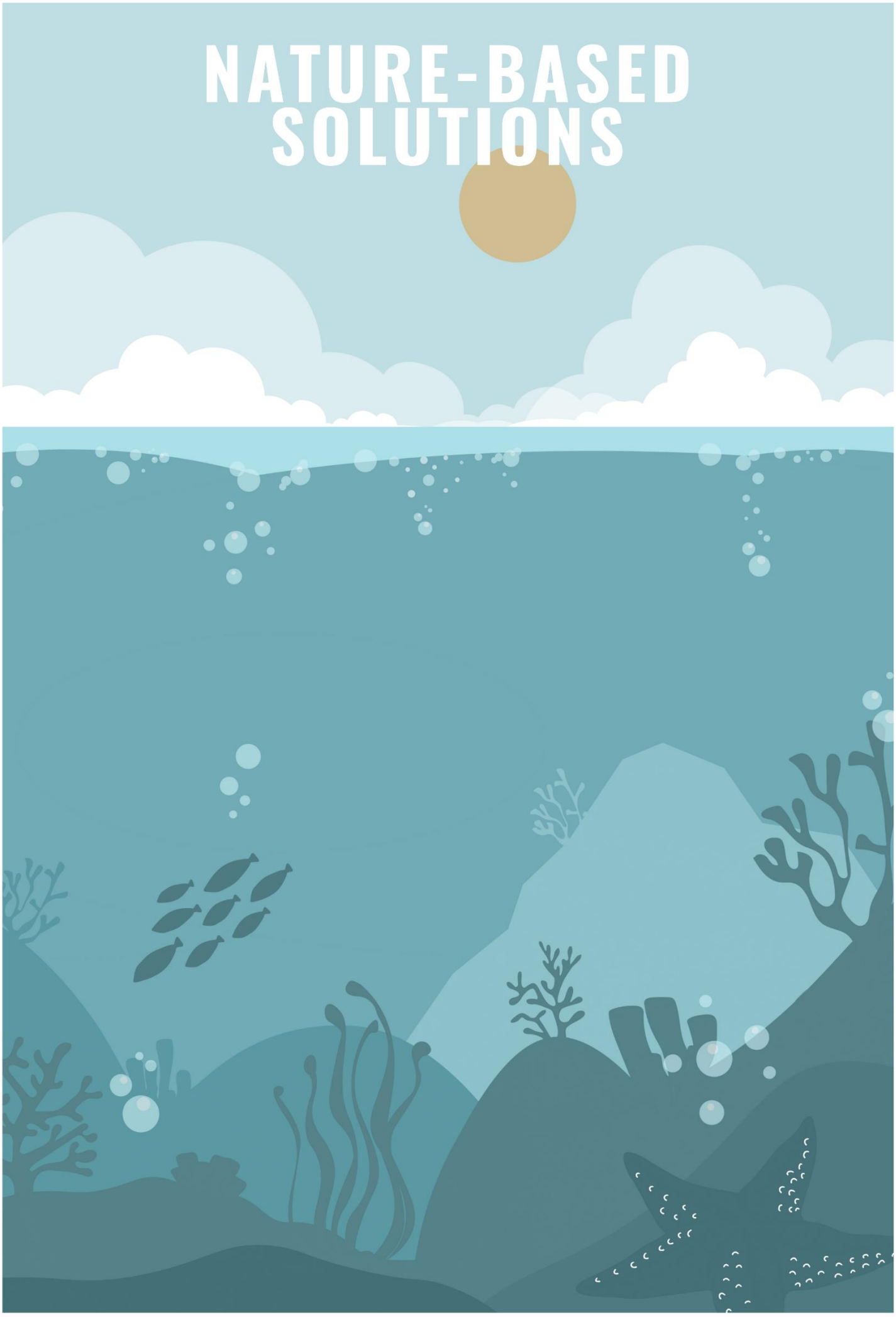
NATURE-BASED SOLUTIONS



The importance of nature to sustain human life on earth is widely recognised: the Leaders Pledge for Nature signed in preparation to the United Nations Biodiversity Summit[1] is yet another high-level recognition. Such pledges need to be interpreted as a strong signal for adopting systemic approaches to address the different environmental issues of today's world. Different, yet equally-urgent crises characterise today's interconnected world. Nature-based Solutions (NbS) have been gaining momentum, especially in international policy spaces for the last 5 years[2,3,4], as a notion that could potentially support the twofold objective of preserving the integrity of the natural world while providing effective responses to pressing social and economic needs[5].

The International Union for Conservation of Nature (IUCN) recently launched The Global Standard for Nature-based Solutions (2020), which defines NbS as *"actions to protect, sustainably manage, and restore natural or modified ecosystems, that address societal challenges effectively and adaptively, simultaneously providing human well-being and biodiversity benefits"*[6]. While this definition is considered the most accepted one to date, other sources highlight different elements that can be integrated when addressing NbS. Moreover, the concept of "natural solutions" is based on and supports other closely related concepts such as ecosystem thinking[7], ecosystem approach, ecosystem services, ecosystem adaptation and mitigation, and green and blue infrastructure[8].

