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Reinforcing Protected Areas Capacity through an Innovative Methodology for Sustainability

– BIO2CARE –

(Reg. No: 1890)

Deliverable 5.2
Targeted workshops regarding biodiversity conservation, circular economy and symbiotic activities

Deliverable 5.3
Targeted workshops regarding BIO2CARE labelling scheme

Hand-out Material – e-Notes of the workshop

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Session 1-A
Introduction – Sustainable Performance of Protected Areas

The problem

The growth of the human population enhances the extensive use and consumption of materials, while the existing lifestyle and established consumer patterns lead the planet and its population to an unstable situation without possible reversal (Allenby and Graedel, 2002). In other words, the rate of use and consumption of resources and material, especially in developed countries, cannot be maintained without causing significant damage to the environment, society, and economy (Aktsoglou and Gaidajis, 2020a).

The solution

Sustainable development requires human systems to function within specific “green” limits to ensure the sufficient supply of goods and services both to current and future generations (Daily, 1997). The achievement of sustainability in an area depends on whether the impact of anthropogenic activities are within the “green” range, including those activities that take place outside the examined area but whose impacts affect its environmental status (Graymore et a., 2010). For this reason, the planning and natural resources management in all spatial scales is essential to aim toward sustainability (Graymore et al., 2008), as it requires the population to live within the limits of the supporting systems, ensuring equitable sharing of resources and opportunities for this and future generations (Graymore et al., 2005).

Sustainability and protected areas

The sustainability of protected areas is associated directly with Carrying Capacity for two reasons: (a) the idea of sustainability reflects a limit, similarly with the concept of Carrying Capacity, and (b) both concepts share the same challenges in formulating the objectives, practices, and actions of improvement (Saarinen, 2006). From the early 1960s, due to the fact that public visits were the major threat for protected areas (Lawson et al., 2003; Needham et al., 2011; Prato, 2001; 2009), research on outdoor recreation has utilized the concept of Carrying Capacity to address the resource and social impacts of visitors (Lawson et al., 2003; Wagar, 1964; Manning, 1999). A number of frameworks (Farell, 2002; Stankey et al., 1985; Kuss et al., 1990; National Park Services, 1997; Payne and Nilsen, 1994) have been developed in order to provide management bodies with a basis for decision-making about the Carrying Capacity of national parks and protected areas, defining it as “*the maximum number of visitors an area can sustain without unacceptable deterioration of the physical environment and without considerably diminishing user satisfaction*” (Prato, 2001; National Park Services, 1997; Sata et al., 2003).

But in many protected areas worldwide, the integration of anthropogenic activities within the boundaries of protected areas has led to increasing concerns regarding the appropriate use levels of parks, forests, lakes, and other environmentally sensitive areas (Manning, 2007). Alongside the significant ecological habitats within protected areas, extensive human activities are developed such as households, tourism, agriculture, light industry, and transportation (Aktsoglou and Gaidajis, 2020b). The harmonious coexistence of those diverse activities is a basic concern of the management bodies responsible for protected areas (Farell, 2002). More and more relevant authorities need to quantify and assess the maximum level of human activities that can be developed to satisfy current and future needs, while in parallel sustaining the environmental and ecological health (Aktsoglou and Gaidajis, 2020b).

Serving this challenge, the aim of the specific project is to provide an applicable framework that is able to improve the evaluation and monitoring of the carrying capacity of protected areas. The proposed framework takes advantages from the results of an extensive literature review (Aktsoglou and Gaidajis, 2020a), where 13 methods selected from a pool of 61 methods from a literature review were analyzed, categorized, and were finally evaluated based on specific criteria (Aktsoglou and Gaidajis, 2020a; Angelakoglou and Gaidais, 2020). The “Ecological Footprint” method has been indicated as the most appropriate method for the evaluation of carrying capacity of protected areas ((Aktsoglou and Gaidajis, 2020a).

Carrying Capacity

The concept of Carrying Capacity in general expresses an upper limit of the ability to sustain a living system, whereas beyond that limit, instability, degradation, or irreversible damage will subsequently occur (Lui, 2012). Therefore, Carrying Capacity can be utilized as a supportive tool of policy and decision-making, in order to resolve the aforementioned challenges (Aktsoglou and Gaidajis, 2020b).

The assessment of the Carrying Capacity of an area is a case-specific procedure and depends on the nature of the problem to be solved and the objectives set by the researcher (Aktsoglou and Gaidajis, 2020b). As a result, various Carrying Capacity definitions are available in literature. A widely known definition was introduced by Rees (1997), according to which the Carrying Capacity of an ecosystem is “*the maximum population of certain species that can be accommodated in an environment without permanent damage to the productivity of the environment*”.

In order to assess the Carrying Capacity of a protected area, its Ecological Footprint per person is compared with its Biocapacity, a term that represents the available biologically productive land that absorbs the impact of consumption along with subsequent waste (Peters et al., 2007).

Ecological Footprint

The majority of existing Carrying Capacity methodologies focus on the environmental constraints of resource consumption to determine population limits (Lane, 2009). The resource-consumption-focused methodologies (Peters et al., 2007; Fairlie, 2007) are universally applicable, reasonably comprehensive, and their data and methodology have been made publicly available (Peters et al., 2005). The most common current existing examples of environmental modeling (Lane, 2009; Scroll et al., 2012; Azapagic and Perdan, 2011) are based on the Ecological Footprint, *“the amount of land and/or water that is necessary to a population or activity, in order to produce, in a sustainable way, all the natural* *resources it consumes and assimilate the waste it produces, using the available technology" (Wackernagel et al., 1999).*

The Ecological Footprint calculations refer to the estimation of annual consumption needs of anthropogenic activities that take place on the protected area and their conversion to biologically productive land. According to Wackernagel et al., 2005, the aforementioned consumption needs are classified into six (6) Ecological Footprint land use types, namely, agricultural products, livestock products, fishery and aquaculture, timber products, CO_2 emissions, and built-up surfaces. The Ecological Footprint of consumption for each product (EFc) is calculated as:

$$EF_C = EF_P + EF_{im} - EF_{ex}$$

where EF_P is the Ecological Footprint of production, and EF_{im} and EF_{ex} are the Ecological Footprints embodied in imported and exported commodity flows, respectively.

Integration of Life Cycle Analysis in the calculations of Ecological Footprint method

In order to ensure that all the production procedures as well as the necessary materials both for product production or energy generation will be taken into account in the estimation of the Ecological Footprint, the Life Cycle Analysis (LCA) approach was innovatively applied (Aktsoglou and Gaidajis, 2020b), leading to a more thorough assessment of human activities and ensuring that all required processes and materials were taken into account in the calculations (Cucek et al., 2012). The Life Cycle Analysis is conventionally characterized as a "cradle-to-grave" or "closed-loop" approach, as it examines the overall environmental impact of a product, process, or system, taking into account every step of its life—from receipt of raw materials to its construction, its sale, usage, and final disposal into the environment (Hagar, 2007).

Biocapacity

The Biocapacity calculations refer to the estimation of the existing available biologically productive land. The available land is divided into five land uses, namely, cropland area, grazing land area, marine/inland water area, forest area, and infrastructure area and the calculation of Biocapacity is implemented based on the accounting framework proposed by Wackernagel et al. (2005).

Methodological Framework

The proposed framework is based on the "Ecological Footprint" calculation framework, but goes a big step further by simplifying the Ecological Footprint calculations and introducing a new unit, namely, "equivalent person," in order to enable the evaluation of more than one activity.

The methodological framework is summarized in Figure 1.

