

Rehabilitating China's Loess Plateau

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Fifteen years ago China's Loess Plateau was a barren region plagued by wind and soil erosion, making farming beyond subsistence virtually impossible. Millennia of agricultural exploitation and relentless grazing by domestic livestock had taken their toll, transforming the once lush region into a dustbowl unsuitable for supporting its rural population. Today, thanks to one of the largest land rehabilitation development projects ever conceived, the plateau is a thriving, lush ecosystem providing improved livelihoods for more than 3 million farmers and their families. The Loess Plateau Watershed Rehabilitation Project, implemented by the Government of the People's Republic of China with the assistance of the World Bank, did more than just transform a region in China—it proved that large-scale ecosystem rehabilitation projects were both possible and replicable, redefining the notion of scaling up in agricultural development and paving the way for similar efforts to take hold in places like Ethiopia and Rwanda.

An ambitious theory of change

A clearly defined and usable theory of change (TOC) is an important component of any successful project and a vital element to the scaling up of successful initiatives. The Loess Plateau project involved a highly ambitious TOC, including transformation of ingrained agricultural practices, large-scale ecosystem rehabilitation, and the introduction of new crops. It built on the success of a model of alternative farming techniques being implemented elsewhere in the country. Establishing incentive and accountability drivers also helped propel this project, as did creating appropriate environmental, policy, and cultural spaces.

The sponsors were willing to take significant risks in their desire to rehabilitate the vast plateau. For the initiative to succeed, farmers in the region had to abandon goat-herding practices that they had employed for generations, and the sponsors introduced new crops on the terraced mountain slopes and in the fertile valley fields. Although this project's TOC required a major shift in long-standing cultural and economic practices among project beneficiaries, its implementing agencies were able to bring about these changes through the identification and creation of drivers and spaces—components that have since been incorporated into the scaling-up efforts of similar interventions.

Drivers

The Loess Plateau project featured a number of key drivers that served as crucial elements for the project's success. First was the model of changed agricultural practice, which served as the catalyst for the initial implementation processes. It was not until the project sponsors were exposed to a simple model for change being implemented in the nearby village of Shageduo that an initial breakthrough for the rehabilitation project was achieved and important drivers forged. Replacing traditional goat herding with walnut tree farming in Shageduo had resulted in drastically

improved farmlands in the gullies near the village, and this example provided the change model underlying the implementation of the plateau project over the next decade. A first driver, the idea that man-made degradation of large-scale ecosystems could be reversed through agricultural initiatives, was coupled with a second—the model of successful and sustainable alternative livelihood practices. With this combination, the sponsors were able to demonstrate the positive implications of this process and produce a working model for replication.

In addition, the drivers of incentives and accountability helped solidify the crucial components of legitimacy and buy-in among local farmers whose participation ensured sustainability. Building on the demonstrated success of the replacement of goats with trees—which provided both economic and ecological incentives—and providing crop ownership opportunities through low-cost, long-term land-leasing options created the necessary economic incentives and stakeholder buy-in to induce the required behavior change.

Finally, the success of this project was ensured by one additional driver: a series of champions. Throughout project design, implementation, and completion, champions from both the World Bank and within various Chinese government ministries continuously monitored and pushed for the progress of this intervention and quickly responded to any problems that arose—helping the project build continuously on successes and avoid potential pitfalls.

Spaces

The Loess Plateau Watershed Rehabilitation project was successful in both identifying key obstacles that might have hindered success and minimizing the risks posed by these obstacles. Of the different spaces created during this intervention, four areas stand out as being of particular importance in the scaling-up context.

- **Natural resource/environmental space:** Of utmost importance to this project's design was the ultimate rehabilitation of the Loess Plateau watershed, which had the triple-win potential of improving a large-scale ecosystem, creating an agricultural environment that was more sustainable for rural livelihoods, and contributing to climate change adaptation and mitigation. Without the creation of appropriate natural resource and environmental space, this project would not have succeeded. The spaces created through enlarged and improved terracing along mountain slopes and fertile fields in the once-barren and flood-prone valleys resulted in both enlarged areas for agricultural production and increased yields from improved land management. Equally important to the creation of these spaces was the transformation of the space once dominated by herds of goats and other livestock. Newly constructed pens allowed for necessary shifts in land management to occur without abolition of the culturally ingrained practices of goat

herding—ensuring the retention of some traditional agricultural spaces along with the incorporation of new ones.

