

# **The Hopeful Stars of the Central Plains' Beautiful Landscape**

## **—A Summary of the “Ten, Hundred and Thousand” Demonstration Projects of Soil & Water Conservation and Ecological Construction in Henan Province**

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**Abstract:** Since the implementation of the “ten, hundred and thousand” demonstration projects of ecological environment construction for soil & water conservation in China in 1999, 6 demonstration counties and 89 demonstration small watersheds in Henan Province have passed the check and acceptance and have been officially named as the national demonstration counties or demonstration small watersheds by the Ministry of Water Resources and the Ministry of Finance. Analyzing the principal technical & economic indexes of these projects and summarizing the work in the three years, the paper describes the results of the demonstration projects, sums up the basic experiences and practices in construction of these projects in six aspects and puts forward some suggestions for ecological construction in the future. The paper also points out that with the effective measures, high quality and remarkable achievements, representing the highest level of soil & water conservation and ecological construction in Henan Province over the decades, these projects will play an important role in promoting ecological construction and will have great influences on the coordinated development of population, resources and environment in the province. Like the bright pearls on the Central Plains, these projects symbolize the prospects of Henan people in rebuilding the Central Plains' beautiful landscape.

**Keywords:** soil & water conservation, ecological construction, demonstration project, good circle, henan province

### **1 General situation and results of the demonstration project**

#### **1.1 General situation**

In “The Implementation Plan of ‘Ten, Hundred and Thousand’ Demonstration Projects of the National Soil & Water Conservation and Ecological Environmental Construction”, it is determined that Henan Province should build 57 demonstration projects, including 4 demonstration counties and 53 demonstration small watersheds. In the 3 years of 1999—2001, Henan provincial 95 projects were officially approved and named by the Ministry of Water Resources and the Ministry of Finance as the national soil & water conservation and ecological environmental construction demonstration projects, of which the 6 demonstration counties are Xinxian County, Lingbao City (county level), Linzhou City (county level), Xin'an County, Tongbai County and Xixia County; Guowan and other 88 projects were named as demonstration small watersheds, that are 150% and 168% of the planned projects for 1999. Among these projects 30 are located in Yellow River basin, 14 in Yangtze River basin, 36 in Huaihe River basin and 15 in Haihe River basin.

#### **1.2 Major results**

According to the statistical analysis, the average improvement level of the provincial 6 demonstration counties is 58%, with forest and grass acreage making up 74% of the total area suitable for planting trees and grass, and river sediment reduction rate of 60%. The average improvement level of the 89 demonstration small watersheds is 86%, with the forest & grass acreage making up 84% of the total area suitable for trees and grass planting, and soil erosion cut-down rate of 79%. All the soil & water

conservation indexes are far beyond the provincial average level, and also higher than the average level of 800 and more key small watersheds that are being improved. From the check and acceptance results, it is clear that all these demonstration projects are up to or higher than the state standard and norm. In these project areas, soil & water loss is basically under control and ecological environment has been obviously improved. Trees and grass are planted in the original sloping farmland. The ecological agriculture is steadily developed and the farmers' life is remarkably improved.

The demonstration projects of soil & water conservation and ecological environment construction, reflecting soil & water conservation development over decades of years in Henan Province, just like bright pearls on the central plains, symbolize the prospects of Henan people in rebuilding the central plains' beautiful landscape. The fact that these projects were officially named as the national demonstration projects will certainly promote the soil & water conservation in Henan Province. These demonstration projects with effective measures, high quality and satisfied results really set a good example in the province-wide improvement of soil & water conservation.

**Table 1 Basic information of the demonstration projects in Henan province**

Demonstration Project		Provincial total	Yellow River	Yangtze River	Huaihe River	Haihe River
Demonstration county	Quantity	6	2	1	2	1
	Total area (km <sup>2</sup> )	13,224	4,171	4,380	2,628	2,046
	Soil erosion area (km <sup>2</sup> )	8,024	2,599	2,626	1,999	1,800
	Improvement (%)	58	62	51	57	63
	Forest & grass area (%)	74	61	72	89	73
	Sediment reduction (%)	60	52	50	60	78
Demonstration small watershed	Quantity	89	28	13	34	14
	Total area (km <sup>2</sup> )	1,954	606	378	681	290
	Soil erosion area (km <sup>2</sup> )	1,511	506	272	505	228
	Improvement (%)	86	84	86	89	86
	Forest & grass area (%)	84	82	90	80	83
	Soil erosion cut-down(%)	79	79	78	79	78

