



DESIRE WB-3 Stakeholder Workshop 1 report 2

WP3.1 Stakeholder Workshop 1 report 2 - held in Yanhe River Basin, China, December 9-11, 2008.

Authors: Wang Fei, Li Jinpeng, Zhang Jinxin, Wang Qunxing, Song Xiaoyan

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*Institute of Soil and Water Conservation,
Chinese Academy of Sciences, Ministry of
Water Resources, Shaanxi, China.*

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D E S ! R E

Stakeholder workshop 1

Land degradation and desertification – existing and potential prevention and conservation strategies

Results and conclusions from the stakeholder workshop



Name of the study site: Yanhe River Basin, China

Date of workshop: December 9 – 11, 2008

Author(s): Wang Fei, Li Jinpeng, Zhang Jinxin, Wang Qunxing, Song Xiaoyan
E-mail: wafe@ms.iswc.ac.cn or wang.fei.cas@gmail.com

Comment CDE: The Chinese study site team took the initiative to conduct another stakeholder workshop 1 within their huge study site. This report covers the second workshop they conducted.

I General information

A) Workshop

Workshop venue: Ansai County, Yan'an City, Shaanxi Province

Workshop moderator(s): Wang Fei, Li Jinpeng, Zhang Jinxin, Wang Qunxing

List of workshop participants:

First name, name	Stakeholder category / institution (e.g. land user, researcher, NGO, GO)	Local or external participant? (L / E)
Zhao Shibao	Soil and Water Conservation Bureau of Ansai, GO	L
Zhang Cong	Soil and Water Conservation Bureau of Ansai, GO	L
Li Yingzhi	Land Management Bureau of Ansai, GO	L
Guo Xumei	Land Management Bureau of Ansai, GO	L
Zhou Yun	Forestry Bureau of Ansai, GO	L
Li Zhijiang	Fruit Bureau of Ansai, GO	L
Hao Baojun	Official of Zhenwudong Town, Ansai, GO	L
Qiao Dong	Education Bureau of Ansai, GO	L
Xu Linxiang	Office of "Grain for Green" of Ansai, GO	L
Xue Wei	Yanhe River Basin office, Ansai Branch, GO	L
Zhang Zhanshan	Yanhe River Basin office, Ansai Branch, GO	L
Su Zhifeng	Ansai Science and Technology Association of the Senior Citizen, NGO	E
Zhu Jinhai	Land user, head of village	L
Tang Zhanxiang	Land user	L
Wang Junshan	Land user	L
Hao Yunjun	Land user	L
Chen Yunming	ISWC, CAS, researcher	E
Cao Qingyu	ISWC, CAS, researcher	E
Shi Limin	ISWC, CAS, researcher	E
Wang Fei	ISWC, CAS, researcher	E
Wang Qunxing	ISWC, CAS, student	E
Song Xiaoyan	ISWC, CAS, student	E
Li Jinpeng	Northwest A&F University, student	E
Zhang Jinxin	Northwest A&F University, student	E
Yang Shangbin	Northwest A&F University, student	E

