



Project CB005.1.12.153 "Improvement of the capacity for nature protection by enhancement of the cooperation between young environmentalists in Bolyarovo – Kofcaz municipalities", co-funded by EU through the Interreg-IPA CBC Bulgaria-Turkey Programme.



**STUDY ON INNOVATIVE METHODS FOR
SUSTAINABLE USE OF COMMON NATURAL
RESOURCES**



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This document is prepared under project CB005.1.12.153 "Improvement of the capacity for nature protection by enhancement of the cooperation between young environmentalists in Bolyarovo – Kofchaz municipalities". The project is co-funded by the European Union through the Interreg-IPA CBC Bulgaria–Turkey Programme CCI No 2014TC16I5CB005, Priority Axis 1 "Environment", Specific Objective 1.2 "Improving the capacity for nature protection, sustainable use and management of common natural resources through cooperation initiatives in the cross-border area". Lead partner in the project is the Youth Non-governmental organization Bolyarovo (Bulgaria), with project partner Kofchaz Municipality (Turkey). The total budget of the project is EUR 78 367,03, the duration of the project is 12 months.

The overall objective of the project is to raise awareness and build capacity in school students and teachers in the border area in the field of ecosystems protection and restoration. The specific objective of the project is to develop and set appropriate tools for young people to get involved in environmental issues through cooperation.

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Introduction

The regions targeted by this project are rich in biodiversity and have a large, diverse and mostly intact natural environment in the form of flora and fauna, rivers and forests. On the other hand, sustainable development implies economic growth along with the protection of environmental quality, each reinforcing the other, which is why the environmental protection is crucial for the sustainable and economic success of the border region. As recent studies show, environmental awareness and capacity building are more effective when targeting young people who are still flexible in adopting a more environmentally-friendly behavioral pattern through training and practices. In accordance with the current situation, a common approach is needed on both sides of the border region to address common issues, and the project is mainly targeted at young people - pupils from the towns of Bolyarovo and Kofchaz and teachers who will benefit from environmental education and courses that will increase their knowledge and skills for collecting, reading and analyzing environmental data. Also, a number of events are planned to expand the students' environmental views. Given the trans-border context, the establishment of Youth Centre for Monitoring of Ecological Conditions and Balkan Youth Environment Observation platform will provide means and will further infatuate the young people to continue raising awareness on environmental issues and therefore call for adequate measures for nature protection across the border. In this regard the partnership between the youth organization and the municipality will be of great importance as it will help





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provide both - participation and interest of young people and institutional support.

Raising awareness and capacity building in the environmental field are among the key factors influencing the behavior of citizens with regard to environmental issues. The project has a strong impact on the cross-border region as its main target group is students who will benefit from the knowledge and skills acquired during the project implementation and will build on them to make informed decisions using critical thinking and solving scientific problems. Investing time and resources in young people to improve their training and experience in the field of the environment has proved to be the most rewarding incentive to promote sustainable development in the future. The project activities to build capacity and raise awareness through environmental courses, trainings and environmental events along with the establishment of a Youth Centre for Monitoring of Ecological Conditions and Balkan Youth Environment Observation platform will ensure long-lasting effects and create environmental behavior for school students beyond the project, thus ensuring a positive impact on the use of natural resources and the nature conservation in the cross-border area.

The rich ecological heritage in both border regions of Bulgaria and Turkey should be preserved, while at the same time supporting the economic development of the cross-border region. As environmental awareness and capacity building are considered a first step towards sustainable development, the project proposes to raise environmental awareness and build capacity for students and teachers through new environmental knowledge and skills. Through the implementation of the





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project will be identified important means for strengthening the capacity for cross-border cooperation between Bulgaria and Turkey in the field of nature conservation.





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OBJECTIVES OF THE STUDY



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Main objective of the study

The main objective of the study is to draw the attention of young people from the region to the sustainable use of common natural resources by identifying modern innovative, technological, green and challenging methods for sustainable use of common natural resources.

Specific objectives of the study

The following specific objectives are also envisaged for achieving the overall objective of the study:

-  Presentation and analysis of the current state and methods used for sustainable use of common natural resources
-  Presentation and analysis of European best practices and policies for the sustainable use of common natural resources
-  Presenting innovative methods for sustainable use of common natural resources
-  Providing methods for implementing identified innovative methods and follow up of results










Expected results from the study

The developed study will present innovative methods for sustainable use of common natural resources, application methods and possible results. The identified innovative methods for the sustainable use of common natural resources will be available on the developed platform, the project partners will work to test them and their practical implementation through the established youth center, their dissemination in schools and related public institutions.

Direct beneficiaries

The developed research on innovative methods for sustainable use of common natural resources will be actively disseminated and will be used by:

-  Young people (students) who are interested in biology studies and environmental protection
-  Teachers in biology, chemistry and physics from the region
-  Non-governmental organizations active in the environment field
-  Representatives of educational institutions
-  Local and regional institutions and business





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OVERVIEW OF THE STATE OF COMMON NATURAL RESOURCES IN THE REGION

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The development of the region is based on the use and consumption of natural resources, including materials, energy and land. The continued increase in resource use and related environmental impacts can have many negative effects leading to environmental crises and security threats. That is why the sustainable use and management of natural resources has been the focus and subject of many political discussions for more than a decade.

Over the last 50 years, people have changed ecosystems more quickly and wider than any comparable period in human history, to a large extent these changes are motivated by the growing need for food, fresh water, wood, fiber and fuel. This leads to significant benefits for human well-being and economic development, but these gains have been achieved with rising costs in the form of degradation of many ecosystems.

What makes our materials and energy to be used to the extent that they become a global environmental problem and a threat to future generations? There is no simple answer to this question, as there are a number of interdependent socio-economic and environmental factors. Nevertheless, there are three main factors that determine the growth of resource consumption and the ensuing environmental impacts of human production and consumption patterns.

The first is the size of the population. The more people who want to cover their material needs, the more resources they consume. The second is how and to what extent we respond to our needs. The third is the development model broadly defined to include the technological level, economic structure and patterns of production and consumption.





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In a globalized world, these factors need to be seen in a global context in order to better understand the importance and urgency of the challenge for both global and European patterns of production and consumption.



The wide range of activities of the population - resource extraction, industrial production, consumption of goods and services, mobility, recreation - leads to mass flows of materials. Raw materials are extracted, transformed into products and goods, transported to other parts of the world and sooner or later are returned to the natural environment in the form of waste or emissions.

The Earth is a closed material system and this puts certain limits on the economic growth. They are clearly linked to the existence of natural resources where the environment plays the role of "source". For some non-renewable resources, including many metals and building minerals, security of supply is at present not of concern; for others, such as fossil fuels and land, the availability is already becoming a problem that will





almost certainly increase. For many renewable resources, such as fish stocks, forests and water, the main challenge is to ensure their sustainable recovery by preserving the reproductive capacity of the ecosystems (also known as "maintaining the natural capital").

Other limitations result from the limited ability of the environment to act as a "sink" to absorb discharges and emissions of pollutants and wastes without serious damage. For example, man-made carbon dioxide emissions are already causing climate change and the ozone layer is and continues to be damaged by CFC emissions. Groundwater and soil pollution with large amounts of wastewater is another example of how human activity can affect the environment.

The ever more dynamic development of the world economy has its impact on the natural resources of the region between the municipalities of Bolyarovo and Kofchaz. The two municipalities are situated in the Strandzha ridges, having mostly hilly terrain with arable land, and on the hilly territories there is growing presence of natural deciduous forests and pastures with the increase of the altitude.

Minerals

As a whole, mineral reserves are insignificant and have no significant impact on the socio-economic development of the region.

The geological and paleogeographic development of the municipality of Bolyarovo determines the type and the territorial distribution of the





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useful minerals. Of industrial importance are the deposits of marble in the Derwent Heights and limestone deposits near the village of Voden and Krainovo. The industrial reserves of copper ores in Igljika village (with secondary components lead and zinc) and of iron ores in the village of Golyamo Krushevo.

Climate

The climate is formed by a complex of factors including the relatively low altitude, the activity of the Mediterranean cyclones, the presence of secondary natural forest vegetation, proximity to a transitional river with a meridional orientation, proximity to sea basins (the Black Sea and the Aegean Sea).

The average annual temperatures of 12.0 °C are higher than those for Bulgaria and Turkey. The temperature sum for the period with temperatures above 10 °C reaches 3700 °C. The annual temperature amplitude is 21.5 °C.

In winter the average monthly temperatures are positive. The average January temperature measured at Stefan Karadzhovo Station is 0.9 °C, and at Strandzha Station 0.5 °C. For December, they are respectively 3.5 °C and 3.1 °C. The average monthly minimum temperature in January is -2,6 °C (St. Karadzhovo) and -3,4 °C (Strandzha). Under severe cold conditions, absolute minimum temperatures reach 19-22 °C below zero.



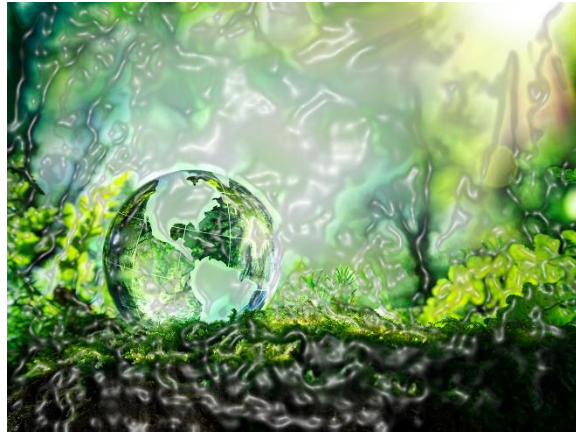


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There are excellent conditions for the production of electricity from photovoltaic systems as well as thermal energy from thermal panels. Good sunlight indicators give reason to claim that there is potential in the area for the use of solar energy as a renewable energy source. Possibility exists also for the cultivation of crops (rape, soy, sunflower, etc.) for the production of biofuels.



The precipitation is insufficient. The annual average amount for the region is 580 mm with a tendency to increase south to the orography of 850 mm / year. The distribution of rainfall is uneven. The highest rainfall occurs in the winter. August is the driest month. There are conditions for spring and summer droughts. The monthly precipitation distribution (for Bolyarovo Station, at a total of 535 mm / year) shows values of 28% in winter, 26% in spring, 22% in summer and 24% in autumn. Separate cases of extreme annual rainfall are ranging from 850 mm to 1300 mm.

The climate regimes in the area favor the comfort of the population. They create excellent conditions for the development of agriculture and livestock breeding, construction and maintenance of business infrastructure, self-cleaning of the air, energy from renewable sources (solar energy, wind energy) and the development of alternative tourism. Adverse rainfall and the relatively high number of fog days may be reported as unfavorable. The risk factors are related to the occurrence of conditions





for the occurrence of extreme abundant eruptions whose consequences have a strong negative effect - floods, erosion, destruction. The conditions also imply the occurrence of summer droughts, the possibility of forest fires, atmospheric and soil humidity deficiency, which poses a risk to permanent crops and intensive vegetable production.

Water and water resources

There are no main water resources in the municipality of Kofchaz, the area relies mainly on the underground waters of the Kayalıköy Dam.

The river network within the municipality of Bolyarovo covers both the Aegean catchment area (via the rivers flowing westwards to Tundzha - Popovska and Arapia) and the Black Sea catchment area (through the high catchment of the Sredetska river). The density of the river network in the catchment area of the Sredetska river is 0.72 to 0.94 km / km², and of the Popovska river - 0.23-0.66 km / km².

The region is characterized by a low watering density and sharp fluctuations of the runoff (mostly in the maximum draft outflow). The average annual flow of the rivers in the area is 180 mm with predominantly rainy feeding (66%). The sweep rate is 37% of the rainfall. The total evaporation from the river basins is high - over 550 mm / year. The rivers are characterized as very torrential with an average frequency of river floods of 6 to 8 times a year.





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With regard to the fresh water, the area has a low potential of natural outflow - 0.5-1 l / sec / km². Crack, ground, and karst waters have been identified. The natural resources of the groundwater in the Negen-Quaternary deposits are insignificant. Karst water manifestations occur in several ascending springs, including south of Voden - 25 l/s and Golyamo Sharkovo - 55 l/s. In the village of St. Karadzovo are located two mineral springs ("Ichme" and "Krastav kladenets"). The springs have a low mineralization and a temperature of about 20.3 °C.

