



WRI INDIA



LANDSCAPE RESTORATION FOR CLIMATE AND COMMUNITIES

Key findings from an opportunity assessment in Sidhi district, Madhya Pradesh





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in Sidhi district, Madhya Pradesh ¹

Landscape Restoration is the deliberate integration and enhancement of tree cover within different land uses. It comprises a range of interventions including forest regeneration, plantations and different types of agroforestry.

The Government of India has committed to a landscape approach under several international agreements and national targets. These include commitments to the Bonn Challenge; Nationally Determined Contributions (NDCs) as part of the Paris Climate Agreement; Sustainable Development Goals; National Mission for Green India; and the sub-mission on agroforestry under the National Mission on Sustainable Agriculture. Identifying restoration potential is a useful first step in planning how these targets can be achieved. The Restoration Opportunities Assessment Methodology (ROAM), developed by IUCN and WRI, offers a flexible, participatory and iterative way of

¹ *Draft findings under peer review.*

identifying restoration potential (Figure 1). The assessment findings aid in identifying: places where different restoration interventions are suitable; key actors and institutions who can support implementation; opportunities and barriers that need to be considered; findings on how restoration can be financed and pinpointing environmental and economic benefits that are likely to flow from landscape restoration.

The ROAM has been implemented in more than 40 countries across the world to identify the most suitable tree-based interventions which will benefit local economy. In India, a first-of-its-kind ROAM assessment was undertaken in Sidhi between October 2016 and September 2017. This note presents key findings from the assessment. Researchers from WRI India, CEL WWF-India, the Institute of Livelihood Research and Training (ILRT) and our local partners implemented the ROAM in Sidhi. District and sub-district level officers from the various government departments such as the forest, horticulture, watershed and state rural livelihoods mission departments participated in stakeholder consultations. Farmers, locally elected leaders, farmer producer companies, NGOs and NABARD's district development officer, Rewa, were also consulted.



Figure 1: Components of ROAM

SIDHI'S CLIMATE AND COMMUNITY

Sidhi is a remote and climate vulnerable district in eastern Madhya Pradesh. It comprises seven tehsils and five blocks (Figure 2). Of these, Kusmi block is a Schedule V area. More than half of Sidhi's population is below the poverty line. Majority of the population in the district is economically dependent on forests, agriculture and wage employment. Changes in forest cover and composition in Sidhi have reduced the availability of fuelwood, fodder and non-timber forest produce. This disproportionately impacts women and marginal communities that are heavily dependent on forests.



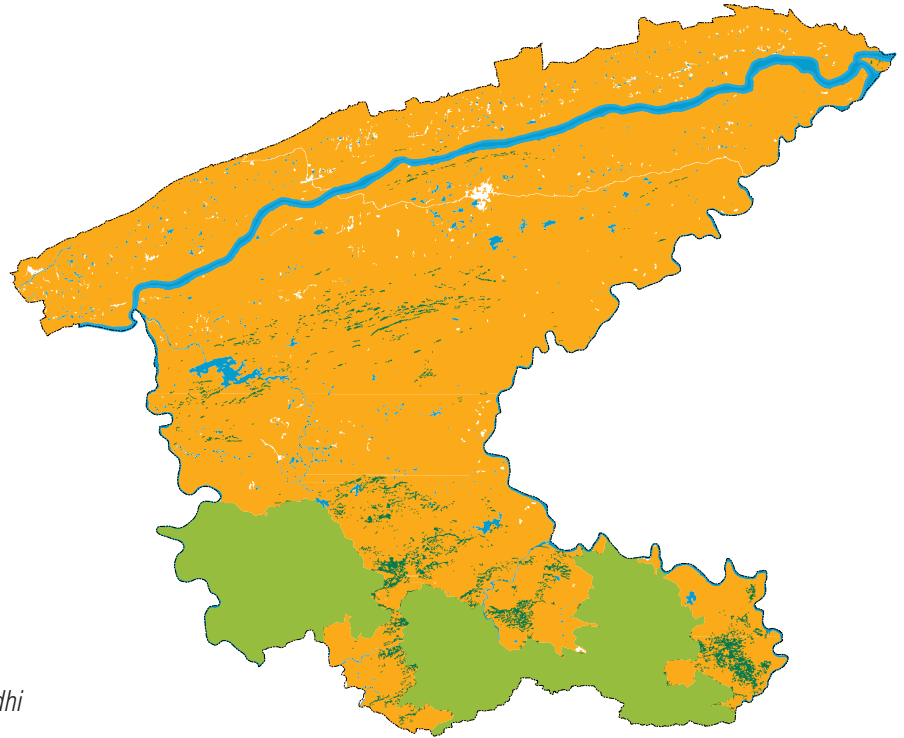
Figure 2: Sidhi district of Madhya Pradesh

