# Individual Project Evaluation

# Seabuckthorn Development in China (CPR/96/107)

# People's Republic of China

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## 1.0 Project Concept and Design

This section seeks to establish the extent to which the project concept and design were relevant at the time the project document was approved. It focuses on the analysis of the Project Document covering the context, objectives, institutional arrangements, and monitoring and evaluation of the project.

The project was designed to assist the Government of China to implement the UNCCD through support to the National Seabuckthorn Coordination Office (NSCO). The project strategy focused on: a) increasing the capability of seabuckthorn demonstration and training; b) increasing the capability of herder/farmer households for seabuckthorn plantation and utilization; and c) increasing the capability of organization, coordination and management of the institutions involved.

The development objective of the project is "to rehabilitate desertified land through seabuckthorn development. promote social and economic growth and improve the quality of life of the inhabitants of the drylands in China".

The immediate objectives of the project are:

- *Immediate Objective 1:* Established seabuckthorn demonstration models in order to rehabilitate desertified land and alleviate poverty.
- *Immediate Objective 2:* Improved professional level and practical ability of the local administrators, technicians and farming households by training.
- *Immediate Objective 3:* Strengthened capability of CRTCS in terms of organization, management, coordination, staff development, professional capabilities and administrative skills

The review of the project document revealed that the project objectives and activities are logically linked. The problems to be addressed, including existing capacities, as well as the expected end of project situation were clearly defined. Capacity building at the system, entity and individual levels were taken into consideration in developing the project operational strategy. The project beneficiaries at all levels are clearly identified.

The institutional arrangements were clearly stated. The China Research and Training Centre on

Seabuckthorn (CRTCS) was designated as the inuplenicnting agency. The Scabuckthom Office of the Upper-middle Reaches Bureau, the Yellow River Conservancy Committee, Yijinhuolo Conservancy Bureau and the Iquecho Soil and Water Conservation Bureau in Inner Mongolia were assigned to work on specific tasks with the CRTCS.

Although technically very sound, the project monitoring and evaluation strategy did not provide or at least propose to develop a strategy including baseline data and performance indicators for monitoring the effects of project activities on environment, poverty alleviation, participation and gender equity. According to the UNDP Programming Manual, the monitoring and evaluation strategy of a project should provide for the assessment of SHD-related outcomes.



**2.0 Project Implementation**

The review of project implementation was carried out by the evaluation team through meetings with project staff and government officials, field visits, interviews of beneficiaries particularly herders/ farmers, and literature review (project documentation, TPR reports, etc.).

Activities and outputs were thoroughly reviewed and the detailed findings are presented in Annex 1. This section presents a synthesis of the ***overall progress achieved towards each output.***

**Immediate Objective 1: Establishment of Seabuckthorn Demonstration Models in order to harness the degraded land induced by desertification, and help in realizing poverty alleviation programs**

**Output 1.1: Establishment of 10 ha of propagated seedlings and cultivar growing and breeding to provide tine varieties to plantation and extension on a large scale**

Seabuckthorn seedling and breeding bases were established in a sand-desert area. The plantations were in good condition despite scarce rainfall (100 mm in 1999), and were contributing effectively to the dissemination of the use of seabuckthorn for desertification control among herders and farmers. Many herders/farmers have adopted the technology and are using it on their own land for sand-dune control and feeding their livestock. The project was instrumental in disseminating this practical, effective and socially acceptable technology for desertifcation control, and improving farmers/herders livelihoods through
improved livestock health and increased number of offspring (better access to high quality fodder).

**Output 1.2: Establishment of integrated demonstration areas of 1000 ha in the three regions: Daerhanhao sandy desert region (400 ha), Chejiaqu "rocky" desert region (300 ha), and Honghaizi salinized-alkaline desert region (300 ha). All are in Yijinjuolo.**

Demonstration sites were established in three different ecological zones with the following applications: a) economic plantations with environmental benefits b) animal husbandry and c) soil and water conservation. The farm households visited have successfully adopted the seabuckthorn (SBT) technology. The herders/farmers interviewed by the mission expressed great interest in SBT and were actively utilizing it for sand dune fixation and feeding their livestock. The project has contributed to environmental conservation, mainly through sand dune fixation, reclamation of desertified land, and improving livestock
productivity. Furthermore, SBT was often the only browse available for livestock during very dry years (SBT can survive with 100 mm *of* rainfall). There were signs in the field that the adoption of SBT will contribute to improved livelihoods of the target groups. The herder/farmer income is

expected to increase further following the harvest of the berries next year (the project was too short in this respect - an additional year or two are required to adequately assess economic benefits). Finally, the use of SBT in Chinese indigenous medicine will definitely enhance its value for people in China and around the world (SBT has 200 medical, food and other applications).

