



**NBS  
EduWORLD**

Nature-based Solutions  
**Education Flipbook**

*Learning from  
NBS EduSystems  
inspiring initiatives*

[nbseduworld.eu](https://nbseduworld.eu)



# Imprint

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**Abstract:** The aim of this document is to be a user-friendly NBS education resource with a major focus on place-based non-formal education, to inspire and bring valuable lessons coming from concrete NBS education initiatives to a broad audience. It brings an overview of NBS education resources, tools, success factors (enabling actor constellations and processes) employed in NBS EduSystems.

**Keywords:** Nature-Based Solutions (NBS), Education, Place-Based



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# Executive Summary

Nature-based solutions (NBS) have gained solid ground in urban planning and design over the last decade. However, NBS education is still in a nascent stage and thus there is a gap in knowledge, skills and awareness of younger generations to be prepared to support mainstreaming NBS in all sectors and scales. To ensure that the relevance of NBS education is understood and NBS Education is proliferated in educational spheres, there is a need for highlighting the best practices and stories.

In this Flipbook, we open with an introduction ([Chapter 1](#)) to what constitutes NBS, why NBS education has an immense role to play, and what are the policies supporting it. We further introduce the three 3 NBS demonstrators (Paris, Offaly and Almada), which represent the three different ecosystems (urban, rural and coastal) engaged with educational activities about NBS. We then situate the project background (in [Chapter 2](#)) to help readers to understand the scope of the work within the project for promoting NBS in education. Following the project background, we divulge into two questions, which you might have in mind when reading this [Chapter 3](#): Why this Flipbook? And [Chapter 4](#): Who is this Flipbook for? These chapters help understand the relevance and target audiences for such a novel approach to bringing to fore the education cases from our NBS demonstrators.

From there on, we get to the heart of the Flipbook – the NBS EduSystems ([Chapter 5](#)), which explains how we conceptualise the term

and what it means to work within the confines of the NBS EduSystems, providing fertile ground (explicitly and in abstract terms) to test, revise and replicate NBS implementation together with local communities and specifically those within the education sphere. We then move on to Learnings from our inspiring NBS EduSystems ([Chapter 6](#)), where we unpack the cases for a closer and deeper look into our three NBS demonstrators. While the cases from NBS EduSystems are about place-based non-formal education, [Chapter 7](#) brings inspiring NBS education initiatives within the school environment, compiling a set of additional resources that can support and inspire educators to start their journey on NBS education. To wrap up the Flipbook, we have [Chapter 8](#) which provides reflections and ways forward.

This Flipbook is based on several methodologies undertaken within the project to gather knowledge. Desk research for relevant terminologies and explanations, local Mini-workshops within the NBS demonstrators (Paris, Offaly, Almada) and case study analysis are the main source of information for NBS EduSystems and the inspiring stories that we tell from the experiences of the NBS demonstrators within the project, but also gathered over a long time working in the field of NBS.



# 1. Introduction



As we face the twin crises of biodiversity loss and climate change, it is becoming increasingly clear that to thrive as a society we need to work with nature, rather than against it. In this sense, Nature-based Solutions (NBS) are a promising approach that harness the power of nature to address a wide range of societal challenges. This can include a diverse set of initiatives, covering different scales – from restoring and managing ecosystems to implementing green facades. By working with natural systems and processes, we can create solutions for a more sustainable, more resilient, and more equitable future for all.

As an “umbrella” notion that encompasses a wide range of approaches applied in different scales and contexts ie. biodiversity conservation,

climate change adaptation and mitigation, sustainable agriculture, water management, urban planning, and disaster risk reduction, among others, the concept is often misused, leading to confusion, and misunderstanding of what NBS really are, and what they can and cannot do. To be qualified as NBS, a solution must benefit biodiversity, support the delivery of a range of ecosystem services, and be implemented in a systemic and integrated manner. By systemic and integrated we mean looking at the broader context in which the NBS will be implemented and considering the social, economic, and environmental factors that may affect its success in [adapting or mitigating to climate change or supporting the halting of biodiversity loss](#) (IUCN, 2020)<sup>1</sup>.



Source: European Commission 2021

Directorate-General for Research and Innovation, Evaluating the impact of nature-based solutions : a handbook for practitioners, Publications Office of the European Union, 2021, <https://data.europa.eu/doi/10.2777/244577>

<sup>1</sup> IUCN (2020). Global Standard for Nature-based Solutions. A user-friendly framework for the verification, design and scaling up of NbS. First edition. Gland, Switzerland: IUCN.



Understanding the social and cultural context of the area where NBS is to be implemented, identifying key stakeholders and their interests, assessing the potential impacts and trade-off of the NBS are fundamental steps in designing and implementing such solutions. Moreover, design, implementation and maintenance should be done in an inclusive and collaborative process, engaging both relevant stakeholders and marginalized groups. In this sense, as a professional field, the skills and competences needed for NBS are diverse (i.e. interdisciplinary knowledge, project management, data analysis and visualization, collaboration and partnership, innovation and entrepreneurship, policy and advocacy) and require individuals with a range of expertise and knowledge to work together effectively.

In addition, NBS are seen as an opportunity to foster a Nature-Positive Economy, creating a new generation of jobs directly related to a regenerative and sustainable agenda either in cities or regions, as well as in infrastructure sectors, such as energy and mobility, and industry (e.g. food production). In this sense, the European Union has recognized the importance of reskilling and upskilling to foster a [Nature Positive Economy](#), and one of key areas of focus is NBS education. European efforts in this regard aim to equip individuals with the necessary knowledge, skills and competences to address environmental and societal challenges and promote nature positive transitions through nature-based approaches.

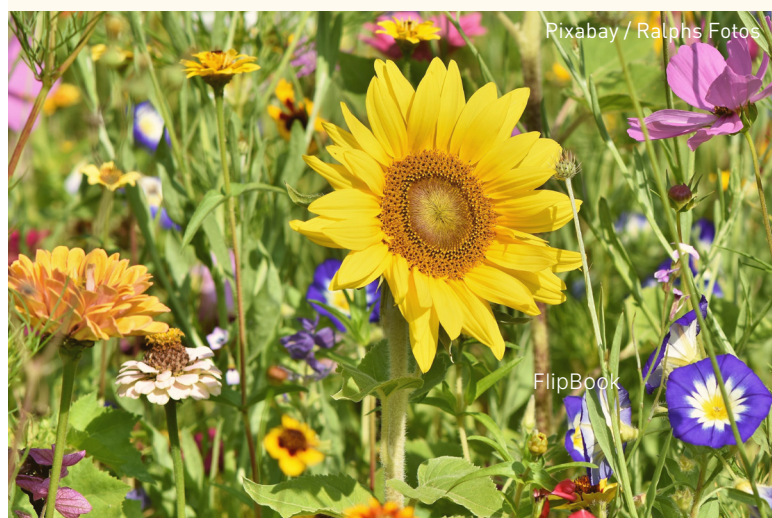
Under this scenario, NBS education plays a crucial role. It emphasizes the understanding, application, and integration of nature's potential in tackling societal and environmental issues, while encompassing a multidisciplinary approach. It is essential to educate all persons, from current leaders and decision-makers to younger generations, about the causes and impacts of ecosystems degradation and climate change and to equip them with the knowledge and skills to shift our current trajectory towards one of a sustainable and resilient future. Education can help address the biodiversity-climate crisis through awareness raising, fostering sustainable behaviours and environmental

## The European Commission defines NBS as

*"Solutions that are inspired and supported by nature, which are cost-effective, simultaneously provide environmental, social and economic benefits and help build resilience. Such solutions bring more, and more diverse, nature and natural features and processes into cities, landscapes and seascapes, through locally adapted, resource-efficient and systemic interventions. Nature-based solutions must therefore benefit biodiversity and support the delivery of a range of ecosystem services."*

## The European Commission defines Nature Positive Economy as

*"an economy that enhances biodiversity and the services ecosystems provide, reversing degradation, and promoting the sustainable use of natural resources, while contributing to economic development, social well-being, and the resilience of the society."*



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FlipBook

citizenship (see Loureiro, 2002<sup>2</sup> and Parra et al, 2020<sup>3</sup>), as well as developing competences, skills and encouraging innovation needed to develop sustainable solutions (Bianchi et al, 2022<sup>4</sup>).

