



## Analysis

# Volunteer and satisfied? Rural households' participation in a payments for environmental services programme in Inner Mongolia<sup>☆</sup>



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## ABSTRACT

Using survey data from Inner Mongolia, this paper explores the role of stakeholder engagement in the implementation of the Sloping Land Conversion Programme, a payments for environmental services (PES) programme designed to restore forest in degraded land. Based on the idea that volunteerism and satisfaction with the programme's outcome are two important components of the programme's viability, we successively analyse the intensity of households' participation in the programme and their reported satisfaction with its economic achievement, which we relate to their stated volunteerism. We show that households' participation intensity in the SLCP is primarily driven by land and location characteristics, and that these findings hold true whether or not the households voluntarily enrolled in the programme. Moreover, as far as participants' satisfaction can be interpreted as an indicator of potential long-term support for the programme, our findings also support plausible sustainability for the programme.

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## 1. Introduction

Payments for environmental services (PES) programmes have quickly become important instruments in environmental and development policies worldwide.<sup>1</sup> The core mechanism of PES schemes is to

create or to change stakeholders' incentives and behaviour so as to promote land management practices that generate ecosystem services and favour ecological restoration and/or conservation (see [Rodriguez et al., 2011](#)). For developing countries, PES schemes often entail the additional goal of achieving a win–win situation in terms of both environmental protection and poverty alleviation ([Muradian et al., 2010](#)).

The long-term sustainability of PES schemes crucially depends on how effective the incentive-based mechanism is at aligning stakeholders' individual land-use decisions with the social benefits arising from conservation. In this paper, we explore the issue of land use changes promoted by the Sloping Land Conversion Programme (henceforth, SLCP) in China, a government-financed PES programme designed to restore forest in degraded land through a public payment scheme. The SLCP is the largest land retirement programme in the developing world. It involves changing land uses by reforesting sloping land currently used in agriculture on the one hand, and by afforesting barren land on the other hand. Local farmers are selected based on the characteristics of their cropland, and they receive compensation in the form of an annual in-kind subsidy of grain, a cash subsidy and free seedlings, to convert degraded and highly sloping land back to either “ecological forests” (timber-producing forests), “economic forests” (orchards or

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<sup>1</sup> [Rodriguez et al. \(2011\)](#) provide an interesting discussion of policy tools used in the developing world to tackle environmental conservation and poverty alleviation, including PES programmes. See also [Wunder \(2005\)](#), [Bulte et al. \(2008\)](#), [Engel et al. \(2008\)](#) and [Muradian et al. \(2010\)](#).

plantations of trees with medicinal value) or grassland. Launched in three pilot provinces in 1999 and progressively scaled-up across 25 provinces until 2002, the programme's goal was to convert 14.7 million hectares of fragile cropland to forests by the end of the decade. The programme also had an explicit component of alleviating poverty in rural areas, with compensation payments provided to more than 50 million rural households upon completion of the programme (Uchida et al. 2007).

The SLCP has generated considerable academic interest regarding its effectiveness in terms of both ecological (Shi and Chen, 2004) and economic outcomes (Yin et al., 2010). So far, most economic papers have studied the impact of the policy on rural households' production and food security (Feng et al., 2005; Z. Xu et al., 2006; J. Xu et al., 2006), on peasants' income (Liang et al., 2012; Liu et al., 2010; Z. Xu et al., 2006; J. Xu et al., 2006; Yao et al., 2010), on poverty (Uchida et al., 2007) or on labour transfer into off-farm sectors (Démurger and Wan, 2012; Groom et al., 2010; Uchida et al., 2009; Yao et al., 2010). In contrast, the question of the long-run sustainability of the programme has received much less attention, although it is of obvious critical importance. One exception is Grosjean and Kontoleon (2009), who propose a direct *ex-ante* assessment of the viability of the programme by using farmers' contingent behaviour and choice experiment data collected in Ningxia and Guizhou provinces in the early phase of the programme's implementation. They find that the major constraints on the programme's sustainability are weak and incomplete property rights on the one hand, and high labour mobility transaction costs on the other hand. We propose a complementary approach to this question by assessing both rural households' *ex-ante* willingness to participate in the SLCP and their *ex-post* support for the programme. Since farmers are the main stakeholders in the SLCP framework, the feasibility and long-lasting prospects of the programme can be reasonably expected to depend strongly on their perceptions of the programme's outcomes (Sommerville et al., 2010). Important for this are the degree to which rural households voluntarily participate,<sup>2</sup> the degree to which they benefit from the programme,<sup>3</sup> and their general trust in the programme, since farmer mistrust may prevent the attaining of environmental goals,<sup>4</sup> all dimensions that can be questioned in the case of China and thus deserve particular attention.

