



# Ecological Protection and Sustainable Development in Sanjiangyuan

The region of Sanjiangyuan (meaning “Source of Three Rivers”) on the Qinghai–Tibet Plateau is the origin of three of China’s major rivers – the Yellow River, the Yangtze and Lancang (named Mekong when it leaves China). Encompassing 16 counties of the four Tibetan Autonomous Prefectures (Yushu, Guoluo, Hainan, and Haungnan) in northwest China’s Qinghai Province, the Sanjiangyuan Region covers an area of 360,310 square kilometers with a population of over 600,000. A key water conservation area for China and Southeast Asia, it provides 25% of the water in the Yangtze, 49% of the Yellow River, and 15% of the Lancang. The region is also home to important alpine ecosystems and bio-resources, and of global significance for biodiversity protection and climate change.

Although it is extremely important in terms of ecology, the region is economically backward and has a fragile ecological environment. The Chinese government therefore attaches great importance to its ecological protection and sustainable development. After the establishment of the Sanjiangyuan National Nature Reserve (SNNR) in 2003, in 2005 the State Council gave the green light for implementing the Overall Planning of Ecological

Conservation and Restoration in the SNNR. Although remarkable progress has been made, a series of problems have remained regarding ecological protection and restoration, relocation of people to protect the environment and related compensation mechanisms, industrial development and livelihood improvement.

The important role of the Sanjiangyuan Region in national ecological security is further clarified in the Outline of the 12th Five-Year Plan (2011-2015) for National Economic and Social Development and the National Plan for Development Priority Zones. In 2011, the State Council decided to set up a National Comprehensive Experimental Zone for Ecological Conservation in the Sanjiangyuan Region in Qinghai Province. It is necessary to evaluate the developments and problems during the implementation of the plan, and to improve its strategic objectives, major tasks and policy systems in the light of new development opportunities and requirements. A report was recently completed on the basis of a research project on major issues concerning ecological and economic developments of the Sanjiangyuan Region under the auspices of the Academic Division of Earth Sciences.



## 1. Progress

Thanks to the 750-million-yuan Sanjiangyuan Ecological Protection Program of the Central Government launched in 2005, the report says sound progress has been made both in ecological conservation and the improvement of people's lives.

**First, the trend of grassland degradation and land desertification is under control, and even partially reversed.**

Since the 1960s, the Sangjiangyuan Region has generally been experiencing continuous ecological degradation featuring reduced coverage of grassland vegetation, shrinking wetlands and desertification. As a result, various alpine ecological systems in the region have been degraded and reduced in area. Since 2005, however, its overall vegetation coverage has increased by 3.1%, 12.2% of degraded grassland has seen improvement, the average grass production of the grasslands has gone up by 24.6% and the area of desertified land has been reduced by 0.74%. Therefore, the ecological conditions of the grasslands have begun to improve, along with somewhat increased canopy closure of woodlands and shrublands, decreased soil erosion sensitivity and intensity, increased soil and water conservation, and better protection of biodiversity. Monitoring shows that ecological improvement and restoration in the region are largely due to the ecological program and the associated increase in precipitation.

**Second, working and living conditions have been improved in areas where the ecological program is underway.**

As a poverty-stricken area, the Sanjiangyuan Region is held back by small economic scale, low development level and slow economic growth. In 2004, the income level of its farmers and herdsmen was only 2/3 of the national average. Since 2005, the infrastructure of the areas to which people have been relocated to protect the ecological environment has been upgraded through such projects as township development. Compared with the areas that such migrants have left, working and living conditions have been greatly improved, with much better access to such facilities as medical care, schooling, road transportation, drinking water, electricity and television. For the past five years, the average household annual income has increased by 20,000 yuan and per capita net income by 8% .

## 2. Problems

However, several major challenges have been observed, says the CASAD report.

**First, the production mode of grassland animal husbandry is backward, and the contradiction between ecological restoration and economic production remains unsolved.**

Featuring a primitive production mode, low productivity, weak capacity to address natural disasters, long livestock breeding cycles, and the unchanged vicious cycle of livestock eating well in the summer, putting on fat in autumn, being skinny in winter and often dying before spring, the extensive mode of animal husbandry in the region is unsustainable. Overgrazing due to this kind of production mode remains the root cause of grassland degradation in the region. Other reasons include a lack of systematic and in-depth understanding of the evolutionary laws, processes and functions of the unique ecological systems in alpine regions, and inadequate technologies and approaches for the rehabilitation of degraded ecosystems, a backward production and development mode for animal husbandry, and a lack of both new technologies and a management approach to ecological protection appropriate for animal husbandry.