For those reasons, NBS education, along with [Green Competences](#) and [Education for](#)

[Environmental Sustainability](#)<sup>5</sup> must take higher prominence in Europe and direct education and skilling policies and initiatives.

And what are Green Competences & Education for Environmental Sustainability? Find it in the box below!

### The GreenComp framework,

as defined by the European Commission, refers to a set of competences or skills required to drive sustainability in various sectors, particularly in the context of the European Green Deal. GreenComp encompasses a wide range of skills, including understanding sustainable development principles, assessing environmental impacts, implementing eco-friendly practices, promoting circular economy models, utilizing renewable energy sources, and developing innovative solutions to address environmental challenges. The framework aims to ensure that individuals and businesses have the necessary competences to actively participate in and support the transition towards a greener and more sustainable future.

### Education for Environmental Sustainability,

according to the European Commission, refers to a holistic approach to education that promotes knowledge, skills, values, and attitudes necessary for individuals to understand and address environmental challenges. It aims to foster environmental literacy, awareness, and responsible behaviors, enabling individuals to make informed decisions and take sustainable actions in their personal lives, communities, and professional endeavors. This form of education emphasizes the interconnectedness of environmental, social, and economic dimensions, encouraging critical thinking, problem-solving, and active engagement in sustainability issues. Ultimately, Education for Environmental Sustainability seeks to empower individuals to become agents of positive change and contribute to a greener and more sustainable future.

<sup>2</sup> Carlos Frederico Loureiro. 2002. Educacao Ambiental: repensando espacios de cidadania. Cortez Editora.

<sup>3</sup> Parra, G. et al. (2020). Education for Environmental Citizenship and Education for Sustainability. In: et al. Conceptualizing Environmental Citizenship for 21st Century Education. Environmental Discourses in Science Education, vol 4. Springer, Cham. [https://doi.org/10.1007/978-3-030-20249-1\\_10](https://doi.org/10.1007/978-3-030-20249-1_10)

<sup>4</sup> Bianchi, G., Pisiotis, U. and Cabrera Giraldez, M., GreenComp The European sustainability competence framework, Punie, Y. and Bacigalupo, M. editor(s), EUR 30955 EN, Publications Office of the European Union, Luxembourg, 2022, ISBN 978-92-76-46485-3, doi:10.2760/13286, JRC128040.

<sup>5</sup> European Commission, Directorate-General for Education, Youth, Sport and Culture, Finlayson, A., Billon, N., Tasiopoulou, E. et al., Education for environmental sustainability – Policies and approaches in European Union Member States: executive summary, Finlayson, A.(editor), Billon, N.(editor), Tasiopoulou, E.(editor), Siarova, H.(editor), Pribušis, K.(editor), Gras-Velazquez, A.(editor), Bajorinaitė, M.(editor), Mulvik, I.(editor), Fronza, V.(editor), Sabaliauskas, E.(editor), Vežikauskaitė, J.(editor), Disterheft, A.(editor), Publications Office of the European Union, 2022, <https://data.europa.eu/doi/10.2766/51869>

Below you can see an illustration of the twelve competences organised into four areas, as provided by the GreenComp framework. This framework has been provided by the European Commission to advance a common understanding of what sustainability as a competence entails, towards which goal, for all ages and types of learning.



Source: Bianchi, G et al (2022)

Bianchi, G., Pisiotis, U. and Cabrera Giraldez, M., GreenComp The European sustainability competence framework, Punie, Y. and Bacigalupo, M. editor(s), EUR 30955 EN, Publications Office of the European Union, Luxembourg, 2022, ISBN 978-92-76-46485-3, doi:10.2760/13286, JRC128040.

EES and NBS education activities can be promoted either in formal or non-formal settings. Non-formal initiatives can be implemented by a wide range of actors, i.e public officials, communities, civil society, companies, or even lead by an engaged individual. Education organisations also engage in non-formal NBS education, particularly when applying a **Whole School Approach** as a framework to support and enhance the connections with the community and to provide a clear vision of a school towards sustainable development and EES. As stated by [Tibury & Galvin, 2022](#)<sup>6</sup>, a Whole-School Approach to sustainability seeks: “to embed learning for environmental sustainability across the institution”. It adopts a systemic view of education, creating opportunities for living

## Definition of the Whole-School Approach (WSA)

The Whole School Approach is a comprehensive strategy that involves all aspects of a school community to promote the health, wellbeing, and academic success of students. It is implemented by bringing together different components of a school community, including administrators, teachers, students, parents, and staff, to work collaboratively towards creating a safe and supportive learning environment. The approach also emphasizes the importance of partnerships with external organizations and agencies to address issues such as mental health, nutrition, and physical activity, and to promote community engagement and empowerment. (Tibury & Galvin, 2022)

<sup>6</sup> Tibury, D., Galvin, C. 2022. Input Paper: A Whole School Approach to Learning for Environmental Sustainability. Expert briefing paper in support of the first meeting of the EU Working Group Schools: Learning for Sustainability. European Commission, DG Education, Youth, Sport and Culture.



and learning sustainability across the education environment.” Such an approach connecting formal and non-formal education set a playground to test innovative pedagogies, introduce and link innovative topics to the curriculum and provide opportunities for Continuous Professional Development for the entire school community.

When not explicitly aiming at skill building, non-formal NBS education initiatives are in general part of a major project or goal, being a policy, the implementation of a project or a collective action. Non-formal education activities are a relevant step for building public awareness, social mobilization and citizen engagement. In the case of EES, long term educational activities can also be seen as a political arena, a tool for promoting inclusion and challenging business-as-usual development narratives (Quintas, 2004<sup>7</sup>).

This Flipbook presents long term place-based non-formal NBS education initiatives promoted

by three public organisations: (i) Museum National d’Histoire Naturelle (MNHN); (ii) Offaly County Council (OCC); and (iii) Municipio de Almada (CMA). In addition, other four inspiring initiatives across Europe are show cased. With this palette of initiatives, we seek to illustrate a diversity of educational settings (biodiversity monitoring through citizen science, upskilling program for sustainable transition, and participatory planning for coastal resilience), tackling different audiences (school kids and youth, adults, and communities). Moreover, this palette reflects on NBS education initiatives not only in urban, but also rural and coastal environments, filling a major gap in terms of NBS educational resources.

<sup>7</sup> Quintas, J. S. (2004). Educacao no processo de gestao ambiental: Uma proposta de educacao ambiental transformadora e emancipatória. In P. P. Layrargues (Ed.), *Identities da educacao ambiental brasileira* (pp. 113-140). Brasília: Ministério do Meio Ambiente, Diretoria de Educacao Ambiental.



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## 2. *Project Background*

NBS EduWORLD is funded by the European Union's Horizon Europe programme blending NBS and education topics. The project is run by a unique Consortium, bringing together researchers, educators, NBS practitioners, non-profit organisations, municipalities, a Ministry, a performing arts organisation and a sports community network, all united around the goal of creating a community of NBS in education for all and accessible to all.

The overall objective of NBS EduWORLD is to nurture an NBS literate society, supporting a just transition to a sustainable future. For this, NBS EduWORLD facilitates synergies between NBS professionals and education providers and ensures free and easy access to NBS knowledge and resources for all. In addition, NBS EduWORLD aims to summarise the state of play of NBS education in Europe and evaluate the initiatives already in place, proposing inspiring and creative paths to expand and replicate such initiatives.