**Immediate Objective 2: Improved professional level and practical ability of the local administrators, technicians and farmer households by training.**

**Output 2.1 Training and study tour, for local leaders and technicians at home and abroad (90 persons).**

The training and study tour plan was designed by Mr. Lu Dongsheng , CTA and international expert in SBT. The plan included activities in China and abroad. Through the training and study tour, technicians



and local leaders have acquired a better knowledge about seabuckthorn.

**Output** 2.2: **300 local farmers of 65 households be trained for establishing and utilizing their own plantations.**

Based on the training plan, 360 farmers were trained on raising seedlings, planting, plantation management and fruit harvesting. Currently, about 1000 ha have been planted by farmers with SBT and are managed by the farmers themselves with limited technical support from the local project office. Some farmers stated they have increased their income through the production and sale of SBT seedlings. However, additional work is still required with respect to the economic benefits of SBT, including market information and processing. Cooperation with the forestry sector should also be strengthened.

**Output 2.3: 10 professional staff and experts will travel to provinces and autonomous regions to address desertification problems and promote the use of SBT.**

Visits to Sichuan and Tibet were cancelled due to the lack of personnel working on SBT development in these regions. Also, there was no representation from these two regions at the training courses conducted by the CRTCS.

**Immediate Objective 3: Strengthened capability of CRTCS in terms of organization, management, coordination, staff development as well as improved professional levels and administrative skills.**

**Output 3.1: Overseas training and study activities completed on research and training skills.**

A critical mass of people was trained in: a) seabuckthorn related issues such growing seedlings, physiological and bio-chemical research, processing and marketing; and b) project management and information technology. The results of these training activities are reflected by the satisfactory management of the project, the technical soundness and sustainability of project results, and the replication of results outside the project area.

**Output 3.2: International information an experts established**

A web page was developed covering technical, research and extension aspects of seabuckthorn

development (\\vww.icrts.orC). Information is available in Chinese and English. The information network is used by national as well as international experts (Russia, Canada, USA, etc.). Through the good quality of its work, the CRTCS has achieved international recognition as evidenced by the frequent contacts with and visits of international experts.

**Output** 3.3: **Integrated Training textbooks on seabuckthorn compiled**

Relevant textbooks and publications on seabuckthorn were compiled and edited by the CTA and an international consultant. They were distributed in desertification-affected regions through the extensive network of the Ministry of Water Resources. The information was also distributed to universities and ministries involved in desertification control.

**Output 3.4: Workshops held and proceedings published.**

Three national workshops were held in Sichuan, Dalian and Beijing in 1997, 1998 and 1999 respectively. An international workshop was held in 1999 with attendance from Canada, Russia, USA, etc. This workshop strengthened the leading role of the CRTCS in the field of seabuckthorn development.

D'rok·ec liD v c;re published.



Output 3.5: **Establishment of necessary equipment for research and training on seabuckthorn.**

The national office was provided with training and information technology equipment. There is clear evidence of improved project management through the effective delivery of services and results. Regional offices in the target counties were adequately equipped with training equipment and a state-of-the art SBT nursery was established in Inner Mongolia. The 10-ha nursery provides 3.3 million seedlings annually to various desertification-stricken counties. Considering the success of operations, the authorities are planning to expand the nursery shortly.

**Output 3.6: Strategy for increased awareness implemented.**

A national media campaign was conducted focusing on the provinces and autonomous regions subject to desertification. There is perceptible awareness about seabuckthorn a the national and regional levels: a) A national seabuckthorn program has been established with an annual budget of RMB 20 million; b) The World Bank has initiated a US$ 13.6 million environmental rehabilitation program in the project area with a heavy focus on the use of seabuckthorn for desertification control; c) The area planted with SBT in one of the target counties has increased by 20 folds over the past 4 years, etc.

