Research – Action: Guidelines for integrating Environmental Sustainability into European Education

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Introduction

The project "**Educating for environmental sustainability: creative learning centers and digital languages**" is a multidisciplinary and multi-action educational path modeled on the specific needs of the European adult learning community in the field of Sustainable Development, Sustainability and Environmental Protection. The thematic core of "Echo" is consequently very complex: environment, sustainability, promotion of individual and collective ecological perspectives and attitudes are European and global challenges that require "complex thinking" and equally stratified design approaches.

"Echo", the product of a new international cooperation between organizations with extensive experience, is a composite action capable of "relating facts to compose a new reality", identifying useful and innovative solutions. The international partnership involves five organizations with a mixed profile, both experts and newcomers in the Erasmus+ framework, which are nevertheless European centers of excellence in the sectors of cultural creativity and offer, technological, digital and virtual innovation, non-formal and informal education, socio-cultural animation oriented towards "Awareness about the European Union". The organizations therefore came together to produce a strategic path capable of rethinking educational spaces, concretely creating new ones and "orienting them to the future", jointly declining adult education with the primary languages of creativity, cultural offering, digital innovation. The planning and partnership move from common assumptions, intimately linked to the recognition of the needs of the contemporary adult learning community in Europe, as well as to the specificities of the main sectors and languages involved here.

The "Echo" project aims to build an architecture – material and digital – with a high educational impact, aimed at empowering and increasing the skills of a vast and stratified adult learning public in the field of Environmental Sustainability. It leverages the attractiveness of the creative medium, on the effectiveness of digital tools, as well as on the capabilities of non-formal and informal education. The project therefore activates a participatory process, made up of mixed units, placing contemporary needs of a cultural and educational nature at the centre. To achieve these objectives, "Echo" involves international organizations experts in the field of education for Environmental Sustainability, the production of innovative modules to support the sectors of education, training and education through the formula of socio-cultural animation,

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involving also important organizations in the field of digital innovation and large-scale creative-cultural offerings.

The Project Results proposed here are therefore a holistic educational architecture that orients the target towards the acquisition of tools and perspectives through which to "understand environmental problems", also identifying the best strategies in this regard. An educational intervention on the environment in fact presupposes a link between the learning subject and Sustainability, a model of action as well as behavioral guidance, but also a greater civic-democratic awareness even before being specialized. The primary beneficiaries of the project are therefore educators, trainers, teachers, and socio-cultural animators and, in a scalar manner, the vast adult learning public, the world of professions directly and/or indirectly linked to the Environment and Sustainable Development.

A non-profit organization based in Palermo, **Pietro Barbaro Foundation**, coordinates the project that promotes Mediterranean culture and builds an open space, inclusive of aggregation and training for citizens through social meetings, artistic residencies for the benefit of the historic centre of Palermo in collaborations with local schools, universities and non-profit organizations. The Foundation promotes the increase in cultural and artistic activities of environmental sustainability, as well as the diffusion of cultural welfare initiatives

The partners are **Idrisi Cultura e Sviluppo ETS** based in Italy, **Carraro Lab srl** based in Italy,**Cyprus Organization for sustainable Education and Active Learning (SEAL Cyprus)** based in Cyprus, and **Sdruzhenie WALK TOGETHER** based in Bulgaria.

Each of the partners involved in the project has experience of training activities and promotion of socio-cultural practices for the improvement of the local and community dimension, providing and disseminating methods, models and learning and in-depth paths in the most culturally relevant themes of the modern social panorama. Carraro Lab srl, in particular, specializes in the technical structuring of immersive and digital courses, which can be used in new generation communication and learning methods.

The transnational dimension was mandatory to produce a path with a clear European scope, starting from the local dimensions, which through analysis, comparisons and diversity can propose a shared and generalized analysis and methodology at a European level, while being based on the local peculiarities to be where the organizations come from.

The objectives of the "Echo" project will be:

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1. A tangible increase in information available on Environmental Sustainability that is based on the best volunteering, entrepreneurial and creative practices in Europe;
2. The creation, through the exhibit and digital registers, of new future-oriented material and immaterial learning centres perceivable as entertainment, documentary art, immersive educational offer;

The production of educational and training courses focused on environmental sustainability that start from experiential and daily data: examples of involvement and active participation of European citizens who, from entrepreneurship to volunteering, offer themselves as micro and macro behavioural models in support of environmental sustainability.

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Analysis of the European context

Environmental education is a field that faces a process of continuous conceptual reconstruction due to the social and political changes that constantly occur around the globe because of the environmental crisis and the climate emergency that is interpreted in different ways by each actor. In order to analyze the importance of environmental education in the European school system it is important to examine the meaning of environmental education (theory and practice).

Some defines environmental education as "*the process of recognizing values and clarifying concepts in order to develop skills and attitudes*"[1]necessary to understand and appreciate the inter-relatedness between man, its cultural practice and its physical surroundings. It also entails decision-making practices on a political level and the development of a code of behavior on a personal level. Environmental awareness, adopting environmentally friendly habits and changing one's attitude is part of the positive outcome of environmental education. "Environmental education emerged 30 years ago as an urgent alternative to help modify human behavior[2]". There are different conceptions of environmental education around the world since this concept changes in each country or education system. From an education point of view, environmental education aims to "produce a change in people's behavior towards the environment and nature through increased knowledge and awareness or through providing constructive information"[3].

The European Union has already been moving for some time towards the effective promotion of educational and cultural practices that spread the themes of environmental sustainability, adapting in the last period to the trend that had already begun to impose itself since the 1970s on a global level, as shown by this infographic on the fundamental stages of approaching Sustainable Development:

1 Barraza.L, DUQUE-ARISTIZA´BAL,.A & GEISHA REBOLLEDO (2003) Environmental Education: From policy to practice, Environmental Education Research, 9:3, 347-357
2 Barraza.L, DUQUE-ARISTIZA´BAL,.A & GEISHA REBOLLEDO (2003) Environmental Education: From policy to practice, Environmental Education Research, 9:3, 347-357
3 Barraza.L, DUQUE-ARISTIZA´BAL,.A & GEISHA REBOLLEDO (2003) Environmental Education: From policy to practice, Environmental Education Research, 9:3, 347-357

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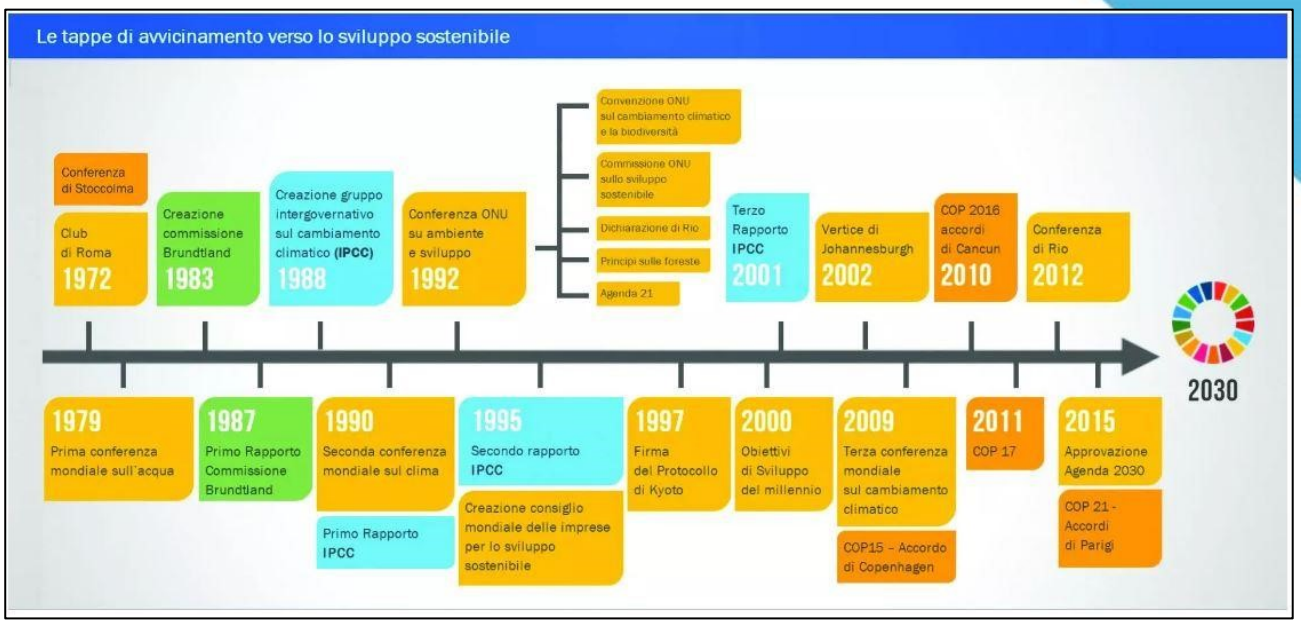

Sustainable development - Italian Alliance for Sustainable Development (asvis.it)[4]

Already in 2019, the Union launched the **GREEN DEAL EU**[5], engaging politically in **Climate Pact**[6], to achieve the objectives of the Paris Agreement as soon as possible. As the Union itself highlights, the reasons for this commitment do not derive only from a well-established awareness of the delay with which the whole world is tackling climate change, but also from increasingly explicit and strong requests from all European citizens. This in order to aim to have healthier and safer societies through caring for the environment in which they live and operate on a daily basis.

The interest and strength with which the Union, and the countries that compose it, are pursuing these efforts concern both the private dimension of citizens' health and the economic implications that this commitment can guarantee.

The Council of the European Union certifies that from 1980 to 2020[7]in Europe alone, the economic impact of climate change was a loss of 487 billion euros (more than what was on average planned for European development plans every 2 years), with over 5 billion due to flooding and flooding, and over 2 billions for fires and droughts. The loss of human

4 https://asvis.it/sviluppo-sostenibile
5 https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/european-green-deal_en
6 https://europa.eu/climate-pact/
7 Human lives and money: the double cost of climate change - Consilium (europa.eu), https://www.consilium.europa.eu/it/infographics/climate-costs

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lives directly linked to atypical phenomena stands at over 138,000 European citizens.

A more balanced relationship with the environment would instead lead to decreasing these losses and creating new opportunities for research and technology (new techniques and better and "cleaner" materials) with a relative expansion of production chains and patents, industrial models with much less impact on the environment but more efficient, productive and long-lasting, savings for healthcare costs in European countries and for disasters caused by climate change at a local level.