We learn from successful NBS education initiatives, across Europe, and support the testing and improvement of NBS education initiatives in other areas through peer-to-peer learning. Meanwhile, the project promotes training and exchange opportunities for educators to engage with NBS practitioners other educators and various stakeholders from the general public, industry members and policy makers, and promotes NBS as a viable career prospect for European citizens.

To advance and learn from place-based non-formal education initiatives, NBS EduWORLD looks into local pilots from urban, rural, and coastal areas – the so-called NBS EduSystems. Within these sites, the project identifies, explores, tests and replicates enabling conditions and success factors related to governance structure, policy instruments and co-production processes that facilitate the development of local education initiatives, including activities and educational resources. Partners will work with innovative NBS education activities on the ground in. These activities will empower and stimulate local communities to co-create NBS and build capacity to facilitate grassroots initiatives on climate change and environmental protection developed based on the needs, challenges, and values of community – all to engender a just and inclusive sustainability transition that leaves no-one behind. As an added value to the pilots, the project will facilitate the expansion of their local educational network, mapping and promoting synergies with other local actors in each NBS EduSystem.

More specifically in relation to this Flipbook, the project aims to increase understanding of value and benefits of NBS education for rural, coastal, and urban communities through the experiences Almada, Offaly and Paris NBS EduSystems. Curious to learn more about the NBS EduSystems? Take a closer look on [Chapter 5](#) of this Flipbook.





## 3. *Why this Flipbook?*

This Flipbook provides an alternative to traditional reports about NBS education. By using a flipbook format, the information can be presented in an engaging way that is more likely to capture the attention of the target audience. Secondly, the Flipbook addresses the absence of NBS education landscape content by focusing on the ground initiatives on rural and coastal ecosystems, along with urban environments. This ensures that the information presented is relevant and pertinent to the local context, which can increase the likelihood of successful implementation and support scaling up of similar solutions.

The Flipbook provides concrete examples of how NBS can be implemented in different contexts and settings. By showcasing real-world examples from partner cities and regions in diverse ecosystems, the Flipbook provides a wealth of information and ideas for formal and non-formal educators who may be interested in incorporating NBS into their practice. This can help to inspire creativity and innovation and can also help to build a sense of community around the issue of environmental sustainability.

It can serve as a valuable tool for raising awareness about the benefits and multifunctionalities of NBS. This can be

especially important in communities where NBS may be less well-known or understood, and where there may be resistance to new or innovative approaches towards its adoption. In fact, the Flipbook can help to develop a sense of encouragement and continued good work among cities and regions that have implemented successful NBS interventions. By showcasing their success stories in a high-quality, visually appealing format, the Flipbook can help celebrate the hard work and dedication of local stakeholders and can help to build momentum for further NBS initiatives.

Finally, the Flipbook can serve as a model for other communities and organizations that are interested in promoting NBS education. By demonstrating the value of sharing success stories and best practices, the Flipbook can help to inspire others to develop similar resources and to build networks of collaboration and support. In sum, the Flipbook is an essential resource for anyone interested in promoting NBS education and building a more sustainable future for all. By showcasing inspiring stories and lessons learnt through reflections from the NBS EduWORLD project, the Flipbook provides a powerful tool for educating, inspiring, and engaging students, educators, and the wider community.





## 4. *Who is this Flipbook for?*

One of the main goals of this Flipbook is to be a user-friendly NBS education resource with a major focus on place-based non-formal education. As such, we aim to inspire and bring valuable lessons to a broad audience, ranging from NBS professionals, public authorities and teachers to the wide public interested on the topics of NBS, biodiversity, sustainability, and education. The stories and lessons brought by this Flipbook are particularly relevant to public officials, policy makers, non-formal place-based education providers (ie. Museums, and NGOs), teachers aiming at developing formal

and non-formal education projects, school leaders, the education community, NBS practitioners (such as landscape planners, urban architects, ecologist, sociologist), and Ministries of Education.

This resource also presents a sound extract of the best practices on NBS education, mostly conducted with the support of EU funding in manifold NBS projects. For this reason, this Flipbook is a suitable reference material for existing and upcoming EU projects related to NBS and Education, and funding agencies.



Unsplash / Juliane Liebermann





# 5. *NBS EduSystems*

NBS EduSystems can be said to comprise of the site/area within an ecosystem where and about which education takes place. The NBS EduSystems can be compared to existing concepts of experimentation with communities, such as living labs or site specific interventions, place-making etc. Similar to these concepts, alongside the physical component, there is also the human component involved in the NBS EduSystems, which shapes the narrative on including and promoting NBS in educational spheres, formal, non-formal and informal.

To learn, experiment and replicate best practices, our project promotes on the ground implementation of NBS education initiatives in urban, rural and coastal NBS EduSystems through a three-tier approach: Tier 1 - experienced partners with consolidated and impactful NBS Education initiatives; Tier 2 - partners that are keen to implement NBS education initiatives and want to learn from the best practices; and Tier 3 - partners that will be later onboarded to implement NBS Education initiatives, inspired by the learning from Tier 1 and Tier 2. Through regular exchange and peer-to-peer learning activities, Tier-1, Tier-2 and Tier-3 NBS EduSystems will work together testing, refining and expanding new knowledge.

Within this process, this Flipbook is one step towards knowledge generation based on the best practices identified in Tier 1 NBS EduSystems, namely in the municipalities of Paris, Offaly and Almada. It unpacks the main enabling conditions allowing fertile grounds for upscaling and further replication of non-formal NBS Education best practices. To identify the main roadblocks of those three NBS EduSystems we conducted surveys and local workshops exploring existing initiatives, experiences of the stakeholders, as well as impacts and challenges of the NBS education initiatives.

A survey addressing our NBS EduSystem was conducted among the Tier-1 partners aimed at broadly identifying NBS Education formats, relevant stakeholders, societal challenges addressed, supporting policy instruments, main impacts, success factors and roadblocks, replicability potential of the initiative as well as future needs. To supplement, the partners also conducted local workshops aimed at sharing information about the project, exchanging the participants' experiences with NBS, gathering needs and understanding gaps, successes, and hurdles in providing NBS education, potential collaboration opportunities and future plans in that direction. Get to know more about Almada, Offaly and Paris NBS EduSystems below!





# 6. *Learning from our inspiring NBS EduSystems*

In this chapter you will learn about our experienced partners and how they set their NBS education initiatives. To convey the message in a Flipbook format we use a narrative approach. The narrative for each case was built based on the survey and workshop results, as well as on our partners' case study reports to be published by NBS EduWORLD in [OPPLA](#) NBS Case Studies repository.

## 6.1. Almada

### Initiatives and activities in Almada relating to NBS education

Since 2015, the municipality of Almada holds regular guided tours for Natural Heritage Interpretation and for the [ReDuna project](#) with the goal to promote environmental education, teach environmental interpretation and the importance of ecosystems services, and promote the appreciation of the natural heritage. The guided tours for Natural Heritage Interpretation are led by the Camara Municipal de Almada, following the Almada Education Strategy for Sustainability. The ReDuna project, as coastal ecosystem restoration program, is led by the Almada City council and the Territorial Enhancement Operational Programme - POVT and underpinned by the Almada Climate Plan. In addition, the Almada Town Hall organizes an annual environment event in May, together with Biodiversity4all aligned with the Almada Education Strategy for Sustainability.