NbS appear to arise from the necessity to view the complex human-environment relationship through a different lens: the actors and institutions welcoming NbS see in these solutions the much-needed capacity to deploy nature for tackling a wide range of societal challenges, including the climate crisis, disaster risk reduction, economic and social development, biodiversity loss, as well as human health, food and water security[9]. Many actors are bringing forward crucial considerations regarding the ownership and use of the NbS concept, including but not limited to concerns about co-opting and greenwashing[10], perpetuating offsetting, using monocultures and delaying decarbonization[11,12], as well as diverting finance from the ecosystem approach[13]. The evolving understanding of NbS makes it critical to carefully assess the needs of various stakeholders, including Indigenous Peoples, local communities, women and youth [14,15], in order to develop appropriate safeguards, and understand what inclusive and effective implementation actions could look like[16]. NbS have the potential to be the bridge we need to merge climate action and biodiversity conservation. Nonetheless, for the youth to fully support and endorse this new concept, the concerns addressed in this brief and the concerns of other actors, must be included and considered properly by policy-makers at all levels.

NbS in the EU Biodiversity Strategy

As part of the European Green Deal, the EU Biodiversity Strategy to 2030 demonstrates the European Commission's ambition in taking a leading role in developing NbS. The strategy only addresses NbS in relation to certain challenges: the climate crisis, biodiversity loss and the greening of urban areas. Yet, other areas NbS could potentially be used for are not mentioned. As outlined later in this brief, these include food security, water security and health. Moreover, the emphasis on their contribution in fighting biodiversity loss is not strong enough, and NbS should be recognized as an effective tool for the conservation and sustainable use of ecosystems, not only in the context of the climate crisis and urban areas.

Additionally, the EU Biodiversity Strategy 2030 focuses primarily on terrestrial NbS, in particular on urban greening and reforestation[17]. This policy gap is problematic because ocean-based solutions like seagrass meadows and salt marshes are among the most effective carbon sinks on our planet- including more so than terrestrial forests[18]. The narrow perspective of the EU on NbS could be consistently enriched if other areas of application are considered.

NbS are an interesting and innovative tool but to ensure that they can deliver what its supporters expect, appropriate mechanisms for NbS development and implementation are needed.

Currently, the EU Biodiversity Framework lacks reference to a strong monitoring framework, which includes social safeguards, that can keep track of the proper management of NbS. Secondly, while the Strategy clearly mentions the role of finance in redirecting investments towards NbS, it fails to address capacity-building as an important enabling factor for the successful uptake of NbS across all sectors of society, including small and medium-sized enterprises.

Opportunities: one tool, diverse issues

Although NbS as a notion has recently been gaining momentum, nature providing solutions is not a new concept. Communities around the world have long-established practices of using nature to benefit their livelihoods and landscapes[19,20]. In this section, we present seven different areas, where opportunities for NbS are currently being explored.

Biodiversity loss: Biodiversity loss is an important societal challenge, given that our economies and societies depend on ecosystems and the services they provide to people. Rewilding, habitat restoration and effective management of natural resources can help to tackle biodiversity loss[21].

Urban greening: examples of such solutions in cities are trees in open spaces (such as streets and squares), green roofs and walls, vegetated drainage basins, parks and urban green areas in general. The multiple benefits include reduction of street dust and noise, flood prevention, stormwater purification and a cooler microclimate during the summer months. Thus, developing green infrastructure in urban environments improves air quality, prevents water pollution and improves the quality of life for residents overall[22]. For example, in Lisbon, every euro invested into tree management brings 4.48€ for residents when considering energy savings, property values, air quality and CO2 sequestration[23].

Climate crisis: Conserving and restoring forests and coastal vegetation supports climate mitigation, as these ecosystems act as powerful carbon sinks[24,25,26]. In land use management, valuing and considering soil as an important carbon sink can be a win-win solution for climate and soil biodiversity. The conservation of peatlands is yet another example showing how the natural world is equipped with the right tools to store carbon[27].

Health: The need to make the most out of NbS to better regulate our interaction with ecosystems while improving human health, both physical and mental, is of utmost importance, now more than ever. The condition of the living environment affects our susceptibility to diseases and the spread of them[28,29]. Moreover, evidence shows that exposure to diverse nature and the associated microbial communities is connected to a healthier gut microbiome and lessened risk for autoimmune diseases[30]. The COVID-19 pandemic highlighted the need for nearby, high-quality, green and blue spaces, as these improve mental and physical health, especially for lower socio-economic groups like the youth and the elderly[31,32].

Food security: NbS such as reforestation, integrated natural resource management and sustainable soil management have shown positive results for both food production and environmental sustainability[33]. Coastal ecosystem restoration and the sustainable management of wetlands and rivers maintain or boost fish stocks and fisheries-based livelihoods, reduce the risk of flooding, and provide recreational and tourism benefits[34]. Furthermore, NbS can play an important role in maintaining soil biodiversity, conserving pollinators and regulating pests; these are all key elements in ensuring sustainable, long-term food productivity[35].