Sidhi has more than 350,000 hectares of restoration potential

Sidhi's restoration opportunity excludes waterbodies and built-up areas. It also excludes the conservation zone, i.e., the Sanjay Dubri Tiger Reserve and protection zones [forests of density > 70 percent (Map 1)]. In the remaining area, trees can be integrated into different land uses to improve food production, strengthen biodiversity conservation and sequester carbon.

- Conservation
- Protection
- Restoration opportunity
- River and waterbodies

Map 1: Potential for landscape restoration in Sidhi



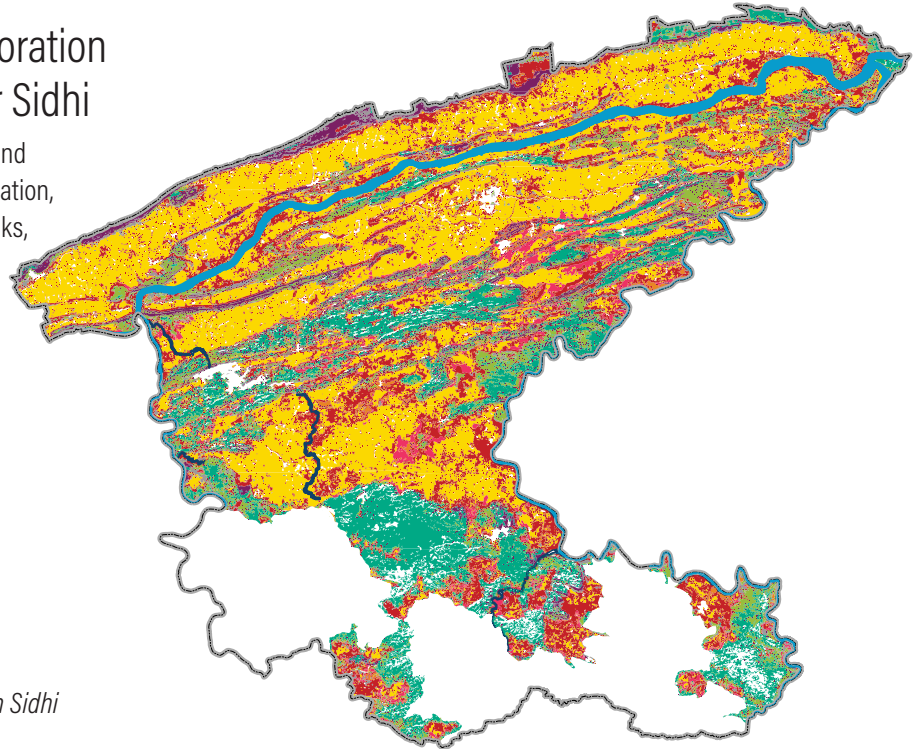
At least eight landscape restoration interventions are suitable for Sidhi

Based on variables such as land ownership, land use, tree cover density, slope, presence of irrigation, presence of bamboo and proximity to riverbanks, eight restoration interventions were found suitable for Sidhi (Map 2).

- Assisted Natural Regeneration (51,374 ha)
- Mixed Plantation (19,285 ha)
- ANR / mixed plantation (42,131 ha)
- Bamboo plantation (19,578 ha)
- Farmer Managed Natural Regeneration (10,151 ha)
- Trees on boundaries (1,43,628)
- Agri-horti-forestry (66,210)
- Pasture land development (7,918)
- Riverbank plantation (3,063)
- River

Total: 3,63,338 hectares

Map 2: Potential for restoration interventions in Sidhi







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Pilot initiatives can be scaled up and models successful elsewhere can be introduced

There are several successful examples of landscape restoration activities in Sidhi that can be scaled up. For instance, communities restored more than 2,400 ha of bamboo forests over four years in partnership with the forest department. These bamboo forests continue being protected by the communities even though the project has ended. Farmers in Sidhi are also experimenting with different models of integrating trees on farms. Successful regeneration models from other parts of Madhya Pradesh and India can also be adapted to Sidhi.