In general, the above educational initiatives seek to engage with local partners and communities and the activities are open to school pupils as well to the wider public. Those initiatives mostly attract middle and upper class participants, nevertheless, the guided tours addressing

schools can reach out to students coming from marginalized zones, particularly when widely disseminated. In addition, the NBS education initiatives, when related to NBS implementation, such as dune ecosystem restoration have direct positive impacts on dwellers from marginalized areas, enhancing resilience against extreme weather events on the coast side. The direct contact of the public and the pupils with experts in the topic leads to a high level of engagement. To be able to upscale the initiatives, however, a higher number of qualified skilled professionals in the fields of NBS are needed.

### **Almada flag initiative: The ReDuna project - Ecological restoration of sand dunes at São João da Caparica and Cova do Vapor beaches**

Type of Ecosystem: coastal area

Almada is a coastal county with a 13km long coastline on the Atlantic shore, constituted mostly by sand beaches with dune ecosystems. The bathing area of Costa da Caparica, one of the most sought-after in Portugal by beach-goers, is visited every year by 8 million tourists during the summer months. However, due to rapid sea-level rise, the area's current coastline regression puts





Pixabay / Al Kalenski

in danger tourist services and the existing private infrastructure, making coastal protection a high priority in this region. The areas of São João da Caparica and Cova do Vapor, adjacent to the Tagus River mouth, are particularly at risk and more susceptible to sea-level rise and severe winter storms, which regularly affect the disadvantaged local communities.

Considering this vulnerability to climate related hazards, the ReDuna project aims to restore the natural capacity of the Almada sand dune ecosystem to healthily respond to natural drivers, enhancing its resilience to sea level rise and storms. As a NBS education approach, the project activities provide an excellent teaching tool to demonstrate, in a practical way, the benefits of nature-based solutions to both residents and visitors of this beach area.

### Community engagement

The ReDuna project established strong community involvement from the very beginning, as the project's design was presented, discussed and defined with engagement of local target groups, who could identify themselves with the project goals and actions from an early stage. The ReDuna project also managed to prove that NBS are useful as complementary actions to artificial beach nourishment to improve ecosystem resilience and provide services as tourism attraction, well-being, nature conservancy and coastal protection. Furthermore, the intervened area of ReDuna has been regularly used as a living lab to showcase the implementation and benefits of NBS in coastal systems, with many guided visits been conducted with groups of interested citizens and school students.





Source: Camara Municipal de Almada

Several relevant stakeholders have been involved in the process, such as students and teachers from different education levels, including universities (who regularly organize field trips to the intervention area to benefit from guided visits by NBS experts from the municipality), other education providers (such as environmental associations and NGOs), policymakers (both local and national), and tourist visitors and residents from the local community.

### Experiences of the local stakeholders with NBS and NBS education

Local authorities, such as the administrative boroughs, civil protection services, maritime delegation and the firefighters' corporation, have had previous contact with NBS solutions mostly through their involvement with the first phase of ReDuna, a dune restoration project which was implemented in some coastal sections of Almada County in 2015, by initiative of Almada Municipality. Apart from that, the experience of local authorities with NBS solutions is limited, and they rely heavily on the technical expertise of municipal staff to conduct these processes.

Most of the environmental and sustainability education local associations, as well as the local informal educators, have previous experience with non-formal NBS education, including in connection with the local ReDuna project since its first phase of implementation. Local residents at Costa da Caparica and Cova do Vapor have first-hand contact with the implementation of NBS in

the coastal dune ecosystem, which happened at their doorstep, and have benefited directly from the positive results of this intervention by becoming acquainted with NBS, as well as being consistently educated by example.

Formal education stakeholders in Almada have limited experience with NBS, particularly in non-university levels, where the subject is not directly mentioned and is only barely approached as part of a broader understanding of sustainability education.

In terms of replication, a Portuguese landscape and environmental restoration professional company (SILVAPOR), involved in the ReDuna project in Costa da Caparica, is contributing to expand the project to another site (Cova do Vapor) and implementing similar dune restoration projects in other areas such as in Guincho beach.

### Major impacts in imparting education and awareness raising for NBS and Environmental sustainability education

- Pivotal importance of ReDuna project as a demonstrator of NBS as valuable options to respond to practical problems affecting everyday lives of local residents
- Engagement of local residents in the support, maintenance and expansion of ReDuna project to Cova do Vapor and adjacent areas
- Creation of a network of contacts and partnerships between formal and informal stakeholders relevant to the environmental and social development of the area
- Education of local authorities and government to the importance of using NBS as a substitute of more traditional and expensive solutions
- Use of ReDuna intervention area as a practical field laboratory for field trip visits from school groups, very effective in demonstrating the benefits of NBS in solving environmental issues



The successful implementation of NBS in projects such as ReDuna makes the benefits of these solutions clearly apparent for anyone visiting the area, thus allowing for it to be used also as an educational tool and adequate demonstrator of best practices in sustainability. The table below illustrates the green competences that this non-formal education initiative can develop on its participants.

**The main perceived gaps in providing NBS or environmental sustainability education**

Overall, the prevailing lack of knowledge and interest of the general public regarding nature conservation issues, usually not at the forefront of people’s concerns, has constituted a major obstacle to any environmental and sustainability education initiatives. This can result in some resistance to accept new and unfamiliar solutions, such as NBS, at least until the positive results of those solutions become apparent, from which point the directly affected population changes its opinion and

fully embraces them. There is, therefore, a noticeable gap between the perception of people who only hear about NBS solutions, who are more reluctant to accept them, and those that experience their results first-hand, fully realizing the benefits of such solutions.

In the case of NBS projects such as ReDuna, medium-scale non-formal education, conducted via expert-guided visits to intervened areas, has proved quite effective in relating the importance of this kind of solutions, whilst large-scale informal education, conducted mostly via informative signage installed at the locations, has fared not so well, partly due to vandalism and lack of regular maintenance.

In coastal beach areas, such as the one intervened by ReDuna, there is also a significant human pressure, with visitors numbered in the thousands, many of which are not aware of the importance of the dunes, and even less of the necessity to restore this ecosystem, and the benefits of doing so through NBS.

GreenComp acquired by participants through ReDuna project education activities

Area	Competence	
Embodying sustainability values	Valuing sustainability	X
	Supporting fairness	
	Promoting nature	X
Embracing complexity in sustainability	Systems thinking	X
	Critical thinking	
	Problem framing	X
Envisioning sustainable futures	Futures literacy	X
	Adaptability	X
	Exploratory thinking	
Acting for sustainability	Political agency	X
	Collective action	X
	Individual initiative	X

Source: Camara Municipal de Almada

Unsplash / Michelle Henderson



## Main obstacles faced

- Low awareness and interest of the general public regarding nature conservation issues, in general not at the forefront of people's concerns and often surpassed by more pressing issues.
- Preference of the general public, local government and authorities for traditional environmental adaptation solutions over NBS, which, albeit, are more expensive, are still perceived as more reliable.
- Low level of involvement and engagement of some local actors and stakeholders with potentially relevant roles, such as owners of beach bars in the case of ReDuna.
- Difficulty in ensuring parallel interventions, such as the resolution of mobility and access problems, which hinder some of the positive education brought about by NBS projects such as ReDuna.
- Lack of flexibility and class time in public school programs of formal education to accommodate for more contents and information relating specifically to NBS.

## Lessons learned

Goals of NBS projects such as ReDuna must be well aligned with local strategies, which enables significant mind-set changes among policy makers. Success of implemented measures, and well-designed communication, is of paramount importance for acceptance by the general public and users of the area.

## Transferability of results

Results obtained through continuous monitoring of the project showed that the restored dune promoted resilience to storms and coastal erosion, attesting that it may constitute a

reliable solution to be implemented elsewhere in similar contexts. Likewise, the educational and awareness raising potential of such NBS intervened areas among the local communities and visiting population has been amply verified and is certainly replicable as a demonstration tool of best practices in sustainability.