**Output** 3.7: **Establishment of seabuckthorn germplasm resources (gene pools).**

Field studies were conducted in areas where native species and sub-species of Hyppophae are located, i.e. in Xinjiang, Qinghain and Tibet. The material collected was characterized and three gene pools have successfully established in Beijing, Qinghain and Sichuan. Research and development activities are supervised by Dr. Lu Dongsheng, the CTA of the project and a leading international scientist in the field of SBT development. New species have been characterized for future use such as *H. Tibetana* (larger fruit size and increased oil content) ***and H. Salicifolia*** (thorn-free plant)

## 3.0 Project Assessment

The objectives of this terminal evaluation are to:

- Assess the relevance, performance and success of the project;
- Extract lessons learned for future development programming and policy formulation; and
- Formulate conclusions and recommendations.

The terms of reference (TOR) for this evaluation assignment are presented in Annex B of the main evaluation report.

### 3.1 Relevance

Relevance is the degree to which the objectives of the project remain valid and pertinent either as originally planned or subsequently modified. The relevance of the project was assessed with respect to: a) national development issues; b) needs of beneficiaries; and c) UNDP's mission to promote Sustainable Human Development (SHD).

#### National Development Issues

China is severely affected by desertifcation and drought with 27.3 % of its land classified either as deserts or desertified areas. It is estimated that 2,600 sq. km of topsoil is lost annually to wind and water erosion. With a severe shortage of land and the current human population exceeding 1. 2 billion, it is extremely urgent for China to combat desertification and prevent further loss of arable land. Hence, assistance for desertifcation control is critical to China's future development. In this respect, the project has provided this essential assistance in several ways. It has provided support for the implementation of the National Action Plan (NAP) to Combat Desertification and the UN Convention to Combat Desertification (UNCCD). The main outcomes of the project were: a) capacity building of national institutions to carry out desertification control; b) improved capacity of local/provincial governments to combat desertifcation; c) improved capacity of herders/farmers to combat desertifcation through the use of SBT.

#### Needs of Beneficiaries

Capacity building at the local level in SBT technology is highly relevant to the needs of farmers/ herders living in desertifcation-stricken areas. 'I he severe land degradation prcvaleui in the project area h-is restricted the use of land for animal and crop production- Hence the reclamation of degraded land for food production is essential for the livelihoods of local communities. SBT technology has gone a long way in fulfilling this need by providing a reliable, appropriate and cost-effective technology for rehabilitating severely degraded land for food production and by providing an alternate source of fodder for livestock production.

#### UNDP's Mission

The project remains highly relevant to the UNDP mission to promote SHD by assisting program countries to build their capacities in the four areas of focus, namely: a) poverty alleviation; b) environmental sustainability; c) participatory development; and d) gender equity. By assisting

resource-poor in rehabilitating and increasing the productivity of their land, the project will likely have an impact on poverty alleviation in the target counties. The involvement of herders/farmers (men and women) in the management and propagation of SI1T is lil•.ely to contribute to the income diversification. The project



period is however too short for assessing these potential benefits. Additional monitoring is recommended following the completion of the project.

Overall, the project objectives remain highly relevant to national development issues, beneficiaries (rural communities subjected to desertification), and UNDP's mission. Additional significant efforts are still needed considering the major desertification challenges facing the country.

3.2 **Performance**

The assessment of performance focuses on the progress made by the project relative to its objectives. In the past, assessment of performance tended to focus on the transformation of inputs into outputs, with limited reference to immediate and long-term development results. " Under the new monitoring and evaluation framework, more attention is given to results" ( UNDP, 1997, Results-oriented Monitoring and Evaluation). The criteria used for assessing the performance of the project are:

- Effectiveness - the extent to which the project achieves its immediate objectives or produces its desired outcomes;

- Efficiency - the optimal transformation of inputs into outputs; and

- Timeliness of inputs and

results. **Effectiveness**

Overall, the project has achieved its immediate objectives to a satisfactory level. The extent to which the project has produced its desired outcomes is discussed below.

- Increased technical, research and extension capacity for utilization of SBT for desertification control in desert itcation-stricken areas: a) professional personnel trained; b) midlevel/ extension staff trained; and c) herders/farmers trained. The effectiveness of these activities is reflected by strong technical achievements and adoption of technology in the target counties.
- Herders/farmers have acquired new knowledge to plant, manage and harvest SBT, thus effectively controlling desertification as well as improving their incomes through improved animal production and sale of SBT products.
- Desertification control using SBT has contributed to the improvement of environmental conditions in target counties through the fixation of sand dune, the .reduction of water and wind Elusion, the stabilization of gullies and the improvement of watef retention in catchment areas.

