The Agro-Ecological Village Development Model

Experiences in China

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REAP-Canada

Helping rural communities in Canada and developing countries meet the challenges of ecologically sound production of food, fibre and fuel since 1986
Western China Agro-Ecological Village (WCAEV) Development Project

Project Partner
Chinese Administrative Center for Seabuckthorn Development (CACSD) Ministry of Water Resources, China

Initiated in July of 2002 and completed in 2005
Village Sites were located within watersheds with severe erosion
Supported by Shell Foundation sustainable communities program

Project Purpose: To improve the economic and social well being of marginalized farming communities with a focus on women, while at the same time protecting and enhancing the natural resource base through the use of participatory development and ecological farming
WCAEV Project Sites

- **Dingxi County, Gansu Province** – 325 households (1470 people) in 4 villages (Zhangjiachuan, Fengjiacha, Chankou, and Beichuan) in the Fuxing watershed

- **Zhunger County, Inner Mongolia Autonomous Region** – 230 households (830) from 4 villages (Sujiata, Nalingo, Bainilaing and Oboyen) in Deshengxi watershed on the Erdos plateau (beside Gobi desert)
# Profile of WCAEV Communities

<table>
<thead>
<tr>
<th></th>
<th>Dingxi county</th>
<th>Zhunger County</th>
</tr>
</thead>
<tbody>
<tr>
<td># of households</td>
<td>325</td>
<td>230</td>
</tr>
<tr>
<td># of people</td>
<td>1470</td>
<td>830</td>
</tr>
<tr>
<td>Annual Precipitation</td>
<td>352 mm</td>
<td>350 mm</td>
</tr>
<tr>
<td>Annual Farm Income</td>
<td>$ 254/person</td>
<td>$ 194/person</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Basic land problems</th>
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<tbody>
<tr>
<td>1. Annual soil erosion rate at 54 tonnes/ha from wind / water;</td>
<td>1. Loss of vegetation cover from over-grazing</td>
<td></td>
</tr>
<tr>
<td>2. 54% of the area has slope &gt; 25°;</td>
<td>2. Severe wind / water erosion</td>
<td></td>
</tr>
<tr>
<td>3. 40% of this region severely eroded.</td>
<td>3. Water shortages</td>
<td></td>
</tr>
<tr>
<td>4. New restrictions on grazing</td>
<td>4. New restrictions on animal grazing</td>
<td></td>
</tr>
<tr>
<td>5. Lack of water</td>
<td>5. Limited water,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>6. Inferior soil quality</td>
<td></td>
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The Agro-Ecological Village

1. Baseline data collection
2. Institutional building
3. Capacity building and training
4. Field level implementation
5. Public engagement
Baseline Data Gathering

- Participatory Rural Appraisal (PRA)
- Agro-ecological & socio-economic survey
The farmers identified the following areas of interest for the project

On-farm research:
• Sustainable animal management
• Reduce women’s burden in farming
• Reduce salinization

Training:
• Basic knowledge about ecological systems
• Increasing soil organic matter
• Reducing chemical fertilizers

Field trials and new agricultural practices:
• Composting
• Drought-resistant vegetables and grasses
• Planting trees and shrubs
• Increasing bio-diversity

Institutional capacity building:
• Establish linkages to markets
• Organize farmers in the exchange of information and technology
Institutional Building Strengthening

1. **Community Organizers:**

2. **Farmers Associations:** Developed a constitution, board membership guidelines for activities during the project

- Dingxi Agricultural Technical Association
- Zhunger Growers Association

Essential all project activities are well grounded

I. Testing, extension and management of crop, vegetable and fodder varieties, trainings, livestock breeding

**Technical specialists generally lack necessary organization and social skills!**
Capacity Building

- PM&E
- Gender development
- Farmer-to-farmer training network and Ecological Training Course
Farmer-to-farmer training Program

The ecological farming modules included the following topics:

- Introduction to ecological farming
- Soil Fertility Management
- Cropping Systems
- Composting
- Horticulture
- Fruit production
- Pest & disease management
- Livestock Management
- Farm Planning
- Soil & water conservation
## Farmer-to-farmer training Summary

<table>
<thead>
<tr>
<th></th>
<th>Dingxi County</th>
<th>Zhunger County</th>
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</thead>
<tbody>
<tr>
<td>Number of trainers in each community</td>
<td>8</td>
<td>11</td>
</tr>
<tr>
<td>Number of training days conducted in each community</td>
<td>3386</td>
<td>1200</td>
</tr>
<tr>
<td>Percentage of women participants</td>
<td>50%</td>
<td>25%</td>
</tr>
<tr>
<td>Percentage of village population attending trainings</td>
<td>97%</td>
<td>68%</td>
</tr>
</tbody>
</table>
Gender Development