Soils

The climatic peculiarities of the continental-Mediterranean climate, the diverse geological basis and the nature of the natural vegetation have contributed to the formation of diverse soil cover in the municipalities of Bolyarovo and Kofchaz.

The main soil types are Luvisols and Vertisols. The Cinnamon (leaved) soils are characterized by a well-expressed and highly-developed clearly differentiated profile, a high sorption capacity and saturation with bases (higher than 50%). In the absence of erosion, they are fully





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developed, deep soils with a profile of 90 - 100 to 150 - 200 cm. They are suitable for the cultivation of wheat, corn, sunflower, beet, oriental tobacco, broadleaf tobacco, pastures, meadows, plums, peaches, apples, pears, cherries, vines.

The Verisols are slightly acidic to alkaline with very high sorption capacity and saturation with bases. They contain from 3 to 5% humus. Their characteristic feature is the seasonal drying of the soil profile and cracking. Suitable for the cultivation of wheat, corn, sunflower, beet, soy, flax, broadleaf tobacco, alfalfa, fruit trees.

Biodiversity and forest resources

In biogeographical terms, the territory of the Bolyarovo and Kofchaz municipalities refers to two regions of the Balkan province - Tundzha and Sakaro-Dervent region. In the past, the area has been covered with thick deciduous forests, but in the process of anthropogenization some agroecosystems have been created in place of some forest ecosystems, or secondary forest, shrub and grass formations.

The plant communities form part of the xerothermic oak belt in its southernmost variant, with the participation of many sub-Mediterranean and Mediterranean species. To the south of the village of Mamarchevo are preserved *Quercus cerris*, *Quercus pubescens* and *Quercus virgiliana*. The eastern part of the Dervent Heights is covered with mixed oak and oak forests (*Quercus frainetto*), which pass to the state border in secondary



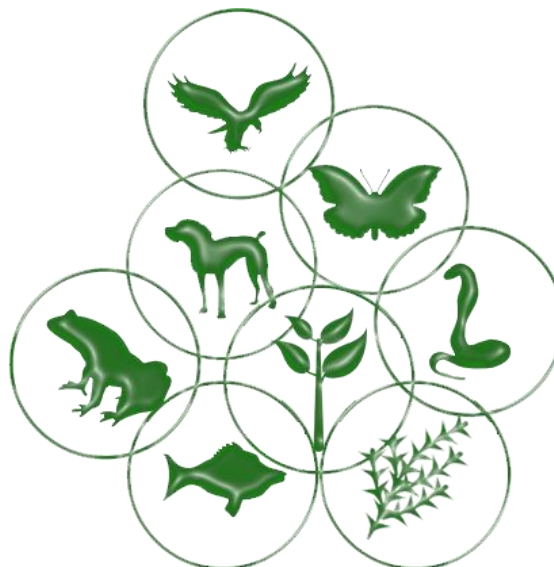


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communities with the participation of *Carpinus orientalis*. To the west, the border was taken by the mixed forests of eastern bush (*Quercus polycarpa*) and bluguna. On the grassy floor, there are euxinian species, including the golden sheepdog and the Binzian blue flower.



The sunlit treeless spaces are covered with the xerothermic grass formations of the Belize, the bulbous grasshopper and the sapwood. At the north exposure are growing the mesothermal grass formations of the grassland ryegrass, the high fescue and the shrub. The variety of species is also large in the available medicinal plants.

The most important representatives of the animal world living permanently or temporarily in the area are: 1. mammals: fallow deer, roe deer, wild boar, rabbit, squirrel, lapel; 2. From the predators: wolf, jackal, fox, wild cat, beard, golden, black poison; 3. Birds: Pheasant of Colchid, Pheasant, Keck, Quail, Forest Foreman, Turtle. Among the protected bird species with the highest prevalence are the owl and the woodcock. Additionally: black kite, eagle snake, common buzzard and hawk. Different representatives of singing birds, woodpeckers, long-legged birds live in the area. Most are protected species without hunting economic significance.





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PRESENTATION AND ANALYSIS OF THE MOST USED METHODS FOR SUSTAINABLE USE OF COMMON NATURAL RESOURCES





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The study of the adopted and acting regional and municipal strategies and plans for management and protection of the environment and the natural resources has shown that the municipalities of Bolyarovo and Kofchaz are at an early stage of implementation of basic general measures for sustainable use of common natural resources. More important from these measures not only for the nature, but also with a direct effect on the quality of life of the local population, are the measures for water purification, waste management, prevention of the risk of adverse natural phenomena, air purification. These methods are described in more detail in the following pages.

Methods for protection of the atmospheric air

The methods for protection of the quality of the ambient air are associated with the potential risk to human health and possible negative impacts on sensitive landscapes and ecosystems. In this connection, methods are taken for the following:



Accelerating the process of building an information base on the state of the environment in the municipality and in particular the atmospheric air. Information provision plays an important role in preventing pollution and taking timely measures to eliminate it, as well as in carrying out the necessary control of the municipalities and the responsible authorities regarding the sources of pollution, their localization and activity









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-  Phased renewal and maintenance of the transport network in the municipalities
-  Stimulating activities related to increasing the energy efficiency and limiting the use of solid fuels for heating
-  Increase of the landscaped areas in the settlement environment and extension of the green areas, which will have a favorable impact on the quality of the atmospheric air
-  Fire prevention

Methods for protection of the surface and groundwater

The methods envisaged in this area are in line with the existing national evidence and are expressed in:

-  Phased construction of the necessary infrastructure in the sector - water, sewage, treatment (both for wastewater and for drinking water). This is a set of measures aimed at: reducing the loss of drinking water and pollution in the water supply process; prevention of pollution caused by household wastewater, sewage, industrial water; providing water treatment
-  Introducing an up-to-date and efficient waste management system. This set of measures is aimed at overcoming the problems caused by landfills - disposal and recultivation of municipal landfills, removal of unregulated landfills as the main





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source of biogenic contamination (including waste from private farms). The aim is to ensure environmentally sound waste management by preventing, reducing or limiting their harmful effects on the human health and the environment.



Promotion of environmentally friendly agricultural practices to overcome the problems (biogenic ground water pollution) caused by the inappropriate use of fertilizers and plant protection products



Prevention of floods and establishment of an organization to reduce the negative effects of floods. This set of measures includes activities for the maintenance and consolidation of rivers and dams, cleaning of deposits and waste, control of activities leading to a change in the hydro morphological characteristics of the water bodies



Care for maintaining a high percentage of forest cover in the river basins. Construction of sanitary-security zones around the sources of drinking and domestic water supply. Creation of regulations / authorization regimes for water use





Working with the public. Raising public awareness of water pollution problems



Exploring the available water resources and entering the data into a register. This complex is aimed at identifying the possibilities of providing sufficient water for the population and ensuring the control of the absorption of resources










-  Creation of prerequisites for regular monitoring of the surface and ground water status
-  Effective control of the compliance with the Municipal regulations. Introduction of fines and sanctions for non-compliance with water abstraction conditions

Methods of conservation of soil resources

The methods envisaged in this area are in line with the existing national evidence and are expressed in:

-  Stimulating organic farming and controlling the conditions for the use of fertilizers and plant protection products
-  Regulation of the terrains used for grazing and control of their natural state
-  Conducting afforestation and other recultivation activities on the sites affected by erosion
-  Restoration of damaged terrains (landfills, construction of infrastructure sites, etc.) and control over their condition
-  Controlling the change of the functional purpose of the lands and limiting the removal of land from the agricultural and forestry funds





Creation of prerequisites for the monitoring of unfavorable and dangerous soil processes.

Methods of biodiversity and natural landscapes

The methods adopted in this area for the conservation of common natural resources are extremely limited, such as:



Implementation of afforestation and other measures (in accordance with the forest plans) for the maintenance and preservation of the forests in the municipalities



Informing and engaging the public in the conservation of biodiversity. Information campaigns to support protected areas and bio-reserves are provided here; the conditions for collecting medicinal plants; the hazards associated with invasive species

Methods of adaptation to climate change

The contemporary climate fluctuations, and in particular their impact on climate regimes in southern Europe, suggest that climatic phenomena bearing a certain natural risk may occur within the analyzed area, such as prolonged droughts, the formation of extremely high temperatures, torrential debris in short periods, etc. On this basis, responsible authorities





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for land management should pay close attention to the prevention of the risk processes associated with climate fluctuations - floods, erosion, dust storms, high-speed winds, fresh water shortages, salinization, accommodation of atypical (invasive) species, etc.



In this regard, special care requires the maintaining of the natural forest vegetation in the region, the maintaining of the river beds and the preserving of vegetation in the floodplains, as well as the preventing the increase of anthropogenic load on pasture lands.

The municipalities of Bolyarovo and Kofchaz could benefit from the advantages of their territory, turning the climate fluctuations into assets. This is possible by expanding the investments in the renewable energy sector, production of thermophilic crops (including those with quality of biofuels), organizing specialized types of tourism, expanding agricultural specialization, etc.

For this purpose, the following methods are provided:



Studies addressing the real needs of water in the household and municipal industries. Developing a strategy for optimizing water use





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Information campaigns to encourage limited use of domestic water and encourage the use of methods in irrigation that reduce water consumption



Reconstruction and reduction of losses in water supply networks, modernization and reduction of losses in irrigation systems



Improving forest conditions and fighting erosion



Adapting the agriculture and promoting the cultivation of less water-consuming crops

The above-listed methods for sustainable use of the common natural resources are on the one hand methods concentrated on the own territories of each of the municipalities and on the other are largely methods aimed at reducing the impact of already caused damages on the environment and on the available natural resources. In addition, they are basic standard administrative methods, do not include innovative methods and technologies, not common measures between the municipalities in the region despite the fact that they have the same and interconnected natural resources.

The methods currently in place are needed to lay the foundations for sustainable use of the common natural resources. But the municipalities need to look for and apply good examples from other European countries with common and unique natural resources to build on the results of the methods currently adopted.





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The availability of objective and adequate information on the state of the environment in the municipalities is of crucial importance for its effective protection in support of the sustainable development of the territory and the maintenance of a healthy living environment for the population.



Priority should be given to the construction of air, water and soil monitoring points, the information of which will be analyzed by means of modern IT technologies and accessible to the public in order to raise awareness.

The public participation in the overall process of environmental protection is crucial to the effectiveness of municipal methods in this respect. Taking into account the fact that the low ecological culture is the reason for the lack of a civil position regarding the cleanliness in the urban environment, poaching, illegal hunting, etc., it is necessary to develop an educational and communication program on the problems related to nature conservation. In addition, it is necessary to undertake activities to increase the capacity of local administration staff to develop policies, effectively enforce legislation, exercise control, collect, process, analyze and report data, etc.





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However, the local administrations and the population are not the only ones who have to take care of the available natural resources. The local business is also essential for creating sustainable use of the common natural resources. Increased green production and activities (e.g. organic farming) and increased resources for environmental protection will ensure the implementation of modern and innovative methods for the sustainable use of common natural resources. In this direction are the projects for construction of wastewater treatment plants, the rehabilitation of the water supply and sewerage system in the settlements, the production of ecological products from agricultural and forestry raw materials, etc.

Of great importance for stimulating sustainable business is the availability of support for innovative companies developing their activities in environmental protection and sustainable use of natural resources. The education of the young people in the region in the field of social business and sustainable business solutions will also have a long-term impact on the development of innovative business initiatives.





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PRESENTATION AND ANALYSIS OF EU BEST PRACTICES



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Sustainable use of wind power (Denmark)

The investments in alternative energy sources are becoming increasingly important for countries that rely heavily on fossil fuels and other natural resources facing a significant shortage. In order to reduce dependence on foreign oil fields, the small Scandinavian country of Denmark started an active program aimed at the realization of renewable and diverse energy sources in the late 1980s and early 1990s. The focus on sustainable energy was largely a means of ensuring economic development with environmental care. Early investments in wind power technology quickly made the small nation a world leader in the development of this technology. Denmark is already a pioneer in wind power development since the 1970s and currently generates more wind power per capita than any other country in the world with 5,500 wind turbines and the two largest wind farms in the world.