Restoration will provide direct benefits to communities

Achieving Sidhi's restoration potential will provide direct benefits to communities through food security, strengthened energy security and soil and moisture conservation (Figure 3). The demand for these benefits is differentiated in the district; however, the same restoration interventions, with different types of species can help meet local demands. For example, in Rampur, Naikin and Churhat tehsils, the dependence on fuelwood is high but forest and tree cover is sparse. These tehsils also have large areas of irrigated agriculture, suggesting relatively superior agricultural productivity. In contrast, improved food production is a major demand in Majhau and Kusmi tehsils, where agriculture is rain-fed and marginal. These tehsils also have high forest cover and communities appear relatively self-sufficient in their requirement for fuelwood, fodder and non-timber forest produce (NTFPs).

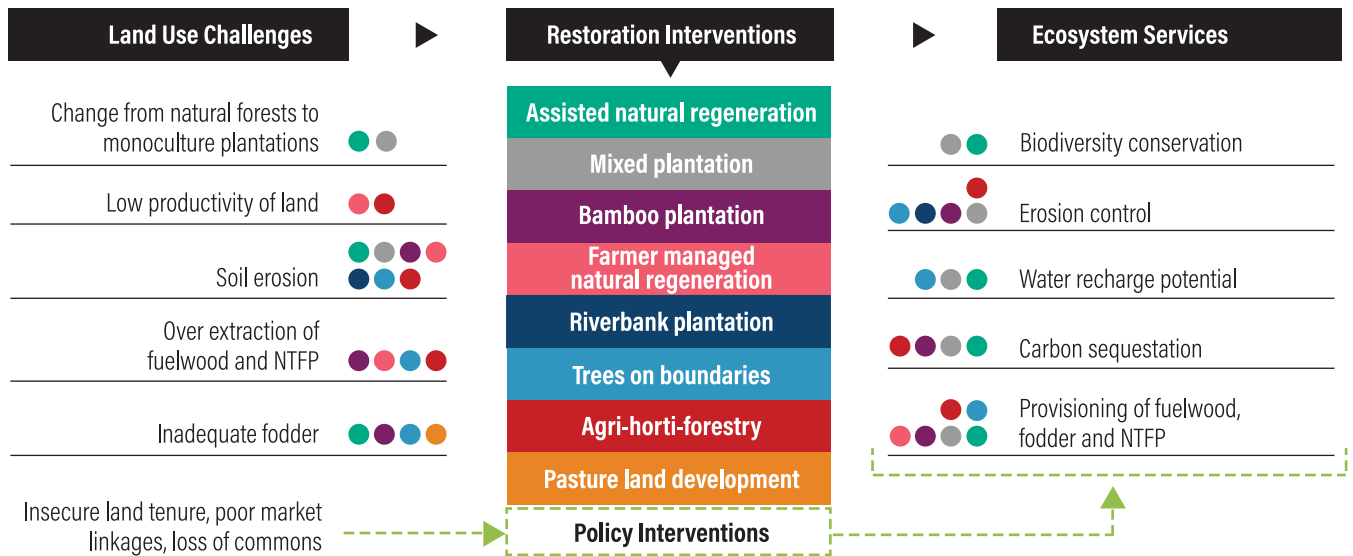


Figure 3: Land use challenges, restoration interventions and ecosystem services

Restoration will generate labour and employment

Sidhi's livelihood assessment indicate that landscape restoration can create wage opportunities of 3.75 million person-days, resulting in INR 710 million (USD 10 million) in wage income. Additionally, value chains for key tree species like Mahua, Bamboo, Palash, Jackfruit, Moringa, and Aonla can be developed by promoting micro-enterprises, cluster and area level federations, and farmer producer companies. These value chains at pre-production, production and processing stages can, at minimum, benefit an estimated 30,000 persons, including women, unemployed youth and landless. These early estimates suggest that landscape restoration could be a catalyst for transformative change in districts with few secondary sector opportunities.



Landscape Restoration will sequester carbon and support tiger conservation

Landscape restoration in Sidhi can contribute to regional and national environmental priorities. Restoration of Sidhi's forest areas is estimated to sequester more than 7 million tonnes of carbon. Implementation of restoration interventions can increase forest carbon stock by 37 percent. Additionally, conservation of the Sanjay Dubri Tiger Reserve and restoration of its buffer zones and forested corridors will provide critical habitat for viable populations of tigers in the entire region.

