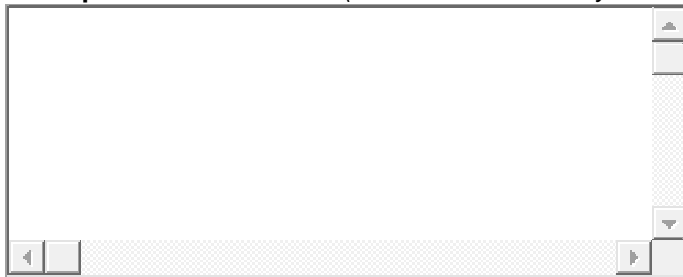
Your role

What was your role in the featured case study?

- Production of green solution
- Distribution / installation of green solution
- Adoption of green solution

Case Study Description

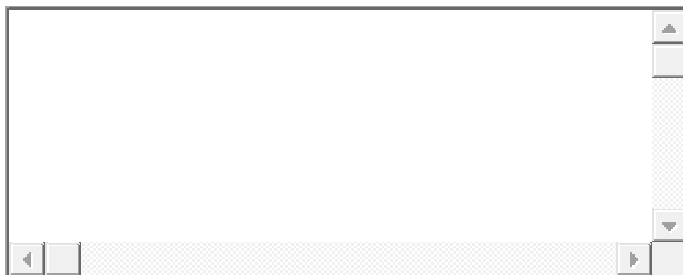
Short pitch of the solution (*One-sentence summary of the case study*)



Description of the case study

A possible outline for a green case study to capture necessary information could be the following: 1. Background (general information setting the landscape of the green initiative/solution/action); 2. Reasoning (why did your organization undertake this green solution?); 3. Process (what steps were followed in order to implement and maintain the green solution?); 4. Effects/Results (what were results/effects observed from the implementation of the green solution? How does the green solution benefit the environment?); 5. Facilitating factors (what factors enabled this good practice to take place?); 6. Barriers/challenges (what barriers/challenges did your organization face?); 7. Lessons learnt (what worked particularly well? What would you do differently next time? What advice would you give to another organization wishing to implement this solution?)

The above outline covers questions often asked. They are for guidance only; additional information should be added accordingly in order to bring the case study alive.



Upload illustrative features, like diagrams, pictures, flowcharts, etc. relevant to the case study.



What was the type of the green solution?

- Technology
 - Raw Materials
 - Pre-fabricated Structures
 - Chemicals and Compounds
 - Products (Goods)
 - Machinery
 - Electrical Equipment
 - Electrical Power Generation Equipment
 - Automation (i.e. how equipment is used)
 - Infrastructure
 - Information Technology
 - Other
- Service
 - Education
 - Behavioural Patterns
 - Carbon Social Responsibility
 - Other
 - Organizational Methods
 - Development and Implementation of Environmental Management Systems
 - Environmental Auditing
 - Carbon Footprint Analysis and Monitoring
 - Other
 - Technical Consulting
 - Technology Assessment
 - Resource Consumption Audit and Analysis
 - Waste Stream Analysis and Waste Management
 - Restoration and Rehabilitation
 - Other
 - Engineering Design / Installation
 - Regulatory Compliance
 - Environmental Impact Assessment
 - Risk Assessment (e.g. SEVEZO II, ATEX)
 - REACH, CLP

- Other
- Green Business Model
- Other

What does the featured solution contributed to?

- Environmental Protection
- Resource Efficiency
- Protection of Public Health
- Compliance with Regulatory Requirements
- Other

Which sector does the case study belong to?

- Materials (e.g. bio based materials, building materials, etc.)
- Industrial Processes
- Energy Production
- Resource Efficiency (e.g. water efficiency, fuel efficiency, etc.)
- Agriculture and Fisheries
- Protection of Natural Resources (e.g. air pollution prevention and mitigation, etc.)
- Waste Treatment and Recycling
- Transportation
- Buildings
- Hospitality
- Other

How would you further categorize the sector for Materials?

- Bio-based Materials
- Nano-materials
- Glass Materials
- Chemical Materials
- Building Materials
- Ceramics
- Polymers
- Biodegradable Products
- Other

How would you further categorize the sector for Industrial Processes?

The International Standard Industrial Classification of All Economic Activities (ISIC), Rev.4 is used.

How would you further categorize the sector for Energy Production?

- Conventional Energy
- Alternative Energy
- Other

How would you further categorize the sub-sector for Alternative Energy Production?

- Wind Energy
- Solar Energy
- Geothermal Energy
- Tidal Energy
- Bio-fuels
- Biogas
- Biomass Energy and Waste-to-Energy
- Other

How would you further categorize the sector for Resource Efficiency?

- Energy Efficiency
- Fuel Efficiency
- Raw Material Efficiency
- Water Efficiency
- Land/Soil Efficiency
- Other

How would you further categorize the sector for Agriculture and Fisheries?