In the early 1990s, the Danish government set up a 15-year nationwide wind-up plan. The long-term target is 10% wind generated electricity in 2000. The country far exceeds this target and today it maintains 20% renewable energy use - a target that large countries like the UK hope to achieve by 2020. Moreover, while Germany, Spain and the United States have installed more wind power on a scale, with Denmark ranked fourth in the world, Denmark has a significantly greater share of the wind power per person than any other country in the world, with 0.88





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kW per person compared to 18 kW in Germany, which has the largest installed wind power capacity.

In addition to its performance targets, successful local turbine manufacturers have become world leaders in wind turbine production. In addition, to maintain this installed equipment, a large service sector has been developed to support and repair existing turbines. Despite its small size, Denmark hosts 5 of the world's top 10 wind turbine producers, with the first three producing 50% of all turbines worldwide. In addition, all 5,500 turbines operating in Denmark are produced in the domestic market.

A great advantage is the efficiency of creating and using a knowledge cluster, where manufacturers, suppliers, research and educational institutions combine expertise, innovation and technology advancements to gain an unrivaled advantage at world level. Leadership in wind energy production has created a healthy industry for which early investment has become a strong reputation and therefore profitable. They produce 60% of the world's wind turbines, of which 2/3 are exported.





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One of the main problems with the wind as a source of energy is the prognosis of time and subsequent changes in production throughout the year. Danish turbine controllers have made a significant investment in wind forecasting technologies to limit these uncertainties and better predict accurate weather forecasts over the next 10 to 15 years.

The electricity network linking Danish electricity production with its larger neighbors Germany, Sweden and Norway allows the country to balance demand and supply over time and to offset the strong fluctuations in seasonal demand and climate models.

The country has gained a unique advantage in the wind energy industry, as it has largely been the first nation to commit to large-scale application coupled with the development and knowledge of technology. Consequently, cost-effective local production and technology control strategies continue to position the nation all over the world in the use and production of wind power.

Their success is largely inadequate due to the advantages of the first driving force. Significantly higher wind power risks exist today as there is probably no revolutionary technological development in wind turbine technology on the horizon.





Sustainable use of solar energy (Germany)

Photovoltaic (PV) cells installed on or integrated in buildings completely avoid the impact on natural habitats. Since terrestrial photovoltaics are more attractive to investors in some European countries as a profit-making effort, the development of solar parks will probably continue.

The worst impacts of terrestrial solar installations occur when all the natural habitat in the area is cleared, the vegetation is removed and the soil is completely covered. This can reduce the carbon content of the soil compared to undisturbed areas and in dry areas allows the transport of dust, which can reduce the efficiency of the solar panels. As with wind installations, many impacts can be reduced or avoided by appropriate deployment. The German Renewable Energy Act allows only installations on previously damaged areas, for example through agriculture or military use, in order to avoid new negative impacts. Positioning on afforested land increases carbon emissions up to 4 times compared to pastures or deserts due to the reduced number of trees. Ideal terrains include lands of unfavorable territories and degraded lands - creating so-called "bright fields". In any place, avoiding total soil cover is highly desirable and the use of support spikes instead of heavy bases minimizes land damage.

The fragmentation of habitats remains a problem with solar parks. However, due to the lack of moving parts and minimal earthquakes, careful





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management of solar parks can be a wildlife refuge. Wildlife planting and the installation of animal cans, as well as careful management of hedges, flight provision and grazing of animals allow the development of meadows without excessive maintenance costs. In one case, terrain in Germany previously used for military training has been cleared of ammunition and is now a solar park and bird conservation area. Preliminary studies show that the habitat is improved in the long run for a number of different bird species.

Other wildlife risks from the operation of the solar park include chemicals such as rust inhibitors. Water is also used to clean the panels, which can lead to scarce resources in dry areas. However, these impacts can be reduced by using more suitable chemicals as well as safety and disposal practices and by minimizing the use of water.

It is also important to take into account the life-cycle assessment: the processes involved in obtaining rare materials used for the production of solar panels can lead to impacts on biodiversity elsewhere, e.g. at the source of extraction, often in non-EU countries. Enhanced solar panel technology can reduce these impacts in the future.





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It is for these reasons that the development of small solar parks, e.g. dwarf solar parks, is being stimulated in Germany. An example of such a park is a 1 MW solar photovoltaic park in Salmodorf, near Munich, completed in 2007 and built on a site previously used as a gravel base in an intensive farming area. The park includes special provisions for nature conservation, such as managed grasslands; hedge boundary; trees and shrubs; a chain fence that allows small animals, such as rabbits, pheasants and partridges, to pass; and lakes to create spawning sites for endangered frogs under the Green Frog scheme, developed in partnership with local authorities. Rare plants are planted in the area, including meadow stones, wax marigess, meadow-goat beard and meadow sage.

Sustainable use of water resources (France)



During the tourist periods (summer, autumn and winter holidays), the population of Savoie (in the French Alps) doubles and the use of water increases significantly. This effect is illustrated by the case of the rural municipality of Tignes, an important ski resort. Unfortunately, this coincides with the lowest flows of river water, which means that water resources can easily be stressed.

The Water, Agriculture and Forestry Office (DDAF) has conducted a study to assess the state of the freshwater network for 28 rural








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municipalities. The assessment method is simple and adapted to small and medium-sized municipalities. It includes an analysis of flows recorded in water reservoirs for one week (hourly production, nocturnal leakage analysis) in cooperation with the local operator. The results are as follows:

 11% of the municipalities have satisfactory distribution networks (linear leakage index of less than 5 m³ / day / km);

 21% of the municipalities have distribution networks in satisfactory condition, but they have to be monitored continuously because they are old (linear leakage index between 5 and 10 5 m³ / day / km);

 21% of the local authorities have distribution networks with real leakage (linear leakage index between 10 and 20 5 m³ / day / km). Most of these municipalities have undertaken leakage searches or intend to do so in the future. For example, one of these municipalities subsequently decided to track and correct the leak. The efficiency factor (the volume meter at the production level / production quantity) was initially around 41%. After tracking and repairing leaks, the ratio is now around 86%;

 47% of the municipalities have serious leakage problems (linear leakage index above 20 5 m³ / day / km), which may be due either to leakage from the grid or to wasteful use due to the lack of meters for consumers. Most of these municipalities have taken action to improve the situation (installation of meters, leakage, common pipe replacement program).









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Through contacts with various local operators, it has become clear that the maintenance of the distribution network is not a priority for most rural municipalities. Thus, it is discovered that:

-  there is no regular monitoring and maintenance of the existing network cranes;
-  the network plans, if any, are rarely updated - often only one person knows the network;
-  the municipal employee who operates the network has other responsibilities and spends only limited time on maintenance, often due to the lack of advice available in this area;
-  15% of the municipalities do not insist on meters for home users. With a few exceptions, the cost of water is estimated at 40% lower than the country average. This low price is explained by two factors: the lack of knowledge about actual costs and the decision to meet costs through taxes and not payments from consumers.

Common network meters are considered necessary to ensure good network management. For this reason, the DDAF has drafted a manual designed to encourage the proper installation of water meters.

It should be noted that tracking and repairing leakage can be very expensive. Increasing the use of water to cover leakages may be cheaper in some systems, so some municipalities decide not to track leakage despite low efficiency ratios.





Sustainable use of soil resources (Spain)

The Baix Llobregat Farm Park is just over 5 km south from Barcelona, and in particular in the Llobregat River Valley and Delta. The park covers lands belonging to 14 municipalities with a population of about 700,000 people. With an area of agricultural land of 2938 hectares, the park is the last agricultural alluvial plain in the immediate vicinity of Barcelona. The region has a long tradition of growing fruits and vegetables. It is one of the twelve associated natural areas, which make up the network of nature parks with a total of 100625 ha.

In 1996, the European Union funded a LIFE project for the restoration of farmland in the Baix Llobregat Valley, which led to the establishment of the Baix Llobregat Farm Park (in 1998). Today, this area is the starting point for managing agriculture and the environment and an emblematic part of the region.

The Farm Park is an instrument for the protection, development and management of a peripheral agricultural area. Its aim is to "consolidate and develop the basis for land use and facilitate the continuity of agriculture by promoting specific programs that enable the preservation of resources and the development of economic and social functions in the agricultural sector within the framework of sustainable agriculture, integrated in the region and in harmony with the natural environment and its surroundings. "





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The farm park depends on the active presence of farmers in the area. To this end, the park management decided to promote greener farming methods, support initiatives to identify and promote the consumption of agricultural products, and to disseminate landscape values as a resource for generating income.

The Farm Park works with a network of technicians who advise farmers on how to implement integrated and environmentally friendly production methods. The aim is to increase the technical know-how to ensure proper rationalization of the use of fertilizers and the fight against pests and diseases. Among the work done there, particular attention is paid to the introduction of bio-fumigation, bio-solar technologies, organic farming techniques for soil disinfection and pest control.

Farmers are helped to produce objective quality criteria such as Protected Geographical Indications (PGIs). The Farm Park also promotes the consumption of "local products" through its own distinctive brand of quality "FRESC del Parc Agrari (Fresh Products)" With advance application and adoption of a set of rules, farmers can use this brand, which is also associated with a restaurant campaign in the municipalities entitled "The tastes of the market garden". The park helps promote branding in local markets where farmers can sell directly to the consumer, but fresh production is also delivered to large retail chains.





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One of the biggest advantages of the Farm Park is its irrigation network, which is mainly distributed through two channels from the 19th century. A GIS is currently being developed to allow management to be based on the efficiency of the use of this natural resource. At the same time, water quality is monitored at different points along the irrigation network.

There is a permanent surveillance service whose mission is to carry out environmental and urban controls to detect illegal disposal and unauthorized construction works. In the park can also be found activities related to environmental education.

The future of the Farm Park, located in an area under permanent urban pressure, depends in part on the actions taken to protect, improve and develop it. But its future also depends on how it is designed outside the park to be popularized and not to be isolated from the pan-European movement in defense of peripheral urban spaces and especially of suburban agriculture. Landscape excellence is beginning to be seen as an important distinctive feature, and this is becoming more and more relevant in the competitiveness of different areas.





Sustainable use of livestock resources (Luxembourg)

Agricultural land accounts for about half of the Luxembourg territory (55%). The main focus is on beef and dairy production, not on cereals. Because of the high cost of living, farmers in Luxembourg usually have high investment costs, which affects their competitiveness and long-term prospects.

Recognizing the growing cost of farming, the Ministry of Environment has launched a scheme to support low-cost grazing practices in protected areas, including Natura 2000 sites. Luxembourg has about 13,600 hectares of farmland and vineyards in Natura 2000. As everywhere, a significant part of this land is dependent on regular management activities such as low-intensity pastures to be maintained or restored in good general condition. The purpose of the scheme called "Naturschutz durch Nutzung" (conservation through use) is to promote such economic activities for the benefit of both farmers and the conservation of nature. Farmers in target protected areas are encouraged to use low-intensity pastures using sustainable cattle breeds such as Galloway, Angus, Limousines and Highland.

Farmers wishing to join the scheme first receive a detailed economic survey of their farm. This is done by a qualified agronomist appointed by the Ministry of Environment. The service is free and at this stage the farmer is not obliged to join the scheme. The economic study explores the farmer's





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costs, turnover and profit / loss, and then looks at how these values will change if the farmer goes to low-intensity grazing using sustainable livestock breeds. As a result, the farmer can immediately see the economic consequences of his options.



One of the key benefits of using low-intensity grazing is that it significantly reduces both investment costs and the daily running costs of the farm. Since durable breeds are well adapted to the natural environment, they can remain on the field throughout the year. They also require little care or additional nutrition. As a result, the farmer does not need to invest in buildings to keep the animals safe in winter or to buy specialized equipment (e.g. plowing or haying). Its total cost in terms of labor costs (hiring of animal care staff) and consumables (additional feed, pesticides, fertilizers, etc.) are also greatly reduced.