## 2 Principal measures and experiences

### 2.1 Unified planning and designing of improvement of mountains, rivers, forests, farmlands and roads

In these demonstration counties and small watersheds, construction of soil erosion improvement projects were planned and designed in a unified way, having effectively avoided any random idea in planning & designing and blind action in project construction. In the comprehensive improvement and ecological construction, the local people summed up some successful experiences. When they implemented comprehensive improvement of a mountain they also constructed a road leading to the mountain, set up electricity line and distributed water to the mountain, planted trees on the mountain as well as transformed sloping land to terraced field. For example, in construction of Donbeichuan small watershed in Neixiang County, the local government worked out a comprehensive improvement plan and design according to the principle of "making use of the local advantageous condition—mountain, planting fruit trees first, stabilizing grain production and developing livestock farming" and built a 3 dimensional protection system, i.e. planting pine trees and cypress trees on hill tops and fruit trees on mountain side, building reservoirs at the foot of hills. Xixia County specially worked out "The Technical Essentials of Soil and Water Conservation of Xixia County" that not only took into account the local conditions but also ensured the planning and design being scientific and reasonable.

## **2.2 Building the farmland that can ensure stable yield despite drought or excessive rain and planting trees in the original cultivated land**

To make sure that all the farmland with slope over 25 degree should be transformed to forest or covered with grass, the soil and water conservation sectors have made thorough investigation to find a suitable way-out and practicable measures. They took the construction of high standard farmland that can ensure stable yield despite drought or excessive rain as a primary component in the watershed improvement & development and the economic structure readjustment. For example, in Qianhe small watershed of Xin'an County grain yield increased from 173kg/mu to 356kg/mu after transforming the original sloping farmland to high standard level terrace. Along with adopting this practice, per unit area grain yield increased year after year. The gross grain yield was also increased and could meet the demand of local people even if after part of the original sloping cultivated land has been planted with trees, that has laid a solid foundation for giving up growing crops on hill slope and planting trees instead, having effectively maintained the improvement results.

## **2.3 Stressing economic benefit and bringing into play the local farmers' enthusiasm of transforming mountains and taming rivers**

In these demonstration project areas, by adopting soil & water conservation measures, "mountains are turning green, water is becoming clear, farmers income is increased, new houses and roads are built in rural areas and the watersheds are taking new looks". The improvement of Qingshuihe small watershed in Lushan County commenced in 1986. When the project was checked and approved in 1999, the improvement rate reached 99%. Trees and grass coverage rate was 93.7%, soil erosion area decreased by 82.2% and per capita income increased from 102 yuan to 1,605 yuan. Lingbao City started comprehensive improvement of soil and water loss in 1982. By 1999 about 1,133km<sup>2</sup> was improved, accounting for 68% of the city's soil erosion acreage. Lingbao City has built the nation-wide well-known apples production bases and the farmers' annual per capita net income reached 2,229 yuan. The subsistence conditions and material life as well as recreation facilities in rural areas have been improved remarkably. The farmers' enthusiasm of controlling soil erosion and building graceful homeland has been fully put into play.

## **2.4 Paying special attention to primary issues and making full use of local natural resources**

In construction of the demonstration projects, another successful experience is taking advantage of local rich natural resources, adopting reasonable and practicable measures for improvement of local serious soil erosion and building high efficient and quality production bases for pillar products to get the maximum benefit of soil and water conservation project. For instance, Qingshan'gou small watershed of Ruyang County, considering local specific condition, determined the guiding idea of "developing livestock farming first and then forest in future" and set up the watershed economic chains of "company + production base + household". By the time of check and approval of the project, the local animal husbandry income accounted for 45% of the overall income and some of the households' annual income from livestock farming reached 15,000 yuan. In Lushan County, Xinzhuanghe small watershed established economic forest bases, planting Chinese chestnuts and dogwood, and annual output value increased by over 500,000 yuan. The former bare hills and mountains have been covered with green trees and grass. Land utilization structure has been readjusted effectively and the ecological environment is tending towards a good circle.