## Plans for the future

Having ReDuna primarily as the focus NBS project in Almada, several developments and initiatives are already planned for the future, many of which are also replicable in other situations and projects involving NBS. Engagement of the local community is of paramount importance, for which the creation of a network of "ReDuna Friends" is being considered, including all current partners and stakeholders mobilised through NBS EduWORLD, as well as attracting others that have been less involved, such as the fishermen community and business owners, which will benefit considerably of being educated about NBS.

Extra workshops will be held on different schedules to attend different publics, as for example during the week for schools and teachers and for other entities and public as borough workers. The involvement of other stakeholders in this network, such as specific departments within the municipality and authorities as the Nature Conservation Institute and the regional Police Department, will also bring benefits to the development of the project and allow to expand the scope of education initiatives about NBS.

Actions of non-formal NBS education implemented in ReDuna, which are regularly promoted by Almada Municipality, will become increasingly more frequent and encompassing, particularly during the bathing season, and resorting either to hands-on actions of maintenance with the participation of volunteers, the use of wide-ranging communication strategies via digital apps, as well as the improvement of the installed awareness raising signage.



## 6.2. Paris

### Initiatives and activities in Paris relating to NBS education

The city of Paris has more than ten years of experience in teacher training programs related to the topics of biodiversity and urban environments. Its main initiatives are the Vigie-Nature École, the INPN Espèce (both led by the MNHN), the Aire Éducative and the Formation ARB (both led by the France Biodiversity Officer – ARB). The main impact of this initiative is to provide education resources for teachers that are adequate to the curricula and can be easily adapted to the school environment.

Further, bringing an NBS education perspective to teachers often bursts them to adopt more practical oriented pedagogical activities and diversifies the lessons content. By fostering those changes there is a higher chance of including more disadvantaged groups that might have more difficulties in coping with more traditional teaching methods.

Another flag programme in Paris is the [Cours Oasis](#) (Oasis Schoolyard Programme), led by the Paris City Council. Thought of as an NBS to address heat island effects, the program promotes the transformation of sealed schoolyards in Paris into green public areas accessible to both the school pupils and local communities. Due to the presence of schools in all neighbourhoods and the proximity to potentially vulnerable communities the unsealing and greening schoolyards was the strategy chosen to promote cool areas. This strategy is highly scalable and similar initiatives

are explored in the project [COOLSCHOOLS](#). You can know a bit more about the Oasis Schoolyard Programme in [Chapter 7](#) “Other inspiring initiatives” in this Flipbook.

### Paris MNHN flagship initiative: Vigie-Nature École – citizen science programme on biodiversity and associated actions

Type of Ecosystem: urban areas

Paris region is an area of 12 012 km<sup>2</sup> and 12,21 million inhabitants (2019) located in the northern middle of France. The centre of the region is characterized by a very dense urban area subject to heat-island effect, pollution (air, water, and soil), noise pollution and lack of green spaces. The rest of the region (Peripheral area of the region) is composed of forests and agricultural areas. In these areas, the lack of nature is mostly related to agricultural intensification and urbanisation.

The development of NBS in the area is crucial to deal with the various problems associated with urban development and agricultural transformations. Renaturation is one of the axes Paris programs and a lot of improvement must be noted in this field. In this direction, [Vigie-Nature École](#) is a biodiversity monitoring program, which focus on multiple groups of organisms. The primary goals of this data collection are to provide data to researchers in urban ecology and provide education to children in all the subjects related to biodiversity that can be cover by the MNHN. More recently, the program has been focusing on actions that pupils or children can take to improve both biodiversity and well-being within the schools.



As a teacher training program, the main target audience from Vigie-Nature École are primary and secondary school teachers, with expected benefits for pupils and students as well to other education providers (such as environmental associations, NGO’s and research centres), policy makers (both local and national) and residents from the local community. The table below illustrates the green competences that this non-formal education initiative can develop on its participants.

Education with the Vigie-Nature École program has shown positive effects on the willingness of kids to increase the quantity and the diversity of natural elements within their schools or gardens. Multiple schools are now implementing facilities that favour biodiversity at different scales with effect for example on gender equality (better sharing of the space in courtyards).

Having more habitats for biodiversity within a school is also beneficial to promote gender equality (enabling better space sharing compared to full concrete courtyards that become sport fields only and are often more used by boys). More habitats mean more materials and these materials can lead

to a better motor development and sensitivity for younger children. Observation of biodiversity improves the chances that children can imagine their own NBS. The monitoring of biodiversity can allow children to quantify the effect of the NBS and develop critical thinking.



GreenComp acquired by participants through Vigie-Nature École project education activities

Areas	Competences	
Embodying sustainability values	Valuing sustainability	X
	Supporting fairness	
	Promoting nature	X
Embracing complexity in sustainability	Systems thinking	X
	Critical thinking	
	Problem framing	X
Envisioning sustainable futures	Futures literacy	X
	Adaptability	X
	Exploratory thinking	X
Acting for sustainability, including the competences	Political agency	
	Collective action	X
	Individual initiative	X



All pictures: Muséum national d'Histoire naturelle

Source: Muséum national d'Histoire naturelle



## Experiences of the local stakeholders with NBS and NBS education

In general, NBS education activities in Paris are implemented as part of a project outcome. Most of the mapped stakeholders participate on NBS initiatives, mainly related to renaturation by adding vegetation to the city to mitigate heat island effect (green roofs, depaving, tree plantations etc.).

One relevant local player is the Architecture, Urbanism and Environment Council of Paris - [CAUE 75](#), which supports NBS implementation within schools through training and promotion of renatured and gender equal courtyards. Another relevant stakeholder in the field of NBS education is the [Biodiversity Department of Paris - ARB](#), which organises webinars for all professionals with a focus on biodiversity and renaturation, with a particular attention to the benefits for water management. Through their accumulated experience in the field of NBS education, manifold tools have been developed, and relevant environmental data has been collected and disseminated.

At the MNHN, NBS education project focuses on building pupil skills to monitor biodiversity, to set biodiversity projects, to communicate and

disseminate project goals and results and to advocate with the school administration on the relevance of NBS education activities within the school environment.

## Major impacts in imparting education and awareness raising for NBS and Environmental sustainability education

- NBS education initiatives are an important driver of NBS uptake and implementation in the region of Paris.
- The range of the NBS implemented is now wider and with a clear focus on biodiversity, environmental quality and community building, beyond climate mitigation projects.
- NBS education initiatives promote a broader understanding and uptake of co-design principles in public administration and school communities.

## The main perceived gaps in providing NBS or environmental sustainability education

NBS are not yet perceived as important by some actors. A lot of engineers, politicians and administrative staff feel uncomfortable with the subject or reluctant to its' implementation. In





In addition, training and upskilling of public officials and educators, especially in ecology subjects, are required to achieve more impactful NBS initiatives. This public, however, lacks capacity to engage in capacity building programs. Consequently, the implementation of NBS at the scale of the Paris region faces a gap of qualified work-force. Continuous professional development programs on the fields are turning more popular among French professionals but they are not too common yet.

### Major obstacles faced

- NBS is not yet a commonly used word and therefore NBS education doesn't receive a lot of interest.
- The number of people able to lead NBS education project is low.
- In the relevant services provided by public administration that could benefit from NBS education, executives and employees do not always feel concerned.
- Political and social complexity of the urban planning 'ecosystem' is challenging to navigate to achieve broader NBS acceptance and uptake.
- NBS are multiple and it is difficult to master all its aspects, particularly in terms of monitoring and evaluation of its co-benefits and effectivity in addressing societal challenges.

### Lessons learned

The term Nature-based Solutions is still rarely mentioned in training and capacity building activities promoted by MNHN and its peers, even though the activities are totally consistent with NBS definition. Sustainable development or renaturation are better understood and accepted terms by the persons who benefit from the education.