If a farmer agrees to use low-intensity farming, a five-year agreement between the farmer and the ministry drafted, which sets out the conditions under which grazing is to be carried out. This is based on an analysis of the specific conservation needs of the land (e.g. loading rates, non-use of fertilizers or pesticides, non-application of plowing, mowing, unless otherwise specified, etc.).

Instead, the farmer receives an annual biodiversity subsidy from the Ministry of Environment (in addition to his usual one-time area payment),





which aims to compensate for lost profits from the use of low-intensity grazing (e.g. slower growth of the animal and lower productivity). He may also receive payment for any additional conservation-oriented management activity that the farmer may be asked to carry out.

The interest in the meat from resistant bovine breeds is due to various reasons:



For health reasons: the meat is solid, with little water and low fat, which is better for the heart. Also, as animals feed only on natural vegetation, there are no residues of fertilizers, pesticides, etc.



For taste: the taste of the meat is full of character because the animals have a varied diet (which includes a wide range of herbs, shrubs, etc.) and are allowed to grow slowly until they reach the age of 3 years (instead of 1.5 years as is the case with conventional cattle). The meat also develops for a longer period of time, which improves the taste.



For reasons of animal welfare: the animal can walk freely throughout the year and be slaughtered in a less stressful environment.



For reasons of nature conservation. Consumption of meat grown in protected areas helps to conserve the biodiversity of these areas.

For these reasons, in order to further increase the interest in the development of this kind of animal breeding, the Ministry of Environment





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assists the producers in selling their produce. Initially, the focus was on selling meat directly to local restaurants near the farms. Restaurants who agree to use this beef on their menu also receive additional support from the Ministry of Environment through free promotional brochures, leaflets and regular publications and press releases in Luxembourg. The ministry can also help develop and improve local tourist routes to promote local tourism. In this case, the names of the participating restaurants are also included in the promotional materials and route signs.

In addition, the Ministry helps coordinate the supply chain between the farmer and the restaurants with regard to the transport, slaughtering and cutting of the meat. In this way, it can ensure that the farmer has a permanent market for his animals at a fair price and the restaurants have a constant supply of meat when they need it.

The ministry is also investigating alternative / additional markets for beef. There are deals with a number of butchers who sell meat directly to customers - either in the form of "noble" cuts, such as entrecotes or fillets, or as derived products such as sausages. A "certificate of origin" label is also being prepared which is accompanied by a strong marketing campaign to promote the fact that the meat comes from nature conservation areas in Luxembourg.

In addition, the ministry has recently begun negotiations with the largest supermarket chain in Luxembourg - Cactus. The supermarket has a strong interest in obtaining the exclusive rights to sell the meat in its stores. Interestingly, the high price of the meat is not the greatest concern. While it is important to keep costs, the supermarket is particularly





attracted to the fact that the meat is locally derived from Luxembourg and already has a solid reputation as a healthy, sustainable and high-quality production. This fits well in their corporate spirit. Their studies show that customers are very willing to buy local food products where their origin is easily traceable and are willing to pay extra for it.

Sustainable use of plant resources (Slovenia)

Because of the predominant hilly nature, many agricultural areas in Slovenia are still managed mainly by small farms. As a result, Slovenia has retained a significant part of its biodiversity of rich pastures. As elsewhere, traditional, extensive farming practices are becoming more and more difficult to be economically viable, with the result that many small farms either abandon their land or, where possible, adopt more intensive agricultural practices.

The change in agriculture is particularly noticeable in the lowlands, where the intensification of farmland is much more prevalent. Only in the last 20 years significant stretches of wet meadows have decreased or have disappeared altogether. Today, only a small percentage of wet meadows of high natural value have remained. Most of these pastures are now protected within the Natura 2000 network. With more than one-fifth of agricultural land in Slovenia (approximately 30,000 hectares) in Natura 2000, the Slovenian Government has decided that the most effective way to ensure their conservation is to attribute the responsibility for managing





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them among the different sectoral authorities (including forestry, agriculture and water).



Thus, in 2006, the country adopted a Strategic Operational Program for Natura 2000 which defines the conservation objectives and the measures to be implemented for each site as well as the sectors responsible for their implementation. This strategic and highly integrated approach not only created a shared responsibility for the management of the Natura 2000 network in Slovenia but also helped to provide additional funding for Natura 2000 under the various sectoral programs. As a result, the Slovenian Rural Development Program (2007-2013) contains three groups of agri-environmental schemes (including a total of 23 sub-measures) designed to support extensive farming practices in pastures with high biodiversity and landscape value.

One of the most iconic species of birds living in wide-ranging wet meadows is the corncrake, *Crex crex*. In Slovenia, however, the corncrake population has declined by more than 50% over the last 20 years. This is mainly due to the destruction and degradation of habitats (e.g. Drainage or application of intensive livestock farming or arable land), changing farming practices (e.g. grass mowing) and land abandonment.

The Slovenian organization Birdlife is implementing a project whose main goal is to develop and use conservation tools for effective long-term





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protection of the corncrake in Slovenia. One of the key outcomes of the project is the preparation of a national conservation plan for the corncrake. It summarizes all the knowledge and findings obtained during the lifetime of the project and sets out a ten-year (2005-2015) legal framework for the implementation of measures to protect the corncrake in accordance with the requirements of the EU Directives on birds. In addition, the project recovers a number of overgrown and damaged wet meadows and tests different bird management practices in extensive wet meadows in a pilot area in Ljubljansko Barje (later became an important demonstration area for farmers).

The organization also works very closely with local farmers, agricultural consultants and landowners to raise awareness of poultry practices and encourage them to introduce local management measures in the three areas of the project in exchange for a management fee. Initially, farmers were not interested, but after numerous meetings and discussions the measures were adopted and successfully implemented in a total of about 180 hectares.


There is also excellent communication and cooperation with responsible public institutions in the field of agriculture and rural development, and in particular with advisory organizations for farmers and local farmers. This leads to the development of national guidelines for the management and conservation of extensive wet meadows of high ornithological value.








Sustainable Urban Environment (UK)


Newcastle upon Tyne is located in Northeast England and has a population of 277,800 people. The Newcastle City Council has formulated the vision of creating a vibrant, inclusive, safe, sustainable and modern European city with the following goals:

 to provide services which are accessible and of constantly good quality, with an emphasis on their effective and efficient performance and value, while keeping taxes as low as possible;

 to improve the educational level and to support all citizens to fulfill their aspirations and potential, to encourage everyone to learn, develop skills and build self-esteem;

 building and supporting safe and clean neighborhoods and communities, while managing the environment effectively and sustainably;

 to create an improved quality of life by working with people and partners, to transfer decision-making and to enable people and communities to contribute and influence the services;

 fostering entrepreneurship, investment, innovation and jobs through a forward-looking, future oriented approach and building a positive relationship with business and with Europe;





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creating an attractive city for people today and tomorrow, with a friendly natural and built environment and affordable transport system;



work to improve housing, health and well-being across the city and promote inclusion and equity.

In the Council's plan, four clearly defined priorities aim to concentrate efforts and resources for the city:



A working city - creating quality jobs and helping local people develop their skills;



Decent neighborhoods - working with local communities to care for each other as well as for the surrounding environment;



Tackling inequality - tackling discrimination and inequalities that prevent people from realizing their true potential;



Success tips - advice that enables others to achieve their goals.

As can be seen, a strong focus is on social issues in Newcastle. However, important investments are also planned to help local businesses and the local economy: the Council declares in its plan that it will work with a number of partners to invest 545 million euros in the city in the coming years.

With regard to environmental issues, Newcastle is also very active and committed to improving the environment in its progress towards a





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sustainable city, particularly through its environmental policy and climate change strategy and action plan.

The council also aims to turn Newcastle into a sustainable city by 2021 with excellent air quality, low waste levels, low carbon emissions and high recycling rates. In its environmental policy, the Newcastle Municipal Council recognizes its responsibility for the environment and aims to:



Reducing the impacts of climate change and the city's contribution to the causes: limiting the risks and impacts of floods and changing climate patterns; improving air quality and reducing pollution; promoting sustainable design and construction; promoting the use of locally produced energy from low carbon and renewable resources;



Life within the environment, both locally and globally: minimize the use of non-renewable natural resources, including fossil fuels and green areas; reduce waste generation and increase re-use and recycling; protect and improve the quality of groundwater and rivers;



Protection and improvement of the city's environmental assets and infrastructure: protecting and improving the quality and diversity of the city's rural and urban landscape; protecting and improving the city's biodiversity; promoting the development of an integrated green infrastructure in the city.

Through the Climate Change Strategy and the Action Plan, Newcastle views climate change as one of its most important local





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challenges, taking the wide-ranging implications for the Newcastle population. Newcastle embraces the need to do as much as possible at the local level to mitigate the effects of climate change while striving to develop opportunities to strengthen its economy through science and technology. Therefore, in 2010, Newcastle committed itself to the EU Covenant of Mayors on Sustainable Energy and developed a Sustainable Energy Action Plan in line with the UK's carbon footprint.



Other projects described in the plan are related to the area of "Raising Awareness, Communication and Behavior" in which Newcastle residents have the opportunity to improve their knowledge of the causes and impacts of climate change and are encouraged to take positive action to reduce the carbon emissions and support the creation of local sustainable communities through, for example, a number of actions such as: 1. OurNewcastle; 2. Enviro Schools; 3. Electricity monitoring scheme;





4. Campaign Working with Warmzone; 5. Discounts for landfilling; 6. City Life; 7. Partnership on climate change; 8. Events; 9. Support for national and international events

Another Newcastle plan is the Newcastle Biodiversity Action Plan, which consists of a number of priority habitats and species plans in the Newcastle and North Tyneside areas, which are considered to be endangered at local and national level. The plan is a ten-year vision for the conservation and improvement of the biodiversity in Newcastle and North Tyneside in order to provide more effective management of the natural environment in order to protect these natural resources and to leave an inheritance that will benefit current and future generations. The Biodiversity Action Plan also seeks to engage residents to contribute to local, regional and national goals and to achieve a real change in biodiversity in Newcastle and North Tyneside.

An interesting initiative is also the Big Green Pledge initiative and its website launched in Newcastle, with the main intention of engaging residents in addressing climate change issues, for example through the possibility of publishing personal commitments to the nature of Tyneside on <http://thebiggreenpledge.org.uk/node/add/pledge>, taking into account:



Small changes in the home, mainly to improve the use of energy;



Small changes in the lifestyle, for example by reducing electricity or water consumption;





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Small changes in personal mobility, such as increased cycling.

Through this initiative, the Newcastle City Council is also trying to communicate better and increase awareness among residents (i.e. providing information on climate change). As reported on the website, the city of Newcastle has been selected by the Forum for the Future for the UK's most sustainable city for the second consecutive year thanks to the work of the municipal council to promote and implement the low carbon program.

Examples of good European practices for the sustainable use of natural resources have shown that over the last decade environmental protection has been mainly stimulated by policies, programs and funding at European, national and regional levels. Producers, farmers, consumers, and others are mainly focused on lower costs at the expense of nature, extensive and high resource production and consumption.

The main part of the initiatives taken for the sustainable use of natural resources are aimed at returning to more environmentally friendly production methods, agriculture and livestock farming. The demand for and application of innovative methods for generating energy - mainly solar and wind energy - are gradually increasing, here too, the original practices have an adverse effect on biodiversity.

Numerous measures have been taken to raise business and population awareness, support business initiatives for environmentally friendly and sustainable business, agriculture, livestock farming, production and lifestyle. More intensive measures need to be taken for the





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sustainable use of natural resources, the search for new sources of energy, the maximum reduction of pollution from production and human activity, which can mainly occur through the application of innovative technologies and results of research and development under partnerships between governments, business and science.

In this way, the European Union has made more progress towards a resource-efficient and low-carbon economy than to protect biodiversity, natural capital and human health. The EU's natural capital is still not protected, upheld and strengthened. The EU continues to work on the road to achieving its key climate and energy targets by 2020. Moreover, the European economy is growing faster than raw materials, which shows better resource efficiency. However, the efforts so far to reduce the environmental impact of production and consumption in key food, housing and mobility sectors differ significantly in their success rate. There has been a significant reduction in emissions of air and water pollutants over recent decades. The main problems related to air quality and noise pollution in urban areas and the chronic exposure of the population to complex chemical mixtures in products continue to exist.