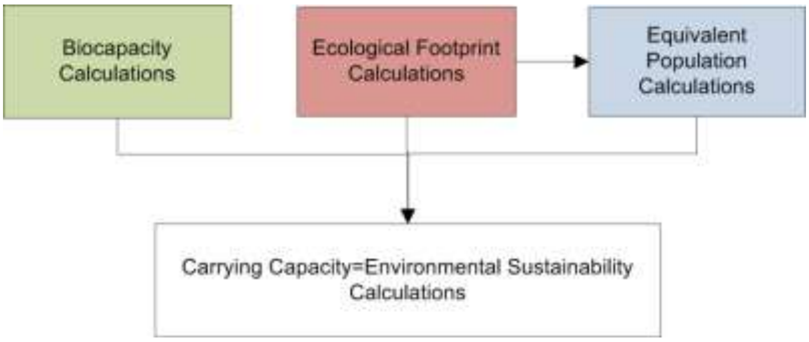

Figure 1. The proposed methodological framework

Based on the above, a comprehensive quantitative definition of Carrying Capacity is given by Aktsoglou and Gaidajis (2020b) with the following formula:

$$Carrying\ Capacity\ (max.\ equivalent\ population) = \frac{Biocapacity\ (available\ land)}{\frac{Ecological\ Footprint\ (required\ land)}{P\ (existing\ equivalent\ population)}}$$

where P is the existing equivalent population of the inhabitants of the protected area. The unit of "equivalent population" is introduced, since the proposed methodological framework besides the consumption needs of the real human population of the protected area estimates the consumption needs of anthropogenic activities, which are not directly dependent on the size of the real population. For example, the annual energy consumption of buildings depends on their size and their use and not on the population size of the protected area.

At first, the spatial and time parameters of the framework, namely the geographical boundaries of the study area and the reference year essential for the procedure of data acquiring, are clarified. Following, the calculations are separated in three sectors: (a) Biocapacity calculations, (b) Ecological Footprint calculations, and (c) Calculations of existing Equivalent population (Aktsoglou and Gaidajis, 2020b).

Session 1-B
Biodiversity conservation

1-B.1. Biodiversity and state of nature

Biodiversity – Definition and context

The term "Biodiversity" was officially adopted in the early 1980s. It was and still remains a complex and vague term, subject to a variety of different definitions. In 1981, Franklin *et al*. described three aspects of ecosystems: composition, structure, function. Less than 10 years later, in 1990, Noss expands the three primary attributes of biodiversity into a nested hierarchy that incorporates elements of each attribute at four levels of organization: a) regional landscape, b) community-ecosystem, c) population-species and d) genetic.

The conceptual framework of the hierarchical approach encompasses different levels of:

- Compositional biodiversity: The identity and variety of biological elements
- Structural biodiversity: The rules of aggregation of biological elements in space
- Functional biodiversity: Ecological and evolutionary processes between biological elements

The Convention on Biological Diversity (CBD), which was signed in Rio de Janeiro, Brazil, in 1992, by 150 government leader, recognizes that biological diversity is about more than plants, animals and micro-organisms and their ecosystems – it is about people and our need for food security, medicines, fresh air and water, shelter, and a clean and healthy environment in which to live. The term, in art. 2 of the CBD, is described as "*the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems*". The objectives of the CBD, to be pursued in accordance with its relevant provisions, are:

- the conservation of biological diversity (mostly in situ, supported by ex situ)
- the sustainable use of its components and
- the fair and equitable sharing of the benefits arising out of the utilization of genetic resources, including by appropriate access to genetic resources and by appropriate transfer of relevant technologies, taking into account all rights over those resources and to technologies, and by appropriate funding.

The CBD foresees the development of national strategies and the implementation of plans and programs for the conservation of biodiversity (https://www.cbd.int/convention/).

Species and ecosystems – at a glance

The main categories of **species** in relation to their habitat / ecosystem, other species, distribution area and pressures / threats, are:

Endemic species: Species whose distribution is limited to a specific geographical area as a result of a variety of factors (eg isolation, response to abiotic conditions).

Umbrella species: Species with high needs for habitat or other ecological requirements and whose conservation covers the conservation needs of many other species at the ecosystem or landscape level.

Dominant species: The most abundant species of an ecosystem, i.e. the ones with the largest number of individuals, which are usually the largest part of its biomass. For example, one species of pine is the dominant species in a pine forest.

Key-stone species: Species whose impact on the function and diversity of the ecosystem is disproportionately large in relation to their numerical abundance or biomass, so that their disappearance may trigger significant changes in the structure of the ecosystem and loss of biodiversity. Despite the fact that all species interact, the interactions of some species are more intense and extensive. As a result, their extinction may trigger successive direct and indirect changes in an ecosystem, at more than one food level, ultimately leading to habitat loss and extinction of species from the food chain.

Endangered species: Species that are in danger of extinction in the near future from the whole range or part of their distribution. Survival of these species is unlikely if the factors/pressures that cause their numerical decline or habitat degradation continue to exist. Marking one species as endangered is often the first step in identifying the threats it faces and implementing appropriate actions to protect it. The term "threatened" covers species that are classified as Critically Endangered, Endangered or Vulnerable by the IUCN Red List of Endangered Species or corresponding national catalogs.

Extinct species: Undoubtedly extinct species, i.e. species for which there is no doubt that the last individual has become extinct. One species is considered extinct when extensive surveys of its biological cycle, in known or expected habitats, during the appropriate time periods and throughout the historical scope of its range, have failed to record an individual.

Ecosystems are characterized by four key features:

- biotic (living) elements
- abiotic elements (e.g. water, soil, climate)
- interactions within and between the above two components, through energy flows
- natural space in which it exists and operates.

The main ecosystem categories are:

- Terrestrial (7 vegetation types from evergreen broadleaved forests-Mediterranean zone to sub-alpine zone)
- Wetland (rivers, deltas, estuaries, lakes, lagoons, marshes, etc.)
- Marine and coastal (pelagic and benthic systems)

Ecosystem services

Formerly known and described as ecosystem values and functions, the modern term "ecosystem services" (Millennium Ecosystem Assessment 2005), promotes the necessity of ecosystem for the well-being of human civilization and highlights their large-scale functionality with complex mechanisms that are irreplaceable by human technological means. Ecosystems, with the biodiversity they encompass, offer a variety of services to humans:

a) Provisioning (food, freshwater, raw material, medicinal resources)

b) Regulating (local climate air quality, carbon sequestration and storage, moderation of extreme events, waste-water treatment, erosion prevention and maintenance of soil fertility, pollination, biological control, regulation of water flow)

b) Supporting (habitat for species, maintenance of genetic diversity)

d) Cultural (recreational and mental/physical health, tourism, aesthetic appreciation and inspiration for culture, art and design, spiritual experience and sense of place)

The state of nature

The Natura 2000 network in Greece comprises 446 sites: 265 sites (Sites of Community Importance-SCIs and Special Areas of Conservation-SACs) for the protection and conservation of habitats and species under the Habitats Directive and 207 Special Protection Areas-SPAs for the protection and conservation of avifauna under the Birds Directive. The sites in Greece cover more than 27% of the national territory (terrestrial and marine, excluding overlaps).

Barometer statistics per country

Country: Greece — Release version: End2019 — 2020-03-23

Land area in km² (European part): 132,026 km²

	Natura 2000 area data (km²)		
	SPA	SCI	Natura 2000
Number of Natura 2000 sites	207	265	446
Natura 2000 land area (km²)	27,761	21,912	35,382
Natura 2000 marine area (km²)	10,764	17,529	22,796
Natura 2000 total area (km²)	38,525	39,440	58,778
Proportion European land area covered by	21.0%	16.6%	27.3%

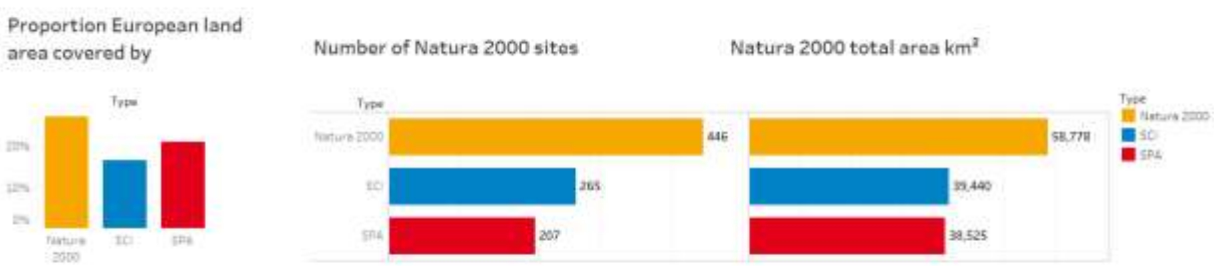

Figure 1. The Natura 2000 network sites in Greece (latest major revision of the national list of the European Ecological Network Natura 2000, Joint Ministerial Decision 50743/2017 (source: EEA, 2020).

