

# Strengthening biodiversity solutions through mobile and digital technology

## Statement of Work

June 2023

### GSMA ClimateTech programme

The mission of the [GSMA's ClimateTech Programme](#) is to unlock the power of digital technology to create a low-carbon and climate resilient future. Through our research activities, we identify, promote and inform opportunities for digital innovation and develop pathways for aligning climate action with the sustainable development agenda. We also catalyse vital partnerships between the GSMA, the mobile industry, tech innovators, governments and the development sector with the aim of reducing fragmentation, facilitating scale and promoting collective action.

### Context

The Convention on Biological Diversity (CBD) defines biodiversity as “the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species, and of ecosystems”<sup>1</sup>. This can be further broken down to three levels: genetic diversity<sup>2</sup>, species diversity<sup>3</sup>, and ecosystem diversity<sup>4</sup>.

Human well-being and economic development have greatly improved in the past century, but this progress has come at the cost of harming the world's ecosystems. Biodiversity loss, driven primarily by human activities such as habitat destruction, pollution, and climate change, is one of the most pressing environmental challenges of our time. Up to one million species are at risk of extinction, while 75% of land surface has been significantly altered by human activities, and over 85% of wetlands have been lost<sup>5</sup>. The staggering decline of species diversity and ecosystems worldwide not only threatens the survival of countless plant and animal species, but also has far-reaching consequences for human well-being, including the provision of food, water, security and livelihoods.

Low- and middle-income countries (LMICs) host the world's biodiversity hotspots and are facing the greatest impact<sup>6</sup>. The crisis exacerbates existing inequalities, by disproportionately affecting vulnerable communities' access to essential natural resources, livelihood opportunities, and resilience against environmental challenges. This is particularly felt by Indigenous Peoples and local communities (IP&LCs) who have long been the custodians of such ecosystems. While IP&LCs comprise around 6% of the population, they are protectors of an estimated 80% of the world's biodiversity<sup>7</sup> and are central to all efforts to safeguard it.

Mobile and digital technologies offer growing potential to address biodiversity needs across the prevention of loss and restoration, sustainable use, as well as access and benefit sharing<sup>8</sup>.

<sup>1</sup> [The Convention on Biological Diversity, Article 2. Use of Terms.](#)

<sup>2</sup> Genetic diversity: The variation of genes both within and between populations of specific plant and animal species.

<sup>3</sup> Species diversity: The variety of different plant and animal species within a given area.

<sup>4</sup> Ecosystem diversity: The range of habitats, species populations and ecological processes that occur in a region.

<sup>5</sup> [IPBES \(2019\) Global Assessment Report on Biodiversity and Ecosystem Services](#)

<sup>6</sup> 8 out of the 10 most biodiverse countries are Brazil, Indonesia, China, Colombia, Mexico, Peru, India, Ecuador.

<sup>7</sup> [World Bank – Indigenous Peoples](#)

<sup>8</sup> See for example Nature4Climate reports (2022) [The Nature Tech Market](#) or Nature4Climate (2022) [What you can measure, you can manage.](#)

Nature-based solutions<sup>9</sup> are key to this, as they focus on deploying tools and techniques to alleviate biodiversity challenges; measure, report and verify climate and biodiversity data; create transparency and accountability, such as tracing supply chain sources for natural resources; and connecting individuals and communities together to share knowledge and best practices<sup>10</sup>.

Research to date shows a growing diversity of technology being deployed in this space. Innovations range from sensor-based detection and prevention of unwanted activities in forests (such as logging, poaching, or fires)<sup>11</sup>, to the use of drones for ecosystem restoration<sup>12</sup>. Meanwhile, satellite imagery is being employed to effectively monitor, report, and verify nature-based solutions<sup>13</sup>, while blockchain technology can help enhance the transparency of reforestation efforts<sup>14</sup>. However, further evidence is needed on the effectiveness of these solutions, considering their impact on biodiversity and ecosystem conservation, their potential scalability in different contexts, and specifically what business models are needed to ensure their long-term sustainability. Research should also consider the socio-economic implications and potential trade-offs associated with the adoption of these technologies for IP&LCs.

Addressing biodiversity loss requires concerted efforts from multiple stakeholders. This was recognised through the Kunming-Montreal Global Biodiversity Framework, where countries committed to protect and conserve at least 30 per cent of global land area by 2030<sup>15</sup>. Meanwhile, the 2030 Agenda for Sustainable Development centres on biodiversity, its conservation, the sustainable use of its components, and the fair and equitable distribution of the benefits<sup>16</sup>. It particularly recognises the importance of global cooperation and partnerships among governments, civil society and the private sector to achieve these goals.

Certainly, the private sector is under growing pressure to demonstrate their commitment to achieving biodiversity targets and to report on their contributions. This is driven by government regulations, international agreements, and consumer demand for sustainable products and services. As a result, many companies are now developing biodiversity strategies, setting targets, and implementing monitoring and reporting systems to measure their progress – including Mobile Network Operators (MNOs).