**Efficiency**

The review of outputs and activities revealed that, overall, the project was implemented efficiently. Most of the outputs of the project were considered very useful by project beneficiaries both at institutional and community levels. The SBT technology was adopted by numerous herders/farmers in the target and adjacent counties. Both men and women have benefited equally by project outcomes.

**Timeliness**

According to the reports and findings of the evaluation mission, the inputs and results were delivered in a timely manner as per the project schedule



3.3 Success

The three criteria used to assess project success are a) capacity development; b) results and c) sustainability.

Capacity **Building**

This project was successful in achieving its objectives mainly due to its a simple/adequate design the strength of its technical team. It achieved its goal of building capacity at the system, entity/ organizational and individual levels.

*Capacity Development at the Level: Improved awareness of senior officials and administrators at the national and regional/local levels of the effectiveness ofseabuckthorn in desertifcation.*

Increased awareness can be assessed by the following results:

a) Establishment of a national seabuckthorn program with an annual budget of RMB 20 million;
b) The World Bank has initiated a US$ 13.6 million environmental rehabilitation program in the project area with a heavy focus on the use of seabuckthorn for desertification control;
The area planted with SBT in one of Yikechao County has increased by 20 folds over the past 4 years, etc.
d) Over 700 ha of SBT plantations have been established in 1999 in the neighboring county of Y1jinholuo;
A major shelter-belt project (Yuan 1.0 billion) planned around Beijing will integrate the use of SBT in its design.

*Capacity Development at the organizational level -Increased capacity for research, extension and technology transfer*

Several outputs have contributed to the above outcome, as follows:

Strengthened capacity of the CRTCS in terms of organization, co-ordination and improved professional capabilities.

b) Strengthened local capabilities as reflected by the significant replication of SBT models.

Enhanced delivery of SBT technology to herders/faliners as reflected by its widespread adoption in and around the target counties.

*Individual level: Improved capacity of herders/farmers to use seabuckthorn technology.*

The following outputs have contributed to this outcome:

a) Technical training of herders/farmers in SBT technology;

b) Widespread adoption of SBT technology in and around the target counties.
Preliminary indications of increase farmers' income through the sale of seedlings and improved productivity of livestock (improved access to fodder).



**Results**

In the case of a terminal evaluation, the main focus of the assessment is on the *outcomes* or results achieved by the end of the project and their *likely or potential impact* on the intended development objective. "Impact refers to the results of a project that are assessed with reference to the development objective or long term goal of that project. Impact can be assessed only once a significant period has elapsed after the completion of a project" (UNDP, 1997, Results-oriented Monitoring and Evaluation). Consequently, the term outcome (rather than impact) is used in the analysis below to describe the results achieved at this stage.

*In addition to the significant contribution of the project to capacity development,* the assessment of project outcomes focuses on the following aspects: a) environmental management, b) seabuckthorn research; and c) poverty alleviation.

*a) Environmental Management*

Field demonstrations have revealed the environmental benefits of SBT with respect to soil and water conservation, stabilization of sand dune and gullies, and provision of fodder for livestock production. There is also evidence that the stabilization of gullies in the project area have minimized the migration of sediments to the Yellow River, a major environmental problem plaguing China. However, the absence of an adequate environmental monitoring and evaluation strategy including baseline data and indicators makes it difficult to assess adequately the extent of the environmental impact of the project.

*h) Seabuckthorn Research and Development*

The project has contributed significantly to SBT research and development in China. Field studies were conducted in areas where native species and sub-species of Hyppophae are located, i.e. in Xinjiang, Qinghain and Tibet. The material collected was characterized and three gene pools have successfully established in Beijing, Qinghain and Sichuan. Research and development activities are supervised by Dr. Lu Dongsheng, the CTA of the project and a leading international scientist in the field of SBT development. New species have been characterized for future use such as *H. Tibetana* (larger fruit size and increased oil content) *and H. Salicifolia* (thorn-free plant).