Many enabling conditions are in place but need to be strengthened

Several enabling conditions necessary for successful landscape restoration are in place in Sidhi but may need strengthening. Policy and programmatic spaces already exist in the forestry, agriculture and rural development sectors that can anchor landscape restoration efforts. For example, the National Working Plan Code 2014 emphasizes a landscape approach to forest management that generates multiple ecosystem services and directly benefits local communities. Agroforestry systems that support food security and livelihood are core to the Sub-mission on Agroforestry being implemented in Sidhi. It is important that implementers and communities are aware of these policy spaces in order for Sidhi to realise its restoration potential. At present, awareness appears to be lacking. For instance, in some villages where communities have regenerated and protected bamboo forests, their previously agreed upon rights to harvest bamboo were denied once the villages were incorporated into the buffer zone of the Sanjay Dubri Tiger Reserve.

There is commitment to landscape restoration in the district as evidenced by ongoing government initiatives and the willingness shown by champions and leaders on the ground. Local knowledge and customary practices also support restoration and have enabled regeneration of degraded land and forests. There are several local level institutions that can provide necessary ground level support and channelize benefits from restoration to communities. However, most of these committees are inactive because of an absence of sustained flows of benefits and a lack of projects with definitive plans of action that can bring committee members together. Findings from the social network analysis indicate that periphery organizations such as Krishi Vigyan Kendras (KVKs), non-governmental organizations with proven track record of implementing development work not currently active in Sidhi are interested in working there to operationalize Sidhi's restoration potential (Figure 4).

The outlay for landscape restoration can be met by various financial mechanisms

Though there are multiple existing and potential sources of financing, the current flow of funds is fragmented and may prove sub-optimal for achieving environmental and development outcomes. The existing government structure constrains convergence of financial resources, so it is critical that different agencies agree upon common landscape restoration plans and exercise their available room for manoeuvring to achieve synergistic goals. This is critical as the estimated costs of implementing landscape restoration in Sidhi is between INR 4372 million (USD 65 million) and INR 7463 million (USD 111 million) over three to ten years. These costs can be met through a combination of public and private investment along with international climate finance. Once restoration opportunities are incorporated into NABARD's Potential Linked Credit Plan for Sidhi, credit opportunities, particularly for entrepreneurship, can be

secured. Other channels such as NABARD's watershed development fund, tribal development fund, rural infrastructure development fund can also provide financial support. Recently, the World Bank signed a USD 24.64 million, five-year-long project with the Government of India that emphasizes a landscape approach. It supports improvements in forest and farm productivity, soil and moisture conservation and strengthened livelihoods for local communities, and focuses on the Central Indian Highlands where Sidhi is located. Finally, the potential for climate mitigation and adaptation through landscape restoration will make Sidhi eligible for domestic and international climate financing, including the Green Climate Fund and the Adaptation Fund.

Critical gaps must be addressed

Three critical gaps must be addressed for the success of landscape restoration in Sidhi. Firstly, land tenure and resource rights must be secured. Sidhi has 42,000 hectares of deemed forests where survey and settlement requirements are incomplete. More than 1,000 villages in Sidhi are affected by a tenurial issue called the orange areas issue. The buffer zone of the Sanjay Dubri Tiger Reserve was expanded recently and there is a lack of clarity on what is permissible in this zone, causing widespread anxiety among local communities about access to and benefits from forests. Secondly, quality planting material must be made available at nominal rates to farmers so that the potential of landscape restoration can be fully realized. Finally, many financial incentives for restoration depend on the availability of market linkages for tree and tree-based products. At present, these market linkages are poorly developed and the existing infrastructure for value addition is underutilized.



CONCLUSION

The Sidhi district is at cross roads. On one hand, business as usual is likely to render the land and its people severely vulnerable to climate change impacts by mid-century. On the other hand, investments in landscape restoration can put the district on a development path that is inclusive and environmentally sustainable. Achieving Sidhi's restoration opportunity requires a collaborative, strategic plan of action along with a commitment to address issues of tenure and markets. Restoration, when implemented well, will deliver direct benefits to large, small and marginal farmers, women and unemployed youth and landless.

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