

IPSI Case Study Summary Sheet

Basic Information

Title of case study <i>(should be concise and within approximately 25 words)</i>			
Millets pathway to sustainable development and entrepreneurship <i>A case study from Baherakhar Tribal Village of Balaghat District, Madhya Pradesh, India</i>			
Submitting IPSI member organization(s)			
Integrated Development Organisation, Bhopal, Madhya Pradesh, India			
Other contributing organization(s) <i>(IPSI members and/or non-members)</i>			
Indian Institute of Forest Management, Bhopal, Madhya Pradesh			
Author(s) and affiliation(s)			
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Format of case study <i>(manuscript or audiovisual)</i>	Manuscript	Language	English
Key words <i>(3-5 key concepts included in the case study)</i>			
Millets, Tribe, Traditional Knowledge, Baiga, Livelihood			
Date of submission <i>(or update, if this is an update of an existing case study)</i>		02-11-2024	
Web link <i>(of the case study or lead organization if available for more information)</i>		www.idoglobal.org	

Geographical Information

Country <i>(where site(s) or activities described in the case study are located – can be multiple, or even “global”)</i>									
India									
Location(s) <i>(within the country or countries – leave blank if specific location(s) cannot be identified)</i>									
Balaghat, Madhya Pradesh, India									
Longitude/latitude or Google Maps link <i>(if location is identified)</i>									
Latitude and longitude coordinates are: 21.812876, 80.183830.									
Ecosystem(s) <i>(please place an “x” in all appropriate boxes)</i>									
Forest	x	Grassland		Agricultural	x	In-land water		Coastal	
Dryland		Mountain		Urban/peri-urban		Other (Please specify)			
Socioeconomic and environmental characteristics of the area <i>(within 50 words)</i>									
Baherakhar village in Balaghat, M.P., features a tribal population predominantly from the Baiga tribe, with approximately 17,146 individuals living in isolated communities. The area is densely forested, covering about 4,775.54 sq. km, and is rich in natural resources like teak, sal, and tendu trees. Despite its ecological wealth, low literacy rates, and limited employment opportunities have trapped the community in poverty, leading to a decline in traditional millet cultivation and worsening food security. These socio-economic challenges have disrupted local dietary practices and overall well-being.									
Description of human-nature interactions in the area <i>(land-use, traditional resource management practices etc. – within 50 words)</i>									
In Baherakhar village, human-nature interactions are deeply rooted in traditional agricultural practices, primarily focused on millet cultivation, such as Kodo and Kutki, which thrive in local climatic conditions. Villagers employ sustainable land-use techniques, including crop rotation and polyculture, to enhance soil fertility and biodiversity. Ancestral knowledge									

guides the community in resource management, with practices like mixed cropping and selective harvesting of forest products, which maintain ecological balance. Additionally, seasonal rituals and festivals celebrate the agricultural cycle, reinforcing the cultural significance of nature in their daily lives and fostering a sense of stewardship over their environment.

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Status (“ongoing” or “completed”)	Completed	Period (MM/YY to MM/YY)	13-03-24 to 15-8-24
Rationale <i>(why activities or policies described, or information shared in the case study are needed – within 50 words)</i>			
The rationale for this study stems from the critical role of millets in the Baherakhar village's agricultural landscape, local economy, and dietary practices. Despite their historical significance, millet cultivation has declined due to socio-economic pressures and shifting agricultural trends. Understanding this decline is essential to promote food security, sustainable agricultural practices, and resilience among the Baiga tribe, whose livelihoods depend on these crops. This study aims to uncover the factors contributing to the decline of millets and explore potential strategies for revitalization.			
Objectives <i>(goals of activities or policies described, or of producing the case study – within 50 words)</i>			
1) Analyze the historical significance of millets in the area and understand their role in the local economy and dietary patterns. 2) Assess the current scenario of millet cultivation in Baherakhar village, including the area of land dedicated to millet cultivation and crop yields. 3) Identify and examine the reasons for the decline in millet production and usage, taking into account socio-economic, environmental, and cultural factors. 4) Explore the market dynamics, consumer preferences, and demand for millets in the study area.			
Activities and/or practices employed <i>(within 50 words)</i>			
The study involved several activities: conducting structured surveys and interviews with 35 selected farmers, organizing focus group discussions (FGDs) to gather community insights, and engaging with key stakeholders, including local authorities and agricultural experts. The research combined qualitative and quantitative methods to capture a comprehensive view of millet cultivation practices, market dynamics, and consumer preferences.			
Monitoring methodology <i>(e.g. GIS-based monitoring, citizen science, Resilience Indicators in SEPLS, survey - within 40 words)</i>			
Monitoring was conducted using a mixed-methods approach, incorporating structured surveys and in-depth interviews. Data collection was supplemented by focus group discussions to gather community perspectives. Quantitative data were analyzed through descriptive statistics, including mean, median, and standard deviation, while qualitative insights helped contextualize the findings within the local socio-economic framework.			
Results <i>(within 50 words)</i>			
The study on Baherakhar village reveals a decline in millet cultivation due to factors like shifting agricultural practices, market demand, government policies, and processing challenges. The village's historical reliance on millets for both food and income is evident, but the shift towards cash crops like rice and wheat has significantly impacted millet production. Despite these challenges, there are opportunities for revitalizing millet farming. Enhancing soil health, improving market linkages, and value addition can boost millet's economic viability. Government support through MSP, promoting millet in nutrition programs, and facilitating access to modern machinery can further incentivize farmers. By addressing these factors and fostering community engagement, Baherakhar village can revive millet cultivation, ensuring food security, preserving cultural heritage, and promoting sustainable development.			
Lessons learned <i>(factors in success or failure, challenges and opportunities – within 40 words)</i>			
The study highlighted several critical lessons. Community engagement and participatory methods proved vital for gathering accurate data and fostering local ownership of revitalization efforts. Raising awareness about the nutritional and ecological benefits of millets can motivate farmers to return to traditional practices. However, socio-economic pressures, including low income and market forces favoring cash crops, significantly hinder millet production, while poor literacy and negotiation capacity among the Baiga tribe exacerbate their vulnerabilities. On the positive side, the growing global interest in millets, underscored by the UN's declaration of 2023 as the International Year of Millets, offers an opportunity to enhance research and support for millet			