*c) Food Production & Poverty Alleviation*

The project is likely to contribute to poverty alleviation through the effective introduction of SBT technology. The hardy characteristics *of SBT* have contributed to its successful implementation in the project area and thus the enhancement of livestock and crop production. Farmers/herders interviewed stated that their income has been improved as a result of project activities, however despite evidence with this respect (e.g. revenues from sale of SBT seedlings, improved availability of fodder), it is difficult to adequately assess project effects due the absence of a M&E strategy including poverty-related data.

**Sustainability**

The positive results are likely to be sustainable due the strong achievements in terms of capacity building, the commitment of national and local authorities to integrate SBT in their desertification control plans, and the high potential for replication as evidenced by the widespread adoption of SBT in the project area.

**Likely Impact**

Considering all the above, the impact of the project on the environment and livelihoods in desertification



stricken areas is likely to be

positive. **4.0 Lessons**

**Learned**

Several lessons, overall positive, have emerged during this evaluation. These have been grouped into the following areas: a) Capacity development; b) sustainability; and c) monitoring and evaluation.

**Capacity Building**

Capacity building at the system, entity and individual levels are essential for the successful achievement of results in the field. The project strategy was adequately balanced with this respect, thus justifying the strong showing of the project on the ground.

**Sustainability**

Capacity development, strong government commitment and effective participation of target groups are critical elements contributing to the likely sustainability of project results.

**Monitoring and Evaluation**

There were signs in the field of positive impact on Sustainable Human Development (SHD).

However, the results were difficult to assess due to lack of baseline data and performance indicators for monitoring the effects of project activities on environment, poverty alleviation and gender equity. According to the UNDP Programming Manual, the monitoring and evaluation strategy of a project should provide for the assessment of SHD-related outcomes.

**5.0 Conclusions**

The overall rating of the project is "satisfactory". The project has demonstrated the effectiveness of seabuckthorn in combating desertification; however additional monitoring data is needed for the scientific assessment of environment and poverty-related outcomes. The proposed technology is easy to use, costeffective and socially acceptable. Institutional capacity has been strengthened for the application of SBT technology at a larger scale in China. By providing a viable alternative for desertification control, the project has significantly contributed to the national efforts for implementing the United Nations Convention to Combat Desertification.

**6.0 Recommendations**

This evaluation leads to the following recommendations:

- Additional efforts are still needed by the CRTCS to better integrate the use of seabuckthorn in the activities of various institutions involved in desertification control in China (e.g. forestry, agriculture, environment and transport sectors). Improved coordination and information exchange will contribute to the much needed **convergence of national efforts towards desertification control.**
- Considering the strong potential of the SBT technology, continued national and international support for research, development and implementation activities is recommended.



# Annex 1: Detailed Review of Project Activities and Outputs

The review of project implementation was carried out by the valuation team through meetings with project staff and government officials, field visits, interviews of beneficiaries particularly farmers (men and women), and literature review (project documentation, TPR reports, etc.).

**Immediate Objective 1: Establishment of Seabuckthorn Demonstration Models in order to harness the degraded land induced by desertification, and help in realizing poverty alleviation programs**

**Output 1.1: Establishment of 10 ha of propagated seedlings and cultivar growing and breeding to provide tine varieties to plantation and extension on a large scale**

**Planned Activities**

1.1. 1: Survey and selection of a typical sand-desert area in Daerhanhao region of Ijinholuo county to decide on permanent 10 ha base nursery for propagation of seedlings and cultivar breeding.

1.1.2: Completion of overall plan and design of cultivating seedlings and breeding base, implementation and operation procedures

1.2.3: Design of a 10 ha base for cultivating seedlings and breeding in line with the overall plan and design, implementation and operation procedures.

1.1.4: Initiation of management of propagating seedlings and cultivar breeding base, and implementation requirements to control functions

**Progress Achieved**

1.1. 1: A 10 ha site was selected in a sand-desert area in the Daerhanhao region and a base was established (seedlings and cultivar).

1.1.2: Overall plan and design of seedling cultivation and breeding base completed and implemented. 1.1.3: A 10 ha seedling cultivation and breeding base designed and implemented. 1.1.4: Management of a seedling propagation cultivar breeding base initiated and control function

requirements implemented.