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PRESENTATION AND ANALYSIS OF EUROPEAN POLICIES IN THE FIELD OF SUSTAINABLE USE OF COMMON NATURAL RESOURCES





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Europe 2020 - A strategy for smart, sustainable and inclusive growth

Europe faces a moment of transformation. Due to the crisis, years of economic and social progress have been lost and structural weaknesses in the European economy have been exposed. Meanwhile, the world is moving fast and in the long run - globalization, resource pressure, aging - are deepening. The EU must take its future in its own hands.

Europe can succeed if it acts collectively, as a union. It needs a strategy to help emerge stronger from the crisis and to become a smart, sustainable and inclusive economy that provides a high level of employment, productivity and social cohesion. The Europe 2020 Strategy sets out a vision for a social market economy in 21st century Europe.

The Europe 2020 strategy proposes three mutually supportive priorities:



Smart growth: Developing a knowledge-based economy and innovation.



Sustainable growth: promoting a greener and more competitive economy.



Inclusive growth: Promoting a high-employment economy that provides social and territorial cohesion.





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Sustainable growth means building a sustainable and competitive resource-efficient economy, using Europe's leadership in the process of developing new processes and technologies, including green technologies, accelerating the deployment of smart grids through ICT, using EU networks and strengthening the competitive advantages of business, especially in manufacturing, and by helping consumers evaluate resource efficiency. This approach will help the EU prosper in a low-carbon, resource-efficient economy, while at the same time preventing environmental degradation, biodiversity loss and unsustainable use of resources. It will also help economic, social and territorial cohesion.

The EU thrives through trade, it exports to the whole world and imports raw materials as well as finished goods. Faced with strong pressure on export markets and an increasing range of resources, it must increase its competitiveness against its major trading partners through higher productivity. It will have to look at relative competitiveness in the euro area and in the wider EU. The EU was largely the first driver of green solutions, but its advantages were driven by key competitors, especially China and North America. The EU should maintain its leading position in the green technologies market as a means of ensuring resource efficiency across the economy while removing weaknesses in key network infrastructures, thereby increasing its industrial competitiveness.





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Achieving EU climate goals means cutting emissions significantly faster in the next decade than in the last decade and making full use of the potential of new technologies. Improving resource efficiency will significantly help to reduce emissions, save money and stimulate economic growth. All sectors of the economy are taken into account and not only intensive emission issues. There is also a need to strengthen the economy's resilience to climate risks and the EU's disaster prevention and response capacity.

Achieving the energy targets could lead to a € 60 billion reduction in oil and gas imports by 2020. This is not just economic savings; this is essential for the EU's energy security. Further progress in the integration of the European energy market could add an additional 0.6% to 0.8% of





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GDP. Achieving the EU target of 20% renewable energy has the potential to create more than 600,000 jobs in the EU. By adding the 20% energy efficiency target, it is more than 1 million new jobs.

Actions within this priority will require meeting the EU's emission reduction commitments in a way that maximizes benefits and minimizes costs, including through the diffusion of innovative technology solutions. In addition, the EU should seek to decouple growth from energy use and become a resource-efficient economy that will not only give Europe a competitive edge but also reduce its dependence on foreign sources of raw materials and commodities.

EU Sustainable Development Strategy

The overall objective of the EU Sustainable Development Strategy is to identify and develop actions to enable the EU to achieve a sustained long-term improvement in the quality of life by creating sustainable communities that can manage and use resources efficiently, develop the potential for social innovation of the economy and, ultimately, to ensure prosperity, environmental protection and social cohesion.

The strategy sets out the overall objectives and concrete actions for seven key priority challenges for the period up to 2010, many of which are primarily environmental (including climate change and clean energy, sustainable transport, sustainable consumption and production, or conservation and management of natural resources).





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To improve synergies and reduce trade-offs, is proposed a more integrated approach to policy-making based on better regulation (impact assessments) and guiding principles for sustainable development (adopted by the European Council in June 2005). The external dimension of sustainable development (e.g. global resource use, international development problems) is included in the development of EU internal policy and through the integration of sustainable development considerations into EU external policies.



In order for the EU SDS to be applicable across the EU, mechanisms have been proposed to improve coordination with other levels of government and businesses, NGOs and citizens have been invited to engage more actively in sustainable development activities. An example of this is the launching of a process of voluntary peer review of national sustainable development strategies aimed at improving the exchange of good practice.

Education, research and public finances are highlighted as important tools to facilitate the transition to more sustainable patterns of production and consumption. And since monitoring and tracking are crucial to their effective implementation, a robust management cycle is foreseen. Every two years (launched in 2007), preliminary reports on the implementation





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of the strategy are provided as a basis for discussion in the European Council on guidelines for the next steps in its implementation.

In 2016, the EU enhances its strategy by joining the Sustainable Development Agenda 2030. The 2030 program itself consists of 4 sections: (i) a political declaration; (ii) a set of 17 sustainable development objectives and 169 other objectives (based on the OWG report with some minor amendments); (iii) ways to implement (vi) a framework for follow-up and review of the agenda.

The scale, ambition and approach of the program are unprecedented. One of the key features is that the objectives of sustainable development are global in nature and universally applicable, taking into account national realities, capacity and levels of development and specific challenges. All parties have a shared responsibility for achieving strategic goals, all of which have a significant role at local, national and global level.

In addition, the Sustainable Development Agenda 2030 includes balanced three dimensions of sustainable development - economic, social and environmental. The Sustainable Development Agenda 2030 should be implemented as a whole, in an integrated rather than fragmented manner. The 2030 agenda is based on the concept of a global partnership, backed by a comprehensive approach to the mobilization of all means of implementation, and complemented by the Addis Ababa Action Program.

In addition, in order to ensure progress and long-term accountability, the 2030 Program includes a strong tracking and review mechanism that will allow all partners to assess the impact of their actions.





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At a global level, this is seen by the High-Level Policy Forum on Sustainable Development, which meets annually at the UNHQ to monitor progress.

Seventh Environment Action Program

The Seventh Environment Action Program guides European environmental policy by 2020. In order to give a more long-term perspective, it sets a vision beyond that, defining where the Union wants to be by 2050: „To live well within the ecological boundaries of the planet in 2050“. Our prosperity and healthy environment stem from an innovative circular economy where nothing is lost and where natural resources are managed steadily and biodiversity is protected, valued and restored in a way that ensures the sustainability of our society Our low carbon growth has long been separated from the use of resources that sets the pace for a safe and sustainable global society".

The program defines three main objectives:

-  protecting, preserving and improving the Union's natural capital
-  making the Union a resource-efficient, green and competitive low-carbon economy
-  protecting the citizens of the Union from environmental pressures and risks to their health and well-being





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Four so-called "tools" will help Europe achieve these goals:



better enforcement of the legislation



better information through improving the knowledge base



more and wiser investments in environmental and climate policy



full integration of environmental requirements and considerations into other policies

Two additional horizontal priority objectives complement the program:



to make the cities of the Union more sustainable



to help the Union cope more effectively with international environmental and climate challenges.

The program entered into force in January 2014. It is now up to the EU institutions and the Member States to ensure that it is implemented and that the set priority targets will be met by 2020.

Clean Air Policies Package

On December 18, 2013, the European Commission adopted a package of clean air policies. This package is based on a comprehensive review of the EU's air policy so far. This policy package includes a clean air





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program for Europe and a proposal for directives on the reduction of national emissions of certain atmospheric pollutants (NEC Directive) and on the limitation of emissions of certain pollutants into the air from medium-range combustion plants (MCP Directive). The accepted package contains a number of components. They include:



New Clean Air Program for Europe with measures to ensure the achievement of existing short-term targets and new air quality objectives for the period up to 2030. The package also includes measures to help reduce air pollution, air quality in cities, support for research and innovation and the promotion of international cooperation



Revised National Emission Ceilings Directive with stricter national emission ceilings for the six major pollutants



Proposal for a new directive on the reduction of pollution from intermediate combustion plants, such as power stations for street blocks or large buildings, as well as small installations in the industry.

By 2030 and compared to the usual, the package of clean air policies will lead to:



avoiding 58,000 premature deaths,



rescuing 123,000 km² of ecosystems from nitrogen pollution (more than half of Romania's territory),



rescuing 56 000 km² of Natura 2000 protected areas (more than the entire territory of Croatia) from nitrogen spills,






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 rescuing 19,000 km² forests ecosystems from acidification.



The health benefits alone will save 40-140 billion euros of external costs to society and will provide direct benefits of around 3 billion euro due to higher workforce productivity, lower healthcare costs, higher yields and less damage to buildings. The

package will also add the equivalent of about 100,000 additional jobs due to increased productivity and competitiveness due to fewer lost working days. It is estimated that it has a positive net impact on the economic growth.

EU circular economy action plan

The European Commission has adopted an ambitious circular economy package that includes measures that will help stimulate Europe's transition to a circular economy, increase global competitiveness, promote sustainable economic growth and create new jobs.

The Circular Economy Package consists of an EU circular economy action plan which sets out a concrete and ambitious action program with





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measures covering the entire cycle: from generation and consumption to waste management and the secondary raw materials market, as well as revised legislative proposal on waste.

The actions proposed will contribute to "closing the cycle" of the product's life cycle through greater recycling and re-use and will bring benefits for both the environment and the economy.

The revised waste legislation proposals set clear targets for waste reduction and set up an ambitious and reliable long-term waste management and recycling path. The main elements of the revised waste proposal include:

-  A common EU target for recycling 65% of household waste by 2030;
-  A common EU target for recycling 75% of packaging waste by 2030;
-  Compulsory target for the landfills for reducing landfill to a maximum of 10% of household waste by 2030.;
-  Prohibition on landfill of separately collected waste;
-  Promoting economic instruments to prevent waste disposal;
-  Simplified and improved definitions and harmonized methods for calculating recycling rates across the EU;





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Specific measures to encourage the re-use and stimulation of industrial symbiosis - turning the by-product of one industry into the raw material of another industry;



Economic incentives for manufacturers to place organic products on the market and support recovery and recycling schemes (e.g. packaging, batteries, electrical and electronic equipment, vehicles).

EU biodiversity strategy for 2020



The EU biodiversity strategy aims to halt the loss of biodiversity and ecosystems in the EU and help halt the loss of biodiversity by 2020. It reflects the commitments made by the EU in 2010 under the International Convention on Biodiversity. This should lead to the conservation of species and their habitats, to help us fight climate change and adapt to its

effects, and to contribute to the objectives of the EU Resource Efficiency Initiative.





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Unlike the previous approach, which was too broad and not sufficiently effective, the new strategy is more closely targeted to six priority objectives (and related measures):



Increasing the efforts to protect species and habitats



Maintaining and restoring the ecosystems



Including biodiversity targets in the most relevant EU policy areas: agriculture, forestry and fisheries



Fighting invasive alien species



Increasing the EU contribution to avoiding biodiversity loss on a global scale.

EU Forestry Strategy: Forests and the forestry sector

The strategy promotes a coherent, comprehensive vision for forest management, encompasses the multiple benefits of forests, includes internal and external forest policy issues, and addresses the whole forest value chain.

It sets out the basic principles that are needed to strengthen sustainable forest management and improve competitiveness and job creation, especially in rural areas, while ensuring the protection of forests and the provision of ecosystem services. It also mentions how the EU wants to implement forest-related policies.

Guiding principles of the strategy are:

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 Sustainable forest management and the multifunctional role of forests, balanced supply of many goods and services, and the protection of forests;

 Effective use of resources, optimizing the contribution of forests and the forestry sector to rural development, growth and job creation;

 Responsibility for forests globally, promoting sustainable production and consumption of forest products.

The 2020 objectives for forestry are to ensure and demonstrate that all EU forests are managed in accordance with the principles of sustainable forest management and that the EU contribution to promoting sustainable forest management and reducing deforestation globally is strengthened, thus:

 contributing to balancing the different functions of forests, responding to the needs and providing vital ecosystem services;

 providing a basis for forestry and the entire value chain related to forestry to be competitive and viable factors contributing to the bio-economy.





