



Case report

Institutional innovation and forest landscape restoration in China: Multi-scale cross-sector networking, household fiscal modernization and tenure reform

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ABSTRACT

From 1999, China launched the Conversion of Cropland to Forest Program, an expansive forest landscape restoration project engaging 17% of the rural population in tree planting and management on ca. 30 million ha of degraded land and farmland in vulnerable watersheds. We describe the emergence of innovative institutions, horizontally and vertically networked from central to village government scales, articulating forestry with planning, finance, land, agriculture and water sectors. Compensation to participating households in grain was replaced by direct electronic cash transfers, promoting household fiscal modernization and inclusive finance. Compensation based on the area of household forest plots has reinforced tenure reforms and associated certifications.

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1. Introduction

Launched in 1999, after droughts and floods exacerbated by upstream deforestation, China's Conversion of Cropland to Forest Program (CCFP) has been implemented in the Yangtze and Yellow river watersheds. Upstream afforestation is expected to mitigate floods, soil erosion and desertification. The CCFP has provided subsidies, initially as grain and later cash, to "retire" and afforest agricultural or otherwise degraded sloping lands (≥ 25 degrees) with limited potential for food production. The \$45 billion program has contributed to the largest increase in forest cover among countries worldwide from 1990 to 2000. The CCFP has been implemented in ~1900 counties in 25 provinces, engaging 32 million farm families or 124 million people (ca. 17% of the rural population). Though established for purposes of environmental mitigation, the program added the goal of poverty alleviation, and has become one of China's largest rural development programs, featuring both direct compensation to households and village-level development assistance (Bennett, Xie, Hogarth, Peng, & Putzel, 2014).

The CCFP holds lessons for forest landscape restoration (FLR) on farmlands worldwide as more countries pledge to the Bonn Challenge. Conservation and development often coordinate poorly across sectors (e.g. forests, water), and face land tenure problems or elite capture of financial resources. To address these problems, the CCFP constructed a multi-scale cross-sector network, linking institutions vertically from village to central government and horizontally across sectoral agencies. Particularly innovative aspects include:

- Integration with national forest tenure reforms transferring rights and responsibilities over ~180 million ha of forest land to 500 million individual farmers;
- Use of new digital banking technologies, promoting modernization of household finances and fiscal inclusion.

This perspective on China's institutional innovations for FLR is based on the authors' observations and interviews with key informants from the central government, and at the provincial, county, township and village levels in the four southwestern provinces of Guangxi, Guizhou, Sichuan, and Yunnan; interviews with 164 households in those provinces; and collaboration on papers (see recommended reading). The purpose here is not to assess or comment on socioeconomic or environmental outcomes of the CCFP,

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which vary across regions and ecosystems (Gutiérrez Rodríguez et al., 2016), but to describe the development of institutions for FLR.

2. Institutional innovation and the CCFP: Multi-scale cross-sector networking

The multiple goals of the CCFP – including environmental remediation and forest production, social protection and socioeconomic development, and trade-offs between agriculture and forestry – required creating a new institution for horizontal and vertical coordination and multi-level oversight (Fig. 1). Coordination among sectors at all levels of government guides identification of lands for conversion, design of forestry treatments, and engagement of households as forestland stewards. A multi-layered system of inspection ensures payment of subsidies reflects compliance to agreed land use practices and tree survivorship.

The State Council (SC) launched the CCFP following a policy formed by its Western Regions Development Department (Western Department), which later moved into the National Development and Reform Commission (NDRC), a body responsible for national economic planning. The Western Department oversees horizontal coordination of the CCFP among the NDRC, Administrations of Forestry and Grain, respectively, and Ministries of Agriculture, Water Resources, Land Resources, and Finance. Within the State Forestry Administration (SFA), the CCFP Administration Office was created in 1999 to draft policy in consultation with the sectoral ministries, and to monitor implementation through a specialist group tasked with regular inspections and impact assessments in sampled counties. From the central government, the CCFP Management Office establishes annual plans, approved by NDRC, and delegates implementation to the provincial Development and Reform Commission, which coordinates among provincial departments of forestry, agriculture, finance and land.

