DESIRE REPORT series

DESIRE WB-3 Stakeholder Workshop 1 report

WP3.1 Stakeholder Workshop 1 report - held in Ansai county, Shanxi province, China, March 15-23, 2008.

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Stakeholder workshop 1

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

Name of the study site: Ansai county, Shanxi province, China.

Date of workshop: March 15th to 23th, 2008

Author(s): Wen Zhongming Wang Fei Jiao Juying Jiao Feng

I General information

A) Workshop

Workshop venue: Danangou catchment, Ansai County
Workshop moderator(s): Wen Zhongming, Wang Fei, Jiao Juying, and 5 students

List of workshop participants:

Mr. / Ms.	First name, name	Stakeholder category / institution (e.g. land user, researcher, NGO, GO)	Local or external participant? (L / E)	Which Parts	When
Mr.	Zhang Zhijun	Land user	L	First	March 16th
Mr.	Hou Xilu	Researcher	E	Second	March 20th
Mr.	Li Zuqian	Researcher	E	Second	March 20th
Mr.	Li Pingding	Government official	L	Second	March 20th
Mr.	Dang Fuxian	Land user	L	First	March 16th
Mr.	Wang Guoqing	Government official	L	Second	March 20th
Mr.	Bai Gang	Researcher	E	Second	March 20th
Mr.	Wu Ruijun	Researcher	E	Second	March 20th
Mr.	Zhang Yanjun	Government official	L	Second	March 20th
Mr.	Wang Zhenghe	Land user	L	First	March 16th
Mr.	Ma	Land user (Leader of village)	L	First	March 16th
Mr.	Wang Zhengzhi	Land user	L	First	March 16th

B) Background

The workshop was conducted in Ansai county, Shanxi province, in the northwest of China. It is located from 36°56N to 37°19′N and from 108°51′E to 109°26′E and in the heart of the Loess plateau. It covers an area of 2950 $km^{2,}$ and is characterized by a semi-arid continental climate with cold dry winters and warm moist summers and high pH loess soils. The mean annual precipitation is 525mm, with about 60% falls in period from July to September. The number of inhabitants is 164,000.

The main land use types are cropland, orchard land, woodland, wild grassland, vegetable growing and fallow land. Much of the sloping area was converted into forest land or grass land due to the “Conversion of Sloping Farmland into Grass and Forest Program”. Orchard areas are close to the villages and provided fruits mainly for self-consumption. Forests are generally found on the steeper and moderately steep parts of the landscape. The main types of land degradation include soil erosion, decrease of fertility and fragmentation of land due to erosion.

Since the 1950s, soil and water conservation has been carried out in this region and some progress has been made. The vegetation cover increased and many silt-collection dams have been built. Yet this achievement can not cover the fact that soil erosion is still very serious and land degradation is still a big problem in this region. The main reason for this is that many constraining factors for soil and water conservation still exist. These factors include lack of financial and technical support, and no involvement of local land users in the decision-making process.

II Results and conclusions from sequences / exercises

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

A. Disturbances identified in the water and biomass cycles

Disturbances identified in the water cycles:

Low / irregular rainfall

Increased runoff

Low water infiltration rate of soil

Increase of evaporation

Disturbances identified in the biomass cycles:

Low survival rate of seedlings

Poor and low vegetation growth

Destruction of vegetation

Early withering of trees

Remove of biomass

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

The main causes and effects of disturbances in the water cycle are as follows:

Low / irregular rainfall: *most land users don't know why the rainfall is becoming low and irregular in recent years as well as some governmental official. Yet most researchers think that the global climatic change may be the main cause for this change since there is an increase in vegetation cover in Loess Plateau due to the continuous effort in re-vegetation in this region. However, low/irregular rainfall has caused serious problem for farming activities and re-vegetation program. Land users said that no or little rain in spring will result in a great loss due to the low germination of crops, yet big storms in autumn can cause severe erosion, causing*

many other problems since this region belongs to rain-fed areas. For re-vegetation, most stakeholders think that low / irregular rainfall is the main reason for low survival rate of seedlings.