The explicit objectives of the Climate Pact are:

- Raise awareness of climate issues and the actions of the European Union
- Encourage and catalyze climate commitment and action
- Connecting citizens and organizations working in the field of environmental sustainability to learn from each other

The ECHO project was developed precisely to achieve these 3 objectives through the support of digital teaching methods and innovative cultural methods.

An important starting point for promoting initiatives for the formation of new cultural models in the field of Environmental Sustainability is the **GreenComp: the European competence framework for sustainability**[8], produced by the Joint Research Centre, the European Commission's joint research center for science and knowledge.

This study, carried out with the contribution of around 75 European experts from various sectors and countries of the Union, aims to provide a shared framework applicable to different degrees in every local dimension. This helps to encourage practices of diffusion and application of mental models, educational and cultural for various stakeholders (schools, trainers, citizens and entrepreneurs) who guide choices and practices in an environmental sense. They summarized the work in 4 macro thematic areas and 12 key skills, clearly explained in this model:

8 https://publications.jrc.ec.europa.eu/repository/handle/JRC128040

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Area	Competenza	Descrizione
1. Incorporare i valori di sostenibilità	1.1 Dare valore alla sostenibilità	Riflettere sui valori personali; identificare e spiegare come i valori variano tra le persone e nel tempo, valutando criticamente come si allineano con i valori di sostenibilità.
	1.2 Sostenere l'equità	Sostenere l'equità e la giustizia per le generazioni attuali e future e imparare dalle generazioni precedenti per la sostenibilità.
	1.3 Promuovere la natura	Riconoscere che gli esseri umani sono parte della natura; rispettare i bisogni e i diritti delle altre specie e della natura stessa al fine di ripristinare e rigenerare ecosistemi sani e resilienti.
2. Abbracciare la complessità nella sostenibilità	2.1 Pensiero sistemico	Affrontare un problema di sostenibilità da tutti i punti di vista; considerare il tempo, lo spazio e il contesto al fine di capire come gli elementi interagiscono al loro interno e tra diversi sistemi.
	2.2 Pensiero critico	Valutare le informazioni e gli argomenti, identificare presupposti, sfidare lo status quo e riflettere su come il background personale, sociale e culturale influenza il pensiero e le conclusioni.
	2.3 Inquadramento dei problemi	Formulare le sfide attuali o potenziali come un problema di sostenibilità in termini di - difficoltà, persone coinvolte, dimensione temporale e geografica - al fine di identificare gli approcci adeguati per anticipare e prevenire i problemi, per mitigare e adattarsi ai problemi già esistenti.
3. Visione di futuri sostenibili	3.1 Alfabetizzazione sul futuro	Immaginare futuri alternativi sostenibili sviluppando scenari alternativi, identificando i passi necessari per raggiungere un futuro sostenibile preferito.
	3.2 Adattabilità	Gestire le transizioni e le sfide in situazioni complesse di sostenibilità e prendere decisioni relative al futuro di fronte all'incertezza, all'ambiguità e al rischio.
	3.3 Pensiero esplorativo	Adottare un modo di pensare relazionale esplorando e collegando diverse discipline, usando la creatività e la sperimentazione di idee o metodi nuovi.
4. Agire per la sostenibilità	4.1 Azione politica	Orientarsi nel sistema politico, identificare la responsabilità politica per i comportamenti non sostenibili, e richiedere politiche efficaci per la sostenibilità.
	4.2 Azione collettiva	Agire per il cambiamento in collaborazione con gli altri.
	4.3 Iniziativa individuale	Identificare il proprio potenziale di sostenibilità e contribuire attivamente a migliorare le prospettive per la comunità e per il pianeta.

Source "Greencomp JRC128040"

The 12 skills listed here are not to in hierarchical order: each can be performed independently of the other and without requiring an exhaustive effort to achieve them all. Furthermore, they call for a path that explained as "in progress", by virtue of the fact that their generality can involve administration to any subject and in any local context, which can therefore determine a personalized modeling to better adapt to the reality of the different dimensions on which it intervenes.

It is important to consider that JRC chooses precisely this versatility of the model and its generic abstraction precisely to provide a tool sharable by all European countries, overcoming the first limit of the culture of environmental sustainability, i.e. the fragmented nature of the interventions promoted at social, local, political and national. It goes without saying that it is useless if not impossible to deal with this phenomenon alone, so any attempt to broaden the framework of actions must be implemented quickly.

At present, however, there is still a lot to do, as highlighted by the report "*The environment in Europe: status and prospects in 2020 (SOER 2020)*[9]" carried out at the end of 2021 by the European Environment Agency (EEA).

9 The state of the environment in Europe in 2020: a change of direction is needed to face the challenges posed by climate change, reverse the process of degradation and ensure well-being for future generations — European Environment Agency, https://www.eea.europa.eu/it/highlights/lo-stato-dell-ambiente-in-europa

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The problematic summary of the proposed analyzes is that the 2030 targets are in reality in many ways practically unattainable, and that even the 2050 ones are already at risk unless urgent accelerations are made on ecological initiatives. This despite the fact that the parameters of the European area have improved greatly in emissions of greenhouse gases, air or water pollution, on waste management and recycling policies, or in terms of the circular economy and bioeconomy. So why are we still far from the goal?

Several aspects made up the answer. To begin with, the targets set in the 2030 Agenda are much more stringent than in the past, due to the enormous addressing delay about the issue of environmental sustainability: targets that are more stringent equate to more invasive and timely manoeuvres to be carried out.

Furthermore, although there have been improvements, the global context has changed in at least 2 easily summarized ways:

1) COVID, war and some political/governmental management choices of international and European countries have considerably hindered the path of initiatives already put in place, slowing down their evolution and/or completion.

2) As we applied the strategies put in place, we witnessed an increase and chaotic redistribution of the world's population, which forced us to readjust plans and perspectives for managing an increasingly crowded and turbulent environment.

The report draws attention to the fact that while previously the focus was concentrated on raising citizens' awareness on the issues of eco-sustainability, in this new phase in which cultural and training courses are now taken for granted, widespread and accepted as still indispensable practice. It is necessary to move concretely to action with radical and peremptory choices, in terms of planning urban and domestic spaces, industrial production and transport, waste management and the creation of areas for bio-diversity, etc...

The map of the report - reproduced below - offers a clear overview of the state of the environment in Europe at the end of 2020, and of the necessary steps still to be taken:

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Tema	Tendenze del passato e prospettive		Probabilità di conseguimento di obiettivi/traguardi delle politiche		
	Tendenze precedenti (10-15 anni)	Prospettive fino al 2030	2020	2030	2050
Protezione, conservazione e valorizzazione del capitale naturale					
Aree terrestri protette			☑		
Aree marine protette			☑		
Specie e habitat protetti dall'UE			☒		
Specie comuni (uccelli e farfalle)			☒		
Condizioni e servizi ecosistemici			☒		
Ecosistemi acquatici e zone umide			☒		
Pressioni idromorfologiche			☒		
Stato degli ecosistemi marini e biodiversità			☒		
Pressioni e impatti sugli ecosistemi marini			☒		
Urbanizzazione e uso del suolo da parte di agricoltura e silvicoltura					☒
Condizioni del suolo			☒		
Inquinamento dell'aria e impatti sugli ecosistemi			☐	☐	
Inquinamento chimico e impatti sugli ecosistemi			☒		
Cambiamenti climatici e impatti sugli ecosistemi			☒		
Economia efficiente nell'uso delle risorse, circolare e a basse emissioni di carbonio					
Efficienza delle risorse materiali			☑		
Uso circolare dei materiali				☐	
Produzione di rifiuti			☐		
Gestione dei rifiuti			☐		
Emissioni di gas serra e sforzi di mitigazione			☑	☒	☒
Efficienza energetica			☐	☒	☒
Fonti energetiche rinnovabili			☑	☒	☒
Emissioni di inquinanti atmosferici			☑	☐	
Emissioni di inquinanti industriali			☐		
Processi e tecnologie industriali puliti			☐		
Emissioni di sostanze chimiche			☒		
Estrazione di acqua e relative pressioni sulla superficie e sulle acque sotterranee			☒		
Uso sostenibile dei mari			☐		
Protezione dai rischi ambientali per la salute e il benessere					
Concentrazioni di inquinanti atmosferici			☒	☑	
Impatto dell'inquinamento dell'aria su salute umana e benessere				☑	
Esposizione della popolazione al rumore ambientale e impatto sulla salute umana			☒		
Salvaguardia delle zone silenziose			☒		
Pressioni dell'inquinamento sull'acqua ed effetti sulla salute umana			☒		
Inquinamento chimico e rischi per la salute e il benessere umani			☒		
Rischi dei cambiamenti climatici per la società			☐		
Strategie e piani di adattamento ai cambiamenti climatici			☐		

Valutazione indicativa delle tendenze precedenti (10-15 anni) e prospettive per il 2030		Valutazione indicativa delle probabilità di conseguimento di obiettivi/traguardi delle politiche selezionati	
Dominano tendenze/sviluppi al miglioramento	Anno	☑	A buon punto
Tendenze/sviluppi mostrano un quadro disomogeneo	Anno	☐	Parzialmente a buon punto
Dominano tendenze/sviluppi al peggioramento	Anno	☒	Non a buon punto

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Within the environmental education framework, several concepts focus on raising environmental awareness. Education for Environmental Citizenship is interrelated to environmental education. This education field focuses on teaching young people how to make responsible decisions about complex socioecological issues and take action, individually as well as collectively, to minimize their footprint on the Earth. In our modern world, it is not enough to know what climate emergency is. Due to the ever-increasing environmental crisis, students are required to become well-prepared environmental citizens who will have to develop a set of skills and attitudes to deal with environmental challenges. In fact, "secondary education students comprise a crucial target group, due to their anticipated role as prospective citizens[10]". Secondary education, either formal or informal is an important step in developing environmentally literate students who will have the skills, capacities and right attitudes towards environmental protection. Young people aged 15 -18 years old are more likely to mitigate and resolve the current and future environmental problems.

Environmental citizenship entails the idea of creating environmental citizens who live sustainably, responsibly, preserving the planet instead of consuming it. This field is both intra- and inter-generational because any actions taken at present may have an impact at some point in the future.