farmers. Collaborative initiatives focusing on education and awareness can further boost millet consumption and cultivation, ultimately contributing to food security and sustainable livelihoods in the region..
Funding <i>(any relevant information about funding of activities or projects described in the case study)</i>
The study was funded by the Integrated Development Organisation.

Contributions to Global Agendas

CBD Kunming - Montreal Global Biodiversity Framework (<https://www.cbd.int/gbf/targets/>)

Please place an "x" under a number to rate how much this case study contributes to each CBD Target.

Note 1: The number scale goes from 1, the lowest rating, to 5, the highest rating. N/A indicates "not applicable".

Note 2: Please only mark those to which the case study has or will actually contribute, not those to which it could potentially contribute in the future.

Target		Description	Contribution					
			1	2	3	4	5	N/A
1. Reducing threats to biodiversity	1	Ensure that all areas are under participatory, integrated and biodiversity inclusive spatial planning and/or effective management processes addressing land- and sea-use change, to bring the loss of areas of high biodiversity importance, including ecosystems of high ecological integrity, close to zero by 2030, while respecting the rights of indigenous peoples and local communities.					X	
	2	Ensure that by 2030 at least 30 per cent of areas of degraded terrestrial, inland water, and marine and coastal ecosystems are under effective restoration, in order to enhance biodiversity and ecosystem functions and services, ecological integrity and connectivity.						X
	3	Ensure and enable that by 2030 at least 30 per cent of terrestrial and inland water areas, and of marine and coastal areas, especially areas of particular importance for biodiversity and ecosystem functions and services, are effectively conserved and managed through ecologically representative, well-connected and equitably governed systems of protected areas and other effective area-based conservation measures, recognizing indigenous and traditional territories, where applicable, and integrated into wider landscapes, seascapes and the ocean, while ensuring that any sustainable use, where appropriate in such areas, is fully consistent with conservation outcomes, recognizing and respecting the rights of indigenous peoples and local communities, including over their traditional territories.					X	
	4	Ensure urgent management actions to halt human induced extinction of known threatened species and for the recovery and conservation of species, in particular threatened species, to significantly reduce extinction risk, as well as to maintain and restore the genetic diversity within and between populations of native, wild and domesticated species to maintain their adaptive potential, including through in situ and ex situ conservation and sustainable management practices, and effectively manage human-wildlife interactions to minimize human-wildlife conflict for coexistence.					X	
	5	Ensure that the use, harvesting and trade of wild species is sustainable, safe and legal, preventing overexploitation, minimizing impacts on non-target species and ecosystems, and reducing the risk of pathogen spillover, applying the ecosystem					X	

