

**TERMS OF REFERENCE  
FOR  
GIS MAPPING FOR SUSTAINABLE INFRASTRUCTURE INITIATIVE**

**Duration: 15<sup>th</sup> January, 2023 to 31<sup>st</sup> May, 2023**

**i. Project Name**

Building Ecologically and Sustainable Transport Infrastructure (BEAST) and Greening the BRI

**ii. Project background**

The HKH region is seeing rapid large-scale infrastructure development, mainly transport-infrastructure, and with only an estimated 200-400 snow leopards left in Pakistan, there is a concern that without the proper biodiversity safeguarding protocols it will lead to the fragmentation and destruction of snow leopard habitats. Snow leopard habitats are also generally inaccessible but the construction of these new roads could lead to an influx of tourists and with it the construction of unsustainable hospitality-infrastructure leading to further degradation of snow leopard habitats. WWF-Pakistan also cannot advocate against the construction of these roads as the communities see them as being a source of their socio-economic development. Hence, the next best thing, as identified by WWF-Pakistan's Sustainable Infrastructure initiative in its action plan titled the "Greening Infrastructure in the Hindukush-Karakorum-Himalaya (HKH) Landscape Action Plan" (attached) is to ensure that all transport infrastructure is designed to minimize the risk and impact on the snow leopards and their habitats.

In addition, it has been observed that the concept of integrating wildlife crossings and corridors to ensure the minimal disruption of migratory routes is not being done in Pakistan despite the large number of transport-infrastructure being constructed. Moreover, as per a 2021 report by the WWF Network (attached) on snow leopard research, it was noted that research on mapping the migratory and dispersal routes of snow leopards is severely lacking. Hence, this will be a first-of-its-kind exercise where migratory and dispersal routes of snow leopards will be mapped to inform the design of wildlife corridors, to determine the number of snow leopards and prey species killed as a result of transport collisions, and to assess the growth and sprawl of hospitality infrastructure.

**iii. Objectives**

The consultant shall be required to employ GIS mapping, land cover use and spatial analysis methods as part of the BRI and Building Ecologically and Sustainable Linear/Transport Infrastructure (BEAST) projects to map and assess the following in snow leopard habitats in the Hindu Kush-Karakoram-Himalaya (HKH) landscape:

- Migratory/dispersal routes of Snow Leopards (and associated prey species) in select sites of the Hindu Kush-Karakoram-Himalaya region;
- Growth of tourist hotspots along Snow Leopard habitats to assess infrastructure sprawl and;
- Land cover change of the Karakoram Highway and the Shandur-Chitral Link Road

**iv. Consultancy Outputs:**

- The Consultant shall hold the responsibility of GIS mapping and spatial analysis to map the migratory/dispersal routes of snow leopards in project sites
- The Consultant shall do a land use/land cover change analysis of the KKH and Shandur-Chitral
- road project site to assess infrastructure growth patterns and sprawl due to road



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construction

- Design detailed maps developed to identify locations for the construction of wildlife crossings
- Analyze tourist hotspots near/along the KKH to evaluate the link between road construction and the development of hospitality infrastructure through land use/land cover
- Develop map on wildlife roadkills, with a focus on snow leopards and snow leopard prey species

v. **Deliverables:**

GIS based maps

vi. **Required Qualifications/Skills of Consultant:**

- At least 5 years of prior experience in analyzing data and creating visual maps, metrics, readable reports, and database user interfaces
- Skilled in the use of software such as AutoCAD, CADD, Microstation, Topobase, ESRI ArcEditor, SQL, LISP, VBA and .NET Framework
- Extensive experience in using map creation software, including ArcGIS, ArcIMS, ArcView, and Trimble Pathfinder Office and competent in C#, C++, and Perl
- Critical thinking and complex problem-solving skills and aid in finding workable solutions to problems

vii. **Guideline for submission of proposal/expression of interest:**

Interested consultants should submit the following documentation to Muzzammil Ahmed ([mahmed@wwf.org.pk](mailto:mahmed@wwf.org.pk)) and Maham Zahara ([mzahara@wwf.org.pk](mailto:mzahara@wwf.org.pk))

- Brief introduction of consultant (attach detailed CV with references)
- Understanding of the context
- Methodology
- Design Portfolio
- Work plan
- The consultant will submit the cost of assignment in lump sum including all applicable taxes of the Government of Pakistan.

viii. **Selection Criteria:**

Applicant's proposal shall be evaluated based on Quality and Cost Based Selection (QCBS) method. Under QCBS both technical and financial proposals shall be evaluated as per following criteria against a maximum score of 100 points.

- Technical Proposal 70%
- Financial Proposal 30%

The following criteria shall be used as a basis for evaluation of technical proposals:

- Qualifications (maximum 30 points)
- Experience relevant to the assignment (maximum 30 points)
- Adequacy of the proposed methodology and work plan (maximum 20 points)
- Skills & Competencies for the assignment (maximum 10 points)
- Prior experience with WWF-Pakistan (maximum 10 points)

Note: Late/ incomplete submissions will not be accepted. Only three (03) top ranked firms will be included in the comparative process.