Increased runoff: *most stakeholders think that deforestation and over-grazing are the main reasons for the increased runoff. The impacts of increased runoff mainly include floods and low soil water content.*

Low water infiltration rate of soil*: soil hardening due to the low input of organic matter and overuse of fertilizer is the main reason for this problem. It increases the runoff and reduces the water holding capacity of soil.*

Increase of evaporation: *the main causes include deforestation and high temperature. Most of stakeholders think that the effects of increasing evaporation include soil drying and drought.*

The main causes and effects of disturbances in the biomass cycle are as follows:

Low survival rate of seedlings: *most land users and government officials think that drought is the main cause of this problem, yet some researchers think that bad choice of species and lack of technical support are also important reasons. The low survival rate of seedlings usually leads to the failure of re-vegetation and more efforts for re-vegetation.*

Poor and low vegetation growth: *most land users and government officials think that lack of water and low fertility are the main reasons. But researchers said that the mismatching of species to site conditions is also an important reason for this problem (for example planting trees on top of hills and upper part of slopes). Poor and low vegetation growth usually causes low or no vegetation or will take longer time to increase vegetation cover, thus exposing soil to the water erosion. Government official said this also caused big economical loss due to more input of efforts.*

Destruction of vegetation: *deforestation and overgrazing are the main causes of destruction. The effects include low vegetation cover (land users and government officials), low biodiversity (researchers) and increased runoff.*

Early withering of trees: *drought (land users and government officials) and mismatching of species to site conditions (researchers) are the main reasons for withering of trees. Some trees even withered in young stages. Early withering of trees can lead to low vegetation cover, thus leaving soil to water erosion.*

Remove of biomass: *collection of leaves and cutting grass or removal of crop stubble are the main reasons for this problem. Remove of biomass usually disturbs the nutrient cycle and reduces the soil organic matter.*

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

Population increase and low economic income are said to be the main causes of the land degradation. Much forest and grass land was converted into farm land to meet the food requirement of the increased population in the past. Although farmers also suffered from this process due to high soil erosion, they couldn't afford to take measures to deal with this problem, especially those costly measures such as building dams and constructing terraces. In recent years, government carried out "Conversion of Sloping Farmland to Forest and Grass Program", which subsidizes farmers for changing sloping farmland to forest and grass again. More important is that local government also pay more attention to this, and make more effort to this.

However there are some factors constraining the government effort. Firstly, the political top-down decision process prevents the involvement of local land user in decision making. Mostly, farmers are just followers and executants of policies and decisions. So they may not be interested in the government effort. Secondly, the land use rights also constrain the layout of the planned measures because the land is divided into small blocks and belongs to different farmers.

D. Already applied solutions at the local level

The applied solutions at the local level mainly include a) building dams. Building dams can not only reduce the transportation of sediments into rivers but can also collect silt from runoff, and produce fertile farmland; b) constructing terraces; c) planting trees and grasses in gullies and steep slopes; d) increase the planting of green manure vegetation to produce more organic matter for soil improvement; e) planting hedgerows; f) rotate grass with crops to prevent soil degradation; g) planting cash trees and grass to increase economic income.

2) List of local indicators for land degradation and conservation

(→ results form Exercise 3)

Indicator	**Used by (stakeholder group)**
Crop yield	Local farmer
Crop growth	Local farmer
Fragmentation of land	Local farmer
Hardening of land	Local farmer
Nutrient content	Researcher
Water content	Researcher

3) List of stakeholders and their influence and interest in regard to sustainable land management
(→ results from Exercise 4)

Stakeholder / stakeholder group	Influence on the sustainability of land use?	Motivation / interest in the implementation of sustainable land management?	Comments
Researcher	Provide theories and techniques of sustainable land use to decision making and land use planning.	To protect the soil and water resources, and make the land use sustainable	They are key to the sustainable land use since they can provide key ideas and techniques
Government officials	They may play more important role in the land use since they are the executor of the policies and decision maker.	To make local farmers rich and protect environment according to the government policies.	They are the executor of the policies and decision maker. If they can adopt more advises from researchers and get the farmers into the involvement of decision making process, they can play more important role.
Local farmer	Their interest and benefit can be very important for the sustainability of land use. They can decide how much resources can be allocated to land use.	To increase the family income and produce more food	They have to change the traditional way and open their mind to the new land use ideas and techniques

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

Please fill in the following table for different stakeholders:

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		
Building dam	Already applied	crop	high	high	-	+	0	+	0	+	Funds are limited	Hard but benefit
Building terraced field	Already applied	crop	high	high	+	++	+	++	0	++	Need lots of funds and labour	Good
Planting trees	Already applied	Forest	medium	medium	+	++	+	+++	0	+	survival rate of trees	Good
forest enclosure	Potential solution	forest	low	low	+	++	+	++	0	+	Education level	good but should be accessible to rational use
closure against grazing	Already applied	Grazing land	low	low	0	+	+	+++	0	+	Education level	Good
interplanting	Already applied	crop	low	low	+	++	0	+	0	+	soil fertility	good but take more effort

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		
Planting trees	Already applied	Forest	medium	medium	+	++	+	+++	0	+	survival rate of trees	Good
closure against grazing	Already applied	Grazing land	low	low	0	+	+	+++	0	+	How to ensure the food supply	Good
interplanting	Already applied	crop	low	low	+	++	0	+	0	+	Choice of species	Good but need some techniques
Building terraced field	Already applied	crop	high	high	+	++	+	++	0	++	Need lots of fund and labour as well as technical support	Good and can contribute more to the increase of ecological land

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)

Questions by CDE: The assessment made by local and external stakeholders seems to be identical (which is a bit astonishing) → question: has it be made separately by local and by external stakeholders or has it been made all together? Please clarify!

Answer: In this part, local stakeholders include the land users and government officers, so the comments in the first table are the result of the combination of the two workshops. Yet the external stakeholders mainly refer to the researchers, their comments have been updated according to the questionnaires.

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

1. Planting trees
2. Building dam
3. Building terraced field
4. Closure against grazing
5. Interplanting

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

The strategy for sustainable land management in this region mainly includes the following parts: 1) Convert steep slope farmland to forest and grass: this is fundamental to control soil and water loss and improve the quality of land.

2) Constructing terraces in gentle slopes: terraces can increase the land productivity, thus reduce the requirement of total land area for food production. Meanwhile terraces can change the hydrological process of slope land and reduce the runoff.

3) Planting cash trees in gentle and south facing slopes

4) Strengthen the construction of irrigation works and improve their management in order to ensure stable yields despite drought.

5) Implement scientific farming practices, including the application of optimum amounts of fertilizer and the use of crop rotation methods.

6) Transformation of mono-crop systems into a mixed system of crops and grass

III Evaluation of the workshop (Ex. 9)

Evaluation of contents and methodology of the workshop:

- By participants (local and external): they think that the workshop is effective in identifying the causes and effects of land degradation, and help to make a reasonable strategy of sustainable land management. The evaluation of measures of local and external stakeholders gives a clear understanding of importance and benefit of different technologies.
- By the moderator(s): it is an effective way to make a good sustainable land use planning. Yet it is difficult to organize this kind of workshop.

IV Other information

Difficulties encountered:

A) Local land users and some government official have no idea about the water and biomass cycles, and moderators have to explain it to them, so they may be influenced by moderators, thus cannot get the real information from them.

B) Another difficulty is that many local land users go into the towns and cities to do off-farm work, and only old farmer are left in the village. So it's difficult to have more local land users for the workshop.

C) It is a busy season and impossible to get all participants for the workshop at the same time.

D) We lack experiences in organizing such workshops, and are often unprepared for this, so workshop is not as effective as expected.

Changes made concerning the procedure suggested in the workshop guidelines:

Although 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. For example, we had to explain the basic ideas about the water and biomass cycles before we started the workshop because local land users and some government officials don't understand the scientific concept. Also we had to divide the workshop into two parts; one is with governmental officials and one with local land users, because we could not get all participants for the workshop at the same time.

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

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. A pity is that we cannot find right time to take them into the workshop with local land users.

Local land users are interested in the increase of income and producing enough food. So they also actively participated in the workshop, yet low economic income make it difficult for them to take costly conservation measures, so they just tell what they thought about sustainable land management and leave it for government to decide.

Recommendations:

A). Take the workshop at the right season, it should not be conducted in a busy season.

B). Organise the workshop with the help of local government, so all stakeholders can take part in this procedure and express their ideas. Not like this workshop, only land user and government official took part in it. (*Some land renters and some government department officials whose decision may impact the land use are not included now*)

C). Get all stuff prepared, including papers, photos and other stuff.

Comments:

The workshop is good for the forming of a strategy of a sustainable land management system. Yet many changes had to be made to meet the local conditions and socio-cultural traditions. We hope for a successful workshop next time.

questionnaire interview

questionnaire interview

Workshop with officials, some students take part in it.

Workshop with officials, some students take part in it