Natura 2000 network comes with EU obligations for each member state, to monitor and report the conservation status and trends of all protected items (habitats and species, including birds). These obligations are:

The National report on the implementation of Art. 17 of the Habitats Directive (Directive 92/43/EEC) for the Reporting Period 2013-2018 – submission 2019. Factsheets and maps for 89 habitat types (Annex I to Directive) and 297 flora & 251 fauna species (Annexes II, IV and V) + 18 species with uncertain/unclear taxonomical status or presence/occurrence were drafted and submitted. The results are shown in Fig. 2.

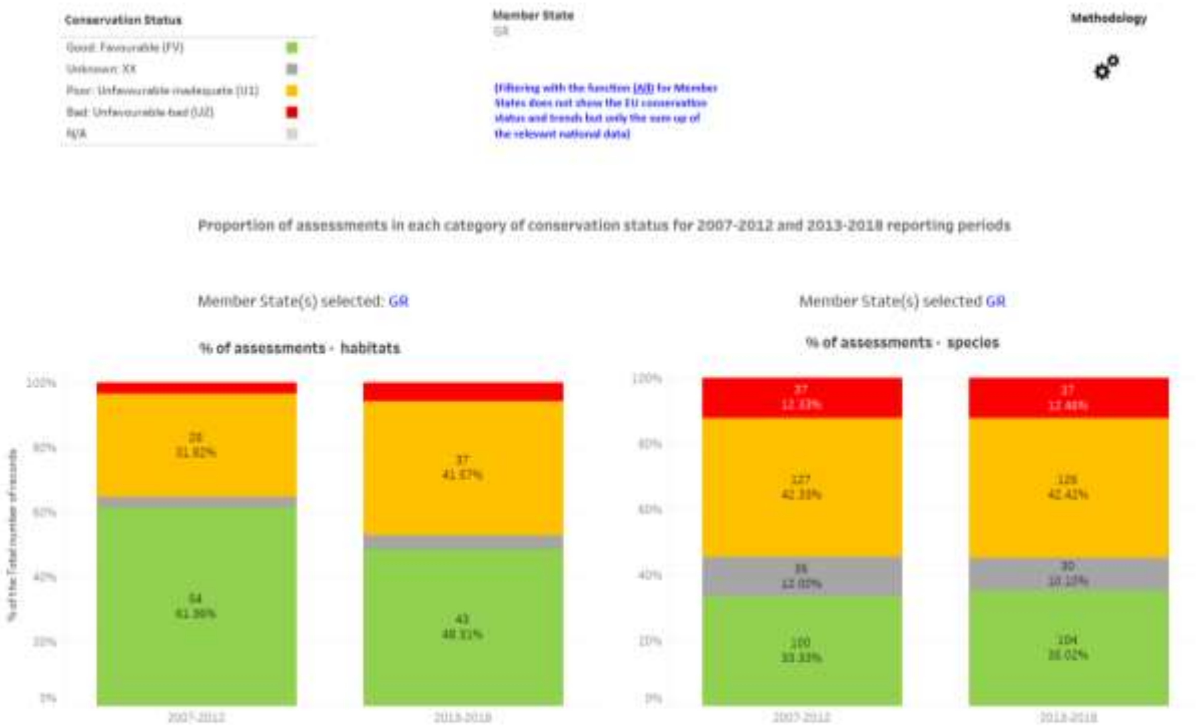

Figure 2. Conservation status of habitat types and species (Habitats Directive) – comparison between two successive reporting periods (source: EEA, 2020).

The National report on the implementation of Art. 12 of the Birds Directive (Directive 2009/147/EC) for the Reporting Period 2013-2018 – submission 2019. Factsheets and maps for 320 bird species and seasonality (breeding, wintering, passage) were drafted and submitted.

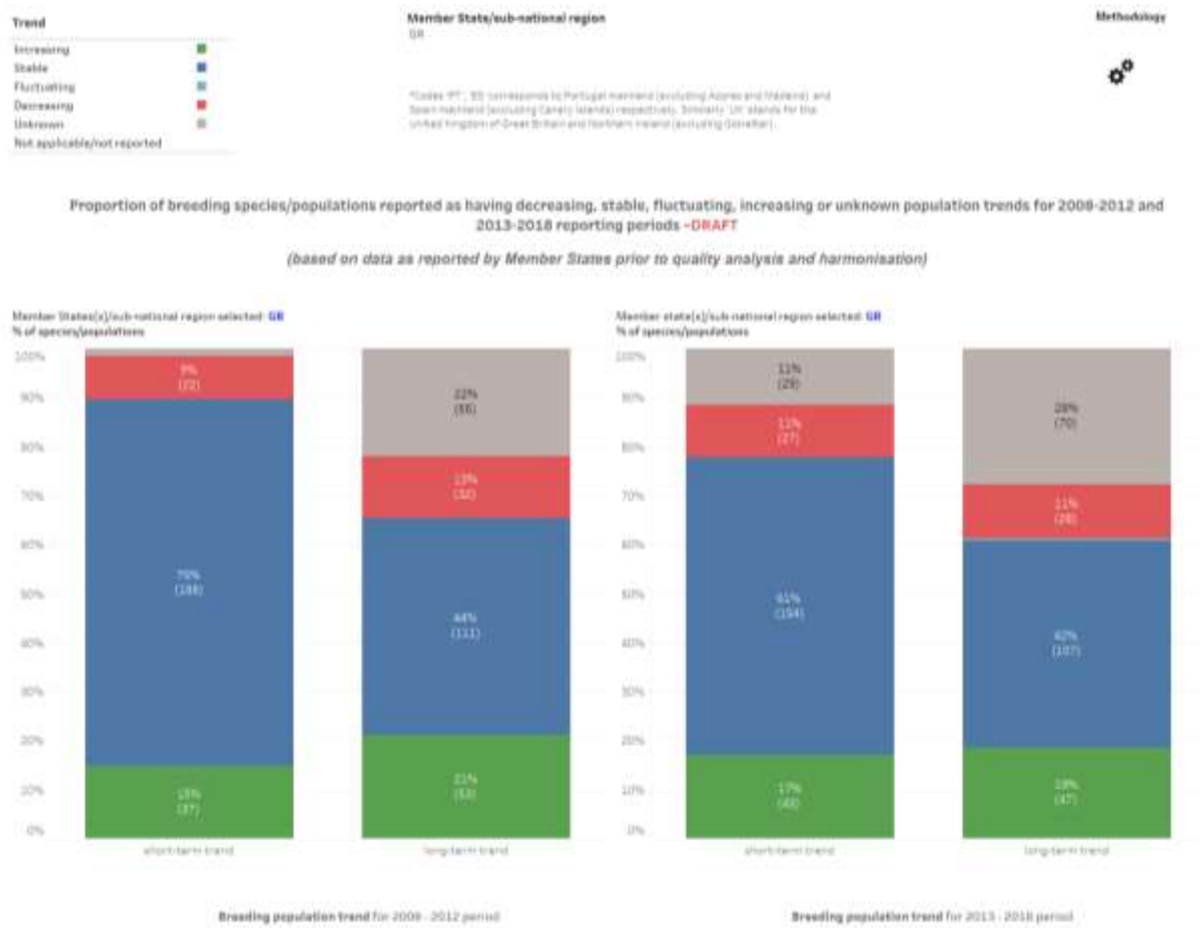

Figure 3. Breeding population trends of bird species (Birds Directive) – comparison between two successive reporting periods (source: EEA, 2020).

