Recommendations for overcoming barriers to mainstreaming the delivery of Nature-based Solutions

Discussion paper from the Climate Change Interest Groups of the European Network of the Heads of Environment Protection Agencies (EPA Network*) and Heads of European Nature Conservation Agencies (ENCA)

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Federal Office for the Environment (FOEN) Switzerland, ISPRA Italy, Natural Resources Wales, PBL Netherlands Environmental Assessment Agency, The Environment Agency Austria, The Environment Agency England, The Environment Agency Germany, The Norwegian Environment Agency, The Slovak Environment Agency, The Swedish Environmental Protection Agency

1. Background to the workshop and joint-working

This paper was developed through a joint workshop and discussions between the Climate Change Interest Groups of the European Network of the Heads of Environment Protection Agencies (EPA) and Heads of European Nature Conservation Agencies (ENCA).

The EPA Climate Change IG had identified Nature-based Solutions (NbS) as a topic of interest to members at previous meetings while a survey of members of the ENCA Climate Change IG identified it as a priority area too. In response, the groups organised a short joint meeting at the European Climate Change Adaptation conference in Glasgow in June 2017 to explore common interests and synergies. All participants recognised the importance of Nature-based Solutions/Nature-based Adaptation. While the role of NbS in delivering climate change adaptation is of particular importance to the groups, it was agreed that the role of NbS in delivering mitigation benefits and ecosystem services more broadly were important too. It was also widely observed that there was limited delivery of NbS across Europe despite policy drivers often supporting adoption of NbS and the availability of case studies illustrating delivery of multiple benefits. Indeed, in some countries it was percieved that there was limited willingness to mainstream on a national scale at present.

Recognising the position of the members of the Interest Groups in understanding both the policy and delivery context of NbS, it was agreed to organise a joint Nature-based Solutions workshop in Cardiff on 11th September 2018. This workshop sought to build the collective understanding and capacity of members around the NbS topic, including showcasing good examples of policy integration and delivery.

The workshop discussions centred upon the key question: *how can NbS be mainstreamed through delivery at the national level, supported by the environmental protection and nature conservation agencies and others?* Along with a subsiduary question: *how can NbS be incorporated more explicitly within National Adaptation Strategies?*

A summary of the workshop was subsequently discussed by both Interest Groups with recommendations and conclusions collectively drawn out to form the basis of this paper. It is important to recognise that not all agencies, particularly amongst EPAs, have a remit relating to supporting and delivering NbS, and so the specific role of individual agencies and the relevance of the recommendations to them does vary from country to country.

2. Introduction

Nature-based Solutions are in essence nothing new. In Switzerland since the 19th Century ecosystem management to reduce avalanche risk has delivered multiple benefits for communities and the natural environment. More recently, peatland restoration has become a widely replicated example of NbS that delivers both

mitigation and adaptation benefits. In this case there are a significant number of large-scale case studies that have delivered clearly defined benefits. Additionally, peat restoration is an easier sell because it is generally perceived to have a low risk of any negative socio-economic or community impacts. Despite these examples, across Europe wider application of Nature-based Solutions is limited. This is in spite of NbS being explicitly or implicitly encouraged through its inclusion in a range of policies. For example, in Wales, the recent Natural Resources Policy identifies 'Delivering nature-based solutions' as one of the three priorities while the latest National Strategy for Flood and Coastal Erosion Risk Management identifies natural flood management as a key tool in managing risk. NbS is certainly being embedded within policy at international, national and regional scales but questions remain over how it can be mainstreamed.

3. How can NbS be mainstreamed through delivery at the national level?

In answering this question, it was recognised that there were a range of generic barriers to delivery, many of which were common across Europe. The identification of potential barriers and relevant approaches to overcome them was identified as the key to widespread delivery. It was considered within the Interest Groups that NbS was already relatively-well embedded and widely recognised within policies at both the European level, and in many cases the State or regional scale so overcoming the key barriers to delivery (described below under key themes) should be the priority.

