The proposed structure of contributions

1. **Title/Heading.** Ecosystem-based Adaptation (EbA) in Drylands

2. **Context and rationale**.

Drylands are found on all continents of the world, covering 45% of the world's land surface and supporting 40% of global population. They hold approximately a third of biodiversity hotspots and provide habitat for 28% of endangered species. However, globally drylands are impacted by climate change through increased mean annual temperatures and related heat waves, higher variability of precipitation, and greater frequency of droughts, exacerbating desertification and water crisis. These have led to further decreases in agricultural productivity and increased rural poverty. Moreover, these have posed far-reaching impacts on the livelihoods of marginalised peoples locally, and drive migration, unrest and economic instability at regional and global levels. Interventions are, therefore, required urgently to improve functionality of ecosystems and make the livelihoods of local communities more resilient to the impacts of climate change.

3. **An overview of the contribution**. See 4.

4. **How the contribution leverages living natural systems as a solution to avert climate change?**

Overall, the contribution aims to improve livelihoods through dryland ecosystem restoration and sustainable management in a changing climate, and to promote continued cooperation among developing countries. Both natural and human aspects will be addressed, as demonstrated in the specific interventions detailed below:

- Establishment of greenbelt (using plant species selected based on their resilience to drought and increased temperatures for restoration activities) that combats desertification and provides multiple NTFPs;
- Utilising high-efficiency irrigation for crop plantation, and water harvesting in human settlements to optimise end-point water use; establishing watershed conservation and management to enhance water security;
- Developing and enforcing grassland enclosure to promote the natural regeneration of rangelands and pastures.

5. **How might the contribution support both climate, mitigation and adaptation as well as other important co-benefits and social, economic and environmental outcomes in coming years?**

This contribution, most directly contributing to SDG target 15.3, will establish climate-resilient landscapes that support both climate, mitigation and adaptation for local communities, and bring other important environmental and social-economic co-benefits in the coming decades. Firstly, the impacts of desertification and water crisis will be reduced by restoring large-scale local vegetation and conserving watershed. According to previous activities, through the environmental co-benefits of revegetation including stabilising sand dunes and facilitating the infiltration of rainfall to recharge groundwater aquifers, the increase of biodiversity has also been observed. Moreover, the established greenbelts will provide carbon mitigation co-benefits. Restoration efforts in Senegal showed that restoring degraded savannah landscapes by planting *Acacia* trees achieved carbon sequestration rates of 0.77 t C ha^{-1} yr^{-1} over a 20-year period. Also, plantations of *Acacia senegal* in Sudan increased ground vegetation cover and increased soil organic carbon contents, thereby sequestering carbon and increasing soil productivity.

The primary economic benefits will be reduced through avoided damages to infrastructure and maintenance costs for both private and public sectors. For instance, the estimated cost for the construction and

maintenance of the 436 km Green Corridor in Taklamakan Desert in 20 years is RMB 750 million (vs. cost for sand clearance of ~RMB 1.8 billion).

Furthermore, it will create an enabling environment for the development of sustainable natural resource-based local businesses that use NTFPs (e.g. gum arabic), among others. These businesses will be owned and operated by local communities, creating jobs and reducing poverty in an inclusive way.

In addition, the knowledge support and collaboration between the government/policy makers and research institutes will expand the use of science in the country's climate change adaptation and mitigation strategies and facilitate the paradigm shift towards a climate-resilient society.

6. Which countries and organisations are involved in the contribution?

The EbA approach, in which the 'inclusive and participatory principle' is prime, draws strength from a consortium of stakeholders at various levels, including key players such as China, Mongolia, Kazakhstan, Uzbekistan, Turkmenistan (Central Asia), Kuwait (West Asia), Ethiopia, Senegal, and Mauritania (Africa); international organisations and initiatives such as the UN Environment, UNCCD, the Great Green Wall initiative; private sector; local authorities e.g. mayors; and academic and research institutions at regional and global levels. See more at 7, 8 and 15.

7. How have stakeholders (for example local communities, youth and indigenous peoples, where applicable) been consulted in developing the contribution?

Consultation with stakeholders for this contribution has been incorporated into some ongoing projects focused on Ecosystem-based Adaptation (EbA). For example, the GEF-funded Ecosystem-based Adaptation through South-South Cooperation (EbA South) project has organised several regional knowledge exchange workshops that involved government officials, researchers, and practitioners from local communities from Mauritania and other dryland countries to share their knowledge and practices about adaptation to the impacts of climate change in drylands. Moreover, another project in China on building resilience of indigenous communities focusing on the cultural diversity and indigenous knowledge also produced substantial results to build on. Afterwards, rounds of thematic discussions were held and joint proposals were developed for further efforts on EbA in drylands. These proposals with concrete activities at various levels together make up the contribution.