- **Policy space:** The natural resource and environmental spaces were paramount in the creation of this project, but the creation of policy space was essential for continued sustainability. Two key policy actions—the implementation of a grazing ban and the creation of land-leasing options for farmers—provided necessary spaces for success in the short, medium, and long terms. The grazing ban was essential in allowing grasses, trees, and shrubs to grow and in combating soil erosion. This ban allowed for the natural vegetation to fully recover and for astragalus and alfalfa to be grown on a large scale, increasing vegetative cover in the area—even during drought periods—and generating new economic opportunities through fodder production. The implementation of a land-leasing program by the Chinese government allowed farmers to reap the benefits from the output of their fields and orchards, providing economic and cultural incentives for those who ultimately guarantee the sustainability of this project. These policies provided the necessary time for ecological changes to take hold and economic benefits to be fully realized—time that had not been afforded to similar but unsuccessful projects in the past.
- **Fiscal/financial space:** Inherent to the overall success of policy spaces was the creation of fiscal and financial spaces, which allowed for a shift in agricultural practices without interruption to the economic livelihoods of the farmers most affected by these shifts. To help livestock owners adjust to the newly introduced grazing bans, informal credit was made available and project loans were created that allowed farmers to construct animal sheds and pens, procure fodder-processing equipment, and purchase animals more suitable for pen feeding. The end result of these actions was a sharp increase in incomes and productivity as farmers moved to more intensive production systems. They subsequently benefited from higher wool yields and improved quality of wool.
- **Cultural space:** The creation of cultural spaces is often the most challenging element for rural development project design and implementation. The Loess Plateau project involved the daunting task of changing embedded farming practices that had been deeply ingrained in the region's culture for generations. Recognizing that the long-term benefits of

change—especially change that requires radical cultural shifts—are difficult to convey to farmers who rely on the present landscape for their livelihoods, project implementers were able to utilize the policy space to create short-term incentives (for example, the aforementioned credit and loans to smallholders) to support fundamental cultural change. The short-term measures allowed for the long-term benefits to take hold, convincing stakeholders that these shifts could actually be beneficial. Furthermore, these measures were reinforced by deliberately gentle changes—shifting crops and penning livestock instead of eradicating traditional farming techniques all together.

Conclusion

When the Loess Plateau Watershed Rehabilitation Project was first conceived, the common assumption among agricultural development practitioners was that the project, if successful, could not be replicated. The overall size and scope of the project, the low capacity of the targeted beneficiaries, and the rigid political structure of the implementing client country convinced many that this initiative could never be scaled up. The implementers of the Loess Plateau project were instead able to demonstrate that adherence to manageable theories of change, implementation of well-understood drivers, and creation of necessary spaces can provide a roadmap for scaling up that is adaptable to the conditions of any project's scope, scale, or location.

For further reading: A. Hartmann and J. Linn, "Scaling Up: A Framework and Lessons for Development Effectiveness from Literature and Practice." Wolfensohn Center for Development Working Paper 5, Washington, DC: The Brookings Institution, 2008; D. Pachico and S. Fujisaka, eds., *Scaling Up and Out: Achieving Widespread Impact through Agricultural Research* (Cali, Colombia: International Center for Tropical Agriculture, 2004), available at http://webapp.ciat.cgiar.org/impact/pdf/scaling_up.pdf; World Bank, "Restoring China's Loess Plateau," News and Views, <http://www.worldbank.org/en/news/2007/03/15/restoring-chinas-loess-plateau>; World Bank Institute, Climate Change Unit, "Rehabilitating a Degraded Watershed: A Case Study from China's Loess Plateau." Washington, DC: The World Bank Group, 2010, available at <http://wbi.worldbank.org/wbi/Data/wbi/wbicms/files/drupal-acquia/wbi/0928313-03-31-10.pdf>

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