We utilize rural households' survey data collected in 2006 in Inner Mongolia to explore the role of stakeholder engagement in the implementation of the Sloping Land Conversion Programme and its implications for the programme's long-term sustainability. We proceed as follows. First, we seek to assess farmers' volunteerism and thus understand their involvement in the programme. To do so, we focus on the implementation modalities of the programme and on the determinants of households' intensity of participation. In particular, we seek to evaluate to what extent the intensity of participation is determined by household demographic characteristics and/or by geographic and location characteristics. Second, we explore what factors are associated with participating household perceptions regarding whether or not the programme has had a beneficial effect on their livelihoods. As well as contributing to the existing literature by combining measures of the intensity of participation and a subjective well-being approach, we also make use of more recent data compared to earlier studies, which

<sup>2</sup> Bennett (2008) points out that one of the main drawbacks of the SLCP is that it is a mix of a PES and a top-down approach with campaign-style political mobilization, and it lacks effective volunteerism from rural stakeholders.

<sup>3</sup> Early papers have put forward shortfalls in compensation payments, with SLCP payments being lower than the net income derived from cultivating the retired land (Uchida et al., 2005) and shortfalls in delivered subsidies (Xu and Cao, 2001; Xu et al., 2010; Zuo, 2001).

<sup>4</sup> In the case of China, uncertainties arise from the limited time-horizon of the payments coupled with ambiguous property rights and changing government policies. Analysing responses from a 2003 survey to a question on what households would most likely do upon the end of the subsidy period, Bennett (2008) concludes that at least a fifth of retired cropland would be returned to cultivation. Grosjean and Kontoleon (2009) highlight institutional constraints as key obstacles to the long-term viability of the programme.

enables us to better capture the changes that have occurred since the start of the programme and the perceived benefits for rural households.

The paper is organized as follows. Section 2 describes the study area and database. Section 3 presents the analytical framework for examining the determinants of households' participation intensity and their satisfaction with respect to the programme. Section 4 presents the empirical results and Section 5 concludes.

## 2. Study Area

### 2.1. Data

Our analysis is based on data collected through a household survey that was implemented in 10 villages in Inner Mongolia in March 2006. The villages are situated in Zhuozhi county of Wulanchabu prefecture-level city, in central Inner Mongolia. The county is located 120 km from the provincial capital, Hohhot, in a northern temperate zone with a semi-arid continental monsoonal climate. Due to the mismanagement of land and overgrazing, the area has developed a fragile and damaged environment. It has been designated one of 42 key soil erosion counties in the upper and middle reaches of the Yellow River and one of Inner Mongolia's six counties with the most serious soil erosion.

The 10 administrative villages were purposely selected to reflect several criteria including accessibility, local economic opportunities, and programme implementation. Within each village, 30 to 60 households were randomly selected and interviewed on a face-to-face basis by enumerators hired from Beijing Forestry University and from the Inner Mongolia Agricultural University. Altogether, 481 households from 10 villages in 5 townships were interviewed. The data set includes detailed information at the household level and at the plot level. Family information includes household demography, members' activities, income and assets, access to credit, and energy consumption. Land information includes plot characteristics and utilization as well as information on land conversion and compensation received for conversion. In addition to household interviews, village-level information was also gathered so as to complement individual data by providing a general overview of the implementation arrangements at the village level.

### 2.2. The Local Implementation of the Sloping Land Conversion Programme

As in other parts of Inner Mongolia, the Sloping Land Conversion Programme has been implemented in Zhuozhi county on a gradual basis from 2000 onwards. It started in 10 townships and was then extended to the 14 townships in the county by 2002. The implementation procedure for the SLCP in Zhuozhi county followed the national arrangements of a top-down approach that left only small room for farmers to get involved on a truly voluntary basis. In particular, the target area for conversion was decided at the county level while the choice of tree species to be planted fell under the responsibility of the local forest bureau.

In addition to retiring their own cultivated land,<sup>5</sup> participating households were also requested to afforest barren and degraded wasteland. The arrangement was that for each retired mu<sup>6</sup> of cropland, households had to afforest between 1 and 2.5 mu of barren land that belonged to the village but was meant to be contracted to the household after afforestation.<sup>7</sup> Participating farmers received an annual compensation that follows the national settings: a cash payment of 300 yuan per

<sup>5</sup> Land in rural China is owned by village collectives but it is contracted to households for their own productive use under a fixed-term contract (Brandt et al., 2002).

<sup>6</sup> The conversion for China's land measurement unit is 1 mu = 1/15 ha.

<sup>7</sup> The conversion share of barren land to cropland varied over time (and across villages): it started at 2.5:1 in 2000, decreased to 2:1 in 2001 and 2002 before reaching a minimum of 1:1 from 2003 onwards. As argued by Bennett (2008), the additional goal of afforesting barren land imposed by the central government shifted nationwide from an explicit requirement for participation to an optional goal after participants protested against the significant labour requirement of the stipulation. See also Zuo (2001).

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