3.1 Increasing the awareness and acceptance of the role of NbS in delivering the organisational objectives.

Despite the differing roles of organisations both within and between the ENCA and EPA networks, it was apparent that internally the role of NbS in delivering Agency objectives could in many cases be more fully realised. NbS delivery was frequently fragmented and being worked on in isolation. NbS is an expanding field and the evidence as highlighted later remains largely based on case studies. It was therefore recognised that there are still considerable challenges in encouraging acceptance within organisations, especially where traditional approaches are deemed effective. This is in part due to the often single purpose of agency objectives compared to the multiple benefits that NbS approaches offer.

Recommendation

Increased organisational focus on providing guidance and training on the role of NbS where gaps are identified in delivery – this may be applicable both within ENCA/EPA agencies and more widely in other organisations.

3.2 Enabling greater inter-disciplinary and cross-sectoral working on NbS, including between environmental protection and nature conservation agencies.

The cross-cutting nature of NbS means that successful delivery in many cases requires multiple policy and delivery bodies. This can be challenging due in part to different understanding of the scope of NbS and the approach to its delivery. There was recognition of the need to develop a shared understanding. The use of broadly accepted definitions as, for example, developed by the IUCN - *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* – or the EU definition more focussed on benefits - *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* - could provide an important starting point to cross-sectoral working.

It has been recognised that a range of approaches fall within the umbrella of NbS, from obtaining multifunctional benefits from existing ecosystems to creating new ecosystems such as green rooves and urban tree planting. And, there are many other terms such as ecosystem-based approach or ecosystem-based adaptation that are used by different communities. What is important is developing a shared understanding of terminology, the scope of solutions and the benefits that NbS can deliver. The IUCN's development of a Global Standard for NbS to provide a common language, framework and quality metric https://www.iucn.org/theme/nature-based-solutions/about/iucn-global-standard-nbs that was published in July 2020 could provide a valuable tool to further collaboration.

Any standard should provide a framework within which both EPA and ENCA agencies can work, whilst ensuring sufficient flexibility to enable the underpinning statutory functions of environmental protection and conservation to be delivered.

Recommendation The Agencies within the Interest Groups should consider use of the published IUCN Standard, where applicable, along with raising the awareness of the terms, their scope and benefits to improve working across the sectors.

3.3 Larger-scale case studies to demonstrate that NbS works at scale. There was recognition of the need to act at a larger scale but limited examples of this in practice to date. Significant numbers of case studies of NbS action have been identified through various reports and reviews but these are mostly local, small-scale projects. There is currently a lack of more fully mainstreamed examples

implemented across multiple localities at European, national or regional scales. There is a perception that small-scale NbS projects are viewed as acceptable risk while there is insufficient confidence in larger scale application.

Recommendation

There is a need for more well monitored and documented case studies at larger scale to demonstrate the potential for NbS delivery with European institutions, National Governments and Agencies all having a potential role to play in their development.

3.4 Development of a better evidence base. This is linked to the lack of larger scale examples but even among existing examples there are relatively few extensively monitored and evaluated case studies where their effectiveness, costs and benefits are fully evaluated. This can lead to a considerable reluctance to use green rather than grey infrastructure approaches such as for coastal erosion and flood risk management. For example, the capacity of saltmarshes to provide coastal flood protection on the Forth Estuary in Scotland was undermined by a lack of trust in NbS and the efficacy of it as a solution. However, there are examples of good practice where the benefits have been clearly evaluated e.g. as illustrated by the floodplain restoration project at Lenzen on the Elbe in Germany. There is widespread recognition of the need for comparison of hard and soft measures to understand differences and complementary benefits of combining in some cases. Often the evaluation of projects is confined to the key objective rather than quantifying multiple benefits that could provide impetus for wider application.

Recommendation

Agencies and the academic community should better evaluate, quantify and communicate the crucial capacity of NbS projects to provide multiple benefits, including the merits of either green or a combination of green/grey infrastructure.