According to *Westheimer* and *Kahne*, the future environmental citizen will have the following characteristics[11]:

- Personally responsible citizen – responsible, law-abiding and honest
- The participatory citizen – actively involved in existing systems, undertaking leadership actions
- Social-justice-oriented citizen – challenges, questions and transforms the existing system

The ***European Network for Environmental Citizenship (ENEC)*** defines education for environmental citizenship as:

"…the type of education that cultivates a coherent and adequate body of knowledge as well as the necessary skills, values, attitudes and competences that an Environmental Citizen should be equipped with in order to be able to act and participate in society as an agent of change in the

10 Hadjichambis,A. Paraskeva-Hatdjichambi, D and Georgiou,Y. (2022). Evaluating a Novel Learning Intervention Grounded in the Education for Environmental Citizenship Pedagogical Approach: A Case Study from Cyprus. Sustainability, vol.14, 1-18.
11 Westheimer, J.; Kahne, J. (2004). What kind of citizen? The politics of educating for democracy. Am. Educ. Res. J, 41, 237-269.

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private and public sphere on a local, national and global scale, through individual and collective actions in the direction of solving contemporary environmental problems, preventing the creation of new environmental problems, in achieving sustainability as well as developing a healthy relationship with nature "[12].

12 Hadjichambis, A.; Reis, P. European Network for Environmental Citizenship (ENEC). Impact 2018, 2018, 52–54.

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Local context analysis: Italy

The problem of climate change in Italy manifests itself with particular gravity, as highlighted by the report of the Council of the European Union, in which Italy is one of the countries most affected by disasters and which suffers one of the highest numbers of victims and economic losses in GDP due to environmental catastrophes.

This is also obvious due to the geography and location of the country within the European area, in the centre of the Mediterranean, with many kilometres of exposed coastline and a vertical development of the country simultaneously absorbing both African and Northern European phenomena.

The *Sustainable Italy Report created* by Cerved[13] highlights how the Italian system is in 9th place in Europe for environmental performance, with a marked gap between the North and South of the country: low levels of greenhouse gas emissions and pollution, consumption and conversions in line with the average and an excellent industrial emissions reduction rate.

The top provinces are all in the north, while those in the south (in particular the Sicilian provinces) are at the bottom: Bari is the first southern province to appear in the ranking, but well in 51st place.

If, however, the specific levels of pollution, the safety of the territory due to hydro-geological risks and the management of waste/slag (with relative recycling) are analysed, the differences appear between metropolitan cities and other areas of the territory, where the former suffer a higher level of pollution but better waste management and use of renewable sources for energy production.

Politicians planned and prepared the strategies to increase environmental sustainability with the help of PNRR funds, with 31% of the amount of the plan (just over 69 billion euros) intended for "green revolution and transition ecological". Of these 18 are specifically dedicated to the energy transition and sustainable mobility in which Italy is significantly behind the European average.

Moreover, what about raising awareness and training communities on environmental issues?

13 Sustainability, Italy in chiaroscuro: it is 15th out of 29 in Europe (esg360.it), https://www.esg360.it/report-analisi-e-ricerche/sostenibilita-italia-in-chiaroscuro-e-15esima-su-29-in-europa/

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The document drawn up by **MITe (Ministry of Ecological Transition)**[14] highlights how within the **SNSvS**, i.e. the National Strategy for sustainable development. It includes education in the system of the so-called Sustainability Vectors, privileging information and awareness-raising activities on sustainable development on a local scale, which has led the Ministry to stipulate specific agreements directly with Regions, Autonomous Provinces and Metropolitan Cities.

Img_2 Rappresentazione dei destinatari delle attività di Educazione, realizzate da Regioni e Città Metropolitane,

As can be seen from this graphic, the greatest intervention is thanks to the Regions, which favor raising the awareness of students and young people through the structuring of plans integrated into the school programs in which the topics addressed with the students concern the general knowledge of UN Agenda 2030 and its 17 Goals. But also specifically biodiversity, the circular economy and reuse, sustainable mobility, social inclusion, global citizenship and food education. Some activities include experiential moments, such as educational trips to protected areas or places of historical/cultural value, which aim to discover the territory and its protection.

14 Report_vettore_education_luglio_2021.pdf (mase.gov.it), https://www.mase.gov.it/sites/default/files/archivio/allegati/sviluppo_sostenibile/rapporto_vettore_educazione_luglio_2021.pdf

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Metropolitan cities, on the other hand, have divided the interventions equally between students and public officials, in order to develop sustainable development strategies for the territories.

Due to the pandemic emergency and therefore the difficulty in carrying out face-to-face activities, webinars were organized with information and training purposes on sustainable development issues and social networks were used as dissemination tools. In the field of non-formal and informal education, many awareness and dissemination initiatives have been carried out aimed at a wide audience of citizens, making use of tools such as radio programmes, organization of "virtual" events and fairs, production of audiovisual materials.

Img_3 Ripartizione, per tipologia, del materiale prodotto dalle Regioni

Img_4 Ripartizione, per tipologia, del materiale prodotto dalle Città Metropolitane

Due to the pandemic and lock-down moment, the materials produced to raise awareness of the aforementioned stakeholders are predominantly digital and collide between regional and metropolitan dimensions.

All this regional and metropolitan awareness-raising work, which takes the form of programs involving both individual government bodies and the

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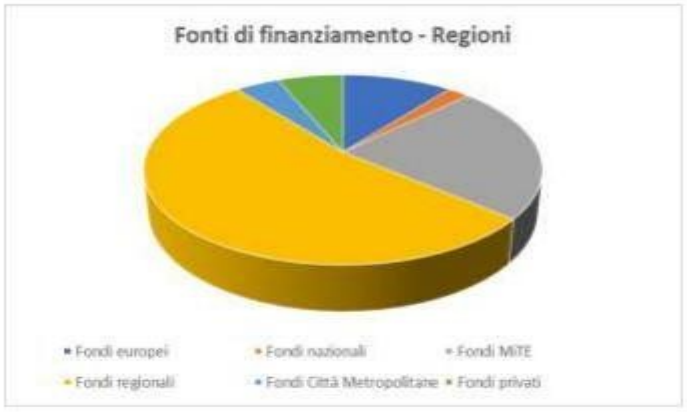
networks of citizens and operators involved (private organisations, consortia, associations), makes use of heterogeneous funds:



***Img_7** Ripartizione dei progetti delle Regioni per fonte di Finanziamento*

***Img_8** Ripartizione dei progetti delle CM per fonte di Finanziamento*

The IN.FEA programming, from 2000 onwards, has led to the creation of almost 290 **Environmental Education Centers (CEAS)** throughout the national territory, a network of institutional and private entities that carry out action on the territories through the creation of numerous activities, projects and programmes, providing value and strengthening national, regional and local sustainability policies.

The local community are the aim of this activities, having as their main objective that of promoting and managing participatory and shared planning spaces, an essential condition for a complex and systemic learning process in exchange with the surrounding environment, and are subject to multiplying and expand by involving an increasingly large audience of interested parties.

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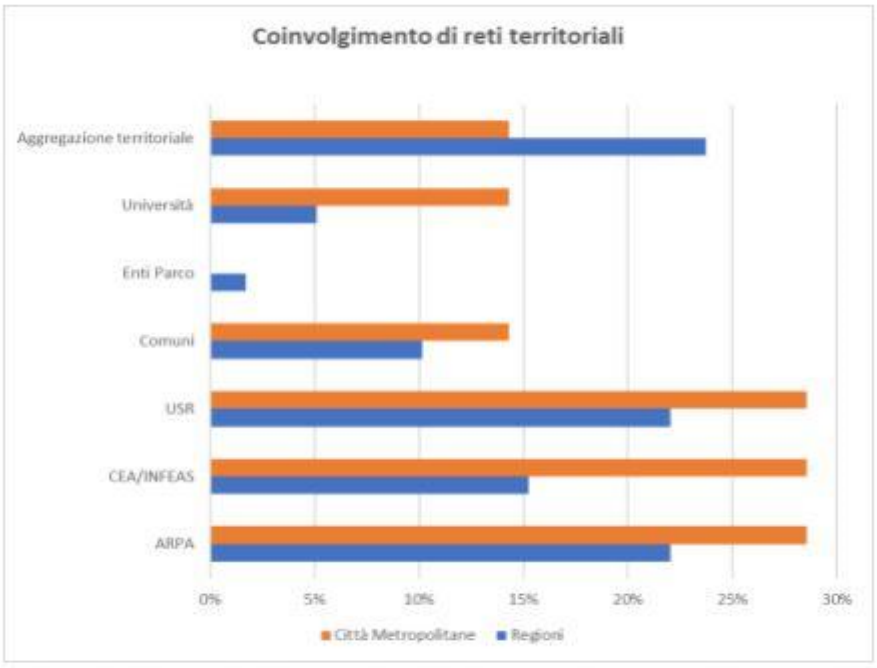

***Img_9** Coinvolgimento di Reti territoriali, in termini percentuali, nelle attività di Regioni e CM*

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Local context analysis:Cyprus

A report by *Corriere della Sera* ***"Cyprus: the sea saved by kids"***[15] shows an interesting analytical insight into the current situation of environmental sustainability in Cyprus. It highlights how the Mediterranean island was one of the last to follow the European Community directives regarding respect for the environment, but suggests that it has now undertaken the necessary path to remedy the main problem for an island: the marine pollution, mostly due to plastics (between 80 and 90%).

The reason for this pollution is to be found in 2 main factors, which most of the countries bordering the Mediterranean Sea have in common:

1. The local culture of the population, still unwilling to adapt to sufficient standards of recycling, waste separation and protection of biodiversity
2. The influence of other countries that share the same marine space, often delivering waste that reaches the island via marine currents

This requires, now as always, an intervention of local mental change, but also widespread and generalized to more or less neighbouring countries.

Many political initiatives spread throughout Europe (such as new waste collection, sorting and recycling centres, or increased costs for the sale of plastic products to citizens). They really may become concrete thanks to funding from the European Union (the European Bank for Investments has provided more than 250 million euros for circular economy and environmental sustainability initiatives) and State (in 2021 thanks to the PNRR the government has allocated approximately 450 million Euros for the country's green turnaround). From this, many successful initiatives that directly involve school students in cleaning the island, real beach "clean-up" meetings that enthuse young people and provide excellent results, have been spreaded.

This is of particular value for an island Republic which makes the beauty of its sea the cornerstone of a high-level tourism industry. In this sense, Cyprus is increasingly expanding towards eco-sustainable tourism, on which the island's governments are increasingly focusing, as demonstrated by the ***Fishing fo litter*** project. It directly involves anglers to clean the sea from plastic, or as other community initiatives and protocols to which

15 Cyprus, the sea saved by kids | Corriere della Sera's 100 days in Europe - Corriere.it, https://www.corriere.it/elezioni-europee/100giorni/cipro/

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Cyprus has decided to join for the protection of the cleanliness of the sea from naval pollution.