**Second, the unsettled problem of retaining relocated people and helping them improve their lives.**

The relocation project in the region involves inhabitants of its 18 core areas. So far, more than 55,000 people have moved out of the Sanjiangyuan National Nature Reserve. However, the project is facing several challenges: a lack of in-depth and systematic understanding of the migrants' unique ethnic culture, mode of production, lifestyle and preferred living environment, and no plans have been made to deal with such issues; there is no forward-looking program for subsequent industrial development for them, with inadequate efforts to foster industries and insignificant results; a lack of relevant job training for those with no work skills other than animal husbandry; paying inadequate attention to infrastructure construction in the townships designated for them, with insufficient investment and low building quality; unsustainable development capacity of the emigrants in terms of production and life; difficulties in steadily raising their income levels and building a moderately prosperous society over and above having enough food and clothing.

**Third, the compensation for ecological services is low and lacks support from scientific evidence and a long-term mechanism.**

At present, there are two kinds of ecological compensation in the region: One is subsidies for the conversion of grazing land into less heavily exploited grassland, which include annual cash payments of 3,000-8,000 yuan per household for livestock feed and 800-2,000 yuan per household for heating and fuel. The second is subsidies from other national programs, including conversion of degraded farmland into forest and grassland, natural forest protection, ecological service forests, and



mountain enclosures for forest restoration, with payments ranging from 0.117 - 0.3 yuan per mu (1.75 - 5 yuan per hectare). The problem here is the compensation level, which is rather low and, without the support of adequate scientific evidence of the monetary value of the related ecosystem services, cannot be changed to adjust for inflation and the growing size of households. In addition, the compensation is solely from the central government, without contributions from other stakeholders, and with no assurance of long-term availability.

### 3. Suggestions

As a key area in the fight against desertification, the sustainable development of the Sanjiangyuan Region is of great importance to the central government. With sound prospects for development, it is expected to become a comprehensive experimental zone for ecological conservation with a valuable demonstrative role both domestically and globally. The report therefore makes the following recommendations.

**First, actively promote the transformation and improvement of animal husbandry and successfully combine it with ecological protection.**

Efforts should be made to pioneer a new production mode in modern ecological animal husbandry in alpine grasslands by transforming the traditional mode that solely depends on natural meadows to an ecological one with two phases, namely, grazing in warm seasons and drylot feeding in cold ones.

To this end, it would be advisable for the government to: support the establishment of large scale man-made forage bases; extend the policy coverage of direct subsidies for crop growing to areas of ecological grassland management and culture; introduce a certification system of organic plant products and high value-added organic animal products with strict, publicly available records kept of their production, processing and logistics; promote a new management mode of animal husbandry production and operation cooperatives starting with setting up husbandry cooperatives and rural land-use right transfers.

Efforts should be made to develop key technologies for ecological rehabilitation and production, adopt a sustainable development mode for highly efficient ecological animal husbandry and the region's special ecological environment, and launch a major research program for sustainable development and ecological conservation in Sanjiangyuan.

**Second, place great importance on relocation for ecological protection and subsequent industrial development.**

It is important to adopt a sustainable mode of emigration supported by employment services and vocational training.

By introducing policy incentives, efforts should be made to: create a social environment in which emigrants enjoy the same treatment as urban residents or industrial workers; establish a long-term mechanism to promote the migration of the Sanjiangyuan population to developed regions and townships; set up vocational training centers for Sanjiangyuan people outside the region while improving job opportunities, especially for young people.

To improve training and employment opportunities for emigrants, it is advisable to increase the scale of offsite training and adopt a mode combining centralized training with a recruitment mechanism that links the various industrial and service sectors in different regions.

Government departments should give more policy support and incentives to such industries as ecological animal husbandry, ethnic and traditional industries, the cultural industry, tourism, and deep-processing of animal husbandry products. In addition, key enterprises and key R&D efforts in businesses with unique and advantageous features in the region deserve more financial support or investment.

**Third, establishing and improving a long-term compensation mechanism for common prosperity.**

A sound long-term mechanism and measures for ecological compensation should be put in place, clearly clarifying its principles, level, recipients, mode and amounts in an institutional way, so as to ensure continuous support to ecological conservation in the region.

Sticking to the policy of government paying for ecological services, the central government should increase its transfer payments to the Sanjiangyuan Region by adding a special budgetary item of "ecological compensation for the Sanjiangyuan Region" in its expenditures in order to ensure the consistency and stability of the ecological compensation policy.

Financial resources for ecological compensation should be increased, and a multi-channel fund set up accordingly in the Sanjiangyuan region, encouraging all walks of life to support its ecological conservation.

Efforts should be made to conduct long-term and systematic monitoring of ecological and environmental changes in the region, including research into the ecological system's changes in carbon sink function and water conservation. This would enable the determination of appropriate subsidies based on the values of carbon sequestration, water conservation and supply, and biodiversity.