Besides ecological and technical content, the training programs focus on advocacy, stakeholder engagement and risk management topics to catalyse adherence of more reluctant actors either in the education environment or in the public administration.

### Transferability of results

The project Vigie-Nature École can be directly transferred to neighbouring countries and with some modification of the protocols to the whole Europe. Translation of the specific part on NBS in the different country teaching languages is however mandatory. Tools, results and data can help building NBS education programs and could allow us to extend the results in other region with other issues that NBS could help solve.

### Plans for the future

After the exchanges promoted with local stakeholders, it was identified promising complementary roles from CAUE 75 and ARB. Tapping on each organisation focus and approach, MNHN, with the support of NBS EduWORLD, will explore how to expand their NBS EduSystem, increasing collaboration with the above-mentioned organisations.

As a first action of exploring synergies, the three organisations plan to coordinate their training activities, in terms of syllabus and target audience needs, to optimize training outreach and impact on attendees. Another potential collaboration to be further explored is to co-develop training tools such as serious games and booklets, on which MNHN have stronger expertise.



Dreamstime / Pajda83

## 6.3. Offaly

### Initiatives and activities in Offaly relating to NBS education

Since 2021 Offaly County Council (CoCo) is engaged in promoting regular place-based NBS education activities. The initiatives are supported by different founding partners, such as the National Parks & Wildlife Service - NPWS, the Heritage Council of Ireland, the Offaly CoCo on itself, or community funding. A list of relevant activities is - the Tullamore River Wetland, the Syngefield Planting, the Geashil Swale, the Birr Tree Pits.

The main goal of the activities is to enhance knowledge of biodiversity and NBS also in relation to water management and urban environments. To build collaboration across different local governments departments and share approaches towards NBS, Green Offaly, a countywide non-for-profit enterprise lead the event "Local Futures", successfully engaging different departments and local governments of the county. Moreover, Green Offaly is now promoting the [Green Futures](#) project to deliver educational & training and research programmes aiming at equipping communities, youth and students with the skills and resources for new careers in the context of an emerging nature-positive economy paradigm.

At large, the projects promote public participation by means of co-design, co-implementation, community stewardship and public consultation. The Tullamore River Wetland initiative, for example, engages with a diverse set of stakeholders - Inland Fisheries Ireland, Tullamore Tidy Towns, Local Authority Waters Programme, Offaly Local Community Development Committee - LCDC and has great stewardship of local communities, including financing. Moreover, in collaboration with partners, the project ensured that disadvantaged kids were given the opportunity to participate and experience the NBS project.

Another example is the Birr Tree Pits, where the public was consulted in relation to a NBS design for urban surface water treatment. A common success factor of the place-based education initiatives was that the sites were amenities or areas widely used by the public. In addition, Offaly CoCo works with the perspective of an open government and the citizens have direct contact with the Biodiversity Officer, which creates an environment for closer partnership with communities. All the projects are considered to have high implementation potential.



## Offaly flagship initiative: Lough Boora Discovery Park

Type of Ecosystem: previously extracted peatlands

The Park covers an area of approx. 2,000 hectares with 940 species recorded in one 24hr blitz survey carried out in 2012. The Park also attracts approx. 100,000 visitors each year and is recognized as a prime example of the regeneration of areas previously harvested for peat creating a centre of NBS excellence. The demonstrator project put forward within Offaly as part of NBS EduWorld is Lough Boora Discovery Park. This is a project which initially involved many local stakeholders and commenced approx. 20 years ago to showcase the cultural history and transitional benefits of moving away from extracting peat for use as a fossil fuel. The Discovery Park was the first of its kind within the Midlands Region and most likely the first in Ireland. Feasibility studies are continuing on strategic plans to sustainably expand the park, which continue to involve many local stakeholders.

The ecosystem involved is previously extracted peatlands, used as fossil fuels in locally situated power plants. Over the past 20 years, the park has become a well-established facility providing a network of cycling and walking routes which combine with an award-winning sculpture park inspired by the Park's nature and history. The Park is now one of the Country's most significant nature conservation programmes which has resulted in the successful breeding of the Grey Partridge, Lapwing, Snipe, Woodcock, Sky Lark and Meadow Pipit.

The initial concept of the project was to demonstrate how peat harvested lands could be successfully brought back to nature. The idea was challenged at first as many generations of local people only knew the lands as harvest fields. The peat harvest industry employed many local people and there was a reluctance from many local stakeholders to move away from this local employment opportunity.

However, the Park was first put forward as a pilot site with much engagement with local





people and employees. Many stakeholders were from a rural background and had a deep understanding and appreciation for the land, so they saw the nature and biodiversity benefits of the project. This knowledge was gained informally or handed down from generation to generation. Little to no formal NBS education was available at the commencement of the park project. Tougher engagement followed on the employment and economic benefits of the projects, as many stakeholders were fearful of losing employment opportunities extracting peat. Many meetings were held with stakeholders, and these engagement processes continue today with a view to any sustainable development of the park.

As the initial Park development project has successfully demonstrated the nature-based benefits for the area, the current round of stakeholder engagement is more focused on the economic benefits and opportunities presented by new policy and funding streams.

### The main perceived gaps in providing NBS or environmental sustainability education

Some of the main gaps identified highlighted the need for flexible formal education around NBS. Formal NBS education needs to be part of “lifelong learning”, which continues outside primary/secondary/ 3<sup>rd</sup> level institutions. Smaller, bite sized modules need to be made available, 5-10 ECTS, were individuals can collect ECTS in NBS to achieve an accredited award.

Funding was also mentioned as a gap to NBS education, in so far as properly developed targeted education needs sufficient resources to deliver the message.

The lack of one dedicated acknowledged centre of NBS educational material was discussed as being a “gap” that needs to be filled. Currently there are so many sources of information that there is information overload, and difficulty in determining which information sources can be trusted.

GreenComp acquired by participants through the education activities in the Lough Boora Discovery Park

Areas	Competences	
Embodying sustainability values	Valuing sustainability	X
	Supporting fairness	X
	Promoting nature	X
Embracing complexity in sustainability	Systems thinking	X
	Critical thinking	X
	Problem framing	X
Envisioning sustainable futures	Futures literacy	X
	Adaptability	X
	Exploratory thinking	X
Acting for sustainability, including the competences	Political agency	X
	Collective action	X
	Individual initiative	X

Source: Offaly County Council





Source: Offaly County Council

### Major obstacles faced

EU/National policy has accelerated the halt of peat extraction, which caught many stakeholders by surprise and caused more fear and frustration. Under the Just Transition process, more structured local stakeholder engagement continues across Offaly and the wider region. In fact, there perpetuates also a sense of 'small individual actions don't make a difference' narrative. This is further exacerbated by lack of leadership and misinformation on the issue of halting peat extraction and educating about the benefits for the climate and the society.

### Lessons learnt

In order to fully realise the opportunities now presented, a greater degree of NBS education and awareness is required among all stakeholder, both local policy-makers and project implementers. This is one of the greatest challenges facing the local community. Things are improving in the NBS education field, with many different educators providing training/awareness/education in NBS. The recent workshop promoted through NBS

EduWORLD highlighted the willingness of local schools/teachers/pupils to open themselves up to gaining and providing NBS education.

### Transferability of the results

The lessons learned on the Lough Boora Discovery Park project are very transferrable across the entire Midlands Region of Ireland. Many communities grew up around peat extraction and they are now all facing an abrupt transition away from extraction. NBS can fill the void left on harvested lands, with the right education and awareness provided to relevant stakeholders.

### Plans for the future

In October 2018 a Transition Team was established by Offaly County Council to address the challenges and opportunities presented by the ending of the peat industry. The Team expanded into the Midlands Regional Transition Team (MRTT), with representation from Laois, Longford, Offaly, Westmeath, Roscommon, North Tipperary and Kildare Local Authorities as along with other regional stakeholders, under the auspices of the Midlands Regional Enterprise Plan.