Despite these efforts, the management of external pollution flows seems to be a difficult challenge to overcome, precisely because Cyprus geography as the last outpost of the Eastern Mediterranean for Europe. While the Republic of Cyprus has begun to follow European directives by distancing itself from the Greek model, grateful for the cultural indications and the new rules that overcome the bureaucratic blocks of the initiatives, the neighbouring countries are not, being excluded from the Union.

Complicating things even more is the internal political situation in Cyprus, where the southern part has been included and recognized internationally and in the European community since 2004, while the northern part is an area recognized and directly dependent on Turkey (Turkish Republic of Northern Cyprus).

This "subdivision" has constantly recurred over the last fifty years, especially between the 1980s and 2000s in relation to one of the most pressing problems for the island that many have tried to resolve: water scarcity. With a small quantity of fresh water coming from the island's aquifers and with an often reckless use of resources, no solution seems to have completely resolved the issue: desalination plants were tried whose low efficiency did not give the hoped-for quality of water, and which being inefficient they polluted the air considerably during operation. The population has not had any awareness of the correct use, saving and correct reuse of water, thus generating continuous waste of an already scarce resource, even rarer since mega resorts for tourist purposes were built on the island (in the period in the summer the situation worsens further). In the 1990s, a huge submarine connection between Cyprus and Turkey, ***the Peace Pipeline***, was finally built[16] for an investment of around 450 million dollars financed entirely by Turkey: the environmental and political criticisms of the construction and management of the infrastructure, however, leave many doubts about the effective resolution of the problem.

Many Cypriots see this work simply as a means of Turkish political propaganda to increase its influence and pressure on the entire island, and as a way to make a profit through the privatized management of the pipeline. Furthermore, the construction has generated alterations to the Cypriot environment, and once again disadvantaged water economy paths driven by awareness of correct use by the population, and all in the face of an in any case scarce quantity of water for the population.

16 Water colonization: the case of Cyprus - AB AQUA, https://abaqua.it/colonizzazione-idrica-il-caso-di-cipro/

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Local context analysis: Bulgaria

The current Bulgarian situation presents more or less the same trend as other European countries, but it even presents itself as a virtuous example in the more limited context of the Balkan countries.

Although in the first decades of 2000 Bulgaria needed recommendations and warnings from the European Commission on respecting the stages for eco-sustainability, a community awareness has increasingly taken hold rapidly pushing towards an adaptation of ecological activities and mentality. The conformation and history of the country in fact sees a panorama of rural micro communities which, due to the lifestyle of its citizens, is naturally more in line with the parameters of environmental sustainability (just think that out of 264 municipal centres, around 230 can be classified as " rural dimension").

The government and the communities of these centres glimpsed the potential of ecotourism in these contexts. Since 2010, there has been a real boom in ecological projects and business initiatives to promote the country for tourism purposes, especially in the *Central Balkan area* and the *Rodopi Mountains* (reception and hospitality in agritourist facilities, production chains of food and artisan products according to ancient methods, and various nature trails)[17].

Until at least 2009, however, the overall situation in the country was not yet acceptable, as the awareness of eco-sustainability was not yet widely spread or promoted.

The same companies and industries complied only minimally with environmental requests, limiting themselves with respecting the legal limits of the government, accused by the opposition of not wanting to impose ecological mechanisms on the companies themselves.

From this perspective, we have arrived at a paradoxical point: the more the economic well-being for the population and companies increases, the less these same subjects cares of eco-sustainability.

A trend that is common to all European realities, where the wealth of countries and populations, despite the efforts, usually coincides with a worsening of ecological sustainability indices.

The first crises of the post-2010 economic model have in fact revealed how necessity has led to increase progress in the field of respect for the

17 Tourism in Bulgaria: the challenge of sustainability passes through rural areas - eHabitat.it, https://www.ehabitat.it/2019/12/20/turismo-in-bulgaria-rurale-sostenibilita/

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environment than before. Simply in order not to lose profit the entire industrial and civil context has begun to reorganize its production systems to move towards the reuse and differentiation of energy sources[18].

According to an interesting analysis carried out in 1990 by eminent economists and researchers of the *National Chamber Foundation* and published by the Independent Institute on the "*Bulgarian blueprint for economic growth and transition*"[19], from a study expressly requested by the Bulgarian government itself as soon as it emerged from the long communist dictatorship, the fundamental reasons for this nation's delay in the field of environmental sustainability and related awareness are highlighted.

The main obstacle to an adaptation to average European levels was due precisely to the removal of the communist approach that prevented the spread of an environmental awareness. The fact that the market itself was not free, but bound to standardization and restriction of prices and means, generated a notable slowdown in cultural, political and social activities for environmental protection. Furthermore, no free press could influence public opinion on environmental issues and the failure to respect them by the government interested in subsidizing highly polluting national industries and factories.

The same "political" and regulatory lack of individual property rights, according to the researchers, has led to a serious lack of direct interest of groups that support environmental well-being. Not considering it as a lever for economic well-being, leaving every area in a sort of limbo of responsibility "common and communist" which did not allow us to identify precise managers and responsibilities regarding environmental sustainability.

From 1990 to today, this is obviously gradually changing, shifting attention, sensitivity and responsibility into the hands of the population and private groups who evaluate it as an essential factor of success. This is evident by connecting to the website of the Ministry for the protection of the environment and of Bulgarian water[20], where it is possible to find a considerable amount of materials and information clearly divided by theme, which summarize the efforts implemented over the last twenty years to overcome the problems of a past of pollution.

18 Debunking myths about sustainable development in Bulgaria (cafebabel.com), https://cafebabel.com/it/article/sfatiamo-i-miti-sullo-sviluppo-sostenibile-in-bulgaria-5ae00749f723b35a145e1b18/
19 The Bulgarian Economic Growth and Transition Project: Independent Institute, https://www.independent.org/publications/article.asp?id=2618
20 Ministry of Environment and Water | MOEW (government.bg), https://www.moew.government.bg/

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For example, we talk about plans and contracts for the sale of industries and factories to private individuals, with precise clauses for cleaning and remediation of their pollution factors, or the list and guidelines for accessing the "Ecolabel EU" product group, which guarantees environmental sustainability in production and the recycling of industrial outputs. Or even a complete and constantly updated list for the registration of private entities on lists that track the specific work/production activity if it concerns potentially polluting material or dangerous; all according to a logical and detailed methodology of analysis of the areas, with an expressly European imprint and with a view to recycling and reuse if possible.

How can we spread the message of eco-sustainability at a national level?

If the various governments have now clearly taken this path, promoting registers and practices, manuals and instructions for environmental sustainability, the associations also make an important contribution.

The *Bulgarian Center for Sustainable Local Development and Ecopedagogy*[21], for example, is committed to carrying out projects to raise awareness of ecological issues in schools and local communities in the country, spreading the concept of Ecopedagogy, conceived in South America in the early 1990s.

The commitment of the center and its founders create ecopedagogy manuals for students and trainers. Furthermore, they are involved in civil demonstrations of opposition to government choices, such as that of granting Chevron permits to search for gas in rocks through the fracking (hydraulic fracturing) in the *Dobruja region*, which is home to one of the largest underground freshwater deposits in the world.

21 Bulgarian Center for Sustainable Local Development and Ecopedagogy (bcslde.org), http://bcslde.org/

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Overview of Action Research interventions

The objective of the partnership is to provide an analysis of the context, methodologies and tools implemented in the different contexts of the reference countries. This in order to allow the protagonists of education (teachers, operators, civil population actively engaged in sustainability environmental) to generate a set of practices to be evaluated and discerned to promote the best ones. Therefore, it would be easy to apply them concretely and - if necessary take inspiration from them - to build different paths that achieve the objective of increasing awareness among students and the entire citizenry on environmental issues.

The aim is to make these paths concrete through a digital cartography that frames the roles, skills and activities of the trainers: a personalized outline applicable and replicable in each of the different contexts.

The analysis of the context provides the intervention framework, highlighting where to intervene, with what objective and with what solutions. As already stated, each national and/or regional dimension has its own needs, and therefore narrowing the field of action locally can help to make the intervention more concrete in the application. The needs are those that arise from the daily life of everyone, both students and citizens, who suffer the impact of incorrect or incorrectly applied practices in their lives. What is the reason for these limits and how to overcome them is already part of the path of active solution to environmental problems, spreading that logical methodology of exhaustive analysis of the causes and evaluations of the imagined effects, already referred to in the *GreenComp: European framework for sustainability*.

The evaluation of common and non-common experiences, already widespread and carried out, can provide the first set of interventions customable and constantly improvable. Successful experiences shared by almost every local reality are those of the clean-up sessions of natural and/or city environments, in which groups of people gather by appointment to clean up some areas of waste, or reforestation sessions of particularly damaged areas from natural events (fires, desertification, landslides, storms) and/or human events. Other solutions are those that involve different actors in society, such as anglers called to collect waste at sea, or actions to safeguard and protect fertile spaces for animal reproduction, and so on.

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The cartographic metaphor envisaged as an output of the ECHO project, however, transforms the set of analyses, evaluations, choices and actions into a digital synthesis that has the dual purpose of providing guidelines to educators, further clarifying limits and solutions to achieve the objectives expected, and transmit the results of these paths through every digital platform.

Digital tools and products find ample prominence in the objective action of training the population, both for their undisputed pervasiveness and for the very potential of the means: socialization and sharing of ideas and materials, ease of use, social connections capable of sow new values and broaden the audience of interest.

Not recently, the simple sharing of opinions online has made it possible to generate an important improvement in the global commercial and industrial sector, whereby commercial brands themselves are the first to choose and promote reuse, recycling and environmentally friendly initiatives in production, certain of the economic return towards consumer groups who increasingly evaluate these criteria when choosing their products.

Some of the latest and most spontaneous forms of value, cultural and social aggregation that can promote environmental sustainability through the circular economy were born precisely from trends that have established themselves and spread through social media. For example, a latest trend that is currently taking hold across the world is Upcycling, a form of waste and waste recovery that at different levels (from the civil and informal to the professional chemical and industrial one) can reuse waste materials and products to produce new things and/or materials that are even better than the original ones.

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Actions and interventions in Italy

In Italy, environmental education is a topic of great importance and involves many areas, including schools, universities, environmental organizations and local administrations.

School is the main place promoting environmental education, through the teaching of specific subjects such as biology, geography, chemistry and physics, but also through projects, activities and initiatives that involve students and raise their awareness of environmental Protection.

Universities also have an important role in promoting environmental education, through scientific research, the training of new professionals in sectors such as environment and energy, and the dissemination of knowledge and skills in this area.