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EU Common Agricultural Policy (CAP) - for our food, our villages, our environment

The policy objective is to define the conditions that enable farmers to perform their numerous functions in society, the first of which is food production.

In order to ensure that farmers can work effectively and that these upstream and downstream sectors remain modern and productive, they need direct access to up-to-date information on agriculture, agricultural methods and market development issues. The CAP therefore improves access to high-speed technologies in rural areas and thus contributes to one of the Commission's ten priorities, namely the digital single market. It is expected that in 2014-2020 the policy will provide an improvement in the Internet services and infrastructure of 18 million inhabitants in rural areas - a figure corresponding to 6.4% of the population in the EU's rural areas.

Farmers provide stable and secure food supplies to over 500 million citizens; so, the common agricultural policy supports them in the following ways:



income support: direct payments provide income support to farms and compensate farmers for the provision of public goods that are not usually paid by the market such as rural care;



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market measures: The European Commission can take measures to tackle difficult market situations such as sudden drop in demand due to health risk or price decrease as a result of temporary oversupply;



rural development measures: National (sometimes regional) development programs address the specific needs and challenges which these areas face. While EU Member States draw up their programs from the same list of measures, they have a choice to focus their efforts on the most pressing problems in their territories in economic, natural and structural terms. An integral part of rural development programs is the Leader approach, which encourages local people to solve local issues.

Market and income support measures are fully funded by the EU budget and rural development measures are jointly funded by the EU and the Member States on the basis of a multiannual financial program.





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Energy 2020 Strategy



By 2020, the EU aims to reduce its greenhouse gas emissions by at least 20%, increase the share of renewable energy to at least 20% of consumption and achieve energy savings of 20% or more. All EU countries must also achieve a

share of 10% of renewable energy in their transport.

By achieving these objectives, the EU can help combat climate change and air pollution, reduce its dependence on foreign fossil fuels and keep energy available to consumers and businesses.

For achieving the objectives, the Energy 2020 Strategy sets five priorities:



Achieving higher energy efficiency in Europe by accelerating investment in efficient buildings, products and transport. This includes measures such as energy labeling schemes, renovation of public buildings and eco-design requirements for energy-using products





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Building a pan-European energy market by building the necessary power lines, pipelines, liquefied natural gas terminals and other infrastructure. Financial schemes may be awarded to projects that have difficulties in obtaining public funding. By 2015, no EU country should be isolated from the internal market



Protecting consumers' rights and achieving high safety standards in the energy sector. This includes allowing users to easily switch energy suppliers and monitor energy use



Implementing the Strategic Energy Technology Plan - EU strategy to accelerate the development and deployment of low-carbon technologies such as solar energy, smart grids and carbon capture and storage



Establishing good relations with external suppliers of energy and energy transit countries in the EU. Through the Energy Community, the EU is also working to integrate neighboring countries into its internal energy market.

Strategic Energy Technology Plan

The European Strategic Energy Technology Plan (SET Plan) aims to accelerate the development and deployment of low carbon technologies. The aim is to improve new technologies and reduce costs by coordinating national research efforts and supporting project finding.





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The SET-Plan promotes research and innovation efforts across Europe by supporting the most influential technologies in the EU's transformation into a low-carbon energy system. It encourages cooperation between EU countries, companies, research institutions and the EU itself.

The SET Plan consists of the SET-Plan Coordination Group, the European Technology and Innovation Platforms, the European Energy Research Alliance and the SET Scheme Information System (SETIS).

Research, innovation and competitiveness are one of the five dimensions of the Commission's Energy Alliance strategy. The Integrated Strategic Energy Technology Plan is part of a new European approach to energy research and innovation aimed at accelerating the transformation of the EU energy system and putting new promising zero energy technologies on the market. The plan thus defined includes:



10 research and innovation actions based on an assessment of the needs of the energy system and their importance for the transformation of the energy system and their potential for creating growth and jobs in the EU



Attention to the whole chain of innovation, from research to market penetration, and dealing with both the funding and the regulatory framework



Adaptation of the governance structures under the SET-Plan in order to ensure more effective interaction with EU countries and stakeholders





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Proposal to measure progress through the Common Key Performance Indicators (KPIs), such as the level of investment in research and innovation or cost reductions.

Action Plan for eco-innovations

In response to the economic and financial crisis, the Europe 2020 strategy strengthens the EU's ability to achieve smart, sustainable and inclusive growth. Several flagship initiatives that address the main challenges are contributing to the achievement of its objectives.

The Innovation Union flagship initiative will ensure that innovative ideas turn into products and services, lead to economic growth and job creation and respond to the major challenges facing European society. As a step in this direction, the flagship initiative is committed to developing an eco-innovation action plan as a continuation of the Innovation Union and focusing on the specific barriers, challenges and opportunities for achieving environmental objectives through innovation.

The eco-innovation action plan (EIAP) is complementary to other Europe 2020 flagship initiatives. A key building block for the transition to a green economy is the flagship initiative "Resource efficient Europe" and its roadmap for creating and enhancing the demand for eco-innovation and related investments. In the Communication "An Integrated Industrial Policy for the Globalization Era", the EIAP is seen as an instrument for identifying and implementing measures for implementing key environmental





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technologies, improving coordination and cooperation between the EU and Member States, and raising awareness of the potential of new technologies. The Communication on new skills and jobs agenda calls for the EIAP to support the acquisition of skills needed for sustainable development, to promote the development of appropriate skills and to help bridge the gap between the need of skills and their availability.



The EIAP will therefore focus on promoting innovation that leads to or aims at a more environmentally friendly approach and overcoming the gap between innovation and the market. Among other things, the EEAP foresees the continuation of some of the activities identified in the Action Plan of the flagship initiative "Resource efficient Europe".

The plan includes targeted activities both in supply and demand, research and industry, and in political and financial instruments. Support for implementation will bring the partnership approach between stakeholders, the public and private sectors and the European Commission.





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The Commission will provide the main incentives for eco - innovations to enter the market through:

-  use of environmental policy and legislation as an incentive to promote eco-innovations;
-  support for demonstration projects and partnerships for the entering of promising, intelligent and ambitious operating technologies on the market that have not yet been widely deployed;
-  developing new standards to promote eco-innovations;
-  attracting funding and ancillary services to support SMEs;
-  promoting international cooperation;
-  support for the development of new skills and the provision of jobs and related training programs to meet the needs of the labor market;
-  promoting eco-innovations through the European Innovation Partnerships provided for in the Innovation Union initiative.





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PRESENTATION OF INNOVATIVE METHODS FOR SUSTAINABLE USE OF COMMON NATURAL RESOURCES



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Using Tides to Generate Energy

Tidal energy is a form of hydroelectric generation where water is fed by tidal movements. This is really renewable green energy and a clean source of energy that does not create pollution and thus helps to reduce greenhouse gas emissions.

Tidal energy uses a double-day deviation at sea level caused mainly by the gravitational effect of the Moon and, to a lesser extent, by the Sun on the world's oceans. The interaction between the Sun and the Moon of the rotating Earth affects the ocean water that rises up and is called the "tide." Tides are day-to-day movements, with 2 tides occurring every 24 hours and 50 minutes, each up and down store a large amount of potential energy. The energy of tides comes from the rotational energy of the Earth.

Tidal energy stems from the force of changing tides, called the tide of tides (the difference between the height and low of the tide). This change at sea level can be used to generate electricity by constructing a dam across a coastal bay or estuary with large differences between low and high tide. High waves allow the water to enter the bay. The gate (sluice gate) of the dam closes when the water level is at its maximum height. The flow of water generates enough power to turn the turbines that generate electricity. The generation of electricity from tides is very similar to hydroelectric production, except that water can flow in both directions and thus electricity can be generated by bi-directional turbines.





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Tidal energy remains far below potential in terms of its application in this area. There are only a few tidal power plants in the world. Although there are many possible places for generating tidal energy around the world. Currently, the design of tidal energy does not raise new scientific issues. Nevertheless, further research and development should be carried out in three areas: interconnection of tidal power production with national networks and, above all, a good evaluation of its economic interest; design and execution of the construction works according to the site; and impact on the environment.

Tidal Electric, Inc. (TE) has developed and patented a tidal generator that is able to produce cheap electricity in the commercial network that uses oceans as an excellent source of energy. The Tidal Electric Tidal Generator combines existing hydroelectric power technology with conventional marine techniques and configures a large-scale power supply system similar to nuclear fuel and fossil-fuel power plants. The project locates an offshore enclosure structure that makes it completely independent of the coastline, thus eliminating the environmental problems associated with blocking and changing the coastline. Migrating fish just swim around the structure, and ships and boats just sail past the structure. The generator is looking for shallow water near the shoreline and the corridors are usually in deeper water. The offshore location is the hallmark of this design and one of the main claims. The turbines are in a power





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plant. Power is transmitted to shore via underground / underwater cables and connected to the grid.

Tidal energy is green energy and offers many opportunities, including reducing greenhouse gas emissions and the impact of climate change. But it is still far from being actually applied in the practical field due to the lack of knowledge about appropriate technologies and financial engagement. At present, technology is available and financial processes continue. This technology needs strategic planning to adapt tidal forces to appropriate locations around the world. This strategic planning must come from a global (like the UN), international, national and local level, including NGOs and civil society.

LightCatcher



Econation is a young company nominated for the EEP Prize, a prize for innovative environmental methods. Econation LightCatcher is the first active, intelligent light dome that generates up to 3,650 hours of free light per year.

LightCatcher follows the rhythm of the Sun to generate energy. Its strength is its ability to catch daylight even when the Sun is hidden behind a thick layer of clouds because it looks for daylight rather than sunlight. The system also works in cloudy and rainy days and can be installed





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anywhere on flat or sloping roofs anywhere in the world. One LightCatcher illuminates from 50 to 120 square meters. It consists of different layers of polycarbonate and uses an ingenious sensor system that constantly seeks the most optimal frequency of light. The latter distinguishes this system from other lighting systems as LightCatcher does not strictly monitor the Sun but adjusts and optimizes when local conditions require it.

According to designers, the LightCatcher approach leads to increased efficiency compared to traditional methods. Studies show that, compared to traditional methods, LightCatcher is: 1) three to four times more effective than the traditional dome (more hours per day, more light power); 2) active (mirror and motor), the traditional dome is passive; 3) uses intelligent technology; (4) does not suffer from heat loss or temperature fluctuations; 5) there is three to four times faster reimbursement period than the traditional dome. In addition, compared to solar panels, according to the evidence provided by Econation, LightCatcher has the following advantages: 1) Solar panel payout: 9-12 years, while LightCatcher: 2-4 years; 2) Solar roof panel weight / load: min. 18 kg per 1.5 m² while LightCatcher: 17 kg at 60-120 m² and 3) Solar panel maintenance fee: about 10% of initial investment after 10- 12 years (due to replacement of the inverter), while LightCatcher: close to zero. Lastly, it should be noted that incentives through tax incentives (subsidies for solar panels) are decreasing each year and for LightCatcher they are constantly increasing every year.

LightCatcher works neutral for CO₂ and provides savings of an average of 3,650 hours per year for all luminaires. Less electricity consumption means less CO₂.





Wastewater treatment

In Europe, most waste water treatment plants follow the same mechanism. As a first step, the waste water is allowed to settle in settling tanks and then the sediment at the bottom is removed. The water is then treated with a biological process. Bacteria feed on the dissolved organic matter, and after removal, the bacteria themselves are removed. After these initial stages, which constitute the minimum required for discharge into surface water, more rigorous biological treatments can be used to remove nutrients such as nitrogen and phosphorus if the waste water is discharged into a sensitive area. Other treatment steps may include treatment of pathogens to be discarded in bathing waters or waters for breeding shellfish.

Over the past decade, membrane filtration has been developed and installed to provide new and compact projects for waste water treatment plants. These membranes range in pore sizes from microfiltration to ultrafiltration and nanofiltration, and may be specialized to remove pathogens, toxic metals, salinity or selectively to feed nutrients depending on the size of the pores. There is already a wide variety of membrane-based techniques that have undergone laboratory tests, including ion selectors, nanosugges, and various sorbents such as egg shells, although many require much further testing, development and standardization to be able to be of wider use. Reverse osmosis and electrodialysis also use membrane technology, but wastewater is pushed through the membrane,





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and the chemical reactions between the membrane and the wastewater components are able to selectively remove the specific components.