		approach, while respecting and protecting customary sustainable use by indigenous peoples and local communities.						
	6	Eliminate, minimize, reduce and or mitigate the impacts of invasive alien species on biodiversity and ecosystem services by identifying and managing pathways of the introduction of alien species, preventing the introduction and establishment of priority invasive alien species, reducing the rates of introduction and establishment of other known or potential invasive alien species by at least 50 per cent by 2030, and eradicating or controlling invasive alien species, especially in priority sites, such as islands.						X
	7	Reduce pollution risks and the negative impact of pollution from all sources by 2030, to levels that are not harmful to biodiversity and ecosystem functions and services, considering cumulative effects, including: (a) by reducing excess nutrients lost to the environment by at least half, including through more efficient nutrient cycling and use; (b) by reducing the overall risk from pesticides and highly hazardous chemicals by at least 8half, including through integrated pest management, based on science, taking into account food security and livelihoods; and (c) by preventing, reducing, and working towards eliminating plastic pollution.						X
	8	Minimize the impact of climate change and ocean acidification on biodiversity and increase its resilience through mitigation, adaptation, and disaster risk reduction actions, including through nature-based solution and/or ecosystem-based approaches, while minimizing negative and fostering positive impacts of climate action on biodiversity.					X	
2. Meeting people's needs through sustainable use and benefit-sharing	9	Ensure that the management and use of wild species are sustainable, thereby providing social, economic and environmental benefits for people, especially those in vulnerable situations and those most dependent on biodiversity, including through sustainable biodiversity-based activities, products and services that enhance biodiversity, and protecting and encouraging customary sustainable use by indigenous peoples and local communities.					X	
	10	Ensure that areas under agriculture, aquaculture, fisheries and forestry are managed sustainably, in particular through the sustainable use of biodiversity, including through a substantial increase of the application of biodiversity friendly practices, such as sustainable intensification, agroecological and other innovative approaches, contributing to the resilience and long-term efficiency and productivity of these production systems, and to food security, conserving and restoring biodiversity and maintaining nature's contributions to people, including ecosystem functions and services.					X	
	11	Restore, maintain and enhance nature's contributions to people, including ecosystem functions and services, such as the regulation of air, water and climate, soil health, pollination and reduction of disease risk, as well as protection from natural hazards and disasters, through nature-based solutions and/or ecosystem-based approaches for the benefit of all people and nature.					X	
	12	Significantly increase the area and quality, and connectivity of, access to, and benefits from green and blue spaces in urban and densely populated areas sustainably, by mainstreaming the conservation and sustainable use of					X	

		biodiversity, and ensure biodiversity-inclusive urban planning, enhancing native biodiversity, ecological connectivity and integrity, and improving human health and well-being and connection to nature, and contributing to inclusive and sustainable urbanization and to the provision of ecosystem functions and services.						
	13	Take effective legal, policy, administrative and capacity-building measures at all levels, as appropriate, to ensure the fair and equitable sharing of benefits that arise from the utilization of genetic resources and from digital sequence information on genetic resources, as well as traditional knowledge associated with genetic resources, and facilitating appropriate access to genetic resources, and by 2030, facilitating a significant increase of the benefits shared, in accordance with applicable international access and benefit-sharing instruments.					X	
3. Tools and solutions for implementation and mainstreaming	14	Ensure the full integration of biodiversity and its multiple values into policies, regulations, planning and development processes, poverty eradication strategies, strategic environmental assessments, environmental impact assessments and, as appropriate, national accounting, within and across all levels of government and across all sectors, in particular those with significant impacts on biodiversity, progressively aligning all relevant public and private activities, and fiscal and financial flows with the goals and targets of this framework.					X	
	15	Take legal, administrative or policy measures to encourage and enable business, and in particular to ensure that large and transnational companies and financial institutions: (a) Regularly monitor, assess, and transparently disclose their risks, dependencies and impacts on biodiversity, including with requirements for all large as well as transnational companies and financial institutions along their operations, supply and value chains, and portfolios; (b) Provide information needed to consumers to promote sustainable consumption patterns; (c) Report on compliance with access and benefit-sharing regulations and measures, as applicable; in order to progressively reduce negative impacts on biodiversity, increase positive impacts, reduce biodiversity-related risks to business and financial institutions, and promote actions to ensure sustainable patterns of production.					X	
	16	Ensure that people are encouraged and enabled to make sustainable consumption choices, including by establishing supportive policy, legislative or regulatory frameworks, improving education and access to relevant and accurate information and alternatives, and by 2030, reduce the global footprint of consumption in an equitable manner, including through halving global food waste, significantly reducing overconsumption and substantially reducing waste generation, in order for all people to live well in harmony with Mother Earth.					X	
	17	Establish, strengthen capacity for, and implement in all countries, biosafety measures as set out in Article 8(g) of the Convention on Biological Diversity and measures for the handling of biotechnology and distribution of its benefits as set out in Article 19 of the Convention.					X	