Data were obtained through extensive fieldwork of many expert groups, in the framework of a national-scale project in 2015, while the drafting and submission of the Report drafting was assigned by the Ministry of Environment and Energy to EKBY in 2019.

1-B.2. Protected Areas and legal framework: An Introduction

Protected Area (PA) - Definition

According to the definition given by the International Union for the Conservation of Nature and Natural Resources (IUCN, a membership Union composed of both government and civil society organizations - www.iucn.org):

«*A protected area – PA is a clearly defined geographical space, recognized, dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values*» (IUCN Definition 2008)

PAs are distinguished for their specific (or even uniqueness of) flora, fauna, ecosystems, geomorphological formations and for the beauty of the landscapes. They serve the needs of protection and conservation of their unique biodiversity, scientific research, outdoor recreation and environmental education.

Necessity & Legal bases of nature protection: Historical background

The need to protect specific habitats, species and regions, begins with the realization of the continuing degradation of the natural environment and the disturbance of the ecological balance. At the time when man was organized in societies and began to develop agriculture, stock-raising, handicrafts and shipbuilding, the destruction of nature, the depletion of natural resources with their reckless use and the deterioration of the landscape also began.

The drastic destruction of the natural environment began in the mid-19th century with the Industrial Revolution, the urbanization of the population, the expansion of existing cities, the rapid creation of new settlements and industrial areas, the expansion and creation of new transport networks.

So, the idea of protection of special sites is universal and is by no means a modern concept. The first historically mentioned protection action took place in 1,122 BC, when a decree was issued in China to protect a forest. In 252 BC, Asoka, emperor of India, issues a decree protecting animals, fish and forests. In ancient Greece and Rome, the sacred groves are known, which were dedicated to deities, whose protection was absolute. The first natural reserve in the western world is probably the one created near Venice in the 8th century AD, as a shelter for deer and wild boars. At the end of the Middle Ages and during the Renaissance, princes and other nobles naturally created prey shelters after finding that predatory fauna was declining due to demographic growth and improvement of hunting methods. The European Bison and the Tarpan (wild horse) survived thanks to the absolute protection regime, which had been imposed since the 14th century.

However, extensive legislative regulations began only at the end of the 19th century and early 20th:

- In 1853, France, the first natural reserve of modern times was created with the designation of the Fontainebleau beech forest as a protected area.
- In 1872, the Yellowstone National Park area was designated in the United States.
- 1909 was a milestone year in which most European countries began to set the legal bases of the protection of nature and biodiversity.

However, the most important steps towards this direction were taken in the '70s:

- 1971: Signing of the Ramsar Convention on Wetlands of International Importance especially as Waterfowl Habitat
- 1973: Signing of the CITES Convention on the International Trade in Endangered Species of Wild Fauna and Flora
- 1976: Signing of the Barcelona Convention for the Protection of the Marine Environment and Coastal Areas of the Mediterranean
- 1979a: Bonn Convention «… *on the Conservation of Migratory Species of Wild Animals*»

- 1979b: Berne Convention «… *on the Conservation of European Wildlife and Natural Habitats*»
- 1979c: European Directive 79/409/EEC «*on the conservation of wild birds*»
- 1990: Important steps continue…
  - 1992a: Convention on Biological Diversity (Rio de Janeiro)
  - 1992b: Directive 92/43/EEC – Natura 2000 network

The IUCN PAs Categories

As already mentioned, IUCN defines a protected area as: "*A clearly defined geographical space, recognized, dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values*". This definition is expanded by six management categories (one with a sub-division), summarized as follows:

Ia. Strict nature reserve: Strictly protected for biodiversity and also possibly geological/ geomorphological features, where human visitation, use and impacts are controlled and limited to ensure protection of the conservation values.

Ib. Wilderness area: Usually large unmodified or slightly modified areas, retaining their natural character and influence, without permanent or significant human habitation, protected and managed to preserve their natural condition.

II. National park: Large natural or near-natural areas protecting large-scale ecological processes with characteristic species and ecosystems, which also have environmentally and culturally compatible spiritual, scientific, educational, recreational and visitor opportunities

III. Natural monument or feature: Areas set aside to protect a specific natural monument, which can be a landform, sea mount, marine cavern, geological feature such as a cave, or a living feature such as an ancient grove.

IV. Habitat/species management area: Areas to protect particular species or habitats, where management reflects this priority. Many will need regular, active interventions to meet the needs of particular species or habitats, but this is not a requirement of the category

V. Protected landscape or seascape: Where the interaction of people and nature over time has produced a distinct character with significant ecological, biological, cultural and scenic value: and where safeguarding the integrity of this interaction is vital to protecting and sustaining the area and its associated nature conservation and other values

VI. Protected areas with sustainable use of natural resources: Areas which conserve ecosystems, together with associated cultural values and traditional natural resource management systems. Generally large, mainly in a natural condition, with a proportion under sustainable natural resource management and where low-level non-industrial natural resource use compatible with nature conservation is seen as one of the main aims".

IUCN protected area management categories classify protected areas according to their management objectives. The categories are recognized by international bodies such as the United Nations and by many national governments as the global standard for defining and recording protected areas and as such are increasingly being incorporated into government legislation (https://www.iucn.org/theme/protected-areas/about/protected-area-categories).

Main features of PAs

Protected Areas are characterized by the following features, crucial to achieving the goals of PAs:

- Clear characterization and delimitation by legally binding permanent text,
- Clear and fair governance system
- Defined protection objectives
- Sufficient size
- Approved management plan, which is subject to evaluation and review
- Monitoring and evaluation program that supports adaptive management
- In situ measures for the conservation of biodiversity (or even geo-diversity and landscape) and for habitat management[1].

The role of PAs, in modern times

It is therefore understood that, today, PAs play a key role not only in biodiversity conservation but also in upgrading the quality of life of the population associated with them and in supporting local development.

Being a public social good and a tourist good as well, the PAs support the local development for the following reasons:

- They aim at sustainable tourism development, through participatory processes, based on the given institutional frameworks, the agreement of expert scientists and with respect for man and the environment.
- They demand actions that respect the scales and sizes of the local community, support the local population and create new standards of regional development.
- They may have a comparative advantage for tourism development with high quality standards.

The Institution of Protected Areas in Greece

The institution of Protected Areas in Greece began in 1938 with the designation of the first National Parks, those of Mount Olympus and Parnassos, based on Law 856/1937 "*On National Parks*". The designation of protected areas in the various categories of protection was based, until 1986, on provisions mainly of the Forest Code. National Parks, Aesthetic Forests and Preserved Monuments of Nature are provided by Law 996/1971 which is part of Law 86/1969 "*On the Forest Code*". Wildlife Refuges, Controlled Hunting Areas and game breeding are provided for by Law 177/75, as amended by Law 2637/1998. The Landscapes of Special Natural Beauty are provided by Law 1465/1950, which complements Law 5351/1932 "*On Antiquities*". An important step towards a new perception of protected areas is the Framework Law 1650/1986 "*On environmental protection*". This law contains two important regulations:

- categorizes protected areas into five new sub-categories (Area of Absolute Nature Protection, Nature Protection Area, National Park, Protected Physical Formations and Landscapes, Eco-Development Areas)
- defines a specific procedure managing new protected areas.

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[1] Both conservation and management measures are subject to evaluation of their effect.

Directive 92/43/EEC “*on the conservation of natural habitats as well as wild fauna and flora*”, also known as the Habitats Directive, is aiming to maintain biodiversity in Member States by protecting certain natural habitat types (habitats) and certain species of plants and animals of Community interest, which are listed in Annexes I and II. This goal is achieved through the establishment of the Natura 2000 Protected Areas Network. This Network integrates also the areas which, pursuant to Directive 79/409/EEC, are recognized by each Member State as Special Protection Areas - SPAs for birds.