Other water treatment procedures include sodium hypochlorite, ozone and ultraviolet rays: all are very effective in removing pathogens. An increasing problem in freshwater is increasing levels of micro-pollutants such as antibiotics and hormonal drugs

such as contraceptives. It has been shown that these chemicals have a serious impact on the wild, and most waste water treatment plants are not designed to remove them. In addition to treatment technologies, ecosystems can play an important and valuable role in water purification. At the most basic level, they play a vital role throughout the water cycle, providing regulation and purification. Under the right conditions, the use of humid ecosystems for waste water treatment is a win-win strategy because, in addition to effective water treatment, they can also create the habitat needed for some seriously endangered creatures, like some amphibian species.

Built-in and natural wetlands have been used for waste water treatment for several decades and have proven their effectiveness in removing nutrients, pathogens and even persistent toxic metals from the water. There are also novelties in this relatively established area.





For example, Ávila et al. (2013) explore an integrated system using three different successive wetland projects: vertical flow, horizontal flow and ultimately free water surface. They observe a pilot project using all three methods of combined rainfall and waste water treatment in the Spanish community of 2,500 people, Ávila et al. (2013) found that the wetland with a vertical flow is able to remove the organic matter and nitrogen and the horizontal flow and free water surfaces lead to basic purification and disinfection of the water. This approach is particularly innovative, as constructed wetlands are usually used to treat rainwater or waste water, but not both. The experimental project has been observed for a year and a half and has shown that it is capable of delivering good results in both dry and humid conditions (including storms). This combined treatment has achieved water quality, not suitable for drinking, but for refueling of aquifers through land leaching, irrigation of forests and other green areas not accessible to the public.

Improving soil fertility

Soil fertility is the ability of the soil to maintain plant growth and optimize crop yield. It can be improved by adding organic and inorganic fertilizers to the soil. Nuclear techniques improve the fertility of soil and plant production, while reducing the impact on the environment.

Improving food security and environmental sustainability in farming systems requires an integrated approach to soil fertility management that





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maximizes crop production whilst minimizing the deposition of nutrients in the soil and the deterioration of the physical and chemical properties of the soil, which can lead to soil degradation, including erosion. Such soil fertility management practices include the use of fertilizers, organic additives, planting legumes, and the use of improved genetic plasma, combined with the knowledge of adapting these practices to local conditions.

Integrated soil fertility management aims to maximize the efficiency of the agronomic use of nutrients and improve crop productivity. This can be achieved by the use of grain legumes that improve soil fertility by biological nitrogen fixation and the use of chemical fertilizers.

Whether grown as grain, as green manure, as pasture or as wood components of agro-forestry systems, the key value of legumes is their ability to determine atmospheric nitrogen, which helps reduce the use of commercial nitrogen fertilizers and improves soil fertility. Nitrogen saplings are the basis for sustainable farming systems that include integrated nutrient management. The use of nitrogen-15 allows understanding of the dynamics and interaction between different groups in agricultural systems, including nitrogen boosting with leguminous crops, both in single and mixed crop systems.

Soil fertility can be further improved by incorporating cover crops that add organic matter to the soil, resulting in improved soil structure and promoting healthy, fertile soil; by using green manure or growing leguminous plants to fix nitrogen from the air through the process of biological nitrogen fixation; by the application of micro-dose fertilizers to compensate for losses from plant uptake and other processes; and by





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minimizing losses through extraction under the rooting area of crops by improving the use of water and nutrients.

The isotopes of nitrogen-15 and phosphorus-32 are used to track the movement of labeled nitrogen and phosphorous fertilizers in soils, crops and water, providing quantitative data on the effectiveness of use, movement, residual effects and transformation of these fertilizers. This information is valuable in the development of improved fertilizer application strategies. The nitrogen-15 isotope technique is also used to quantitate the amount of nitrogen fixed by the atmosphere by biologically nitrogen fixation by legumes.

The isotopic sign "carbon-13" helps quantify the inclusion of crop residues to stabilize the soil and improve fertility. This technique can also assess the effects of conservation measures such as the inclusion of plant residues in soil moisture and soil quality. This information allows to establish the origin and the relative contribution of different crops to the soil organic matter.

Innovative and sustainable livestock farming

The world population is expected to exceed 9 billion by 2050. By improving life expectancy, increasing urbanization, accelerating migration and, in the light of limited environmental resources, these population trends will have profound consequences for future generations. At least 3 billion people are expected to join the middle class by 2050, and the Food





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and Agriculture Organization of the United Nations estimates that this will lead to a 60% increase in demand for high-quality protein such as milk, meat and eggs.



Satisfying current and predicted demand in a sustainable way is a challenge, especially given that we are already using Earth's resources in ways that are considered unsustainable. The livestock sector is currently the world's largest consumer of natural resources: 80% of all agricultural land used for grazing or for fodder production and 8% of world water use, mainly for fodder crops. In addition, climate change is expected to continue to drive food security through more extreme weather events and other challenges at both regional and global level.

For this reason, the European Union faces a double challenge: it is required to produce higher quantities of high-quality and affordable meat, milk and eggs in response to the rising global demand, while doing so through production systems that are environmentally, socially responsible and economically viable.

Innovative livestock technologies include a wide variety of machines, farm management systems and other devices. They range from advanced feeding systems to cleaning and milking through robots. Technologies such as these are available and useful for all types and sizes of farms. These





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technologies have progressed rapidly in recent years and now have proven benefits for the environment, animal welfare and farmers' competitiveness.

Animal welfare can be improved by using technologies that contribute to the early detection of diseases. This allows for earlier treatment of the animals, which makes treatment more effective at an early stage and thus reduces animal diseases.

The ecological impact of livestock farming can be greatly reduced by using new technologies that reduce livestock emissions. This can be done by, for example, installing air cleaners in the stalls. In this way, the air in the stalls is "cleaned" chemically or organically before coming out. These air cleaners can reduce ammonia emissions by up to 90% and significantly reduce particulate emissions. Another example is the reduction of emissions of ammonia and greenhouse gases by installing a system that removes the fertilizers from the floors.

Precision animal breeding technologies, for example, robot milking, allow better nutrition and treatment of each animal. This results in a higher yield of milk with the same feed consumption. Ultimately, this will reduce the overall consumption of feed in the sector.

Apart from agricultural land that absorbs CO₂, part of the global greenhouse gas emissions from agriculture are the result of the production of animal feed. Using feed more effectively will help reduce the carbon footprint of livestock farming. The same accurate livestock farming technologies will increase the competitiveness of the farms. Farmers will need less feed to produce the same milk yields.





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These innovations will improve the working conditions of farmers as certain tasks can be automated and management software can be used to support their work. For example, robots used for milking and feeding cows will reduce workload and provide more flexibility to farmers. In addition, these technologies improve the attractiveness of agriculture, which is especially important for young farmers.

Modern livestock technologies aim to increase productivity and optimize production. As demand for livestock products is expected to increase significantly over the coming decades, livestock technology can play an important role in contributing to feeding the growing world population.

Extensive farm management systems on farms will facilitate the traceability of the product in the food supply chain. Increasing traceability has a positive impact on food safety in Europe.

Agro-forestry



Agro-forestry is the management and integration of trees, crops and / or livestock on the same parcel and can be an integral part of productive agriculture. It may include existing local forests and forests





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planted by farmers. This is a flexible concept involving both small and large farms.

From a scientific point of view, agro-forestry comes from ecology and is one of the three basic sciences of land use, and the other two are agriculture and forestry. Agro-forestry differs from the last two principles, focusing on the integration and interaction between a combination of elements and not just the focus on each individual element.

Agro-forestry has much to do with mixed cultivation (the practice of planting two or more crops on the same plot), both practices focus on the interaction between different plant species. Typically, both agro-forestry and mixed cultivation can lead to higher overall yields and reduced operating costs.

Over the last two decades, a number of studies have been carried out to analyze the viability of agro-forestry. Combined studies highlight that agroforestry can benefit from both economic and environmental benefits, generating more production and making it more sustainable than forestry or agricultural monocultures. Agro-systems are already accepted in many parts of the world. According to the Agro-Sustainable Research Trust, agro-forestry systems may include the following advantages:



They can control runoff and soil erosion, thus reducing water, soil, organic matter and nutrient losses.



They can maintain the soil organic matter and biological activity at levels satisfying the fertility of the soil. This depends on an adequate part of the trees in the system - usually at





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least 20% of the tree crown to maintain organic matter over the systems as a whole.



They can maintain more favorable physical properties of the soil from agriculture by maintaining organic matter and the impact of tree roots.



They can lead to a more closed circulation of nutrients from agriculture and thus to a more efficient use of nutrients.



They can test the development of soil toxicity or reduce baseline toxic properties - soil acidification and salinisation can be checked and trees can be used to recover contaminated soils.



They use solar energy more efficiently than monoculture systems with different heights, leaf shapes, and alignment.



They can reduce harmful insects and related diseases.



They can be used to recover eroded and degraded lands.



Agro-forestry can increase the availability of soil water in land-use systems. In dry regions, however, competition between trees and crops is a major problem.



Nitrogen trees and shrubs can significantly increase nitrogen inputs in agro-forestry systems.



Trees are likely to increase the input of nutrients in agro-forestry systems by extracting from lower soil horizons and weathering rocks.





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Tree degradation and pruning can greatly contribute to maintaining soil fertility. The addition of high quality tree cuts leads to a large increase in crop yields.



The release of nutrients from the decomposition of wood residues can be synchronized with the requirements for nutrient intake from the respective crops. While different trees and crops will have different requirements and there will always be some imbalance, the addition of high quality crops to the soil during planting usually results in a good degree of synergy between nutrient release and the demand for such.



In the maintenance of soil fertility in agro-forestry, the role of the roots is at least as important as that of the above-ground biomass.



Agro-forestry can provide a more diverse farm economy and stimulate the entire rural economy, leading to more stable farms and communities. Economic risks are reduced when the systems produce multiple products.

Besides being based on practices used in forestry and agriculture, agro-forestry also works to protect the land through more effective stockpile protection, soil erosion control, salinity and water mass and better quality control of timber.

The denser and more reliable cover of trees can provide shelter for livestock during the warmer months, allowing animals to consume energy. The same coating helps to block the wind, helping to increase water retention levels that can help achieve a more stable harvest.





Agro-forestry can have enormous environmental and farm benefits. For farmers, the ability to maintain some control over land and production in the context of climate change means that agro-forestry can be a huge opportunity for the agricultural sector.

At an environmental level, the ability of agro-forestry to help prevent soil erosion while helping to retain water and promote soil fertility can help to find solutions for areas where rainfall is rare or declining due to climate change.

Information and communication technologies for cities

Information and communication technologies (ICTs) play a key role in the urban context, as they can be applied to resolve diverse cross-sectoral urban problems and most of the time they do not require large and expensive capital infrastructure. Potential urban ICT applications include geospatial spatial planning, simulation and visualization tools, mobility tools, energy and water management optimization solutions, disaster response monitoring and social inclusion, all of which lead to the creation of more sustainable cities.

Geospatial tools such as satellite maps and data layers of geographic information systems can be used in urban contexts for different purposes:








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 Mapping of underground utilities, mines, tunnels and other urban infrastructure to identify problems, improve efficiency and design extensions;


 Mapping of areas at risk of earthquakes, floods, landslides and other natural disasters and adaptation of development plans;

 Identification of filling areas as abandoned land or buildings suitable for reconstruction and planning of their redistribution;

 Mapping natural resources as first-class agricultural land and unique or threatened habitats;

 Mapping historical and cultural sites to be protected and developing future urban development that is in line with the cultural heritage of the city;

 Providing virtual addresses to houses and businesses that do not have official addresses;

 Combining multi-layered statistical information with satellite maps for analyzes such as poverty targeting, urban infrastructure and transport planning as well as socio-economic analyzes such as crime statistics and tracking of illegal building.

Civil servants can use simulation, modeling, and visualization technologies to support long-term planning and investment decisions. Simulation tools can help urban planning, building layout and design, traffic and energy analysis as well as emission calculations.