B) Background

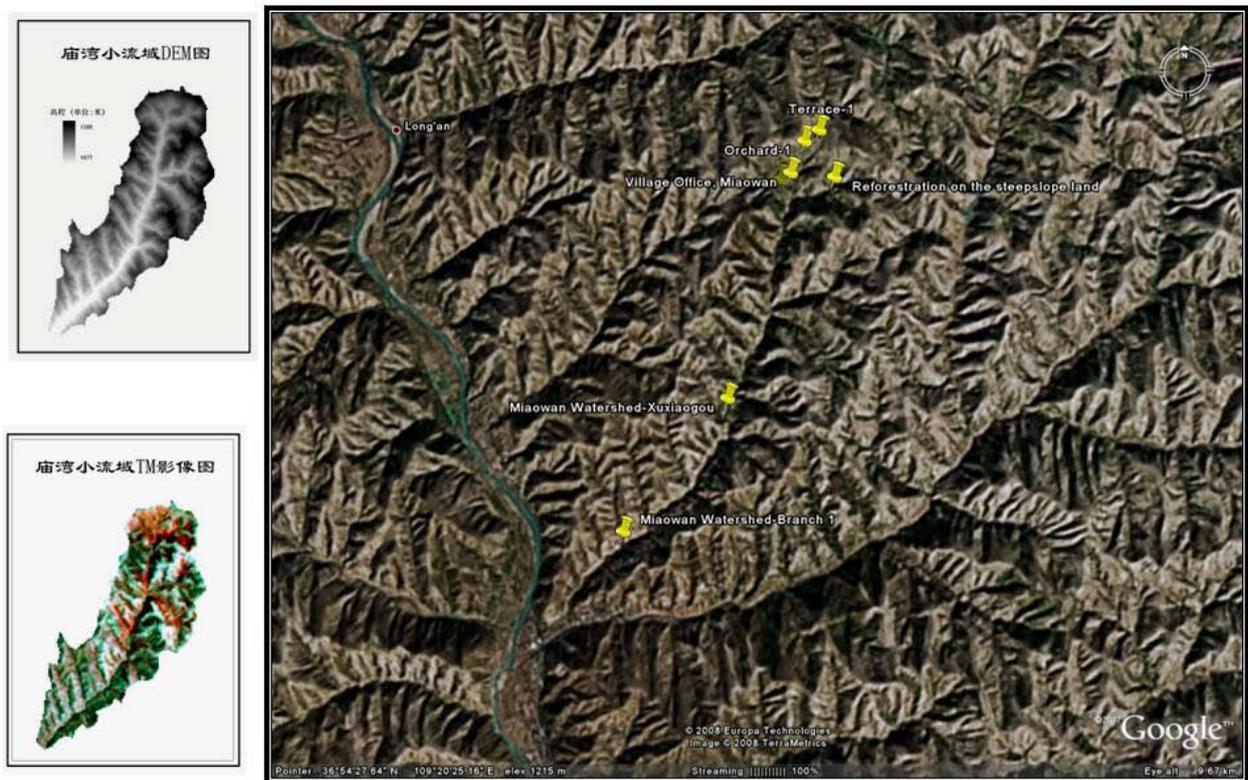
Please provide background information on the context in which the workshop was conducted (area covered, no. of inhabitants, predominant types of land use, main types of land degradation, constraining factors for soil and water conservation, etc.)

Ansai County is located in the northern part of Shaanxi Province, on the Loess Plateau, which is said to have some of the most serious erosion in the world. The county lies in the northern part of Yan'an City Prefecture and has an area of 2,950 square kilometers. Ansai has 14 townships, 204 administrative villages, 1,001 natural villages, 35,800 households, and a total population of 151,200. Of this population, 138,200 are considered agricultural; and the agricultural labor force is 45,200. The population density of the county is 51.25 persons per square kilometer.

Ansai is a part of the hill and gully areas of the Loess Plateau; and, as in much of the rest of the region, soil erosion is severe. About 94% of the county's total area suffers from soil erosion, resulting in a loss of between 4,000 to 15,000 tons of soil annually. Rainfall, averaging 505.3 mm annually, is unevenly distributed over time, with 63% occurring in the months of July, August, and September. The north of the county is drier than the south.

Land (averaging 2.13 ha per capita in 1999) is plentiful in Ansai, but its quality is poor. The county had a total of 96,000 ha of arable land (0.7 ha per capita) in 1999, but a large proportion of this (84,000 ha) was sloping land with low productivity (an average of 600 kg of grain per ha). The large area of sloping land results in a great amount of soil erosion. The amount of fertilizer lost each year due to erosion is estimated to be 127,000 tons. In contrast, the 12,000 ha of non-sloping land in the county, which is made up mainly of terraced fields, has relatively high and stable productivity.

Miaowan Watershed is one of small watershed at Zhenwudong Town, Ansai County. The area is about 7.35 km². There are 5 natural villages as Miaowan Administrative in this watershed. There are XXX people there. The main types of land degradation are soil erosion, runoff loss and lack of soil water. The constraining factors for soil and water conservation are lower input and the lack of awareness because the soil here is so deep that the local people do not think the soil erosion is the main factor to induce the low output.



The location of Miaowan Watershed

II Results and conclusions from sequences / exercises

1) Impact chains – chains that link causes and effects of land degradation

(→ results from Exercise 2: the water and biomass cycles)

After the introduction of the aims of the water and biomass cycles, the participants finished these two cycles together. The water cycle is some easier for all of the participants because we can feel and see some phenomena directly and can get more information from books, radio and TV. The biomass is quite difficult because most of the participants have not paid attention this topic.