Within the MRTT, there is a specific working group on Education, training and research, which will continue to support the development of current and future skills, hence opening other career pathways and fostering a more sustainable relationship between the communities and nature.



# 7. Other inspiring initiatives

Public officials and state organisations have a central role in implementing place-based and long-term NBS education initiatives. And so do schools! Now that you learned from on the ground successful initiatives implemented by state organizations, let's explore a bit how our project is inspiring schools to promote place-based NBS education activities, engaging with neighbourhood and the community.

## NBS School Living Labs

NBS EduWORLD is implementing Living Labs in nine pilot schools in Greece, combining the perspectives of the Open Schooling and the Whole School Approach. The Whole School Approach engages everyone in a school community working together to help students be healthy, happy and successful learners. Open Schooling, in turn, involves the integration and collaboration with the wider community, including local organizations, parents and neighbours, to create a supportive learning environment for the students while strengthening the connections between the school and its surroundings. Hence, Open Schooling is a term promoted by the European Union that refers to schools as agents of wellbeing (see [Open Schools for Open Societies \(OSOS\)](#), Okanda & Grey 2023<sup>8</sup>).

<sup>8</sup> Okada A., and Gray P., [2023]. "A Climate Change and Sustainability Education Movement: Networks, Open Schooling, and the 'CARE-KNOW-DO' Framework" Sustainability 15, no. 3: 2356. <https://doi.org/10.3390/su15032356>

Based on those two approaches, our NBS EduWORLD Living Labs led by our partner Ellinogermaniki Agogi (EA) will implement NBS education initiatives, addressing their community and neighbourhood challenges in a co-creative process. The idea is to demonstrate how schools can act as agents of change in mobilizing all members of the community and raise awareness of the high value of the NBS concepts.

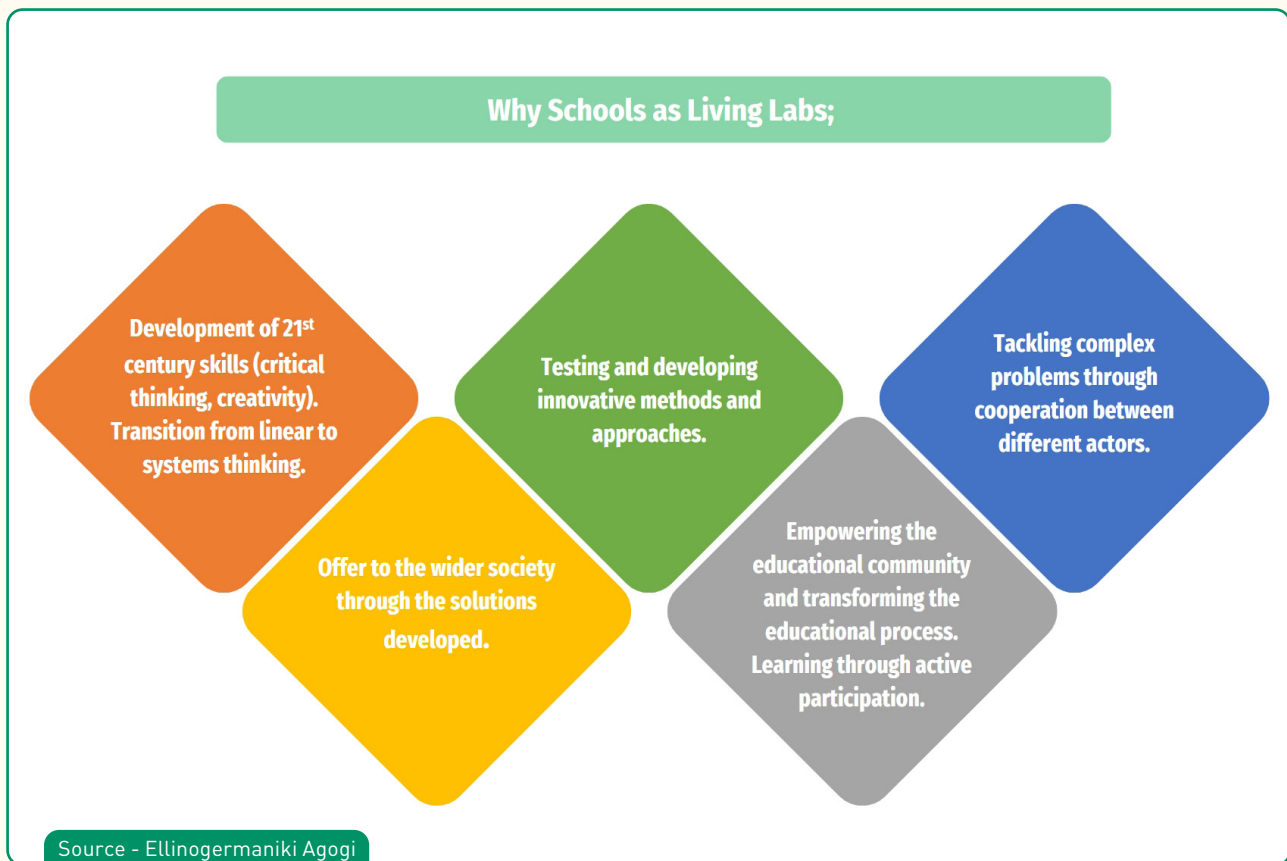
## Definition of the Living Labs concept

Living Labs (LLs) are: *"Open innovation ecosystems in real-life environments using iterative feedback processes throughout a lifecycle approach of an innovation to create sustainable impact."*

They focus on co-creation, rapid prototyping & testing and scaling-up innovations & businesses, providing (different types of) joint-value to the involved stakeholders. Living labs operate as intermediaries/orchestrators among citizens, research organisations, companies and government agencies/levels.

Source: European Network of Living Labs





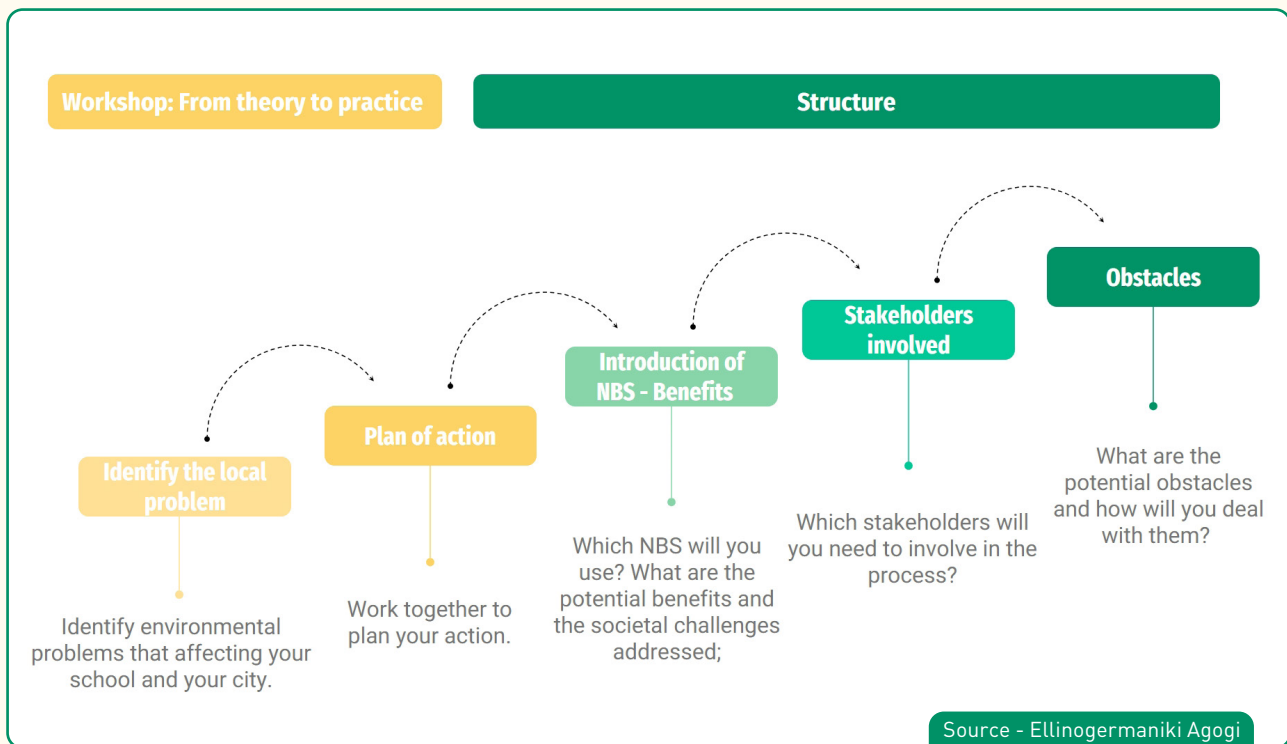
To set the NBS School Living Labs, the project team will work together with school leaders, expert educators, students, and researchers using cooperative and instructional co-design methods embedded in a long-term vision of competence development. The first step taken into this direction are the Visionary Workshops. These series of workshops seek to empower and engage schools and local communities to actively participate in co-creating sustainable solutions to their neighbourhood.