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ICT can be implemented in different ways to improve urban mobility, including traffic management, multimodal travel planning and congestion pricing. ICT and smartphones allow city residents to benefit from new business mobility models such as car exchange, car sharing and incentive programs that encourage cycling. ICT also allows for the use of transport subsidies for individuals and low-income households that may not be able to afford the standard rate for transport services.

ICT can also be used to optimize energy and water management. Intelligent networks, for example, are intelligent electrical systems that integrate consumption management, distributed power generation and transmission and distribution network management. They provide real-time information to utility companies with the help of sensors that allow them to respond to changes in demand, supply, costs and emissions, and to prevent serious power outages. Smart grids increase the flexibility of energy production and distribution by allowing decentralized individual energy producers, such as micro-wind turbine households or roof solar panels, or electric vehicle batteries to feed surplus energy back into the grid. In order to make the best use of existing energy sources, it is suggested that local authorities can create energy markets that use smart grid technologies so that individuals can trade the excess energy generated by their private facilities and reduce the need to invest in new centralized capacity for electricity generation.

ICT can help promote more sustainable patterns of energy and water consumption for individuals, for example through proactive tracking and dissemination of information on personal carbon emissions and patterns of consumption. Similarly, monitoring and controlling energy demand in





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buildings through sensors can reduce energy consumption. ICT can also be used to monitor water losses at relatively low costs. Combined with improved pricing and implementation policies, it can help to more effectively manage water.

ICT can improve resilience against natural hazards. ICT-based surveillance and surveillance techniques can be used for early warning and land-use planning. ICTs used for so-called "dashboards" or operational centers combine data from different departments and allow cities to monitor risks in an integrated way. ICT can also analyze data from sensors that are established across the city to identify and resolve critical infrastructure and safety issues, including water and energy loss.





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COMPARISON BETWEEN THE MOST USED AND INNOVATIVE METHODS



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In order to protect the environment and make our production more competitive, we need technology, processes and business models that use resources more efficiently. These solutions are called "eco-innovation".

Mankind must strive to use an increasingly resource-efficient and low-carbon economy. This will require substantial changes in production and consumption to reduce environmental pressures.

Eco-production can help. It can prevent and correct environmental damage and solve problems such as noise and damage to ecosystems. It has a vital contribution to sectors such as waste and waste water management, renewable energy sources, air pollution and sustainable construction.

Environmental technologies are an important part of the EU economy. They have an annual turnover of 320 billion euros, and since 2004 they have grown by 8% per year. The EU has one-third of the world market, which can double to over 2200 billion euros by 2020.

The European Union supports green technologies and green products through a range of funding schemes and policies. The Eco-Innovation Action Plan addresses the drivers of eco-innovation and the obstacles to their implementation. It supports the funding of research and innovation projects and eco-innovative companies. The Competitiveness and Innovation Program provides access to finance for small businesses facilitating research and innovation.





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One of the problems faced by new technologies is confidence building. An EU Eco-Technology Screening Scheme with a network of centers should increase market confidence by reinforcing the effectiveness of eco-innovations.

The LIFE program also supports areas such as climate change, waste reduction and more efficient use of natural resources, pollution prevention, waste water management, rivers, seas and coasts, and improving the urban environment. So far, over 1950 projects have been co-financed, representing an investment of € 3.6 billion, of which LIFE has provided € 1.2 billion. In this way, various innovative ideas in the field of sustainable use of natural resources are being constantly developed, which build on the results of the already established good practices in this field, help to solve the problems arising from the initial steps towards resource efficiency and seek new resources that have not been used up to now.

The presented good practices and innovative methods for sustainable use of natural resources show that there are two main groups of innovative methods:



innovative methods aimed at seeking new techniques for energy generation, ICT implementation, technological innovation and research, and



innovative, nature-friendly methods that apply natural methods with minimal use of artificial technology to improve the sustainable development of agriculture and livestock farming, sustainable land use, forestry and water use, thereby improving people's lives and health





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Despite its positive effects, the first group of innovations still poses a number of challenges to environmental and sustainable development. Wind turbines and terrestrial solar panels pose risks to nature. The death of birds and bats caused by wind turbines is widely known. Other important impacts of energy infrastructure include habitat loss and habitat fragmentation, which can lead to changes in the behavior of animals. It is for these reasons that more environmentally-friendly methods for the location and design of wind turbines and solar parks, the use of new materials, the search for other inexhaustible sources of energy, and the search for new methods of energy storage are sought. Large investments related to the use of inexhaustible energy sources limit their intensive use, but new energy resale policies and practices and investment subsidies will greatly help in the increasingly widespread use of these technologies.

On the other hand, innovations aimed at environmentally friendly and sustainable agriculture, livestock farming and the full use of renewable natural resources are primarily geared towards more efficient use of natural conservation methods. Although many of these methods do not require large initial investments, they have a longer payback period due to





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the need to await the natural development of natural processes for soil and water clearing, as well as for breeding animals, forests and crops.

Global livestock farming and agriculture will be more and more advanced to improve the efficiency required to meet the growing demand for food and animal protein from the growing, more urban and wealthy populations. Responding to the growing public importance of sustainability is a major challenge for all producers and especially for industrialized operations. As with livestock farming, feed and manure contribute to a large extent to the three most critical categories of environmental impacts, global warming potential (GWP), acidification rates (AR) and eutrophication potential (EP). Intelligent combining of the management of nutrients, emissions and waste into the concept of integrated, low-emission agricultural production not only significantly reduces the environmental footprint in the environmental dimension of sustainability but also through the production of renewable energy (heat, electricity, biomethane) as the main raw material the anaerobic bioreactor can also improve the economic dimension of this type of production.

As nature is itself a closed system in which each element depends on the rest, innovative methods in the sustainable use of natural resources are increasingly seeking to close the economy and production cycle so that any waste product from one production to be used in another, the cultivation of some products to promote the subsequent cultivation of others, and the ever-increasing urbanization to have an ever-greater positive effect on nature.





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Of extreme importance for the effective development and practical application of the innovative methods of sustainable development is their active popularization, financial, political and strategic support in their implementation as well as the creation of active demand among the population.





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METHODOLOGY AND PLAN FOR TESTING AND
IMPLEMENTING ESTABLISHED MOST EFFECTIVE AND
EFFICIENT INNOVATIVE METHODS FOR SUSTAINABLE USE
OF COMMON NATURAL RESOURCES





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Taking into account the characteristics of the organizations that commissioned the survey as well as the economic and sustainable development of the areas under the study, a methodology is proposed to stimulate and take initial steps towards sustainable use of natural resources.

Both regions of Bolyarovo and Kofchaz cannot be identified with high economic or technological development but, on the other hand, they still maintain a good level of ecological and preserved nature.



In view of the above, it is recommended to apply short-term measures for initial education and information of the population and representatives of farmers about the possibilities of applying good practices and innovative methods of sustainable use of resources that do not require high investment and are easily applicable. Initial organization of information events - youth trainings, farmers' seminars, information days for the population and others to present methods for sustainable and low resource breeding, plant production, land use, as well as recycling. Residents, farmers, youths and others who have participated in information events and have shown interest in testing and using certain methods will then be actively assisted by the municipality and NGO to actually implement and track the effect of these methods. Results, impressions, experiences and comments from tests and applications in the practice of selected methods can be posted on the existing platform to this project or on another easily accessible





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website. Municipality and NGO should establish contacts between already involved and new entrants, issue brief information material on progress and organize, after 1-year, new information events to report on the success achieved in the sustainable use of natural resources so that they can attract even more people willing to be involved in sustainable lifestyles and sustainable business. An exemplary 1.5-year plan to test and implement the most effective and efficient innovative methods for sustainable use of common natural resources is proposed in the following table:



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Activity / Month	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	XIII	XIV	XV	XVI	XVI
Identification of sustainable and low-resource farming methods, agriculture, land use, and recycling applicable to the area																	
Preparation of information materials and preparation of information events																	
Organization of information events - youth training,																	





Activity / Month	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	XIII	XIV	XV	XVI	XVI
seminars for farmers, information days for the population and others																	
Testing and applying methods for sustainable and low-resource farming, agriculture, land use, and recycling																	
Publish results, comments, discussions, and more																	





Activity / Month	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	XIII	XIV	XV	XVI	XVI
on an accessible online platform																	
Establish contacts between already included participants and new entrants																	
Publishing and distribution of short information materials																	
Collecting results and information from the conducted tests																	
Preparation of information materials																	





Activity / Month	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	XIII	XIV	XV	XVI	XVI
and preparation of information events																	
Organization of new information events to present the results and attract more people																	





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METHODOLOGY FOR MONITORING AND FOLLOW UP

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The tasks of monitoring and follow up of the implementation and effectiveness of the plan for testing and implementing the most effective and efficient innovative methods for sustainable use of common natural resources are aimed at continuous monitoring of the number of participants involved. Two main sets of indicators to be tracked are defined for this purpose:



Performance indicators, which aim to measure the level of development and progress of the activities included in the plan.



Impact indicators aiming to know the effectiveness of the activities on the practical application of sustainable resource use methods.

The performance indicators immediately measure the scope and level of development of each of the activities foreseen in the plan. It is suggested to monitor and follow up the following indicators:



Number of organized information events



Number of participants included



Number of active participants involved in the practical application of the methods for sustainable use of natural resources

In addition, for each action within the plan, own performance and result metrics should be created to assess the contrast of the results obtained with the expected results. Thus, during the implementation period











of the plan and each activity undertaken on the basis of it, it will be possible to assess intermediate results and to take timely improvement measures.



The impact indicators will measure the results of tested and applied sustainable resource utilization methods by implementing the set plan so that one can monitor the development of the sustainable use of natural resources among the population and farmers. Thus, to

achieve this goal, the following indicators will be tracked:

-  Number of effective and permanently applied sustainable farming methods
-  Number of effective and permanently applied methods for sustainable livestock farming
-  Number of effective and permanently applied methods for sustainable soil use
-  Number of effective and permanently applied recycling methods
-  Number of participants from the population who apply sustainable methods of using natural resources
-  Number of farmers who apply sustainable methods of using natural resources





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Number of business representatives interested in investing in sustainable use of natural resources



Number of local administrations interested in investments in methods of sustainable use of natural resources



Created projects and received funding for the sustainable use of natural resources



Enhanced environmental profile of the region





References

1. *Wind and solar energy and nature conservation, European Commission, December 2014*
2. *Sustainable Opportunities to Address the Problems of Drought and Water - a Tree of Problems and Cases, H. George et al.*
3. *Municipal Development Plan, Bolyarovo Municipality 2014 - 2020*
4. *Regional Strategy for Development of Yambol District 2014 - 2020*
5. *Information from the Municipality of Kofchaz*
6. *Tidal energy, short technology, International Renewable Energy Agency, June 2014*
7. *G20 Case Report on Clean Energy and Energy Efficiency, October 2013*
8. *Management of agricultural land in Natura 2000, European Commission*
9. *Tackling Soil Degradation in EU Agriculture, SoCo Project Team, 2009*
10. *Sustainable urban development approaches in three different cities: Copenhagen, Newcastle, Vienna, Umberto Pisano, Katrin Lepuschitz & Gerald Berger, January 2014*
11. *Organic Livestock Farming - Challenges, Perspectives and Strategies to Increase its Contribution to the Sustainability of the Agricultural System, Alfredo J. Escribano, 2015*





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12. *Sustainable Water Use in Europe, European Environment Agency, 2001*
13. *Report on the Environmental Indicator, European Environment Agency, 2017*
14. *Sustainable use and management of natural resources, European Environment Agency, 2005*
15. *Europe 2020, European strategy for smart, sustainable and inclusive growth*
16. *Sustainable Europe for a Better World: A European Union Strategy for Sustainable Development, European Commission, 2001*
17. *Prospects and Green Power Sustainability: Tidal Energy Case, Md. Salequzzaman*
18. *Sustainable Intensification of European Agriculture, Prof. Allan Buckwell*
19. *Comparative study of models and approaches for "Eco-provinces and eco-cities", Dipl.- Biol. Nadja Kasperczyk 2009*