Environmental organizations, such as *Greenpeace* and *Legambiente*, play a fundamental role in raising public awareness of the importance of environmental protection and in promoting initiatives and projects to protect nature.

Finally, local administrations play an important role in environmental education, through the promotion of awareness-raising projects and initiatives and the management of the territory in a sustainable way.

In Italy, there is also a national agency for environmental education, called **"Centro di Educazione Ambientale" (CEA)**, which promotes environmental education at a national level and offers support to schools and organizations dealing with the environment.

Starting from local/regional or directly national dimensions, many initiatives have been disseminated which now constitute an agenda of fixed and constant events for many realities.

- **Zero Waste Project:** this project, promoted by the Ministry of the Environment, has the objective of reducing waste production to a minimum through the promotion of practices of reduction, reuse and recycling of materials.

- **I light up less:** this is an initiative launched by *Caterpillar*, a radio program on *Rai Radio 2*, which has taken place every year on 16 February (date of entry into force of the Kyoto Protocol) since 2005.

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The objective is to raise awareness public on the importance of energy saving, promoting various environmental respect actions that can be integrated by individual citizens, and above all the switching off monuments and public buildings: it was so successful that in 2008 it had a transnational dimension, leading to the synchronized shutdown of many monuments throughout Europe. It was converted into law by the Italian State in 2022, recognizing February 16 as "National Energy Saving and Sustainable Lifestyles Day".

- **Let's clean the world**: this initiative was launched in Italy in 1993 by *Legambiente* and has become a global activity involving over 35 million people in 120 countries around the world, with more than 400,000 volunteers and 1,300 localities involved every year. The objective is to raise awareness about waste management and effective and concrete cleaning of the environment, through the possibility for everyone to participate in cleaning events with indications of times, places and methods, but also to be able to organize and launch meetings.

- **Earth Day**: This project promotes an annual opportunity to raise awareness of the importance of environmental sustainability and ecological practices. It is a global initiative that started from the United States, where various study and research institutions (Colleges, Schools and Universities) annually celebrate Earth Day on April 22nd (the date now decided for this event at an international level), when in In 1970, approximately 20 million American citizens took to the streets to spread ideas about protecting the planet. Since then it has also been celebrated in Italy.

- **Echo from the Cities**: this project aims to promote environmental sustainability in Italian cities, through the adoption of ecological practices and community involvement. It was born from a Turin digital news program focused on the urban environment and the circular economy: since 2009, it has produced an association that shares its focus and promotes environmental sustainability actions and activities in the Piedmont Region. A vast audience follow the newsletter of fans and has numerous subscribers.

Save cyclists: this organization promotes the use of the bicycle as a sustainable means of transport, through the organization of events and awareness campaigns. It has 2 fundamental nuclei located in Bologna and Rome, and has been operating for about 10 years: the grandiose start involved a large part of the 2 Italian cities, but little by little the movement began to slow down (victim, according to the organizers, of the incorrect and limited policy decisions regarding cycling).

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Actions and interventions in Cyprus

Environmental education in Cyprus is a priority for the government and many non-governmental organizations working to protect the island's environment. Many initiatives and educational programs aim to raise awareness among citizens and visitors of the importance of environmental protection and the need to take measures to reduce man's negative impact on the environment.

The **Education for Environmental Citizenship (EEC) model** was implemented in the Cyprus education system for research and pedagogical reasons. The aim of applying the EEC model to the school system was to provide students with a set of core competences that will allow them to gain a better understanding of current socio-ecological issues and act as agents of change.

The structural elements of the EEC model:

- The competences (knowledge, attitudes, skills, values, behaviors) are necessary for young people's personal growth, leading them to become agents of change.
- The potential actions an environmental citizen may undertake in different spheres (private or public), dimensions (individual or collective) and scales (local, national and global).
- The expected environmental outcomes that can contribute to environmental and social transformation.

Environmental outcomes after receiving EEC:

- Solving current environmental problems
- Preventing future environmental challenges
- Addressing the causes of current environmental challenges
- Having a healthy relationship with nature
- Respecting duties and rights in relation to environmental conservation
- Enhancing civic participation

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- Achieving sustainability

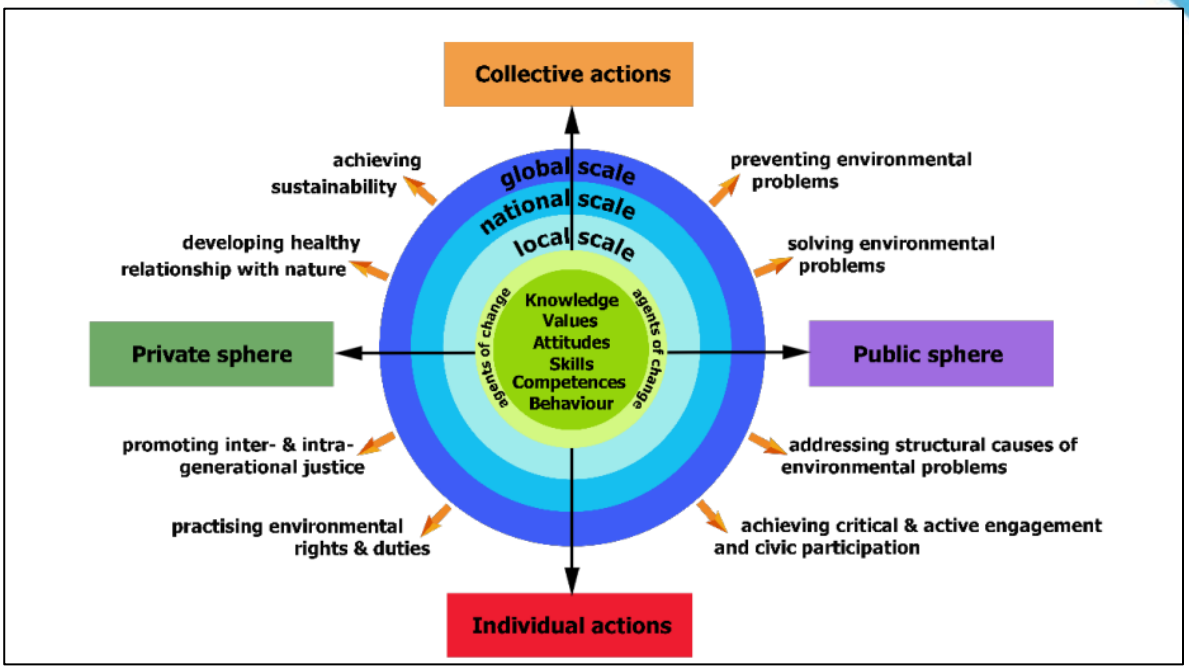

Photo credit: Hadjichambis, A. Paraskeva-Hatdjichambi, D and Georgiou, Y. (2022). Evaluating a Novel Learning Intervention Grounded in the Education for Environmental Citizenship Pedagogical Approach: A Case Study from Cyprus. Sustainability, vol.14, 1-18.

The *Ministry of the Environment of Cyprus* has created educational programs for schools, including environmental education programs that include guided tours of nature reserves and national parks. These educational programs provide information about environmental problems, such as climate change, air and water pollution, and biodiversity loss, and suggest ways to reduce environmental impacts.
Environmental Education is a key aspect of Primary Education. *'Life Education'* is a core subject in grades AD, and Environmental Education is a subject taught in grades EF. Environmental education is part of the entire analytical program, and it touches upon all aspects of the educational curriculum. Environmental education aims to develop the sensitivity and critical thinking of young students on the main global and local environmental issues through a holistic approach. There is an easy opportunity to inform students on environmental issues in the context of the Environmental Education subject and adopt new attitudes and behaviors. The Environmental Education subjects entails certain components that transform the lesson into a participatory and liberating learning process. This subject has an interdisciplinary character, and a student-centered approach is used to address the various environmental issues. The main learning methodologies include experimental and interactive learning,

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learning by doing and brainstorming sessions. The aim of this subject is the competence development of students and the adoption of more environmentally friendly attitudes and values.
In response to the ever-changing climate and environmental challenges, education applies active and interactive methodological approaches that allow students to gain a deeper understanding of climate emergency and the necessity of taking action to preserve nature.
The centrality of didactic training in this sense is based on the model of shared reasoning and active and interactive experimentation, according to the best practices highlighted in the European context. In the context of Environmental Education, various specialized environmental programs are implemented with the participation of a significant number of primary schools around Cyprus. The environmental programs that are currently active are:

- The Eco Schools
- The "Golden Green Leaf" Greek-Cypriot partnership
- The program "Seed – A source of life."
- The program "The leaf – Learning about forests."
- The program "Less waste."

The Eco Schools

The "Eco Schools" is the largest Environmental Education Program that is successfully implemented in the school system. It began its operation in 1997 with the participation of 16 primary schools. The participation grew over the years two to its success. Currently, 139 primary schools, 95 kindergartens, 3 specialized schools, 41 gymnasiums (middle schools) and 17 high schools are participating in the program. The program follows a modern pedagogical and methodological approach that is based on active learning, collaborative teaching, critical thinking and reflective teaching. Through the subject, students gain environmental awareness and develop important skills that contribute to their professional and personal growth.

Golden Green Leaf

The environmental program "Golden Green Leaf" is monitored by a Greek-Cypriot partnership that is active in the environmental field. In this partnership, a school in Greece and a school in Cyprus collaborate on studying a topic related to environmental education. The ultimate goal of the collaboration is to raise awareness on environmental issues and cultivate a sense of positive attitude towards environmental protection in children. So far, 6 Cypriot primary schools have participated in this programme.

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Seed – A source of life

The program "Seed – A source of life" is an environmental educational network involving schools both in Greece and in Cyprus. Through a multi-faceted and structured curriculum, the program aims to introduce the different species of Cypriot flora to students (seeds, plants, biodiversity), cultivate their environmental consciousness and empathy and help them set up school gardens for studying and analyzing the importance of nature in people's lives. The program's ultimate goal is to encourage students to take action on the preservation of nature on a local level. So far, 8 kindergartens have participated in this program.

LEAF - Learning about forests

The program "LEAF - Learning about forests" aims to educate students on the flora and ecosystem of forests. The main aim of the program is to teach about the importance of environmental education in relation to forests. The program reflects on all the forest-related activities in which humans are involved, like cultural, ecological, economic and social activities. Through the program, students are encouraged to become responsible environmental citizens, thus contributing to the enhancement of environmental sustainability, regardless of their age or knowledge level. So far, 29 schools have participated in this program.