	18	Identify by 2025, and eliminate, phase out or reform incentives, including subsidies, harmful for biodiversity, in a proportionate, just, fair, effective and equitable way, while substantially and progressively reducing them by at least \$500 billion per year by 2030, starting with the most harmful incentives, and scale up positive incentives for the conservation and sustainable use of biodiversity.						X
	19	Substantially and progressively increase the level of financial resources from all sources, in an effective, timely and easily accessible manner, including domestic, international, public and private resources, in accordance with Article 20 of the Convention, to implement national biodiversity strategies and action plans, mobilizing at least \$200 billion per year by 2030, including by: (a) Increasing total biodiversity related international financial resources from developed countries, including official development assistance, and from countries that voluntarily assume obligations of developed country Parties, to developing countries, in particular the least developed countries and small island developing States, as well as countries with economies in transition, to at least \$20 billion per year by 2025, and to at least \$30 billion per year by 2030; (b) Significantly increasing domestic resource mobilization, facilitated by the preparation and implementation of national biodiversity finance plans or similar instruments according to national needs, priorities and circumstances; (c) Leveraging private finance, promoting blended finance, implementing strategies for raising new and additional resources, and encouraging the private sector to invest in biodiversity, including through impact funds and other instruments; (d) Stimulating innovative schemes such as payment for ecosystem services, green bonds, biodiversity offsets and credits, and benefit-sharing mechanisms, with environmental and social safeguards; (e) Optimizing co-benefits and synergies of finance targeting the biodiversity and climate crises; (f) Enhancing the role of collective actions, including by indigenous peoples and local communities, Mother Earth centric actions[1] and non-market-based approaches including community based natural resource management and civil society cooperation and solidarity aimed at the conservation of biodiversity; (g) Enhancing the effectiveness, efficiency and transparency of resource provision and use;						X
	20	Strengthen capacity-building and development, access to and transfer of technology, and promote development of and access to innovation and technical and scientific cooperation, including through South-South, North-South and triangular cooperation, to meet the needs for effective implementation, particularly in developing countries, fostering joint technology development and joint scientific research programmes for the conservation and sustainable use of biodiversity and strengthening scientific research and monitoring capacities, commensurate with the ambition of the goals and targets of the Framework.						X

	21	Ensure that the best available data, information and knowledge are accessible to decision makers, practitioners and the public to guide effective and equitable governance, integrated and participatory management of biodiversity, and to strengthen communication, awareness-raising, education, monitoring, research and knowledge management and, also in this context, traditional knowledge, innovations, practices and technologies of indigenous peoples and local communities should only be accessed with their free, prior and informed consent,[2] in accordance with national legislation.						X
	22	Ensure the full, equitable, inclusive, effective and gender-responsive representation and participation in decision-making, and access to justice and information related to biodiversity by indigenous peoples and local communities, respecting their cultures and their rights over lands, territories, resources, and traditional knowledge, as well as by women and girls, children and youth, and persons with disabilities and ensure the full protection of environmental human rights defenders.						X
	23	Ensure gender equality in the implementation of the Framework through a gender-responsive approach, where all women and girls have equal opportunity and capacity to contribute to the three objectives of the Convention, including by recognizing their equal rights and access to land and natural resources and their full, equitable, meaningful and informed participation and leadership at all levels of action, engagement, policy and decision-making related to biodiversity.						X

UN Sustainable Development Goals (SDGs) (<https://sustainabledevelopment.un.org/sdgs>)

Please place an “x” in the “direct” or “indirect” boxes next to any of the UN Sustainable Development Goals to which the work described in this case study contributes as appropriate. Note: please mark only those that the case actually has made or is making a contribution, not those to which it could make a potential contribution in the future.

SDG	Description	Direct	Indirect
	End poverty in all its forms everywhere	X	
	End hunger, achieve food security and improved nutrition, and promote sustainable agriculture	X	
	Ensure healthy lives and promote wellbeing for all at all ages	X	
	Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all		X
	Achieve gender equality and empower all women and girls	X	
	Ensure availability and sustainable management of water and sanitation for all		X
	Ensure access to affordable, reliable, sustainable and modern energy for all		X
	Promote sustained, inclusive and sustainable economic growth, full and productive employment, and decent work for all	X	
	Build resilient infrastructure, promote inclusive and sustainable industrialisation, and foster innovation		X
	Reduce inequality within and among countries	X	
	Make cities and human settlements inclusive, safe, resilient and sustainable		X
	Ensure sustainable consumption and production patterns	X	
	Take urgent action to combat climate change and its impacts	X	

	Conserve and sustainably use the oceans, seas and marine resources for sustainable development		X
	Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification and halt and reverse land degradation, and halt biodiversity loss	X	
	Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels	X	
	Strengthen the means of implementation and revitalise the global partnership for sustainable development	X	