The finished cycles are shown below (Yellow card, cycle section; red card, disturbance; blue card, cause; orange card, effect. Left cycle, biomass cycle; right cycle, water cycle).



A. Disturbances identified in the water and biomass cycles

In the water cycle, the disturbances identified have their local characters. The disturbance of precipitations is normally low and irregular rainfalls, such as the great varying in each year and between years, especially the very shortage in the winter and spring before planting. The disturbance of water infiltration is runoff on the slope. The disturbance of water retention / storage in the soil is the low water retention capacity and great evaporation on site. The disturbance of recharge of groundwater / springs is to reduce discharge of the ground water, even in some places with overexploitation problems. The disturbance of evaporation / transpiration is great evaporation.

In the biomass cycle, the main disturbance of germination / regeneration of vegetation is low regeneration capacity, such as the difficulty of germination of natural plants and crops. The poor and slow vegetation growth is the disturbance of vegetation growth, especially for the trees without conservation measures. The disturbance of maturing of plants / fruits and seeds is destruction / overexploitation of vegetation cover in most places. In this area, the natural disturbances like hail in the summer and frost in the early spring are mains disturbances, but the overexploitation, such as fewer pollards, also affects the maturing. The disturbance of withering and dying of plants is early withering of plants without harvesting. The disturbance of decomposition / mineralisation is decelerated or incomplete decomposition and mineralisation, especially the little decomposition in the field to improve the soil quality because of nearly all the residues on the surface are taken away after harvesting.

B. Causes and effects of land degradation (→ impact chains)

In the water cycle, the cause of disturbance of precipitations is natural reason like climate change, and the result is reduction of water available for plants. It is very difficult to change the rainfall itself, but we can find some ways to change its effect through land surface management. The intensive storm here, soil sealing, low coverage, inappropriate cultivation practices, reduced water retention capacity of soils and steep slopes are the main causes that increase the runoff, and would induce loss of soil and nutrients due to erosion, decreasing yields, reduced water availability for crops and break the land surface. Soil property, storm character, lack of organic matter and inappropriate cultivation practices could decrease the water retention capacity of soils that would make the soil dryer, the withering of plant and yield decreasing. The low recharge of groundwater and sources induced by steep slope, strong storm and soil erosion would reduce the recharge of ground water and sources that would decrease the ground water and the survival in extreme climate. The sandy soil and little coverage of soil surface would increase the evaporation that would induce weak vegetation cover, soil drier and lower production.

In the biomass cycle, the dry soil surface is the main cause of lower regeneration capacity and the germination of natural plants and crops is difficult normally. The lack of water and fertilizer could induce the poor and slow vegetation growth, and the related effects are easier soil erosion by wind and water, low soil surface coverage and low biomass formation. The hail, mouse and long-time rainfall in the autumn are the main reason of low yield and that would decrease the output and income of local farmers. The lack of nutrients and water is the main reason of early withering even dying of plants and crops that would induce low coverage of land surface and more soil erosion. Taking all the surface residues of crops and the rainfall and soil moisture affect the decelerated or incomplete decomposition and mineralisation greatly and would decrease the soil quality, like the soil organic matter and the relative soil capacity.

C. Socio-cultural, economic, political, and legal constraints

The main socio-cultural, economic, political, and legal constraints include type of agriculture, the awareness of local farmers on soil conservation, agricultural policy and cheap and easy technologies. In the central part of this watershed, there are not enough plain crop land, both alluvial land and terrace, that the steep slope land is used for food. In the upper area, the main crop is apple trees that would increase the income of local farmers. The depth of loess here is so deep that the local farmers have not enough attention to keep it well, and they just pay more attention to how to use the rainfall well. The soil and water conservation are not considered as one method to induce sediment and flood of the downstream mostly, and it is difficult to get money from the government or the lower reaches as subsidies. Some farmers have already thought the soil and water conservation is very good but the technologies are not cheap and easy enough.