### Other inspiring initiatives in the school environment

Bellow you will find a couple of real-life examples that inspired our project to design the School Living Labs. Get inspired too!

[Paris Oasis Schoolyard Programme](#) – responding to devastating heatwaves, the city of Paris developed the “OASIS – Openness, Adaptation, Sensitisation, Innovation and Social Ties” schoolyard greening programme, that promotes the transformation of schoolyards in Paris into green oases accessible to both the school pupils and local communities. The program is an example of engaging both state organisations and schools into a NBS initiative that addresses the most vulnerable population. Check this [video](#) for more inspiration!

[School Children as Water Scientists in Vuores](#) – employing the citizen science approach, primary school children in Vuores city monitor the water quality and insect biodiversity of nearby ditches and lakes. At the beginning of the



monitoring activities, pupils and teachers were closely mentored by experts from the Tampere Museum of Natural History. Afterwards, the school started to conduct the monitoring independently, reporting the results back to the city. As an inspiring Open School initiative, this program builds skills and competencies both in students and teachers, promotes cross-sectoral integration among different public actors and foster integration of schools, their neighbourhoods and the public management.

**BREATHE Project** – Sprouted from a grass-root initiative at [Hunter’s Bar Infant School](#), municipality of Sheffield, the project main goal is to protect children from air pollution through the employment of green barriers. In collaboration with the University of Sheffield, teachers, pupils, and undergraduate students acquired skills and competences to design, implement, monitor, maintain this NBS. The

initiative flourished to a bigger scientific project that assesses the impacts and evaluates the feasibility for installing green barriers in other schools in Sheffield and in Buenos Aires. The BREATHE Project is a great example of collective action raising from the school community in collaboration with higher education organisation and local actors.

**Sprouting Oslo** - As part of the Sprout Oslo strategy to promote urban agriculture, the city runs an Edible City Living Lab which supports pollinators biodiversity and creates green public spaces. Being integrated in a strategic policy, the Living Lab builds on a long-term perspective that sees NBS as a tool for addressing multiple municipal tasks such as education, recreation, vocational training and social housing. This Living Lab demonstrates the power of NBS in addressing multiple societal challenges and harnessing cross-sector collaboration.

## Additional resources

Now that you walked through those exciting examples, check out for some NBS educational resources that can support you, your organisation and your community in developing its own place-based NBS education initiative. Here you find a tinny compilation of inspiring non-formal and formal educational resources. A more comprehensive list can be found in our [NBS EduDirectory](#).

[Nature-based Solutions Learning Scenarios](#): Educational tool for teachers in the form of learning scenarios to assist and guide educators in integrating NBS resources in formal education. The resources were created by European Schoolnet (EUN), together with PPMI, under the frame of the pilot project “Integrating Nature-Based Solutions in Education” Pilot, funded by the European Commission. [Here](#) you can see an example of the outcomes of the implementation of a Learning Scenario in a school at Santhià, Italy, through an Open School approach.

[Urban Nature Explorer](#): A simulation game to address sustainability challenges through NBS.

[Nature Lab](#): Platform displaying learning resources on environmental sciences to be integrate into youth curriculum.

[Formation en ligne à Vigie-Nature École](#): online training course from Vigie-Nature École participatory science programme. The course explains the principle of participatory science and how to set it up in classrooms.

[URBiNAT NBS Catalogue](#): A catalogue of 40 different NBS easy to tailor for citizens according to their needs and aspirations, and local environmental conditions.

[Competendo - Digital Toolbox](#): A toolbox for democracy learning, digitalization and non-formal education.

[NetworkNature Knowledge Database](#): a compilation of research, policy, projects and market-based resources focused on reporting evidence-based knowledge.





# 8. Reflection and Way Forward

Here we present key reflections and potential ways forward on how to increase the uptake of NBS and how mainstreaming NBS can be supported by education and awareness raising.

Although there is a proliferation of use of the term NBS and rapid implementation through projects is taking place, the term is still not entirely understood. In fact, especially by public administration departments that are not specifically involved in greening and NBS but have interlinkages to it with their work, have little understanding of the benefits and co-benefits. Therefore, coordination and synergies within departments related to urban planning and education to imbibe NBS at the core as a cost-effective and multifunctional solution is key. Moreover, school staff also need to be equipped with the knowledge of NBS and NBS approaches in education, to better impart training activities and exercises for the school pupils. In general, Continuous Professional Development with focus on ecology and biodiversity tailored for different public, such as building environment professionals, teachers, educators and public administration staff could support them in understanding the concept, approaches and the multifunctional nature of NBS.

This also calls for exploring NBS as a professional field in an emerging post-industrial and nature positive economy. There are also growing reskilling opportunities for NBS education

*“With the exception of a few isolated manifestations of resistance to these “new” solutions, the overall conclusion is that the community that better knows the NBS project implemented in their region, are the ones with a deeper understanding of the social and environmental benefits provided by NBS, and are thus more favourable to the implementation of similar solutions elsewhere, confirming that the most effective education results come from practical demonstration.”*

**Almada municipality**

enterprises targeting undergraduates, young professionals and professionals in the field.

All of such measures would support the mainstreaming of NBS in the long run, to not only increase awareness and build capacity but also to prepare future generations to undertake NBS as a better alternative in urban planning and design, supporting biodiversity and nature connectedness. We have also learnt of the significance of co-creation to be at the core of NBS activities ensuring social acceptance, awareness and engagement with NBS in their local context. This would hence garner support from the local populations who are, in the end, the ones to benefit from measures and raised education on NBS.





# Project partners

 European Schoolnet	 PPMi	 Local Governments for Sustainability EUROPE	 CEUS
 Big Van Ciencia	 ΕΛΛΗΝΟΓΕΡΜΑΝΙΚΗ ΑΓΟΓΗ	 EFDN	 REPUBLIC OF TÜRKİYE MINISTRY OF YOUTH AND SPORTS
 Trinity College Dublin Coláiste na Tríonóide, Baile Átha Cliath The University of Dublin	 VERDE E MOLDOVA	 CMA CÂMARA MUNICIPAL DE ALMADA	 Horizon Nua
 MUSEUM NAL HIST NATURELE	 COMUNE DI GENOVA	 natural solutions	 Comhairle Chontae Uíbh Fhailí Offaly County Council



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