Less waste

The program "Less waste" focuses specifically on the management of waste, involving schools in actions related to the reduction of waste. During the program's lifetime, several primary schools implemented several actions. Some of the activities organized to help students develop environmental awareness and learn about the importance of recycling are the following:

- Organization of an environmental student committee
- Observation of the school environment: Students observe the amount of waste produced in school and discuss ways to reduce waste by employing alternative disposable methods.
- Gathering garbage in the schoolyard
- Offering a meal to all students without using plastic or non-recyclable material
- Recycling all types of material (paper, glass, plastic, batteries, clothing)
- Creation of posters on recycling
- Creating a wall mural on the topic "**Waste – Reduce, Reuse, Recycle.**"

Within the structure of the Cyprus educational system, environmental education is part of the educational curriculum of all levels of education. The unit for Education for Environmental and Sustainable Development is a horizontal structure of the Ministry of Education in Cyprus. It was

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formally established by a decision of the Council of Ministers (Decision No. 81,604 / Proposal No. 1479 / 2016)[22] as a permanent structure of the state with a specified agenda. It is established on a national basis in formal, non-formal and informal education through the promotion, implementation and updating of the central actions of the national strategic educational planning of the Ministry of Education. The aim of the EESD unit is to develop the environmental consciousness of young people in a holistic, coherent and horizontal way not only within the Ministry of Education but also in relation to all bodies, organizations and institutes of the public and private sector.
The following section presents the most important actions in relation to the EESD.

Network of Environmental Education Centers
This network is the only comprehensive non-formal education structure on environmental issues and sustainable development in Cyprus and it is offered to pupils and teachers at all levels of education. The aim of the environmental centers is to provide alternative teaching and learning opportunities in the field of environmental and sustainable development to all pupils but also to society operation complementary and supportively for the integration of the EESD in schools. The network includes 7 centers in many areas around Cyprus: the Pedoulas Environmental Education Center, the Athalassa Environmental Education Center, the Akrotiri Community Environmental Education Center, the Salamiou Environmental Education Center, the Environmental Education Center of Cape Greck, the Koilani Environmental Education Center and the Panagia Environmental Education Center.
The Environmental centers of Athalassa, Cape Greko, Akrotiri Community, Salamiou and Koilani offer one-day programs (9:00 am – 16:30 pm), while the centers in the mountainous area, like the one in Pedoulas, offer in addition to one-day and all-day programmes, two-day and three-day programs with accommodation for up to 40 pupils in its dormitories.
The thematic units of the programs are the following:

- The Forest biodiversity
- Water
- Environment & Culture
- Soil
- Environment & Local Community
- Energy
- Desertification & climate change

22 Cyprus Ministry of Education, Culture, Sport & Youth. (2020). Annual Report 2020, p 107. Available at: https://archeia.moec.gov.cy/mc/605/annual_report_2020_en.pdf

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- Local crops & local products
- The marine and coastal environment

The thematic units used as a basis of the education offered to pupils and young people in the centers, are connected to the official curriculum taught in schools, supporting the educational process not only of pupils but of teachers as well.
The ultimate goal of the environmental centers is to function as supporting structures for the promotion of the EESD unit in schools and become places for the development and implementation of multifaceted environmental actions. Pupils, teachers and other groups have the opportunity to adopt a greener attitude and engage in an alternative learning environment that goes beyond the formal school environment
This through these actions that include educational sessions, excursions in nature, viewing of educational videos and films, discussion sessions on recycling, reducing waste and protection of biodiversity, planting trees and learning about the different species of plants, crops and seeds are found in Cyprus nature.
During the period 2012-2020, over two hundred thousand pupils and three thousand teachers from Cyprus and abroad participated in programs organized in the environmental centres. Within the framework of the actions of the State EEC Network, a series of interdepartmental training and professional learning seminars for teachers at all educational levels were conducted, as well as for professional groups of special interest and the local population. The EEC Network actively participates in research programmes, as well as in the implementation of European programs funded through various financial instruments[23].
The main duties of the Unit for the Environment and Sustainable development are:

- Delivering environmental education programs at the Environmental Centers (pre-primary, primary, secondary, technical and specialized education)
- Preparing, drafting and planning the environmental education programs implemented in state schools and at the Environmental Centers
- Developing education material for environmental education and sustainable development
- Supporting and providing guidance to schools for the promotion of environmental actions, projects and other initiatives related to the EESD.

23 Cyprus Ministry of Education, Culture, Sport & Youth. (2020). Annual Report 2020. Available at: https://archeia.moec.gov.cy/mc/605/annual_report_2020_en.pdf

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- Organization and implementation of trainings and educational sessions for teachers and educators on EESD at the Environmental Centres.
- Supervising and running the Environmental Education Centres
- Collaborating with the local communities in which each center is located to facilitate the smooth operation of the centers and the organization of several activities, conferences or festivals

The mission of the **Network of Environmental Education Centers** focus on promoting environmental education and sustainable development in a comprehensive and holistic way. More specifically, the actions of the network are[24]:

- Learning beyond the formal education setting, outside the school environment
- Interacting with the learning environment
- Using the knowledge and experience of the local population to enrich the learning process for pupils and young people
- Adopting an interdisciplinary, comprehensive and coherent approach to teaching environmental issues and sustainability

Through the various projects and seminars, the Environmental Centers aim to[25]:

- Strengthen students' critical thinking
- Enhance experimental observation
- Examine the interaction and interconnectedness of the natural, cultural, social and economic parameters of the environment
- Develop communication and collaboration networks among the program's participants or involved stakeholders
- Develop young people's communication skills, creativity and
- Enhance youth's participation in relation to shaping sustainable living conditions.

The educational approach used in the Environmental Centers can be summarized through the following keywords:

- Going
- Experiencing
- Learning

24 Cyprus Ministry of Education, Culture, Sport & Youth. (2020). Annual Report 2020. Available at: https://archeia.moec.gov.cy/mc/605/annual_report_2020_en.pdf
25 Cyprus Ministry of Education, Culture, Sport & Youth. (2020). Annual Report 2020. Available at: https://archeia.moec.gov.cy/mc/605/annual_report_2020_en.pdf

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- Being active
- Exchanging ideas
- Changing attitudes
- Participating in decision-making processes
- Being involved in actions

A study visit conducted by a group of pupils at the Athalassa Environmental Centre.

A group of pupils visiting the forest for an educational session on the preservation of nature and the importance of adopting greener habits.

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Learning outdoors, employing alternative teaching methods to learn about the environment.

Photos credit: Unit for the Environmental Education and Sustainable Development, Main page, 2022

In order to enhance the professional development of teachers, educators other relevant stakeholders, a series of seminars as well as education and training programs have been implemented both on a mandatory and optional basis. The training and educational seminars take an experiential form. They are conducted in schools, at the *Cyprus Pedagogical Institute*, at the environmental centres, in various fields of non-formal education such as museums and natural settings like forests, rivers, villages etc.

Organization and participation of the EESD unit in regional meetings

During the COVID-19 pandemic, all the actions and activities of the EESD unit were delivered online. Some actions implemented are the following:

- Organization of the 15th and 16th meetings of the Steering Committee of the United Nations Economic Commission for Europe on Environmental Education
- Participation and organization of experiential workshops by the Unit on climate change and youth in the framework of the annual conference of the European Union e-twinning
- Participation and presentation of the action of Cyprus for climate change in education in the regional webinar organized in the framework

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of the Cyprus initiative for climate change in the Eastern Mediterranean and the Middle East[26].

- Participation and intervention in the UNESCO regional meeting for the new Strategic Plan for ESD 2030
- Participation and presentation on the Sustainable Development Goals in the context of the World Education Week

Production of supporting education material to strengthen the curriculum of the environmental education and sustainable development

The tools and materials developed are:

"WE STAY AT HOME, WE LEARN & CREATE ABOUT THE ENVIRONMENT" is a comprehensive educational material for parents and children. The Ministry of Education in collaboration with the Cyprus Pedagogical Institute and the Pancyprian School of Parents created the toolkit. The material was designed to support parents and children, and it proved to be very helpful during the pandemic. The material is divided into five basic categories related to[27]:

- Simple constructions in the environment
- Simple experiments on the environment
- Entertaining, educational activities with environmental content
- Interactive game with environmental content
- E-books containing fairy tales on the topic of the environment

Provision of educational material for the Common Agricultural Policy on the topic of Rural Economy and Life

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26 *An initiative developed by the Cyprus Government for coordinating climate change actions in the Eastern Mediterranean & Middle East. The initiative aims to bring together regional and international research institutions to conduct academic research on the impacts of climate action and the development of a science-based policy toolkit for the alleviation of the climate change impact and the identification of the appropriate per section and application area.*
The initiative also aims to support the implementation of the Paris Agreement and other national plans in the region through a series of conferences and seminars with the participation of relevant state, private and international stakeholders. More info: https://emme-cci.org/

27 Cyprus Ministry of Education, Culture, Sport & Youth. (2020). Annual Report 2020. Available at: https://archeia.moec.gov.cy/mc/605/annual_report_2020_en.pdf

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Within the framework of the European program "*Promoting entrepreneurship among the younger generation in the agricultural sector*", educational material for teachers and pupils was developed. The material includes innovative educational tools that aim to familiarize the educational community with the topics of rural economy and rural life. The material can be applied both in formal and non-formal education settings. The main aspects of the educational material are:

- Lesson plans and interactive activities freely available on the internet
- Educational material on the Common Agricultural Policy of the Cyprus Government, including topics like biodiversity, climate change, hunger and innovation and entrepreneurship.

Educational television channel

Due to the negative impact of the COVID-19 pandemic, the Ministry of Education has employed ways to provide distant learning through digital educational material made available to pupils through an educational television channel. The channel included content on environmental issues. A series of informative courses were prepared. Some examples are courses on climate change, animal welfare, production and consumption, and biodiversity.

Example of an educational video provided on the television channel of the EESD unit

A vision's steps – Film by Apostolos Pavlos High School

This animated short film named "***A vision's steps***" ("Oromatos Pathkies")[28]portrays the vision (nightmare) of a young girl called Aphrodite. Aphrodite envisions the dystopian future of the planet and the disturbance of the ecosystem's balance due to climate change and human intervention in nature. When she wakes up from her nightmare, she realizes that climate change's effects will be catastrophic for humanity. She decides to take action and stop using fossil fuels for electricity production, replacing it with solar panels and windmills representing a renewable energy source. This animated film aims to raise environmental awareness among citizens, focusing on the necessity of taking preventive

28 Unit for the Environmental and Sustainable Development. (2022). Educational Web TV. Available at: https://elearning.schools.ac.cy/index.php/el/monada-perivallontikis-ekpaidefsis/video/1-oromatos-pathkies-gymnasio-apostolou-paylou

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measures against climate action and its consequences. High School pupils in Cyprus in collaboration with the EESD Unit and the Ministry of Education created the film.