D. Already applied solutions at the local level

In this watershed, there are some solutions at the local level, such as terrace, year-after-year terraced land, check dam for land and reforestation. The area of terrace and check dam for land is not so large. The year-after-year terraced land is used in orchard widely (Photo left, in the beginning, planting trees on the slope; then building sloping terrace year after year; the year-after-year terraced land finished, look like terrace).



2) List of local indicators for land degradation and conservation

(→ results form Exercise 3)

Indicator	Used by (stakeholder group)
Area of terrace	Land user and land management
Area of forestry	Office of "Grain for Green", land user, Forestry Bureau and land management
Area of orchard with conservation practices	Land user, Fruit Bureau and land management
Soil moisture	Researchers, land user
Soil erosion rate	Yanhe River Basin office, researchers
Yield of fruit	Land user, local government, Fruit Bureau, Researchers,
Yield of grain	Land user, local government, researchers
Coverage of vegetation	Forestry Bureau, researchers,
Income of local farmers	Land user, local government, researchers

3) List of stakeholders and their influence and interest in regard to sustainable land management

(→ results form Exercise 4)

Stakeholder / stakeholder group	Influence on the sustainability of land use?	Motivation / interest in the implementation of sustainable land management?	Comments
Small-holders (individual families)	Big	Medium	They do not want to change idea greatly and keep the traditional method. If they want to do, they can do well.
Soil and Water Conservation Bureau	Very big	Big	They wait and design the conservation.
Land Management Bureau	Medium	Medium	They pay more attention to the land use management than the fashion of land use.
Forestry Bureau and Office of "Grain for Green"	Big	Medium	They could make decision on where and how to protect the forest but they have no money to do it they are waiting for the plan and invest of higher organization.
Fruit Bureau	Medium	Medium	They are professional organization on service of fruit production.
Official of Zhenwudong Town	Big	Big	They have some limited power to decide the change of land use.
Education Bureau	Very Low	Very Low	The policymakers have no desire to listen to the suggestion of this organization.
Yanhe River Basin office, Ansai Branch	Big	Big	It is the responsibility of this office.
Ansai Science and Technology Association of the Senior Citizen	Very Low	Very Low	Having no direct influence.
Researcher	Medium	Very high	They want to improve the land degradation but the influence is very slow.

4) Selection and appreciation of locally applied technologies and approaches (→ results from Ex. 7)

4.1. Assessment made by local stakeholders:

Technology / approach	Already applied or potential solution?	On land use type (e.g. crop land / grazing land, etc.)	Labour required (initial and maintenance)	Costs (initial and maintenance)	Impact / Effectiveness						Limiting factors / constraints	Overall assessment of the potential for the local context
					economic		ecological		socio-cult.			
					ST	LT	ST	LT	ST	LT		
Structural	Year-after-year terraced land	Slope orchard	low	low	+	++	+	++	0	++	Labour cost, awareness of local farmers, importance of orchard	Very good
Vegetative	Reforestation	Slope crop land	medium	medium	-	++	+	++	0	++	Investing, training for orchard management	Good
Agronomic	Mulching with residues	Orchard	very low	very low	+	++	+	++	+	++	Awareness of local farmers, importance of orchard	Good
Structural	Check dam for land	Grass land in the gully	very high	very high	-	++	+	++ +	0	++	Investing	Very Good

Legend:

ST = short-term LT = long-term

Labour and costs: very low, low, medium, high, very high

Impact / effectiveness: +++ (very positive), ++ (positive), + (slightly positive), 0 (medium),

- (slightly negative), -- (negative), --- (very negative)

4.2. Assessment made by **external stakeholders**:

Technology / approach	Already applied or potential solution?	On land use type (e.g. crop land / grazing land, etc.)	Labour required (initial and maintenance)	Costs (initial and maintenance)	Impact / Effectiveness						Limiting factors / constraints	Overall assessment of the potential for the local context
					economic		ecological		socio-cult.			
					ST	LT	ST	LT	ST	LT		
Structural	Terrace	Slope cropland and/or orchard	medium	medium	+	++	+	++	+	++	Investing and land form	Good ecological and economic benefit
Structural	Fish-scale pits	Forestry and orchard	low	very low	++	0	++	-	++	0	Awareness.	Good, especially for young trees.
Structural	Check dam for land	Grass land in the gully	very high	very high	+	++ +	+	++ +	+	++ +	Investing	Very good