## **2.5 Giving support to key project construction and using the experiences to promote improvement of soil erosion area in whole province**

Most of the officially named national demonstration projects are the key improvement projects approved by the central government, river basin administrations or provincial government and supported by different level finance. At the same time, the county and township governments as well as the villages

where the projects were constructed have worked out a series of policies to give local farmers incentives to take part in the improvement of soil erosion. Moreover, they have adopted a number of measures including selling *four barrens*, i.e. barren hills, flood plain and sloping land as well as wasteland at auction, auction of property right, shareholding, individual contracting and company management, etc. and mobilized the enthusiasm of local farmers and the partners that were involved in the improvement and set examples to the surrounding areas. For instance, Tongbai County specially drafted “The Opinions on Further Speeding up Reform of Countryside *Four Barrens* Resources Management System and Strengthening Soil & Water Conservation” and “The Proposed Plan of Rural *Four Barrens* Resources Management System Reform”. The county’s 64 enterprises and institutions as well as over 2,200 households have been attracted to take part in the improvement and development of *four barrens*, investing more than 20.31 million yuan and building more than 1,300 soil & water conservation manors.

## **2.6 Tightening up supervision and strengthening project management**

The construction period of the demonstration project is longer and quality standard is higher, therefore the local governments tightened up supervision and management of the projects in the construction period and maintenance of the project after completion. For this purpose, they worked out a series of management regulations, standards, rules as well as kinds of responsibility system, and took some effective measures. Ruzhou City’s Pingwangsong small watershed not only worked out strict management system, but also set up a 12-person group special responsible for management and protection of soil and water conservation project. With over 10 years’ efforts, improvement results are effectively protected from damage of human activities. Dikes and gully control dams could be repaired timely and 98% of forest and for soil and water conservation are well preserved. Linzhou City has integrated the management of special organizations with local farmers’ participation. Moreover in the management they also give great efforts to popularizing scientific research results and stressing economic benefit and the function of leading cadres. The results of these measures are quite satisfactory.

## **3 Recommendations**

### **3.1 Enhancing propaganda**

“Ten, hundred and thousand” demonstration project is one of the major soil & water conservation and ecological construction projects in China initiated at the end of last century, which has exerted a widespread influence in related sectors, all over China and even abroad. However, further propaganda is quite necessary so as to promote development of ecological environment construction in China by means of the demonstration effect of “the ten, hundred and thousand” demonstration projects.

### **3.2 Implementing strict procedure management**

The procedure of demonstration project application, check & acceptance and examination & approval should be strictly controlled. The management methods should be further perfected. It is suggested that check and acceptance of the demonstration projects should be continued as a routine work.

### **3.3 Enhancing management of the demonstration project after being officially named as the national demonstration project**

It is recommended to organize a check in one year after a project is named as the demonstration project and one investigation five years later. Those projects without setting up a nameplate, being loosely managed or existing other problems should be asked to correct within specified time or should be cancelled the title of demonstration project.

### **3.4 Paying greater attention to improvement and perfecting of the demonstration project after being named as the national demonstration project**

For the purpose of mobilizing the enthusiasm of local government and farmers, further improving and perfecting the demonstration project construction, bringing the benefit of the project to the full, it is recommended to increase money awards, especially arranging special funds for award of demonstration small watersheds. The proposed soil & water conservation project involved in the demonstration project area should be arranged before others.

### **3.5 Stressing construction of gully control works**

In the existing demonstration project area, sloping land has been mostly improved and trees have been planted, however, gully control works are less, especially key works , because of less of funds. As a result water resources development and utilization rate is lower. It is suggested that greater attention should be given to gully control project construction in the demonstration project area and raise the criteria of soil and conservation project.

### **3.6 Using natural recovery function of ecology to improve ecological quality and standard of demonstration project**

The officially named national demonstration projects have good foundation of soil and water conservation, where the farmers' food and housing could be ensured. In future development it is suggested to make full use of this advantage and take more strict measures to conserve soil and water resources, preserve vegetation and improve ecological environment, raise the quality of ecological system in the demonstration area.