

# Policy Note

## Reducing Livelihood Vulnerability to Climate Change Impacts through Ecosystem-based Adaptation

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# Reducing Livelihood Vulnerability to Climate Change Impacts through Ecosystem-based Adaptation

## The cases of UNDP SNRMP, and SGBP Projects in Yemen

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## Summary

Yemen is highly vulnerable to climate change-related impacts because of its fragile socio-economic development and inadequate adaptive capacity. Climate change has been identified as new developmental challenge. Yemen has only limited resources and capacities while experiencing tremendous development challenges, and it is unlikely to build up adequate community resilience to the projected climate change impacts. Yemen's ecosystems are already experiencing degradation due to over-exploitation, and climate change impacts. High poverty incidence and climate change such as land-use pressure and recurrent drought have stressed the already degrading natural resources of the country including for instance forest degradation, and therefore reduces other ecosystem services forests provide like flood control, temperature regulation, soil protection, and those related to water purification, health, livelihoods and well-being, among other things. This policy note seeks to explore the Ecosystem-Based Adaptation as an insightful approach to safeguard key ecological services and ensure sustainable livelihoods under changing climate. It also seeks to propose relevant insights for the ongoing biodiversity and natural resources management programme such as Sustainable Natural Resources Management Programme (SNRMP), and Socotra Governance and Biodiversity Project (SGBP). In addition, it aims at bringing to the attention of relevant policy makers the significance of placing greater emphasis on the EbA approach at a broader national policy framework to maximize the full potential of PoAPA which ultimately reduce vulnerability and contributes towards sustainable livelihoods under climate change.

## Background:

The ecological systems and biodiversity in Yemen are endangered due to multiple interacting socio-economical factors causing loss in biota due to degradation of natural habitats and ecosystems. Main threats are due to land resources degradation in various forms, over hunting and overexploitation. In general, Yemen vegetation is being drastically reduced by rapid degradation of the environment, a direct result of desertification and droughts. These phenomena have increased drastically in Yemen and threaten about 90 percent of the land and can be attributed to the following: Cultivation and poor agricultural practices, wood cutting for firewood, timber and charcoal, over-grazing, soil salinity, wind erosion and sand dune encroachment; and construction expansion in cities and villages. On the other hand, threats to terrestrial fauna in Yemen are also common and are mainly to: Destruction, degradation and loss of habitats, over-hunting and proliferation of firearms; and road construction opening up avenues into the hinterland. Climate change is also emerging as an issue posing new threats to biodiversity conservations in Yemen.

Several national studies and reports<sup>1</sup> have indicated that Yemen's is highly vulnerable to climate change impacts. National Adaptation Programme of Action (NAPA) provide a national policy framework for climate change adaptation which has indicated that, Yemen's ecosystems are already experiencing degradation due to over-exploitation, and climate change impacts. High poverty incidence and climate change such as land-use pressure and recurrent drought have stressed the already degrading natural resources of the country including for instance forest degradation, and therefore reduces other ecosystem forests services which include flood control, temperature regulation, soil protection, and those related to water purification, health, livelihoods and well-being, among other things. According to SNC (2011), access to clean energy such as LPG stoves for cooking is limited in rural areas. About 70 percent of the rural households use wood stoves for cooking as of 2000. Wooding is still the biggest source of energy for most of rural and for a few urban areas of Yemen which has the most serious environmental impact. So far only around 1.5 of the Yemen total land is protected areas. The resources gap to achieve the MDGs with regarding to halt deforestation through protected areas is slowly progressing and it is unlikely to reach the target of 10 percent if the current trend persists.

Nevertheless, among others, the UNDP has been supporting enhancement of natural resources management, biodiversity conservation, community-based protected areas management and environmental awareness. A total of six protected areas have been established. Socotra and Jabal Bura'a protected area have been listed as UNESCO World Heritage Sites. The Preliminary Gap Assessment Report of Yemen Protected Areas including institutional, biodiversity components produced. Rosh protected area won Equator Prize 2010 for best practice demonstrating a successful approach for poverty reduction through conservation and sustainable use of natural resources as well as for benefit sharing between biodiversity conservation, eco-tourism and development.