3.5 Demonstrating the long-term viability of the NbS approach. Uncertainty over the long-term viability of an NbS approach has been identified as an issue in several cases. Questions surround whether the ecosystem will be sustained under a changing climate – will the habitat be there in 20 years' time? In reality, most habitats are likely to be similar over such timescales even if they have a somewhat different species composition so it should not generally be viewed as a significant barrier but it clearly is perceived to be in some cases.

Another long-term viability concern raised with NbS proposals relates to uncertainties over the future maintenance and management of green

infrastructure and habitats and the percieived greater confidence in reliance on hard solutions. However, in reality management and maintenance needs are applicable to both hard and green infrastructure.

Building in consideration of these aspects to design of an NbS project and a clear understanding of the overall objectives of the NbS proposal can allay such concerns.

Recommendation:
Ensure that long term monitoring and evaluation is incorporated into NbS project design and implementation to provide the evidence to address this concern.

Identify and ensure that case studies cover the long-term benefits or disbenefits.

There could be a role for EPA/ENCA agencies to stress the importance of long-term evaluation of benefits both through policy/guidance or by directly informing the development of projects.

3.6 Holistic approach to the identification and valuation of benefits so that clear assessment of the importance of multiple benefits. There is a need to more explicitly identify, and where possible quantify, multiple benefits of NbS in terms of carbon mitigation, increased property values, health, etc. Identifying ecosystem service benefits and their valuation through full natural capital accounting to demonstrate multiple benefits is seen as crucial to making the case for mainstreaming. Emphasis on estimating ecosystem-based mitigation and adaptation benefits is seen as a key route to facilitating delivery that already has clear simple metrics to demonstrate quantitative benefits.

Green infrastructure provides added value to properties and localities e.g. Greener Grangetown, Cardiff (Wales) and Green Gym, Scotland. The identification of mitigation and adaptation benefits should always be considered in the application of NbS. While carbon sequestration and storage is routinely considered in for example peatland restoration, many NbS projects do not explicitly recognise such co-benefits.

Recommendation:

Adopt use of ecosystem approach and valuation using natural capital or related approach to identify and quantify the full range of benefits of NbS, including carbon mitigation, adaptation and biodiversity as part of proposal development and delivery.

3.7 Improving understanding and appreciation of risks and benefits to manage expectations. The perception of risk inherent in a NbS project is viewed both within agencies and amongst others as frequently higher than it is likely to

be in reality. An assessment of both the risks and benefits of NbS proposals need consideration early in their development to enable a clear explanation of any risk and of the anticipated results to set an appropriate level of expectation. Future changes in climate has itself been raised as a risk in relation to the future resilience of NbS but future climate should be considered in the design of projects while recognising the capacity of ecosystems to adapt.

Recommendation:

Ensuring the development of a clear narrative around risk and ambition early in the process of NbS project development.

3.8 Mobilising and informing stakeholders, politicians and communities of the value of NbS. While some good examples of NbS are available and shared with professionals and agencies via workshops and conferences, it is often the need to convince local stakeholders that is crucial to delivery. There is a need for good examples to be shared in an accessible way with politicians and communities, and particularly the key opinion formers in communities. Many across the Interest Groups have experienced that politicians want engineered solutions to avoid and minimise risk and show their commitment to tackling issues in a concrete way, often literally!

New Ministers or local politicians can provide a catalyst for proposals if they can be persuaded of the multiple benefits, or alternatively, extreme events and their impacts can prompt interest in NbS. Outputs from NbS case studies are generally aimed at a professional audience, there is a clear case for developing resources that would provide a wide range of stakeholders with a narrative on the case for NbS.

Public understanding of NbS and its potential role is poor too. There may be ‘windows of opportunity’ soon after extreme events to publicise and gain greater interest in NbS and/or undertake a rapid review of the effectiveness of NbS schemes following extreme events.

Many identified the importance of local advocacy in developing a successful proposal, and in particular identifying someone local people relate with. This may be a key way to overcome perceived concerns that may result in opposition e.g. trees acting as a security risk.

Recommendation:

Promoting the development of generic documentation or online resources that would provide a clear accessible narrative on the case for NbS for a wide range of stakeholders.