County governments, with oversight and technical guidance from provincial forestry departments, are the major implementing

institutions at the sub-national level. Counties are responsible for fulfilling restoration targets and assessing tree survival, which are part of the evaluation of county governments' and mayors' annual performance. At this level, county governments coordinate among sector departments to plan for land use change, agricultural productivity, rural social welfare including employment, rural infrastructure, and financing. County land resources bureaus coordinate with county forestry bureaus to verify plot eligibility. Land Resources verify new CCFP plots proposed by Forestry to ensure restoration eligibility, i.e. lands ≥ 25 degrees and not classified as "basic cropland" protected for agriculture. Forestry conducts research and site analysis to select forest species or grasses for restoration, and develop technical guidance.

At village level, both township forest stations and village leaders disseminate information on CCFP national policy to households, including information about advantages and drawbacks of participation. Township and county forestry staff provide technical support to participants and conduct annual inspections to ensure compliance.

Subsidy payments are contingent on maintenance of a minimum threshold of tree cover (80% in most areas). Based on aggregate inspection data, the CCFP Administration transfers inspection results to instruct the Ministry of Finance to disburse subsidies to the provinces. Provincial finance departments transfer funds to county finance bureaus, then to township rural credit cooperatives, and from there directly to bank accounts of farmers. To ensure transparency, results of inspections, subsidy payments and land allocations to households are publicly posted in the village. From one survey we conducted, over 93% of interviewed farmers confirmed to have received their subsidies annually, with 78% affirming prior inspection of their plots.

To assess the degree of enforcement, our surveys asked what happens in case household plots do not pass inspection. Common answers to this question are (1) the situation rarely occurs and (2) if it does occur, subsidies are suspended, but households are given opportunities to comply. After compliance (restoring tree

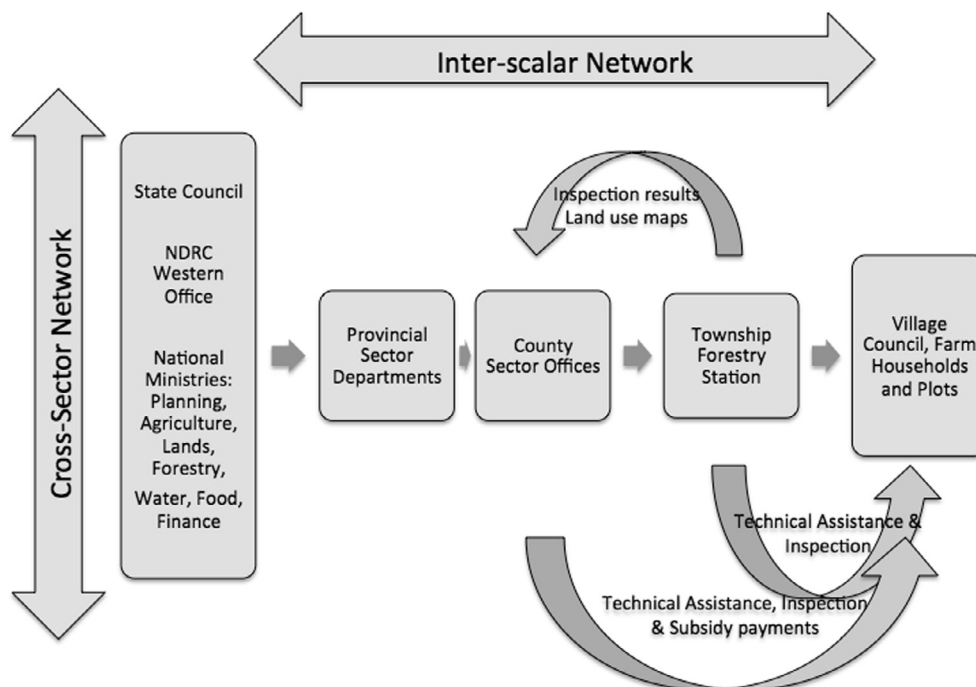


Fig. 1. The basic structure of the CCFP's multi-scalar cross-sector network. Simplified representation of several of the key features of the CCFP's network for policy, implementation, inspection and incentive payments. The associated specific connectors and communications processes are not shown here.

cover to $\geq 80\%$), subsidies are disbursed, including payments previously skipped. Thus, compliance is encouraged over time. The combination of regular inspection, remuneration contingent on compliance, but tolerance in terms of allowing households to improve performance without losing benefits, is a “light touch” approach to enforcement and conditionality that works to encourage continued compliance while fulfilling the poverty alleviation goals of the program.