Yet, the gap remains deep and tremendous work need to be done. The Biodiversity Enabling Activity project document has indicated for instance that the current NBSAP lacks a plan for restoring and safeguarding ecosystems that provides essential services including those related to climate change adaptation. Strengthening

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<sup>1</sup> First National Communication (INC 2001), National Adaptation Programme of Action (NAPA 2008), Assessing the Impacts of Climate Change and Variability on the Water and Agricultural Sectors and the Policy Implications (2010), Millennium Development Goals (MDGs) Yemen Assessment Report (2010, Fourth Socio-economic Developmental Plan for Poverty Reduction (DPPR 2011-2015), Second National Communication (SNC 2011: a draft)

ecosystem resilience to climate change and promoting ecosystem-based approaches to climate change adaptation and mitigation is therefore a national priority, and commitment under the CBD Strategic Plan with regards to Aichi Target# 15. To provide a more relevant context, the following section will explore the Ecosystem-Based Adaptation as an insightful approach to safeguard key ecological services and ensure sustainable livelihoods under changing climate. Also, the policy note seeks to propose relevant insights for the ongoing biodiversity and natural resources management programmes such as Sustainable Natural Resources Management Programme (SNRMP), and Socotra Governance and Biodiversity Project (SGBP). In addition, it aims at bringing to the attention of relevant policy makers the significance of placing greater emphasis on the EbA approach at a broader national policy framework to maximize the full potential of PoAPA which ultimately reduce vulnerability and contributes towards sustainable livelihoods under climate change.

### **The Ecosystem-based Adaptation (EbA) to Climate Change in Yemen**

The UNDP Ecosystems and Biodiversity Strategy (2011-2020) is designed to enable UNDP to better support programme countries to shape and drive biodiversity management for sustainable development at the country level—based on country commitments, needs and priorities. The strategy calls for several actions including adoption of a new paradigm that integrates climate change into strategies and plans that dramatically scale up ecosystem-based adaptation and mitigation efforts at all levels, coordinated by a mix of policy and financial instruments. The new paradigm lies at the center of the ecosystem-based adaptation, and mitigation to climate change which has been identified as an emerging challenge and risk to the current human development particularly across Least Developed Countries (LDCs) including Yemen. The EbA sets out framework for action through: first, developing of conservation plans, second, identifying of conservation actions which contributes towards enabling human and natural communities to adapt to the potential impacts of climate change. EbA usually generates invaluable adaptation outcomes which include for instance reduction of natural disaster risks associated with climate change such as buffering storm surges, and flooding. The UNFCCC indicates that EbA adaptation actions involve: initiatives to assess vulnerability; capacity building, design and policy measures; and implementation of measures, for example in the form of pilot and demonstration schemes, establishment of protected areas, etc.

The EbA does not only place greater emphasis on conservation activities which maintain the ecosystem services, but also make sure that rehabilitation and restoration activities enhance these services to local communities under changing climate. In other words, EbA means building resilience of ecosystem for climate change adaptation. It is worth mentioning that EbA offers a more cost-effective approach to climate change adaptation. With regard to cost-effectiveness of EbA approach, several methods have been developed to estimate the economic values for ecosystem products or services including adaptation to climate change depending on the context among which are:

1. Market prices method
2. Productivity method
3. Hedonic Pricing Method
4. Damage Cost Avoided, Replacement Cost, and Substitute Cost Methods
5. Contingent Valuation Method
6. The Contingent Choice Method
7. Benefit Transfer Method

The IUCN (2009) defines EaA as an approach to integrate the use of biodiversity and ecosystem services into an overall strategy to help people adapt to the adverse impacts of climate change. According to the Conservation International, EbA refers to *“the use of natural systems as a way to buffer the worst impacts of climate change, maintain the resilience of natural ecosystems, their ecosystem services and the species that support them, and help people adapt to changing conditions. Ecosystem-based adaptation is an important and often-overlooked complement to other modes of adaptation, which include infrastructure development and technological solutions such as desalination systems. Ecosystem-based adaptation also refers to conservation actions—such as watershed protection—that protect people from the impacts of climate change.”*

Noteworthy that the SNRM has supported the development of three protected areas namely; Jabal Bura, Aden Wetlands, and Hawf protected areas. The project contributes to enhancement and promotion of livelihood approach in sustainable management of natural resources through wider participation local communities and application of community-based management of protected areas, promotion of income generating activities for local communities, women empowerment, and enhancement of the institutional and legal frameworks for conservation of nature reserves. Reportedly, the project has developed management plans and enhanced the community-based management of the aforementioned protected areas for sustainable use of natural resources. Despite the efforts, and progress made so far by the SNRMP project, climate change vulnerability and adaptation have been insufficiently present in the design and structure of the SNRMP programmatic interventions and strategy. For instance, although livelihoods of local communities have improved through income-generating activities, women empowerment, and participation, it can be noted that risks associated with climate change have not been fully accounted for which plausibly may lead to increased ecosystem vulnerability.