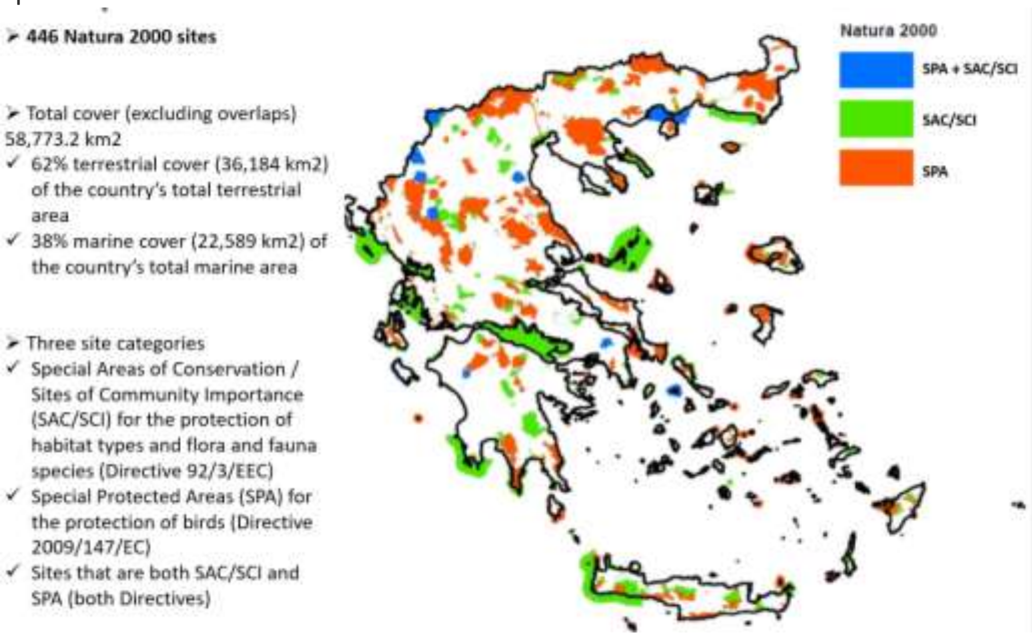

Figure 1. The Natura 2000 network in Greece (latest major revision of the national list of the European Ecological Network Natura 2000, Joint Ministerial Decision 50743/2017 (source: ENVECO 2019).

In the areas of the Natura 2000 network, the principles of sustainable management are applied in order to maintain their protected elements. Management practices are determined by the Member States, taking into account the specifics of each protected area.

Somewhat later, Law 2742/1999, which amends and complements Law 1650/1986, determines the framework of the administration and management of protected areas. The first management body in a protected area, which was established under Law 2742/99, is the Organization of the National Marine Park of Zakynthos, followed by the establishment of a management body for the National Park of Schinias-Marathonas. Based on Law 3044/2002, another 25 management bodies were established. Until the issuance of the relevant Presidential Decrees, the responsibility and responsibility for the management of the PAs is borne by the competent ministry.

Law 3937/2011 “*on the conservation of biodiversity*” modifies and partially complements the Law Framework 1650/1986, proposing:

- the establishment of a National System of Protected Areas,
- the maintenance of Greek biodiversity through the institutionalization of monitoring and protection tools, special provisions for the protection and maintenance of endemic biodiversity, but also special regulations for invading foreign species,
- natural ecosystems conservation and prevention of their degradation,
- scientific research and social information and participation.

Further to the above, Law 3937/2011:
- incorporates Natura 2000 sites in national protected areas, designating them as habitat and species protection areas, i.e. as areas subject to management to ensure adequate conservation of protected habitats and species,
- establishes horizontal regulations for Natura 2000 sites,
- establishes the obligation to draw up management plans,
- modernizes and specializes the framework for the complete protection of biological wealth and the fulfillment of Community obligations for the Natura 2000 Network

Law 4519/2018 focuses on the management of protected areas and is linked to the implementation of European Directives 92/43/EEC and 2009/147/EC. The law aims to strengthen the institutional framework of Management Bodies of Protected Areas (FDPPs, by their Greek initials) by integrating almost all areas of the Natura 2000 network into their local jurisdiction. In particular, among other things, the law provides for the following:
- the legal form of the FDPPs, which are public benefit legal entities under Private Law (NPID), are not of a for-profit nature and are under the supervision of the Ministry of Environment and Energy (Article 1).
- the local competence of the already existing FDPPs is determined as well as the local competence of eight (8) new FDPPs (article 2),
- issues related to the headquarters, branches and competence of the FDPPs are regulated (Articles 3 and 4),
- describes the composition of the Board of Directors of each FDPP, contains individual regulations regarding its meetings and regulates its responsibilities (Articles 5 and 6),
- the staffing of the FDPP is determined through eight-month fixed-term private law contracts (IDOX) and the recruitment process of these staff is described (Article 7),
- the resources of the FDPP are determined and the process of evaluation and control of their work is described (articles 8 and 9),
- functional issues of the IFRS as well as transitional and repealed provisions are regulated (Articles 10-12).

Finally, most recent Law 4685/2020 modernizes environmental legislation, focusing on the following:
- Facilitation of environmental licensing - Reduction of RES licensing time.
- Adoption of a new model of protected area management:
    - ✓ Organization of Natural Environment and Climate Change (OFFPEKA)
    - ✓ Natura 2000 area zoning - Protection degree improvement per Protection Zone in each Natura area (4 protection zones are

introduced, activities are suggested depending on the character of each protection zone).

- Dealing with forest maps and housing densities.
- Extension of the fee for plastic bag to all plastic bags, with the aim of tackling plastic pollution.
- Cuts to solving the waste management problem in many parts of the country.

1-B.3. Financing biodiversity conservation

Policy framework for financing biodiversity conservation

The main documents shaping the framework for financing biodiversity conservation are:

- Prioritized Actions Framework
- European Green Deal & relevant strategies (Climate law, Biodiversity Strategy, Forest Strategy &Farm to Fork Strategy)
- Common Agricultural Policy
- Next Generation EU

Prioritised Action Frameworks (PAFs) are strategic multiannual planning tools, aiming at providing a comprehensive overview of the measures that are needed to implement the EU-wide Natura 2000 network and its associated green infrastructure, specifying the financing needs for these measures and linking them to the corresponding EU funding programmes. All EU funds (European Regional Development Fund -ERDF], Cohesion Fund and European Maritime and Fisheries Fund [EMFF], LIFE, Interreg etc.) and CAP Strategic Plans will need to take into account or require that nature related funding should be conditional on submission of the PAF. National competent authority for PAF is the Min. of Environment.

The European Green Deal is the overall policy framework of EU for the next 30 years. It foreseen the adoption of a) a Climate law (aiming at climate neutrality, adaptation and mitigation for all sectors incl. energy and raw materials, b) the Biodiversity Strategy for 2030 aiming at the protection of 30% of EU area, supporting on climate policy, conservation of landscape (incl. agricultural land) outside PA's, food security, restoration, genetic diversity, soils, marine environment, urban & peri-urban environment, c) the new Forest Strategy, which will foster strict protection of old-growth forests, maintenance and expansion of agroforestry, increase of forest's resilience, climate change mitigation and material replacement and d) the Farm to Fork Strategy, a new vision for EU farming and food sectors with less inputs, organic farming, circular economy, sustainable, affordable high quality food, biodiversity, animal welfare, traditional seeds, food security, sustainable food processing, and increase share of Non Wood Forest Products in food.

Next Generation EU It is the EU Post pandemic recovery plan. According to EC's work plan will reinforce several pro-environmental strategies and financial instruments.

Common Agricultural Policy, sectoral operational programs and national financing

This framework is setting the scene for Common Agricultural Policy, the other sectoral policies, and their relevant operational programs. Draft CAP already is being built with five out of the nine specific objectives promoting directly or indirectly the conservation of biodiversity and the sustainable management of natural resources. Established funding schemes like Natural Capital Financing Facility (NCFF), LIFE, Interreg etc. will be adapted accordingly.