- Food and Feed Management
- Land Management and Fertilization
- Pest and Disease Management
- Aquaculture
- Other

How would you further categorize the sector for Protection of Natural Resources?

- Air Pollution Prevention and Mitigation
- Water Pollution Prevention and Mitigation
- Soil Pollution Prevention and Mitigation
- Protection of Biodiversity
- Other

How would you further categorize the sector for Waste Treatment and Recycling?

- Solid Waste Management

- Waste Water Treatment
- Hazardous Waste Management
- End of Life Product Recovery
- Material Reclamation
- Waste Exchange
- Other

How would you further categorize the sector for Transportation?

- Vehicle Technology
- Vehicle Fuels
- Fuelling and Charging Infrastructure
- Traffic and Route Management
- Driving Patterns and Choice of Transport Modes
- Other

How would you further categorize the sector for Buildings?

- Building Design
- Building Automation
- Insulation
- Lighting
- HVAC (heating, ventilation and air conditioning)
- Other

How would you further categorize the sector for Hospitality?

- Accommodation
- Travel and tourism
- Food and beverage service
- Sporting events
- Other

Information for Solution Assessment

Maturity of the solution

- Available
- Emerging
- Demonstrated in practice

Financing

- Private Funds
- Subsidy
- Bank Loan
- Third Party Financing
- Other

Investment costs *(Turn - key costs)*

Operating costs *(Operational and maintenance costs)*

Emission Reductions (tones/year, specify if otherwise)

Energy Consumption Savings (kWh/year, specify if otherwise)

Water Consumption Savings (tones/year, specify if otherwise)

Material Consumption Savings (tones/year, specify if otherwise)

Total Waste Avoided (tones/year, specify if otherwise)

Technical and Human prerequisites

Technical prerequisites refer to the technical compatibility (meaning the perceived consistency of a green solution with the incumbent infrastructure and overall experiences of the SME) and human prerequisites refer to the in-house expertise required for the implementation of the solution.

Regulatory framework prerequisites and constraints

Regulatory prerequisites and constraints may involve licenses, permits and other obligations needed to be addressed during the implementation of the green solution.

The SME that adopted the green solution

Name of the SME

Description of the SME *(Please shortly include some key information of the company)*

Upload the logo of the company

Sector *(The International Standard Industrial Classification of All Economic Activities (ISIC), Rev.4 is used)*

Contact details of the SME

Location

The SME that provided the green solution

Name of the SME

Description of the SME *(Please shortly include some key information of the company)*



Upload the logo of the company

Sector *(The International Standard Industrial Classification of All Economic Activities (ISIC), Rev.4 is used)*

Contact details of the SME *(Include contact person, location, email, etc.)*

Location

Data Protection

- The case study does not involve sensitive topics, confidential information, or identifiers that could place a participant at risk if disclosed or any other sort of third party information without their consent.**
- Authors of the case study agree the material provided to become available in public in part or as a whole.**

We appreciate that writing a best practice case study can be a time-consuming process and we are grateful for sharing the detailed, value-adding best practices from your organization. We believe this will be of benefit not only to your organisation but to the wider community of SMEs wishing to participate in the transition to the green economy.

Annex III – A ‘Policy-based’ categorisation approach according to “6 Is” categorisation format (OECD, 2012)

Policy category	Policy sub-categories
Internalising (externalities)	1. Taxes, charges, fees, levies on ‘bads’ (i.e. pollution, resource use or proxy) 2. Cap-and-trade permit or certificate systems
Incentivising	3. Investment incentives – low-interest loans; micro-financing; tax exemptions etc. 4. Subsidies, feed-in tariffs and other direct support for ‘goods’ 5. Removing policy-induced distortions and perverse incentives (e.g. harmful subsidies) 6. Leveraging finance – PPPs, long-term guarantees, phased out support, removal of barriers to FDI, lower administrative burden, credit guarantees
Institutions	7. Regulations – norms, standards, info disclosure, labelling, prohibitions, fines and enforcement, mandatory targets 8. Property right and access right laws, including IPR 9. Governance & institutional capacities – accountability, transparency, enforcement, anticorruption 10. Integrated planning, decision-making and resource management - EIA/SEA, IWRM, ICZM, LCA, MCA/CBA, disaster preparedness, other diagnostic tools
Investment (in natural capital, agriculture, human capital, infrastructure, and innovation).	11. Sustainable public procurement 12. Investment in natural capital – PES, protected areas, direct management and rehabilitation 13. Investment in sustainable agriculture 14. Investment in human capital – capacity building, training, skills 15. Investment in infrastructure – energy, water, transport, waste, ICT 16. Investment in innovation – R&D, deployment, information sharing
Information	17. Voluntary approaches – information provision, labelling, CSR, targets, agreements, educational initiatives 18. Measuring progress – green accounting, green targets and indicators, carbon inventories
Inclusion	19. Labour market policies – skills (re-)training, job search assistance, income support and benefits 20. Social protection floors – unemployment