In order to reduce protected area vulnerability to potential climate change associated risks including more frequent and surging storms, floods, and droughts, it should be taken into account that additional adaptive conservation measures are essential to help people adapt to the potential impacts of climate change. The two approved protected areas management plans including the draft one (Halwf) should be revised to integrate sound climate change consideration to ensure a more resilient protected areas under changing climates. Initial thoughts may include integrating additional measures to help cope with and adapt to more frequent and stronger droughts, floods across Jabal Bura’a, and Halwf protected areas. Additional adaptive measures may also be considered to further enhance the Ecosystem-Based Adaptation of the Al-Hiswa protected areas under certain climate change sceneries. This may involve for instance adaptation to potential biophysical effect of Seal-Level Rise (SRL) including possible inundation of low-lying wetland habitats under certain climate change sceneries.

Similarly, SGBP needs to re-consider additional emerging risks associated with climate change such as drought, and that could more cost-effectively be carried out through proper EbA measures. In a field livelihood survey conducted by UNDP Yemen CO team (the co-authors of this paper), it was concluded that drought is among the major livelihood risks across the Island. About 85 percent of the respondents pointed out that change in rainfall season and duration decline, drought, and wind seasons and speed has been noticeable over the last decade. The year of 2012 has been recorded as the highest and stronger droughts started to affect the livelihoods of populations particularly those whose livelihoods mainly depends on grazing. Grazing provide livelihood opportunities for significant percentage of the population across Socotra Island which has been severely affected



due to experiencing declining rainfall and increasing the frequency of prolonged drought, that may probably be attributed to climate change.

Although EbA is insightful when considered within standing-alone projects such as SNRMP, and SGBP, integrating climate change into a broader policy, and strategy framework for sustainable use of natural resources would yield greater impact through scaling up synergies at the strategic policy level. With this regard, the UNDP Country Office (CO) with the GEF Biodiversity Enabling Activity project has ensured that climate change adaptive considerations are integrated into the revised National Biodiversity Strategy and Action Plan (NBSAP) through prompting EbA approach. The Biodiversity Enabling Activity aims at integrating Yemen's obligations under the Convention on Biological Diversity (CBD) into its national development and sectoral planning frameworks through a renewed and participative 'biodiversity planning' and strategizing process, in a manner that is in line with the global guidance contained in the CBD's Strategic Plan for 2011-2020. It should be noted that although Yemen has made progress in implementing the Programme of Work on Protected Areas (PoWPA), in addition conducting preliminary gap assessment contributes towards enhancing the national capacities, significant gaps has remained including climate change resilience and adaptation which require additional measures to account for. Therefore, this policy note strongly recommends placing greater emphasis on EbA approach in order to maximize the full potential of PoWPA implementation to enable Yemen achieve relevant CBD Strategic Plan's Aichi Targets in order to safeguard key ecosystem services, and ultimately ensure sustainable livelihoods under certain climate change sceneries.

### Conclusion

Despite the significant efforts, and progress made so far under the SNRMP as well as SGBP projects, climate change vulnerability and adaptation have been insufficiently present in its design, and programmatic interventions and strategy. Ecosystem-based Adaption (EbA) to climate is insightful when considered within standing-alone projects, integrating climate change into a broader policy, and strategy framework for sustainable use of natural resources would yield greater impact through scaling up EbA approach. Therefore, this policy note strongly recommends placing greater emphasis on EbA approach in order to maximize the full potential of PoWPA implementation to enable Yemen achieve relevant CBD Strategic Plan's Aichi Targets in order to safeguard key ecosystem services, and ultimately ensure sustainable livelihoods under changing climate.

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