Both genders were involved in project activities:

- 44% of training participants were women
- 26% of farmer trainers were women

- Average income increased for women (Dingxi: 46%; Zhunger 24%)
- Female farmer (Gao Cunying) invited to speak in Beijing at high level Round Table meeting on Sustainable Soil Conservation

(jointly organized by the Global Water partnership, World Association for Soil and Water Conservation and Chinese Society for Soil and Water Conservation in Jiangxi)
PM&E Program

 Allows farmers to monitor their own progress
Farm Planning & Field Implementation

- “Learning Farms”
- Ecological livestock & cropping transition
- Comprehensive soil & water conservation
- Appropriate technology (biogas & solar cookers)
Learning Farms

- Ecological On-farm Demonstrations
- Adaptability Trials
- Ecological Farm Plan Rotations

Productivity Drivers!!!

<table>
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<tr>
<th>Good farm management</th>
<th>Good soil fertility</th>
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<tbody>
<tr>
<td>Good seeds &amp; animals</td>
<td>Good weather</td>
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</table>
Ecological On-Farm Demonstrations

Ecological farming enhanced comprehensive soil and water development program:

- More perennial forages and less water consuming crops
- Conserving crop residues on field to retain moisture and soil
- Reduced tillage
- Eliminating livestock grazing through in-stock feeding
- Improved quantity and quality of compost
- Reduced use of chemical fertilizers and pesticides
Adaptability Trials

Varieties of crops, forages and vegetables distributed:
- 103 in Dingxi, 56 in Zhunger

- Alfalfa
- Corn
- Flax
- Grasses
- Lentils
- Millet
- Peas
- Potatoes
- Wheat
Crop Improvement

Farmers prioritized their seed needs,
Dingxi: 1st. potatoes, peas
  2nd lentils, wheat, flax, millet, alfalfa,
Zhunger: alfalfa, corn, potatoes

- successful varieties were tested, scaled up and distributed throughout the community
- commonly 20-30% yield improvement with adapted improved cultivars
- 100% increase in yield in Zhunger with alfalfa and potatoes
Farm Planning

Dingxi:
- 211 Farm Plans drafted

Zhunger:
- 116 Farm Plans drafted

- Rotations developed to optimize soil fertility and efficient water use
Livestock Transition

Zhunger: 5 Improved cashmere male goats for cross breeding

Dingxi: Improved sheep for in-stock feeding

- Zhunger: 400 improved goats/yr doubled hair income/animal
- Major increases to revenues and equity
- More manure and less labour for herding
Comprehensive Soil and Water Conservation

- Permanent cover of seabuckthorn and other shrubs for erosion control
- Planting alfalfa and Grasses
- Check dams to trap sediment
- Contours and Contour farming
- Water harvesting techniques
Soil and Water Conservation Summary

<table>
<thead>
<tr>
<th>Results:</th>
<th>Dingxi County</th>
<th>Zhunger County</th>
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</thead>
<tbody>
<tr>
<td>Revegetation with sea buckthorn (ha)</td>
<td>588</td>
<td>705</td>
</tr>
<tr>
<td>Revegetation with grass (ha)</td>
<td>-</td>
<td>317</td>
</tr>
<tr>
<td>Check-dams installed</td>
<td>169</td>
<td>2 (v. large)</td>
</tr>
<tr>
<td>Water cellars installed</td>
<td>352</td>
<td>2</td>
</tr>
<tr>
<td>Area of terraces constructed (ha)</td>
<td>101</td>
<td>-</td>
</tr>
</tbody>
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Agro-Ecological & Socio-Economic Survey Results

Both communities experienced significant income and food security benefits during project implementation (2002 and 2005):

- 44% increase in mean household income in Dingxi and 60% in Zhunger
- Total revenue from farm-based sources (crops, livestock and forestry) increased by 64% in Dingxi and 68% in Zhunger
- Quality of life in Zhunger has been most dramatic, poorer households ate only millet at project inception and now can eat healthy, diverse diet
Agroecological Villages

A promising future for rural development in China

• Low cost, participatory development approach is the best way to uplift millions of rural peasants

• Emphasizes ecological farming training, planning and technologies
Thank you!