Legend:

ST = short-term LT = long-term

Labour and costs: very low, low, medium, high, very high

Impact / effectiveness: +++ (very positive), ++ (positive), + (slightly positive), 0 (medium),

- (slightly negative), -- (negative), --- (very negative)

4.3 List of technologies / approaches to be evaluated by WOCAT methodology (result from Ex. 7)

Please list those technologies / approaches that will be documented and evaluated (after the workshop) with the WOCAT questionnaires

4.4 Draft outline of a strategy for sustainable land management (Ex. 8)

Objectives	Appropriate technologies	Adequate approaches	Responsible stakeholders
Reduce the runoff on the slope orchard (it also links to increasing soil moisture and with a result of improvement of yield and income)	Year-after-year terraced land	Make the local farmers know the importance of this action; Find some subsidies for local farmers	Farmers GOs, like local government
	Mulching	Demonstration of this measure; Training;	Researchers GOs.
	Terrace	Find suitable slope land.	GOs
Reduce soil loss (it also links to increasing soil organic matter, the decreasing of sediment delivering into downstream river and with a result of improvement of yield and income)	Year-after-year terraced land	Make the local farmers know the important of this action; Find some subsidies for local farmers	Farmers GOs, like local government
	Mulching	Demonstration of this measure; Training;	Researchers GOs.
	Terrace	Find suitable slope land.	GOs
	Check dam for land	Find suitable gullies that could form big area of land. .	GOs

III Evaluation of the workshop (Ex. 9)

Evaluation of contents and methodology of the workshop:

- By participants (local and external)

The workshop is very interesting. The method is different from other meetings or projects. All participants have the chance and right to express their ideas.

The participants could share the ideas and experience with others, not the same as top-down method that the officials speak and all other participants listen.

The problems discussed in the workshop are in front of the local farmers and they have directly feeling of the land degradation and willing to solve it.



Participants' evaluation (very good)

- By the moderator(s)

The workshop is very good that all the participants could share the experience and idea together. The process is quite that all the exercises can get a conclusion.

Some participants thought this workshop is a pre-meeting of a big project like the World Bank Loan Project or "Grain for Green" Project. After we introduced the objectives of the workshop, they looked like to think it is a kind of open scientific discussion. The local farmers could describe the muddy flow from the soil surface of slope orchard even it is not frequent.



Transect walk and investigation

IV Other information

Difficulties encountered:

- 1 To organize a workshop with different governmental departments and local specialists.
- 2 For it has already taken a long time to control the soil erosion in this region, it is difficult to find some place with very severe soil erosion area.
- 3 The research area of our project is so big that it is difficult to treat the scale problems. So we selected one watershed to study and analysis.

Changes made concerning the procedure suggested in the workshop guidelines:

The workshop was conducted according to the procedures suggested by the guidelines, some changes had to be made in order to match the specific conditions, especially the transect walk was finished by researchers and shared the printing photos to the meeting room. Most local officials and all local farmers know this watershed.

How was the interest and participation of the different stakeholder groups in the workshop?

The interest and participation of the different stakeholder groups is quite good because the workshop was held in a very happy and easy environment.

Researchers are the most active part of the workshop because they take this kind of workshop as an opportunity to put their knowledge and techniques into practise. Their interest is to protect the soil and water resources, and make the land use sustainable through this way.

Government officials, as the executants of higher and local government policies, play a key role in the sustainable land management under the top – down decision system. Yet they are also eager to learn causes and effects of land degradation and also actively participated in the workshop. They are also interested the possible projects through the report of this workshop.

Local land users are interested in the increase of income. So they also actively participated in the workshop. If they can get some subsidies from government, they would like to use sustainable land management practices even the direct income from this action is far less than that from off-farm work in the town or city.

Recommendations:

- 1 To select the proper time that there are not busy in farm work.
- 2 To introduce the objectives clearly in the beginning of the workshop.

Comments:

- 1 WOCAT methodology is very useful in the question finding, measures selection and strategy selection to prevent and mitigate the land degradation problems.
- 2 Like the description in the Guideline stakeholder WS1, not all stakeholders are equally important for the implement of SLM. How to implement the technologies is big problem for DESIRE project, especially for the terrace and check dam.