The Natural Capital Financing Facility (NCFF) is already very close to these policies. It offers funding to projects that promote the conservation, restoration, management and enhancement of natural capital for biodiversity and adaptation benefits, including ecosystem-based solutions to challenges related to land, soil, forestry, agriculture, water and waste inside the EU. It consists of a combination of two components: a) the finance facility which can provide financing of a minimum amount of EUR 2 million and a maximum amount of EUR 15 million and b) the technical assistance facility which can provide each project with a grant of up to a maximum of EUR 1 million for project preparation, implementation and the monitoring of the outcomes. The NCFF combines EIB financing and the EC's funding under the LIFE Programme, the EU's funding instrument for the environment and climate action. The facility is currently in a pilot phase and can sign projects until the end of 2021.

The LIFE programme is the EU funding instrument for the environment and climate action created in 1992. The current funding period 2014-2020 has a budget of €3.4 billion. The 2014-2020 program is divided into two sub-programs, one for environment (representing 75% of the overall financial envelope) and one for climate action (representing 25% of the envelope). There is also a new category 'jointly funded integrated projects', which will operate on a large territorial scale. For the 2021-2027 EC proposes to raise the budget of the LIFE programme to €5.4 billion. The new LIFE would have four sub-programs: nature and biodiversity; circular economy and quality of life; climate change mitigation and adaptation and clean energy transition.

Interreg is one of the key instruments of EU supporting cooperation across borders through project funding. Its aim is to jointly tackle common challenges and find shared solutions in fields such as health, environment, research, education, transport, sustainable energy and more. For the 2014-2020 Interreg Europe has a budget of EUR 10.1 billion. It supports research and innovation, SME competitiveness, low-carbon economy and environment and resource efficiency. For the 2021-2027, a major restructuring is under way. Its final shape is expected not earlier than March 2021.

Green Fund is a Greek public agency aiming at the sustainable development by providing administrative, financial and technical support to actions, projects and programs, in line with the overall environmental policy of Greece. It funds various actions for natural environment, forest protection and restoration, actions and projects regarding the marine environment, urban green infrastructure etc.

Best practices in fundraising

Effective fundraising is a key component to successfully respond the multiform needs and achieve goals for sustainable use of resources and the conservation of biodiversity in a protected area. Integration and mobilisation of different funding sources seems to be the best way to cope with it. Special editions, web platforms and organisations can provide ideas, tools and communication channels in this direction:

LIFE Greek Task Force: It aims at the effective participation of Greece in LIFE projects. http://www.lifetaskforce.gr

DG Envi web page about financing Natura 2000
https://ec.europa.eu/environment/nature/natura2000/financing/index_en.htm

A LIFE special edition with non-traditional cooperation for nature conservation
https://op.europa.eu/en/publication-detail/-/publication/c451afab-cfc6-11e5-a4b5-01aa75ed71a1

European Innovation Partnership (EIP-AGRI)
https://ec.europa.eu/eip/agriculture/en

Session 1-C
Circular Economy

What is a circular economy?

Looking beyond the current take-make-waste extractive industrial model, a circular economy aims to redefine growth, focusing on positive society-wide benefits. It entails gradually decoupling economic activity from the consumption of finite resources, and designing waste out of the system. Underpinned by a transition to renewable energy sources, the circular model builds economic, natural, and social capital. It is based on three principles:

- Design out waste and pollution
- Keep products and materials in use
- Regenerate natural systems

Re-thinking Progress: The Circular Economy

There's a world of opportunity to rethink and redesign the way we make stuff. 'Re-Thinking Progress' explores how through a change in perspective we can re-design the way our economy works - designing products that can be 'made to be made again' and powering the system with renewable energy. It questions whether with creativity and innovation we can build a restorative economy.

The concept of a circular economy

In a circular economy, economic activity builds and rebuilds overall system health. The concept recognises the importance of the economy needing to work effectively at all scales – for large and small businesses, for organisations and individuals, globally and locally. Transitioning to a circular economy does not only amount to adjustments aimed at reducing the negative impacts of the linear economy. Rather, it represents a systemic shift that builds long-term resilience, generates business and economic opportunities, and provides environmental and societal benefits.

Technical and biological cycles

The model distinguishes between technical and biological cycles. Consumption happens only in biological cycles, where food and biologically-based materials (such as cotton or wood) are designed to feed back into the system through processes like composting and anaerobic digestion. These cycles regenerate living systems, such as soil, which provide renewable resources for the economy. Technical cycles recover and restore products, components, and materials through strategies like reuse, repair, remanufacture or (in the last resort) recycling.

Origins of the circular economy concept

The notion of circularity has deep historical and philosophical origins. The idea of feedback, of cycles in real-world systems, is ancient and has echoes in various schools of philosophy. It enjoyed a revival in industrialised countries after World War II when the advent of computer-based studies of non-linear systems unambiguously revealed the complex, interrelated, and therefore unpredictable nature of the world we live in – more akin to a metabolism than a machine. With current advances, digital technology has the power to support the transition to a circular economy by radically increasing virtualisation, de-materialisation, transparency, and feedback-driven intelligence.

Circular economy schools of thought

The circular economy model synthesises several major schools of thought. They include the functional service economy (performance economy) of Walter Stahel; the Cradle to Cradle design philosophy of William McDonough and Michael Braungart; biomimicry as articulated by Janine Benyus; the industrial ecology of Reid Lifset and Thomas Graedel; natural capitalism by Amory and Hunter Lovins and Paul Hawken; and the blue economy systems approach described by Gunter Pauli. Through its work with organisations that are making the transition towards a circular economy and an analysis of case studies, the Foundation has identified the following four essential building blocks of a circular economy.

Circular economy design

Companies need to build core competencies in circular design to facilitate product reuse, recycling and cascading. Circular product (and process) design requires advanced skills, information sets, and working methods. Areas important for economically successful circular design include: material selection, standardised components, designed-to-last products, design for easy end-of-life sorting, separation or reuse of products and materials, and design-for-manufacturing criteria that take into account possible useful applications of by-products and wastes.

New business models

The shift to a circular economy requires innovative business models that either replace existing ones or seize new opportunities. Companies with significant market share and capabilities along several vertical steps of the linear value chain could play a major role in circular economy innovation and driving circularity into the mainstream by leveraging their scale and vertical integration. While many new models, materials, and products will come from entrepreneurs, these brand and volume leaders can also play a critical role. Profitable circular economy business models and initiatives will inspire other players and will be copied and expanded geographically.

Reverse cycles

New and additional skills are needed for cascades and the final return of materials to the soil or back into the industrial production system. This includes delivery chain logistics, sorting, warehousing, risk management, power generation, and even molecular biology and polymer chemistry. With cost-efficient, better-quality collection and treatment systems, and effective segmentation of end-of-life products, the leakage of materials out of the system will decrease, supporting the economics of circular design.

Enablers and favourable system conditions

For widespread reuse of materials and higher resource productivity to become commonplace, market mechanisms will need to play a dominant role, supported by policy makers, educational institutions and popular opinion leaders. These enablers include:

- Collaboration
- Rethinking incentives
- Providing a suitable set of international environmental rules
- Leading by example and driving up scale fast
- Access to financing

Schools of Thought

The circular economy concept has deep-rooted origins and cannot be traced back to one single date or author. Its practical applications to modern economic systems and industrial processes, however, have gained momentum since the late 1970s, led by a small number of academics, thought-leaders and businesses.

Cradle to Cradle

German chemist and visionary Michael Braungart went on to develop, together with American architect Bill McDonough, the Cradle to Cradle™ concept and certification process. This design philosophy considers all material involved in industrial and commercial processes to be nutrients, of which there are two main categories: technical and biological. The Cradle to Cradle framework focuses on design for effectiveness in terms of products with positive impact and reducing the negative impacts of commerce through efficiency.