The GSMA ClimateTech programme conducted preliminary consultations with three MNOs in May 2023 to understand existing activities and drivers for engaging in biodiversity projects. Most are still exploring what role they can play and how to ensure activities align both commercial interests and global biodiversity goals. Some mobile operators have already invested in biodiversity-related activities. For example, Safaricom has partnered with the Kenya Forest Service with the aim to grow 5 million trees<sup>17</sup>, while Airtel Africa is using data technology to help monitor and protect rhinos in Kenya<sup>18</sup>. Other common examples identified from these discussions and desk research include MNOs employing Artificial Intelligence or satellite data to support government agencies and wildlife services to address human-wildlife conflict, tackling poaching or to help promote reforestation. The informal discussions highlighted that key motivators for MNOs to support efforts to address biodiversity loss include:

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<sup>9</sup> Nature-based solutions leverage nature and the power of healthy ecosystems to protect people, optimise infrastructure and safeguard a stable and biodiverse future. [International Union for Conservation of Nature](#).

<sup>10</sup> WWF (2022) [The Biodiversity Data Puzzle](#)

<sup>11</sup> For example, World Resources Institute's, [Global Forest Watch](#)

<sup>12</sup> For example, [WeRobotics](#)

<sup>13</sup> For example, [Boomitra](#)

<sup>14</sup> For example, [Open Forest Protocol](#)

<sup>15</sup> Conservation International (2022). [Statement: Kunming-Montreal Global Biodiversity Framework Solidifies 30x30 Target](#)

<sup>16</sup> <https://www.cbd.int/doc/c/e6d3/cd1d/daf663719a03902a9b116c34/cop-15-l-25-en.pdf>

<sup>17</sup> [Safaricom Sustainability Report 2022](#)

<sup>18</sup> [Airtel Africa Annual Report and Accounts 2020](#)

- *Environmental, Social and Governance (ESG) reporting:* Private sector businesses, including MNOs, are required to conform to the United Nations Global Compact guidelines for ESG and sustainability reporting. This makes the environment a core business of the private sector as it also touches on other socio-economic aspects, such as livelihoods and social norms, of their business markets.
- *Government relations:* Investment in biodiversity can help MNOs to strengthen their relationships with governments as interventions are tied to state-owned natural resources, such as conservancies, rivers or forests. This helps to support government efforts to meet their Nationally Determined Contributions.
- *Commercial motivations:* Biodiversity conservation has opened up new customer markets for MNOs and other private sector entities, allowing them to introduce their commercial products and services to these markets.

Given the crucial role that investment and support from the private sector can offer to ongoing biodiversity efforts, further research is needed to understand barriers and incentives for future partnerships that can facilitate digital solutions that promote the sustainable use of ecosystems and biodiversity. This should focus particularly on opportunities and levers to foster collaboration, as well as partnership models that could incentivise future action.

## Research objectives

The GSMA ClimateTech programme will conduct new research to explore the role of mobile and digital technologies in strengthening biodiversity solutions and how the private sector, including mobile network operators, can support these efforts.

The research will aim to

1. Map the existing role of mobile and digital-enabled solutions in addressing biodiversity challenges in LMICs
2. Identify the range of business models being used within biodiversity efforts, classifying which approaches are high-impact i.e. solutions that are (1) successfully addressing biodiversity loss, (2) commercially viable and (3) scalable
3. Examine the extent to which the private sector, including MNOs, are currently involved in biodiversity conservation efforts to better understand their role and motivations in these activities, and
4. Explore potential and existing opportunities and barriers for private sector partnerships in strengthening biodiversity, including the role of MNOs. This includes understanding the different value-adds for MNO investment in the biodiversity space and what benefits they can, or could, derive from such activities.

The proposed study builds on GSMA's existing research related to the role of mobile and digital technology in natural resource management<sup>19</sup> and will deepen the evidence base specifically on biodiversity solutions. It will seek to offer concrete recommendations to drive private sector engagement, commitments and investment in such solutions.

This research also aligns with the current [GSMA Innovation Fund for Climate Resilience and Adaptation 2.0](#) which will support the testing and scaling of mobile and digital technology solutions that contribute to climate resilience through activities strengthening biodiversity.

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<sup>19</sup> See [GSMA \(2020\) Digital Dividends in Natural Resource Management](#) and [GSMA \(2023\) Exploring barriers and incentives to digital solutions in Natural Resource Management](#)

## Methodology

The research is expected to include the following key phases. However, suggestions for alternative approaches are welcomed by consultants:

### Phase 1: Literature review and stakeholder mapping

**Literature review** – The first phase of the study will involve a comprehensive assessment of literature to map existing mobile and digital solutions being used to address biodiversity challenges, documenting trends in application, a list of key use cases, and their relative impact. It should also consider the business models being employed, and private sector engagement with this topic. This should draw from academic literature, policy documents, and reports from relevant organisations. The geographic focus will be low- and middle-income countries. Insights gained through the literature review will be used to identify high-impact use cases for further profiling.