The video is available here: https://youtu.be/4iNwMyYa6p0

A screenshot of the animated film showing Aphrodite's vision on the future of the planet.
Photo Credit: Unit for the Environmental Education and Sustainable Development, Web TV, 2022

Selfie o'clock, Earth 0'clock – Film by Agios Stylianos High School

The animated short film "***Selfie o'clock, Earth 0'clock***"[29] highlights human nature's selfishness and lack of conscience (selfie o'clock). People fail to realize the negative effect of their daily habits and activities on the planet. Due to people's inaction, the planet is being destroyed (Earth zero o'clock).

By using ceramics, painting and photography, pupils created this stop-motion film depicting a modern city built right next to a snowy mountain. The everyday human activity does not provide protection to the environment and does not advance the quality of life. The city has a hectic lifestyle, and the traffic due to the excessive number of cars is too heavy. Habits, such as driving a car, requires the use of fossil fuels. There are no other means of transport like public transport or cycling. Relying on a car is an unsustainable practice that has a negative impact on the environment.

29 Unit for the Environmental Education and Sustainable Development. (2022). Educational Web TV. Available at: https://elearning.schools.ac.cy/index.php/el/monada-perivallontikis-ekpaidefsis/video/4-selfie-o-clock-earth-0-clock

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The excessive use of cars lead to increased greenhouse emissions that result in air pollution, the deterioration of citizens' health and the melting of ice on the mountains' summit. The aim of the film is to raise awareness on the necessity of taking action against climate action. The video is available here: https://youtu.be/yTd5OVnLvxE

A screenshot of the animated film highlighting the necessity of taking climate action
Photo Credit: Unit for the Environmental Education and Sustainable development, Web TV, 2022

Collaboration of the EESD Unit with the Volunteerism Commissioner

The EESD unit collaborated with the volunteerism Commissioner of the Cyprus Government for the production of educational material titled "*The Sustainable Development Goals (SDGs) Travel*". Based on this project, 17 books will be created, one for each goal. Seventeen books will travel in a suitcase to all schools in Cyprus, to communities, organisations, and other entities in order to promote the necessity of taking action in relation to the climate crisis. This is an ongoing project, the results of which will be published in 2022.

Cyprus is also actively involved in European projects for environmental protection and sustainable development. For example, the **European LIFE Green SMEs project** aims to promote the sustainability of businesses in Cyprus by providing them with support and information on ways to reduce their environmental impact.

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There are several environmental sustainability dissemination projects in Cyprus that aim to raise awareness and promote sustainable practices, including

- **The Cyprus Sustainable Tourism Initiative:** This project is a collaborative effort between the *Cyprus Tourism Organization* and the *Travel Foundation* and aims to promote sustainable tourism practices among businesses and tourists. The initiative provides training and support to businesses on how to operate sustainably and encourages tourists to choose sustainable options when planning their trips.
- **The Green Schools program:** the Ministry of Education of Cyprus manage this initiative, and aims to promote sustainable practices in schools across the country. Schools can apply to become a "Green School" and receive support and resources to implement sustainable practices such as recycling and reducing energy consumption.
- **The Cyprus Network for Corporate Social Responsibility:** This network brings together businesses, NGOs and government agencies to promote sustainability and corporate social responsibility in Cyprus. The network organizes events and provides resources to help companies integrate sustainability into their operations.
- **The GreenCyprus project:** This project is a joint effort between the Cyprus University of Technology and the Ministry of Agriculture, Rural Development and Environment and aims to promote sustainable practices in farming and agriculture. The project provides training and resources to farmers on how to reduce their environmental impact and adopt sustainable practices.

The EESD also works and coordinates various local social networks and companies for programs and activities of an environmental nature, at national, regional and local level, engaging in intervention in various projects of the European programs (Horizon and Erasmus), gaining funds through the Erasmus+ program. By strengthening its work and the educational support it provides to pupils and teachers.

The **"PEDIA" Programme**[30] is funded under the European program "HORIZON 2020". The program's coordinator is the Cyprus Energy Agency, and the partner organization is the EESD Unit. The program aims to produce 7.5 million euros-worth investments from the public and private sectors. This money will be used to transform 25 schools into zero energy consumption

30 Cyprus Ministry of Education, Culture, Sport & Youth. (2020). Annual Report 2020. Available at: https://archeia.moec.gov.cy/mc/605/annual_report_2020_en.pdf

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buildings, helping them reduce the amount of energy they consume and their operating costs by 250,000 euros per year.

The EESD Unit, in collaboration with the Pedagogical Institute of Cyprus, the Cyprus Broadcasting Corporation, the NGO Green Dot Cyprus and the Environment Sector of the Ministry of Agriculture, coordinates the project ***Rethink (Reduce, Reuse, Recycle)***[31]. This project aims to promote the reduction, reuse and recycling of the waste in Cyprus through an extensive awareness campaign that is based on a comprehensive communication strategy that focuses on the 3Rs principle Reduce, Reuse, Recycle (RRR). Through this project, a series of awareness campaigns were organized in several schools aiming to bring about a change in the perception, attitudes and habits of pupils, teachers, and other relevant stakeholders. Through this project, an education TV series was created that was broadcast every week on national television. The series focused on the daily habits of a family that decides to adopt an alternative, greener lifestyle. Through their discussions and their everyday activities (recycling, cycling, reducing waste, reducing water consumption, composting) they display a greener, more environmentally friendly lifestyle that everyone can adopt.

A screenshot of one of the "Rethink" episodes showing family's everyday life and green habits https://www.youtube.com/watch?v=Wr7Ic0sJZuM(Episode Title: Glass Recycling with English subs)
Photo credit: YouTube, Rethink Campaign, 2018

31 Cyprus Ministry of Education, Culture, Sport & Youth. (2020). Annual Report 2020. Available at: https://archeia.moec.gov.cy/mc/605/annual_report_2020_en.pdf

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The aim of the environmental centers is to provide alternative teaching and learning opportunities for all pupils, but also for the functioning of the complementary and supportive society for the integration of the EESD in schools: in fact, it produces contents and materials for schools and defines environmental educational programs for the school system. Addressing various environmental issues, student participation in every project at the environmental centers, such as lessons, events, excursions, flora planting actions, actively contributes to the curriculum of the students and the teachers themselves. To understand the importance and success of the initiative, more than 200,000 students and more than 3,000 teachers (trained compulsorily and/or optionally) have been involved in the last decade.

Furthermore, numerous non-governmental organizations and local communities independently organize additional educational events to raise awareness among people about the environment. For example, the Cyprus Nature Protection Association organizes nature excursions, educational activities for children and environmental monitoring programs to involve citizens in nature protection.

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Actions and interventions in Bulgaria

Environmental education in Bulgaria has been a priority since 1970, when the National Committee for Environmental Protection was established. In 1990, after the fall of communism and the country's transition to a democratic system, the Bulgarian government established an environmental education program that created a series of initiatives to promote environmental sustainability and biodiversity conservation, acting directly among primary and secondary school students.

The Ministry of Education and Science has adopted an integrated approach to environmental education, which incorporates the environment as a crosscutting theme across all school subjects. This means that teachers of all disciplines are encouraged to include environmental sustainability in their curricula.

Furthermore, the ministry has developed specific environmental education programs for schools, which include training courses for teachers and educational materials for students. These programs aim to provide students with in-depth knowledge of the environment and environmental issues, as well as encourage sustainable behavior in daily life.

Furthermore, there are numerous non-governmental organizations in Bulgaria that work to raise awareness among the population about environmental problems and promote environmental conservation in various aspects, including conservation of natural resources, energy efficiency, waste management, conservation biodiversity, the protection of air and water and the fight against climate change. There are also specific environmental education programs for local communities, which seek to involve citizens in environmental issues that directly affect them.

In summary, the environment is an important priority that involves a series of initiatives, school courses, non-governmental organizations and specific programs for local communities. This helps promote environmental sustainability and biodiversity conservation across Bulgaria.

Recent Bulgarian governments have implemented various environmental protection policies over the years, many of which have been financed by the European Union; they are mainly initiatives of state origin, but arise from a request from citizens who are now increasingly aware of the importance of the topic and the possibilities offered by the European Union. Here are some examples:

- LIFE+ Program for Nature Conservation: This program aims to protect biodiversity and natural habitats in Bulgaria. Among the funded

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projects are the creation of protected areas, the reduction of greenhouse gas emissions and the restoration of natural habitats.

- **Waste management program:** Bulgaria introduced a waste management program in 2007, with the aim of reducing the amount of waste produced and increasing recycling. The program included the installation of new waste disposal facilities and the implementation of new waste collection policies.
- **Wind farms:** Governments in recent decades have invested in wind energy production, with numerous wind farms built across the country. These parks produce clean energy and reduce greenhouse gas emissions.
- **River restoration:** In collaboration with the European Union, Bulgaria has worked to restore rivers and improve water quality. The State carried out many interventions to reduce water pollution and improve the biodiversity of rivers.
- **Wildlife protection:** Bulgaria has introduced several measures to protect wildlife, including the creation of new nature reserves and the protection of animals' natural habitats.

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Illustrations and concept maps for Operators

The best method to disseminate the concepts of Environmental Sustainability and the hypothetical strategies for the application of the concepts expressed so far in the practical act of the local areas is to educate the Operators. They are assumed to involve other targets to represent the situational and action framework regarding preservation and respect for the environment conceptually.

As we have highlighted, each local context has its own specificities, problems, situations and solutions to the common problem of environmental sustainability, so the conceptual mapping of the best path can only arise from the accurate and in-depth analysis of its local dimension. All thanks to an individual or a collaborative brainstorming.

What the Operator should initially ask himself:

- Where should I start?
- Where do I want to go?
- What tools can I use to develop the path?
- What obstacles can I find along the way?
- How can I carry out the course in the most effective and concrete way?
- How long do I need to make it?

These initial questions are the basis for mapping the starting situation and the destination (or objective) of arrival in an almost cartographic way, and for defining the travel route and route: this therefore presupposes an accurate analysis of the context, with a survey of Strengths, Weaknesses, Opportunities and Threats according to a real S.W.O.T. matrix.

This initial analysis can open up initially unexpected reasoning and actions, or completely overturn goals and plans, to be deepened because in addition to increasing knowledge of the field, they can provide tools and ways to advance on the path.