Water security: A NbS approach can also positively contribute to improving water management[36]. NbS such as green roofs,

retention ponds and vegetated drainage basins retain and purify stormwater, thereby reducing pollution of the receiving water bodies, while supporting local livelihoods[37].

Disaster risk reduction: Using natural coastal infrastructure such as barrier islands, seagrass meadows and oyster reefs to protect shorelines and communities from coastal flooding and reduce the impacts of sea-level rise are important solutions that provide synergies between nature and societal needs, including climate adaptation[38,39]. A specific example can be green infrastructure in cities that help reduce flooding related to extreme rainfall events[40]. Similarly, studies show that salt marshes can protect against storm surges through wave attenuation, while also protecting against erosion[41,42].

Risks and concerns for NbS implementation

As a requirement to the potential scaling up, financing and implementation of NbS, the following non-exhaustive list of preconditions and red-lines elaborated by global youth networks[43] should be carefully considered and further co-developed with all relevant actors, constituting an intrinsic part of the definition of NbS. Any project that does not meet these preconditions or crosses these red-lines, should not be classified as NbS and should by no means be eligible for NbS funding. The list reads:

- Preconditions for human rights, especially for environmental defenders, and from a gender perspective;
- Preconditions for Indigenous Territories, respecting the principle of Free, Prior and Informed Consent and the need to secure tenure and use rights of IPLCs over their lands, territories and resources;
- Preconditions to guarantee inclusiveness and the equitable and socially just distribution of co-benefits;
- Preconditions for Biodiversity and highly biodiverse ecosystems, ecosystem's structure and ecosystem functions;
- Preconditions for native species, preventing the introduction of Invasive Alien Species;
- Red-lines to avoid that NbS is used for greenwashing, offsetting, delaying decarbonization and carbon colonialism;
- Red-lines to prevent monoculture schemes.

In addition to the aforementioned preconditions, special attention should be paid in the risk of financialization of nature and the mainstreaming of the reductionist view that "nature" is merely the sum of marketable, monetizable and quantifiable services that nature offers to capitalist economies. Lastly, the scientific uncertainty related to the use of NbS for climate crisis mitigation should stay within our radar, particularly on the actual extent od the carbon storage and sequestration NbS are able to hold, as this depends on a series of other factors that cannot always be determined and quantifies with precision a priori.

GYBN Europe Priorities

Understanding NbS in the EU Biodiversity Strategy

It is important that the right policies are in place to ensure that all potential opportunities that NbS could create, will provide benefits to both people and ecosystems in Europe. Therefore, we have identified areas where the EU Biodiversity Strategy 2030 needs to be improved. First, the strategy should address all societal challenges where NbS can provide a practical solution and name them clearly. Concerning the application of NbS, the strategy could provide a clear link in the implementation of NbS for water management, food security and disaster-risk reduction especially in the current context of the climate crisis.

When it comes to the climate crisis in particular, the strategy could clearly state the important connection between NbS and Nationally-Determined Contributions (NDCs)

within the framework of the Paris Agreement. Furthermore, in a Post-COVID19 era, human health is a major concern, especially mental health. The strategy should highlight that our health can be positively influenced by greening urban and peri-urban zones but also should be committed to everyone having an equal access to nature. While acknowledging that it is impossible to change the text of the strategy, it is not too late to include these considerations in its implementation.

Second, youth have demonstrated the active commitment for a sustainable society. The strategy should be clear about which mechanisms and spaces will be created to help youth to become active stakeholders. This includes a more relevant role for youth in decision-making, policy-relevant knowledge generation and implementation. Finally, it is not yet clear in the strategy how the EU intends to monitor and implement NbS in the European Union. The strategy could instead provide clear information and methods to address this issue effectively.

Ensuring youth participation

NbS could potentially be a powerful tool to ensure future access and long-term sustainability of natural resources while addressing today's societal challenges. Moreover, NbS have the potential to strengthen their capacity to actively contribute to environmental management and secure employment in green jobs. However, the EU Biodiversity Strategy lacks a proper reference to the role of youth in developing and implementing NbS. More specifically, inclusive and participatory mechanisms that can improve the youth's active contribution to knowledge and implementation are still absent in the EU Biodiversity Strategy. This gap is relevant to research and education in order to advance a generationally-inclusive understanding of NbS.

In line with intergenerational justice, the European youth should be actively involved into the discussions regarding NbS development and implementation. The European youth is already active in the NbS sphere, in both research and activism. The consultation of young researchers is needed to have an inclusive representation of views in policy-relevant knowledge systems. Furthermore, by actively partaking in the development and implementation of NbS, young people in Europe could hold other actors accountable for failing to provide necessary safeguards and inclusion mechanisms.

To prove our active engagement in the NbS discussion, the global youth coordinated over the past months and carried out a survey that gathered more than 1000 youth voices from 118 countries. These efforts led to the Global Youth Position Statement on Nature-based Solutions, which you can find it here.