**Stakeholder mapping** – The consultants should identify priority stakeholders to engage for key informant interviews. This should include practitioners working directly on biodiversity solutions across LMICs, academics, policymakers, and private sector actors. Where necessary, GSMA can support in introductions with stakeholders. Consultants are asked to specify the level of input required.

**Analysis of GSMA Innovation Fund for Climate Resilience and Adaptation 2.0 applications** – In parallel with the consultants' work, the GSMA ClimateTech programme will conduct analysis of pitches received by the Fund with solutions that focus specifically on strengthening biodiversity to capture indicative trends of solutions being used by innovators across LMICs.

### Phase 2: Interviews and case studies

**Case study interviews** – The literature review will be used to refine the scope of the planned case study interviews, identifying at least 5 examples which illustrate high impact mobile and digital solutions underpinned by sustainable business models. This should draw from a range of geographies and technologies.

**Key stakeholder interviews** – The consultant will lead on in-depth interviews with individuals identified in Phase 1 to answer key research questions. This should include a range of perspectives, including policymakers, practitioners and private sector answers. Where possible, we would like to capture the perspective of local community stakeholders (e.g. IP&LCs, community-based organisations, organisations representing the interests of IP&LCS) to understand their views on the relative benefits or constraints of applying mobile/digital solutions to address their local biodiversity-related challenges. Another priority group for interviews is MNOs to capture their current activities, interest-levels and constraints in engaging with biodiversity projects.

### Phase 3: Analysis and reporting

**Analysis** – Analysis of the literature review and stakeholder interviews should be completed to develop key insights, including a minimum of 5 high impact case studies and recommendations for priority stakeholders.

**Validation Workshop** – At the end of the project, the consultants and GSMA will share initial findings from the research in a workshop with leading experts in the field. The workshop will help to validate the findings, sharpen (or gain consensus) on the recommendations to ensure

that they are both relevant and actionable, and create a group of interested experts that are 'invested' in the report to support uptake and impact of the findings.

**Reporting** – Following the validation workshop, the consultant will produce a written report and summary PowerPoint presentation which answer the key research questions. The insights should be used to develop practical, action-oriented recommendations for GSMA, other private sector actors, digital innovators, development organisations and any other key stakeholders that will help drive progress, support sustainable development and foster public-private collaboration in reducing and reversing biodiversity loss.

### Key Deliverables

- A written report (c35-40 pages in length) incorporating key trends and case studies to exemplify findings from the research objectives listed above. The exact content and length will be agreed in advance between the GSMA and selected consultant.
- A summary PowerPoint presentation of key findings and recommendations

These deliverables will be used by the GSMA to produce further outputs for key dissemination events and public content (blogs, short reports, etc).

### Timeline

An indicative timeline for this study is outlined below, with a view to the full report being completed by the end of 2023.

Phase	Activity	Deadline
<b>Procurement</b>	Proposals received by GSMA	30 June 2022
	Supplier selected	12 July 2023
	Contracting	28 July 2023
<b>Research</b>	Kick-off	31 July 2023
	Literature review and stakeholder discussion guide drafting	18 August 2023
	Stakeholder interviews	22 September 2023
<b>Analysis and reporting</b>	First draft report from consultant with key findings	6 October 2023
	Validation workshop	12 October 2023
	Report revisions	27 October 2023
	Finalised report	3 November 2023
	Draft shared with Sida for feedback	10 November 2023
<b>Publication</b>	Development of GSMA report and publication (copy edit and design)	December 2023
	Report published	January 2024

## Application and selection process

Interested applicants are asked to submit a short proposal document outlining the following:

1. Details of the firm/consultants' knowledge and expertise on this topic, previous experience in this area, including reference work and clients.
2. Name and CVs of the coreteam working on the project
3. Proposal of plan to complete the work including:
  - High-level proposed approach and methodology
  - High-level schedule and activity timeline
  - Please note any limitations, risks and mitigations
  - Any additional considerations that you feel have been left out
4. Budget including:
  1. Personnel fees (broken down by name, role, activity, daily fee rate and proposed number of days per deliverable)
  2. The GSMA default currency requirement for all proposals is 'UK Pounds Sterling', this will be the contract currency for the successful Respondent

Due to GSMA compliance requirements, exact project budgets cannot be provided at this stage. You are, however, able to provide a few implementation/budget options that can help us assess value for money and we can align our project scope to the relevant budget after a consultant has been selected.

Proposals should be submitted by **Friday 30<sup>th</sup> June 2023 5pm UK** to Anna Colquhoun [acolquhoun@gsma.com](mailto:acolquhoun@gsma.com), Judith Mulwa [jmulwa@gsma.com](mailto:jmulwa@gsma.com) and Henry Bowes [hbowes@gsma.com](mailto:hbowes@gsma.com).

GSMA may conduct interviews in the week commencing 3<sup>rd</sup> July 2023.