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Example 1: The problem of pollution on the beaches of a specific location

- **Where should I start?**

Analysis of the problem and the reference area: every beach in my area has a problem of soil pollution. Waste of all kinds, especially plastics, litters the coast, and lately areas that until a few years ago not still so affected by the problem.

- **Where do I want to go?**

The goal: to improve the pollution situation on the coastline in my area and to clean the beaches.

- **What tools can I use to develop the path?**
- **What obstacles can I find along the way?**

Tools and Threats: this is where the use of an effective analysis tool such as the S.W.O.T. (Strength, Weakness, Opportunities, Threatments) matrix comes into play. This graphic matrix, usually used in fields such as marketing and economics, breaks down an element into the aspects of the object itself (Strengths and Weaknesses) and allows an analysis of the characteristics of the context that influence the existence of the same object of analysis (Opportunities and Threats). It often happens that some intrinsic qualities of the element of analysis or of the context simultaneously belong to both strengths and weaknesses, or both opportunities and threats.

- **Strengths**: the beaches in the area are medium-sized and therefore not difficult to control. Monitoring them through automatic systems (cameras, control stations) or human systems (control and cleaning groups) is not entirely feasible and would require a limited expense compared to other contexts. In addition, the beaches have a different orientation with respect to the currents of the sea towards the coast, which can facilitate the possible identification of waste coming from the sea rather than that thrown directly on the beach. The access points to the beaches are mostly narrow in size (many coves) and therefore the goers are easily identifiable and countable.
- **Weakness**: In the various coves and beaches, there are few containers for waste, so it is not easy to throw them away. Increasing the number of waste collection points would encourage their use. Alternatively, each of the beaches is subject to air currents of intense intensity, so due to some

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gusts of wind, even properly collected garbage (in particular paper and plastic) can disperse everywhere.

- **Opportunities:** beaches are not very isolated from the local context, so there are commercial activities, such as clubs and shops, and homes within walking distance. This suggests that the inhabitants and those who work in the surrounding areas to keep the context clean and beautiful could be interested in environmental matter. Being on the edge of the residential context, there are streets and points where the waste collection carried out by the municipality can easily take place, with routes and moments that are easy to define for motorized waste collection vehicles. The influx of tourists during spring and especially summer is economically and socially relevant for local institutions, and this can lead to specific attention to the problem so as not to affect incoming and the reputation of the place.

- **Threats:** beaches are not very isolated from the local context, so there are commercial activities, such as clubs and shops, and homes within walking distance. This can mean that most of the waste comes directly from these entities, and has a direct impact on beach pollution. During the summer, when there is the highest number of turnouts, the waste collection shifts arranged by the municipality are the same as the ones in other times of the year. This translates into an exponential increase for waste that flows into the collection points, with ease of dispersion of the same. The establishments overlooking the beaches do not carry out service directly on the beach, and this may mean that instead of bringing back bottles, glasses, or containers provided to customers, the staff of the premises leave the task of disposing of waste to individual customers.

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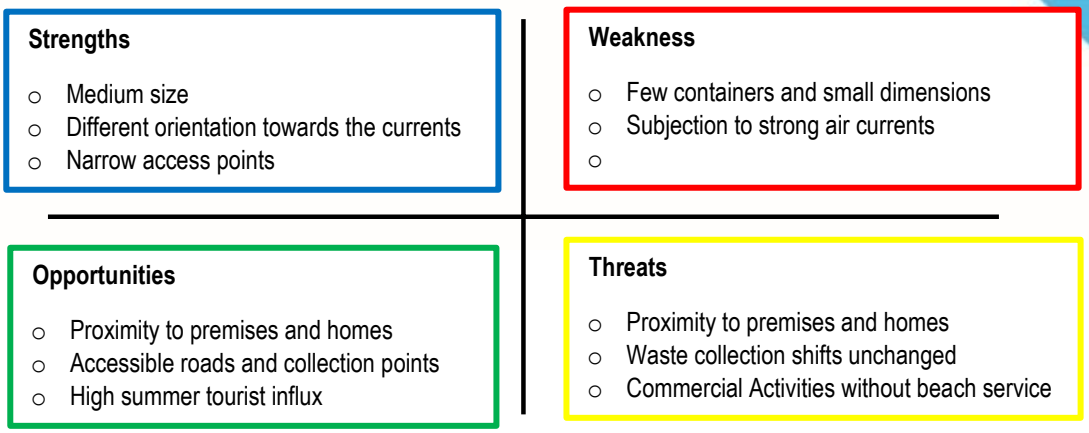

- **How can I carry out the course in the most effective and concrete way?**
  Practical actions to solve the critical issues analyzed and highlighted above:
  - Monitoring through human and automatic systems: involve local institutions and the same commercial activities to contribute to the provision of continuous monitoring tools to verify the actions of beach goers. This can be even easier given the narrow access points to the beaches, so with just a few tools or stakeout points, entrances and exits can be checked.
  - Thanks to these same tools and by combining the data with analysis of currents and pollution rates at various times, it is possible to determine how much waste arrives from visitors by land and how much from sea currents, to understand well which of the 2 areas is best to act on to educate people to respect beaches and seas.
  - In this way, it is also possible to involve educational institutions and dissemination groups to try to provide information and methods of behavior for a civic education of respect for the environment, increasing awareness of the environment.
  - Increase the number of waste collection points on the beaches to encourage and facilitate their use, also using larger containers to prevent waste from overflowing and dispersing. Together with this, for example, provide visitors with free paper ashtrays and organic containers for the disposal of butts, containers and small waste in general, already upon entry to the beach.

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- Involve business owners and inhabitants of maritime areas to share a plan of conduct to provide less product packaging, recyclable, and educate these specific targets on good practices towards the ecological context. Institutions can also be involved in tighter checks on these individuals to ensure the following of those good practices. With this in mind, the inhabitants could also be involved in moments of beach cleaning, moments of spontaneous meeting of groups of subjects to clean practically the coast.
- Push local institutions to better implement and organize waste collection systems during the summer period, dedicating more resources in this sense and thus increasing vehicles, men and waste collection times.
- Involve the institutions by highlighting the economic return given by a correct environmental management of the sea and beaches, which would attract and maintain a good level of tourist turnout and a good spin-off to the areas.

- **How long do I need to make it?**
  Period of intervention and implementation: to support all these initiatives, given the subjects to be involved and the paths to implement, it may require a medium-long term horizon, quantifiable in at least 1 year. Depending on the interventions proposed, some actions can be organised and carried out over a period of 1 month, others over two or more months.

The one proposed here is just one of the various types of concept mapping that Operators and anyone else can use or recreate from scratch. The power of the proposed methodology is based on its heterogeneous applicability in different areas and in all contexts, and based on the logical reasoning behind it, which from observation and analysis of the context can lead to the development of effective strategies that can be shared with different stakeholders.

Through some free online tools (e.g. *Miro*[32]) it is possible to structure a collaborative mental and conceptual mapping around all themes and in all graphic styles, according to multiple schemes and diagrams that can facilitate brainstorming and analysis of information according to different contexts and areas. The one below, created during a collaborative session between several subjects around the above theme:

32 https://miro.com/

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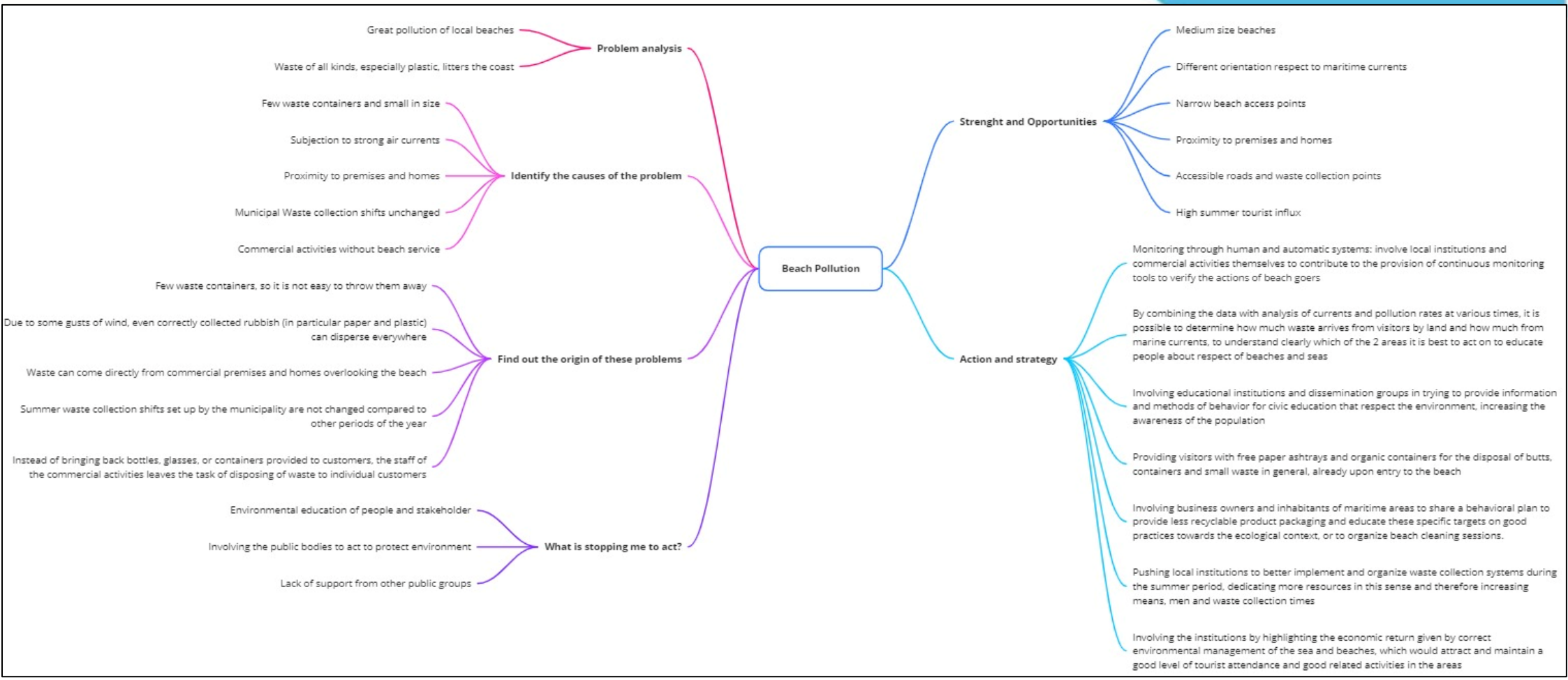

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