Title: EU H2020 Task Force on Nature-Based Solutions for Hydro-meteorological Risk Reduction

i. Context and rationale.

Recently, the EU published an R&I agenda on 'Nature-Based Solutions' (NBS) to include re-naturing cities and territorial resilience. To advocate its further implementation and provide proof-of-concept for the replication and up-scaling of NBS, the EU's Horizon 2020 (H2020) Work Programme is supporting four research and innovation action projects that design, implement and evaluate innovative and locally attuned NBSs for hydro-meteorological risk reduction at the watershed and landscape scale. Specific examples are being implemented that range from urban to rural and from mountain to coastal areas, counting more than 30 demonstration sites in Europe and 10 sites outside Europe including North America, South America, Asia and Australia. This work will facilitate more effective protection of exposed population and environment from hydro-meteorological perils such as landslides, floods, droughts, and erosion.

This Task Force on NBS for Hydro-meteorological Risk Reduction represents four H2020 projects with partnerships between researchers, industry and public agencies. OPERANDUM, RECONECT and PHUSICOS address the use of NBS to reduce hydro-meteorological risks through co-designed, co-developed, and demonstrated NBSs. NAIAD focuses on prevention and insurance value of ecosystems. We are working together to ensure that NBS are technically viable, socially acceptable, cost-effective and implementable at the regional scale and that benefits of NBSs are inclusive by increasing the ecological, social and economic resilience of local communities.

This Task Force provides the Climate Action Summit NBS workstream with knowledge, evidence and best-practices to speed up global implementation of NBSs that can be effective for mitigating hydro-meteorological risks, which are more likely to become more frequent and more extreme as a result of climate change.

ii. An overview of the contribution.

The Task Force's services and products include:

- Implementation of NBSs at a variety of sites with diverse climatic, geographic, socio-economic conditions, cultural profiles and governance structures (potential for replication and validation of upscaling).
- Development of assessment frameworks with indicators for the comparison of NBS with grey/hybrid solutions for DRR (monitoring effectiveness and documentation of social and ecological co-benefits).
- Identification of methods to overcome barriers related to social and cultural acceptance and policy regulatory frameworks (stakeholder mapping, protocols for co-design and co-development, governance innovations for policy and financing).
- Providing consolidated evidence-base processes, performance standards and guidelines (partnerships and business exploitation).
- Development of interoperable and flexible platforms for demonstrating use of NBS at worldwide scale.

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

Our projects leverage living natural systems when new NBSs are integrated in existing natural ones as some demonstration sites are embedded in protected areas (parks, forests, lakes, wetlands, aquifers).

iv. How the contribution supports co-benefits.

Co-benefits are central to the NBSs studied and implemented by the Task Force:

a. Reduction in carbon emission and carbon capture (GTonnes): NBSs will contribute to CO_2 capture. For example, PHUSICOS demonstration sites include 60 km^2 forest with the capacity to sequester 3 tonnes

carbon per hectare, thus sequestering 18,000 tonnes CO_2. NAIAD studies the role of soil conservation and the dual benefits on carbon and soil moisture.

b. Increasing climate resilience: Climate resilience is closely related to disaster resilience and climate change adaptation. The Task Force supports the implementation of the Sendai Framework and the incorporation of adaptation into the NDCs.

c. Social impact (job increase; poverty reduction, etc.): Co-benefits expected from NBSs include job creation (planning, design, evaluation, construction, maintenance). The Task Force will monitor job growth in rural areas and health and well-being in communities.

d. Net economic impact (total in US$; how was it achieved?): Data forthcoming.

e. Impact on realization of the 2030 Agenda for Sustainable Development (in particular SDGs 1, 2, 6, 12, 13, 14, 15, 16): The Task Force addresses ecosystem service provision in terrestrial ecosystems (SDG 15), integration of climate adaptation measures through NBS into national policies, strategies and planning (SDG 13), poverty by reducing the number of deaths and direct economic loss due to hazardous events (SDG 1), hunger and food security by reducing exposure of agricultural lands to hazardous events (SDG 2), and water management by protecting and restoring ecosystems, aligned with EU water directives (SDG 6).

f. **Just transition:** Demonstration sites are located in vulnerable communities more impacted from climate change and hydro-meteorological risks. Thus the Task Force helps societies transition to low carbon, resilient territories that consider potential equity issues in terms of impacts seeking to generate a new type of territorial model, and potential social costs (and benefits) from this transition.

g. **Food security:** The Task Force includes NBS in rural areas including agricultural land with interventions to protect related to agriculture, pastoralism and fishing.

h. **Minimising species extinction and ecological losses and fostering an increase of biodiversity:** Ecological co-benefits are central as the design and implementation of NBSs contribute to habitat restoration, improved biodiversity, and increase the sustainability of ecosystems. Indicators for biodiversity include; number of species, functional diversity, connectivity, vegetation cover and structure.

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

The Task Force is implementing NBS at over 30 demonstration sites across 22 European countries and sites in China, Australia, South Africa, the United States, Thailand, Taiwan, Brazil, Malaysia, Myanmar, Peru, and Colombia. Global partners include UNISDR, UNESCO as well as the IWA.

vi. How have stakeholders been consulted in developing the contribution?

Multi-stakeholder involvement is a core activity in all four projects and is based on the concept of Living Labs and Open Air Laboratories (new concepts to facilitate communication between policy makers, business holders and local inhabitants).

Where the contribution can be put into action?

See point v.

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

End-user partners are involved and co-funding is secured for many of the solutions being implemented thus engaging interested agencies. The aim is to have strong monitoring and evaluation frameworks that can also record the potential for transformation to more resilient and sustainable models of territorial development.

viii. Is this initiative contributing to other Climate Action Summit workstream (industry transition; energy transition; climate finance and carbon pricing; infrastructure, cities and local action; resilience and adaptation; youth and citizen mobilization; social and political drivers; mitigation strategy)?

Yes, climate finance (insurance value of ecosystems), infrastructure (NBS implementation), cities and local action (sites at urban and rural areas), resilience (DRR) and social and political drivers (governance innovation).

ix. Examples of experiences to date: how does this contribution build upon this experience? How does the contribution link with different ongoing initiatives?

The demonstration sites represent cases with ongoing initiatives and established links to the Task Force project partners thus enabling the implementation and monitoring of NBSs to build on existing experience.

x. Mechanisms for funding (with specific emphasis on potential for partnerships).

The total funding represents ~35 MEUR in EC contribution and more than 20 MEUR in co-funding.

xi. Means of stewardship, metrics for monitoring.

Indicators are developed to assess efficacy of NBS and documentation of social and ecological co-benefits (see point ii).

xii. Communication strategy.

Our projects have developed dissemination, communication and exploitation plans to specify principles, key target groups and communication channels to ensure significant impact.

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

Project coordinators and each H2020 project have full commitment from their organizations and countries:

- Elena López Gunn (elopezgunn@icatalist.eu), ICATALIST, Spain for NAIAD (naiad2020.eu)
- Silvana Di Sabatino (silvana.disabatino@unibo.it, University of Bologna, Italy for OPERANDUM (www.operandum-project.eu)
- Zoran Vojinovic (z.vojinovic@un-ihe.org), IHE Delft, the Netherlands for RECONECT (www.reconect.eu)
- Amy Oen (amy.oen@ngi.no), NGI, Norway for PHUSCIOS (phusicos.eu)