Cradle to Cradle design perceives the safe and productive processes of nature's 'biological metabolism' as a model for developing a 'technical metabolism' flow of industrial materials. Product components can be designed for continuous recovery and reutilisation as biological and technical nutrients within these metabolisms.

- Eliminate the concept of waste. "Waste equals food." Design products and materials with life cycles that are safe for human health and the environment and that can be reused perpetually through biological and technical metabolisms. Create and participate in systems to collect and recover the value of these materials following their use.
- Power with renewable energy. "Use current solar income." Maximize the use of renewable energy.
- Respect human & natural systems. "Celebrate diversity." Manage water use to maximize quality, promote healthy ecosystems and respect local impacts. Guide operations and stakeholder relationships using social responsibility.

Performance economy

Walter Stahel, architect and industrial analyst, sketched in his 1976 research report to the European Commission 'The Potential for Substituting Manpower for Energy', co-authored with Genevieve Reday, the vision of an economy in loops (or circular economy) and its impact on job creation, economic competitiveness, resource savings, and waste prevention. Credited with having coined the expression “Cradle to Cradle” in the late 1970s, Stahel worked at developing a “closed loop” approach to production processes and created the Product Life Institute in Geneva more than 25 years ago. It pursues four main goals: product-life extension, long-life goods, reconditioning activities, and waste prevention. It also insists on the importance of selling services rather than products, an idea referred to as the ‘functional service economy’, now more widely subsumed into the notion of ‘performance economy’. Stahel argues that the circular economy should be considered a framework: as a generic notion, the circular economy draws on several more specific approaches that gravitate around a set of basic principles.

Biomimicry

Janine Benyus, author of *Biomimicry: Innovation Inspired by Nature*, defines her approach as ‘a new discipline that studies nature’s best ideas and then imitates these designs and processes to solve human problems’. Studying a leaf to invent a better solar cell is an example. She thinks of it as ‘innovation inspired by nature’. Biomimicry relies on three key principles:

- Nature as model: Study nature’s models and emulate these forms, process, systems, and strategies to solve human problems.
- Nature as measure: Use an ecological standard to judge the sustainability of our innovations.
- Nature as mentor: View and value nature not based on what we can extract from the natural world, but what we can learn from it.

In the video below, Janine Benyus explains the concept and highlights examples of biomimetic innovation.

Industrial Ecology

“Industrial ecology is the study of material and energy flows through industrial systems”. Focusing on connections between operators within the ‘industrial ecosystem’, this approach aims at creating closed-loop processes in which waste serves as an input, thus eliminating the notion of an undesirable by-product. Industrial ecology adopts a systemic point of view, designing production processes in accordance with local ecological constraints whilst looking at their global impact from the outset, and attempting to shape them so they perform as close to living systems as possible. This framework is sometimes referred to as the ‘science of sustainability’, given its interdisciplinary nature, and its principles can also be applied in the services sector. With an emphasis on natural capital restoration, industrial ecology also focuses on social wellbeing.

Natural Capitalism

“Natural capital" refers to the world’s stocks of natural assets including soil, air, water and all living things. In their book “Natural Capitalism: Creating the Next Industrial Revolution”, Paul Hawken, Amory Lovins and L. Hunter Lovins describe a global economy in which business and environmental interests overlap, recognising the interdependencies that exist between the production and use of human-made capital and flows of natural capital. The following four principles underpin natural capitalism:

- Radically increase the productivity of natural resources - Through radical changes to design, production and technology, natural resources can be made to last much longer than they currently do. The resulting savings in cost, capital investment and time will help to implement the other principles.
- Shift to biologically inspired production models and materials - Natural capitalism seeks to eliminate the concept of waste by modelling closed-loop production systems on nature's designs where every output is either returned harmlessly to the ecosystem as a nutrient, or becomes an input for another manufacturing process.
- Move to a "service-and-flow" business model - Providing value as a continuous flow of services rather than the traditional sale-of-goods model aligns the interests of providers and customers in a way that rewards resource productivity.
- Reinvest in natural capital - As human needs expand and pressures on natural capital mount, the need to restore and regenerate natural resources increases.

Blue Economy

Initiated by former Ecover CEO and Belgian businessman Gunter Pauli, the Blue Economy is an open-source movement bringing together concrete case studies, initially compiled in an eponymous report handed over to the Club of Rome. As the official manifesto states, 'using the resources available in cascading systems, (…) the waste of one product becomes the input to create a new cash flow'. Based on 21 founding principles, the Blue Economy insists on solutions being determined by their local environment and physical/ecological characteristics, putting the emphasis on gravity as the primary source of energy. The report, which doubles up as the movement's manifesto, describes '100 innovations that can create 100 million jobs within the next 10 years', and provides many examples of winning South-South collaborative projects— another original feature of this approach intent on promoting its hands-on focus.

Regenerative Design

In the US, John T. Lyle started developing ideas on regenerative design that could be applied to all systems, i.e., beyond agriculture, for which the concept of regeneration had already been formulated earlier. Arguably, he laid the foundations of the circular economy framework, which notably developed and gained notoriety thanks to McDonough (who had studied with Lyle), Braungart and Stahel. Today, the Lyle Center for Regenerative Studies offers courses on the subject.

Session 1-D
Symbiotic activities

Industrial Symbiosis

The designation of industrial symbiosis has its genesis in biology in which symbiosis represents the "association of individuals of different species in a relationship where there is mutual benefit". This definition has been transposed to industries in which industrial symbiosis "engages traditionally separate entities in a collective approach to competitive advantage involving physical exchange of materials, energy, water, and by-products". This definition is widely disseminated in the developing industrial ecological environment and research community. Industrial symbiosis was also identified as "a business opportunity and tool for eco-innovation". Producing more without spending more energy or resources through cooperation is the ultimate objective pursued by the industrial symbiosis.

Industrial symbiosis relationships have been fostered through a number of factors, such as saving resources, obtaining economic benefits, meeting environmental requirements such as reducing greenhouse gas emissions, scarcity of natural resources and reduction of waste that would otherwise stop at landfills and incinerators. Therefore, in order to meet these needs, industrial symbiosis has spread throughout the world with positive economic, environmental and social results.

Cases of industrial symbiosis have been growing over recent years and are scattered all over the world, whether in developed regions such as the United Kingdom, the United States of America and Japan, or in countries with developing economies, such as Thailand, Morocco and Algeria. Benefits of Industrial Symbiosis implementation on already established examples are summarized on the Table below.

Kalundborg, Denmark	Kwinana, Australia	Guitang Group, China
Reduction on natural resources consumption - Oil: 20 kt - Coals: 15 kt - Water: 3.600.000 m^3 **Emission reductions** - CO_2: 635 kt - SO_2: 10,2 kt **Waste reuse** - Flying ash: 130 kt - Sulfur: 4,5 kt - Gypsum: 200 kt	**Reduction on natural resources consumption** - Water: 8.200.000 m^3 **Emission reductions** - CO_2: 343 kt - Other GHG emissions: 134 kt **Waste Reduction**: 422 kt	**Waste/By-product reuse** - Sludge: 38 kt - Sugar Residue: 175 kt - Molasses: 27 kt - Coal ash: 143 kt - Pith: 97 kt

Life Cycle Assessment (LCA)

LCA was developed as a decision support tool, and has found an increasingly common application for the identification, quantification, and evaluation of potential environmental impacts related to products, production processes or activities throughout their lifecycle. LCA takes into account a product's full life cycle: from the extraction of resources, through production, use, and recycling, up to the disposal of remaining waste.

Current LCA practice, as standardized by ISO, follows four interrelated phases:

1. Clearly defining the goal and scope of the study (including selecting a functional unit).
2. Compiling an inventory of relevant energy and material inputs and environmental releases (Life Cycle Inventory (LCI) analysis).
3. Evaluating the potential environmental impacts associated with identified inputs and releases (Life Cycle Impact Assessment (LCIA)).
4. Interpreting the results to help decision makers make a more informed decision.