8. Where can the contribution be put into action?

The *EbA in drylands* can be applied throughout the global dryland regions, where ecosystems and communities are suffering from land degradation, drought, and poverty, etc., all of which exaggerated by climate change. These include Central Asia, West Asia and Sahel region, as our ongoing and upcoming activities in the countries listed in number 6 and 15.

9. How the contribution will be delivered? How will different stakeholders be engaged in its implementation? What are the potential transformational impacts?

Currently, there is little evidence of EbA in drylands; this contribution will increase and scale up our global efforts on EbA in drylands through actions including (1) knowledge compilation, (2) capacity building, (3) on-the-ground demonstration, and (4) science for policy and application.

Different stakeholders will be engaged through, e.g. (1) consultation with government officials to ensure a country-driven approach, (2) research and technical studies involving local communities to guarantee local wisdom being valued, (3) capacity development activities for local communities (including indigenous,

farmers, youth, women groups), and (4) partnership with private sector through business platforms to bring on board private enterprises who can supply relevant technologies and engage local communities .

During the whole process of the contribution, collective efforts are stressed and attentions have been paid on paradigm shift and behavioral change – which are key features to contribute to transformational impacts. Furthermore, practices showing at the demonstration scale stand ready to be replicated on a large scale to other similar dryland ecosystems vulnerable to climate change.

10. Is this initiative contributing to other Climate Action Summit workstreams?

Yes, the *EbA in drylands* can also contribute to other workstreams, particularly infrastructure, cities and local action; resilience and adaptation; youth and citizen mobilisation; social and political drivers; mitigation strategy.

11. How does this contribution build upon examples of experience to date? How does the contribution link with different ongoing initiatives?

This contribution builds on lessons learned and problems identified in the past and ongoing EbA and restoration activities in the drylands such as EbA South project (see number 7), Global Dryland Ecosystem Programme (Global-DEP) as well as other initiatives in-the-pipeline that UNEP-IEMP has been involved. For example, EbA South project in Mauritania restored 150 hectares of arid/semi-arid area by establishing greenbelts using multi-use indigenous species to buffer against sand encroachment and secure livelihoods in facing climate change. Global-DEP, a platform for global research collaboration on dryland ecosystems, is producing scientific knowledge covering crucial issues related to dryland ecosystem dynamics and driving forces (including climate change); dryland ecosystem structure, functions and services; sustainable livelihoods and well-being. Partnership with private sector and concrete collaboration on dryland restoration with China can also be learned from for future actions.

12. What are the mechanisms for funding (with specific emphasis on potential for partnerships)?

Potential funding mechanisms include (but not limited to) the Green Climate Fund, private sector partnership, government funding and other development/environmental sources. See 15: projects in the pipeline.

13. What are the means of stewardship, metrics for monitoring? These will be performed according to the protocol of each project in a holistic way of environmental, social and economic dimensions.

14. What is the communication strategy?

The communication strategy will target different types of stakeholders through various means, including dedicated forum for high-level science and policy advisors, special/summary reports for specific audiences, and mass media for the general public. Key results and lessons can be shared at relevant events to encourage replication and upscaling. Storytelling and documentary film can also be produced from on-the-ground actions to raise awareness of general audience.

15. What are the details of proponents (indicating the degree of commitment among the countries and organizations that are named).

This contribution is proposed by the United Nations Environment Programme – International Ecosystem Management Partnership (UNEP-IEMP), a global collaborating center of UNEP mobilising science to support policy setting for sustainable ecosystem management in developing countries. As mentioned above, the contribution is made up of several joint proposals developed together with partner countries and organisations with a focus on EbA in drylands. For example, a joint research on Practical Technology to Combat Desertification for African Priority Countries of the Great Green Wall (GGW) was proposed with several research institutes of and government agencies for GGW/desertification control in Mauritania,

Nigeria, Ethiopia, etc. A project for ecosystem restoration in dryland areas in Central Asia was proposed with a focus on technology cooperation and public-private-partnership. The Global Dryland Ecosystem Programme, a joint initiative recently proposed by research teams from different dryland regions, provides a platform for global research collaboration on dryland ecosystems. All these partners have provided strong intellectual and in-kind support for the proposal development in the contribution, with firm commitments to provide such support for delivering the contribution effectively in future.