Encouraging that a local stakeholder assessment is undertaken as part of planning for NbS to ensure that relevant local influencers are identified at the outset of any proposals.

3.9 Identifying approaches to reduce the barrier of land ownership/management and its costs. Overcoming the significant challenge of either purchasing land or identifying and negotiating long-term agreements with multiple land owners is widely recognised as a serious barrier to implementation of NbS measures. Even identifying who owns land is difficult in some countries. Additionally, it is often the case that costs occur in some localities and/or sectors while benefits occur in others, such that there is a clear need for bespoke financial incentives e.g. Payment for Ecosystem Services (PES) including incentives for land management to reduce downstream flooding.

The development of compensation schemes to provide incentives for land management that can facilitate adoption of NbS or identifying funding streams such as the insurance industry, e.g. Flood RE or PES schemes, are seen as potential solutions requiring further appraisal and case studies. Making more explicit links to key national strategic agendas such as infrastructure and growth strategies may provide an approach that open up access to long-term funding and budgets. The approach to addressing these issues will likely be dependent on national policy.

4. How NbS can be incorporated more explicitly within National Adaptation Strategies?

While there was broad support for ensuring that NbS is incorporated within National Adaptation Strategies (NAS), this was not viewed as a critical issue for facilitating its greater use. For example, in Germany and Slovakia the NAS is not legally binding so although it contains reference to NbS, NbS implementation is enabled through other routes and financial sources e.g. InterReg funding.

Where NbS is incorporated within NAS, it is important that it is not seen as solely an environmental topic. For example, in England it is covered in the Environment chapter of the National Adaptation Plan while within Scotland's Climate Change Adaptation Programme NbS has been covered under multiple objectives for not only the natural environment, but also health and communities.

Where the need for NbS is included within a NAS, there is a case for ensuring:

- Increased cross-referencing between policies e.g. planning, flood risk, health;
- Consideration of targets (potentially mandatory), and certainly monitoring of delivery;
- Appropriate cross-cutting governance.

It was also recognised that NbS should be encouraged and integrated into other policy areas, such as through inclusion in CBD post 2020 policy targets, but this need hasn't been explored further by the Interest Groups to date.

Recommendation:

Agencies should seek to integrate NbS goals within National Adaptation Strategies, and consider including them across multiple sectors with appropriate targets and monitoring.

5. Conclusion

Both the EPA and ENCA Interest Groups were clear of the huge value and potential of adopting NbS approaches to achieving many adaptation and mitigation objectives. It was recognised that appropriately planned NbS could be transformational in delivering across multiple policy agendas with associated multiple benefits, including addressing the Climate and Ecological Emergencies, and many of the UN Sustainable Development Goals.

A key observation is that the barriers and solutions to greater uptake of NbS are to a large extent common across Europe. There was general consensus that there needs to be a top down approach of embedding in policy and guidance complemented with local capacity developed through training to enable delivery.

Extensive, detailed monitoring and evaluation has been conducted relatively rarely to ascertain the efficacy and breadth of NbS project benefits. Members of both Interest Groups were clear that better knowledge of the effectiveness and benefits of NbS approaches was key to providing greater confidence and encouraging uptake.

It was concluded that a range of well monitored and documented larger-scale case studies across Europe that fully quantify the multiple benefits in terms of ecosystem services (including mitigation and adaptation), natural capital and risk management delivered by NbS approaches would help break down barriers to implementation, particularly if the outcomes are presented as accessible narratives for a wider range of stakeholders. A user-friendly accessible example of case studies from the USA has been produced by the US Army Corps of Engineers, *Engineering with Nature: an Atlas* that provides a description of 56 projects across a range of ecosystems including coastal stabilisation and defence, natural flood management and river restoration https://ewn.el.erdc.dren.mil/atlas.html. There are many other sources of case studies such as the Nature-based Solutions Initiative based at University of Oxford that has collated both the scientific literature and policy briefings https://www.naturebasedsolutionsinitiative.org/ but the Interest Groups believe that there remains a ‘gap’ in terms of readable case studies that stress the benefits of wider adoption of the approach.