A clearly stated goal will simplify scoping the study boundaries and guide the data collection effort. Connected with goal setting is the selection of 'functional unit,' a unique feature of LCA which sets it apart from other environmental assessment approaches. The functional unit is defined by the service provided by the system being studied and further shaped by the goal of the study. It is important to properly set the scale of the functional unit.

Session 2-A
Tourism and Protected Areas – An introduction

Protected Areas (PA) are a key component of any global conservation strategy. Tourism provides a crucial and unique way of fostering visitor's connection with PA values making it a potentially positive force for conservation. Visitor experiences can be transformative for an individual's personal growth and well-being, while instilling an increased sense of stewardship and support for PA values.

Tourism in protected areas is a major part of the global tourism industry. According the UNWTO (2018) sustainable is tourism that takes full account of its current and future economic, social and environmental impacts, addressing the needs of visitors, the tourism industry, the environment and local communities.

Tourism in protected areas generates many impacts (positive and negative) on the environment, economy, local communities and the tourists themselves. Sometimes the balance is difficult to establish. The main potential benefits of tourism on protected resources are (IUCN, 2018):

ENVIRONMENTAL

- Provide education on conservation issues and needs.
- Transmit understanding and appreciation of natural values and resources through experiences, education and interpretation.
- Create awareness of the value of natural resources and protect resources that otherwise have little or no perceived value to residents, or are considered a cost rather than a benefit.
- Support research and development of good environmental practices and management systems to influence the operation of travel and tourism business, as well as visitor behavior at destinations.
- Support monitoring through citizen science volunteers.

ECONOMIC

- Generate economic benefit to a nation, region or community to strengthen the commitment to conserve the PA and its wildlife.
- Increase jobs and income for local residents.
- Stimulate new tourism enterprises and diversify the local economy.
- Encourage the local manufacture and sale of goods and provision of services.
- Access new markets and foreign exchange.
- Generate local tax revenues.
- Enable employees to learn new skills.
- Provide financial support to PA through payment of tourism fees and charges.

SOCIAL / COMMUNITY

- Improve locals living standards.
- Encourage people to value and take pride in their local culture and PA.
- Foster greater understanding of natural and cultural heritage.

- Establish attractive destinations, for residents and visitors, which may support other compatible new activities.
- Improve intercultural understanding through social contact.
- Encourage the development and conservation of culture, crafts ant the arts.
- Promote aesthetic, spiritual, health and other values related to well-being.
- Improve physical health through recreational exercise (e.g. cycling, walking).
- Contribute to mental health by reducing stress and fatigue.
- Raise the profile of conservation at local, national and international level.
- Interpret values, conservation and management issues for visitors.

Negative impacts are inevitable. Even well-managed tourism can create negative impact. e.g. by travelling to a PA, visitors leave a carbon footprint while visitor use inside the PA need to be managed to avoid fragile habitats. The main negative impacts of tourism in protected areas are (IUCN, 2018):

ENVIRONMENTAL

- AIR: Air and noise pollution from vehicles / Carbon dioxide emissions
- LIGHT: Distraction of fauna species
- SOUND: Noise pollution can affect breeding success
- WATER: Mineral, nutrients, sewage, solid waste, toxins etc. added to the environment / Reduction of water quality / Increased water consumption
- GEOLOGY/SOIL: Collection / Vandalism / Erosion
- LANDSCAPE: Visual impact of settlements on the landscape
- HABITATS: Fragmentation of ecosystems / Competition between native and invasive species / Fires / Destruction of habitats and clearing of lands / Eutrophication and sedimentation etc.
- WILDLIFE: Changes of species composition, reproduction and behavior / Overfishing / Eutrophication / Psychological stress, behavioral changes etc.

ECONOMIC

- EMPLOYMENT: Employment options may by menial, with low wages and low skills requirements / Seasonal job losses etc.
- LOCAL BUSINESS DEVELOPMENT: Economic leakage, when a large portion of foreign exchange earnings from tourism is repatriated, hindering local business development / Seasonality of business etc.
- DIVERSIFICATION: Vulnerable economy depended on tourism / Inflation, tourism growth regions may become too expensive for staff etc.

SOCIAL

- TRADITIONS: Demeaning of ceremonies re-enacted for tourists, causing changes in arts, crafts, festivals / Deterioration of workmanship of crafts etc.
- PSYCHOLOGY: Xenophobia and conflict between locals and tourists due to inappropriate tourist behavior / Loss of sense of security etc.

Session 2-B (Invited Speaker) Management tools to enhance sustainable tourism in protected areas: Case study in Tzoumerka National Park

The Management Authority of Tzoumerka National Park (NP) in Greece, since its foundations' establishment, collaborates with local stakeholders to ameliorate environmental sensitization and protect the natural treasures & culture in the protected area. In 2016, Europarc Federation awarded the Management Authority of the Tzoumerka NP as sustainable destination. The utility of the European Charter for Sustainable Tourism in Protected Areas for PAs managers is that it provides a practical tool and a methodology that can indicate if partnerships arrangements and structures are working well and if they are delivering for the environment, the business community and the visitors. Through this webinar, we have the possibility to present the steps accomplished and the actions implemented in Tzoumerka NP.

Session 2-C (Invited Speaker) Enhancing and promoting local products and services through simple methods of certification

Certification processes and labeling can become a powerful tool for Protected Area Management Agencies to establish communication and create networks among SMEs, local residents, visitors and managers but also to achieve certain quality standards for services and products provided within the Protected Area. The Management Body (MB) of Samaria National Park – Western Crete has early acknowledged the importance of these processes and established a semi-formal certification scheme based on a two-fold linear procedure: self-assessment by SMEs and verification by the MB. The entire process is surrounded by the idea of creating an honor agreement among the two parts (SME-MB) which, due to the local idiosyncrasy and customs, may transcend formal agreements and contracts. Since the initiation of the process, several SMEs have been certified through this process and the MB has gained an additional advantage towards the goal of maintaining sustainable development patterns within the Protected Area.

Session 2-D A brief introduction to Ecolabelling Schemes – First steps towards the BIO2CARE labelling scheme

Ecolabelling Schemes/Eco-labels

Eco-labelling is among the several initiatives that have been undertaken by consumers, private industry, civil society and governments to bring about greater sustainability of human activity. It means that products which meet specific environmental requirements, often also regarding their production process, are certified and labelled with a special symbol. The goal is to change consumer behavior by providing information on the environmental impact of a product. The Organization for Economic Co-operation and Development (OECD, 1997) distinguishes at least three types of labels:

1. **Type I** labels refer to the environmental quality of a product compared with other products and are meant to encourage a switch towards more environmentally friendly consumption habits.
2. **Type II** labels consist of one-sided informative environmental claims made by manufacturers, importers or distributors and refer to specific attributes of products, such as 'CFC free' products.
3. **Type III** labels use pre-set indices that give quantified information about products based on independent verification. They include quantified information about the environmental performance of a product/service based on the impacts from a life cycle perspective.

Nowadays, the official website of Ecolabel index is tracking 457 environmental labelling schemes, in almost 200 countries and 25 different industrial sectors. Even though the purpose of these environmental labels is to help the consumer reach a decision regarding products and services, the vast amount of different labels with unclear characteristics has led to increased consumer confusion.

Some advantages and disadvantages of Ecolabelling schemes are presented below.

Pros	Cons
They allow consumers to recognize environmentally friendly products	Large investments, before and after the acquisition of the ecolabel, to transform into green technology. Therefore, the startup is expensive.
They add value to consumers	Businesses can award an eco-label for a particular product using green technologies, meanwhile they can still use conventional technologies for other products.
Businesses are willing to change to more environmentally friendly ways if they are able to take advantage of the Ecolabel	There are more than 465 Ecolabels in 199 countries, which leads to consumer confusion
An important marketing strategy	Most consumers are not fully aware of the importance of Ecolabels.

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