3. Forest restoration and forestland tenure reform

A number of years ago, [Liu and Edmunds \(2003\)](#) remarked “perhaps no country has made more dramatic steps towards devolving authority for forest management than the People’s Republic of China”. Since then, a program of “Collective Forest Tenure Reform” (CFTR) piloted from Fujian province in 2003 and upscaled nationally in 2008 resulted in the devolution of 99% of China’s collective forestland, mostly through 70-year renewable tenure certificates to individual households. Tenure certificates identify rights holders and specify forestland use rights, forest and tree ownership, and other forest/tree use rights.

The CCFP introduced forestland user rights certification independently of and in most locations even prior to local implementation of the CFTR. On launch of the CCFP, counties distributed information and invited household pre-enrollment. Based on initial data, county and/or township technicians were trained and assigned to field investigation teams. These teams consulted with village heads and households to delimit plots for enrollment on topographical maps, obtained signatures of participants, created a database, and issued household tally booklets. Households then applied for their forestland use rights certificates, based on their tally books recording plot areas and subsidy information, generally after 3–4 years of participation, following verification of tree survivorship and public disclosure in villages.

Because CCFP subsidies are based on the amount of land enrolled by households, clarification of tenure and completion of certification processes associated with tenure reforms has been a crucial element of China’s restoration program. The converse is also true: the CCFP introduced innovations for tenure certification and broader reform, building local processes for delimiting holdings and granting certificates.

4. The CCFP compensation system and financial inclusion

A recent paper relating to the status of China’s innovations in finance cites data estimating bank account penetration at around 64 percent of the adult population, with lower reach among rural populations (small-scale farmers, livestock raisers, and fishermen) and the poor ([Shrader and Duflos, 2014](#)). The same paper cites a World Bank report from 2009, when “...half of the poor lived in the western regions of China” noting that “[p]eople who lived in remote and mountainous regions or who were from minority ethnic groups were three times more likely to be poor” than centrally located non-minorities. According to this paper, “banking penetration is largely driven by low-barrier access to accounts and strong government policy that allows government transfer payments and subsidies, such as agricultural subsidies...” This in turn, promotes financial inclusion.

Because the CCFP targets sloping landscapes in upper watersheds, implementation has focused on reaching landscapes in hilly and mountainous regions throughout the country and particularly in the west, from which the major rivers flow, and in which a higher percentage of people are ethnic minorities. Since 2004, when grain subsidies were replaced with digitally-transferred cash, participants have had an incentive to open accounts with

township credit cooperatives. In some locations, the village administration assisted with this process to reduce a potential new barrier to entry.

With the caveat that we do not here assess the degree to which the program has reached the most excluded groups, it is reasonable to state that the CCFP’s targeting of 17% of China’s rural population in upland regions and coverage in western China, combined with an incentive mechanisms dependent on participants having or opening bank accounts, is both dependent on and a driver of financial inclusion.

5. Conclusion

To implement China’s largest forest restoration program, the CCFP, the central government designed a highly articulated network for implementation, inspection and reporting across sectors and administrative scales. The resulting articulation of the program with sector ministries of, in particular, agriculture, land resources and finance, has both facilitated the program and supports parallel efforts in land tenure reform and financial inclusion ([Fig. 2](#)). The number of rural participants enrolled and the targeted geography of the program is potentially a driver of more equitable development, which is likely an important factor of success in forest landscape restoration.



Fig. 2. Documents underpinning participation in the Conversion of Cropland to Forest Program A rural resident in Shangri-La county, Yunnan province displays her bankbook and certifications, including those clarifying forestland and grassland tenure rights. The Conversion of Cropland to Forest Program promoted the advancement of the institutions behind these documents into more rural and more marginalized areas of the country. Photo: Kun Zhang.

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