**Overall Progress Towards Output 1.1**

Seabuckthorn seedling and breeding bases were established. In a sand-desert area. The plantations were in good condition despite scarce rainfall (100 mm in 1999), and were contributing effectively to the dissemination of the use of seabuckthorn among herders and farmers for desertifcation control. Many herders/farmers have adopted the technology and using it on their own land for sand-dune control and feeding their livestock. The project was instrumental in disseminating this practical, effective and socially acceptable technology for desertifcation control, and.' improving farmers/ herders livelihoods through improved health and increased number of offspring of their livestock.

**Output 1.2: Establishment of integrated demonstration areas of 1000 ha in the three regions: Daerhanhao sandy desert region (400 ha), Chejiaqu "rocky" desert region (300 ha), and Honghaizi salinized-alkaline desert region (300 ha). All are in Yijinjuolo.**

**Planned Activities**

1.2.1: Two to three (2-3) investigations in the project regions during the pre-period and defining land selection at demonstration areas.

1.2.2: Define criteria and procedures of establishing demonstration areas.

1.2.3: Complete overall plan and design, implementation and operation procedure of project. Including

three types of demonstration: Plantation; Animal Husbandry, and Soil and Water Environment

Protection.



1.2.4: Establish 1000 ha demonstration areas in Daerhanhao sandy-desert area, Chejiaqu " Rocky" desert

area, and Honghaizi saline-alkaline desert area in Yijinholuo county.

1.2.5: Implement management of demonstration areas and establish requirements according to plan and

design, implementation and operation procedures.

1.2.6: Support 65 typical farmer households (respectively account for 20% of total farmer area households), that is: 20 farmer households in Daehanhao sandy-desert area, 15 in Chejiaqu "Rocky" desert area and 30 in Honghaizi saline-alkaline desert area in basic seabuckthorn operating procedures

Progress Achieved

1.2.1: Several areas were surveyed (3 times) and demonstration sites were selected.

1.2.2: Criteria for selection of "Demonstration Sites" were defined. Sites were selected using

following
criteria: a) Heavily degraded areas b) Communal areas c) New areas - (no previous experience). 1.2.3: Three types of demonstrations were established as required above.
1.2.4: Demonstration areas were established as follows: Daerhanhao sandy-desert area - 229 ha; Chejiaqu
"Rocky" desert area - 311 ha; and Honghaizi saline-alkaline desert area - 450 ha.
1.2.5: The Local County Bureau for Soil Erosion control implemented the management of demonstration
areas
1.2.6: Sixty-five (65) herder/farmer households were recruited to participate in the demonstration plantations. The farmers signed contracts with the NPO to participate. They were provided Seabuckthorn (SBT) seedlings free of charge and were totally reponsible for planting and mangement of the demonstration plots. They were given training and technically assisted and supervised by project technicians. All benefits from the plantations, including use by livestock, went to the participating herders/farmers.

**Overall Progress Towards Output 1.2**
Demonstration sites were established in three different ecological zones with the following applications: a) economic plantations with environmental benefits b) animal husbandry and c) soil and water conservation. The farm households visited have successfully adopted the seabuckthorn (SBT) technology. The herders/farmers interviewed by the mission expressed great interest in SBT and were actively utilizing it for sand dune fixation and feeding their livestock. The project has contributed to environmental conservation, mainly through sand dune fixation, reclamation of desertified land, and improving livestock productivity. Furthermore, SBR was often the only browse available for livestock during very dry years (SBT can survive with 100 mm of rainfall). There were signs in the field that the adoption of SBT will contribute to improved livelihoods of the target groups. The herder/farmer income is expected to increase further following the harvest of the berries next year (the project was too short in this respect - an
additional year or two are required to adcquatcly asscss economic benefits). Finally, the use of SBT in Chinese indigenous medicine will definitely enhance its value for people in China and around the world (SBT has 200 medical, food and other applications).

**Immediate Objective** 2: **Improved professional level and practical ability of the local administrators, technicians and farmer households by training.**

**Output 2.1: 90 people, training and study tour, for local leaders and technicians at home and abroad.**

**Planned Activities**
2.1.1: Design the detailed plan for training and study tour.
2.1.2: Engage 5 national experts to give 15 lectures on knowledge of seabuckthorn exploitation and utilization.
2.1.3: 100 people training and shod\' tour for local le:,'le-, - ;end technicians at home I---



2 1.4: 2 person study tour abroad on seedling, breeding, and other relevant techniques.

**Progress Achieved**
2.1.1: The operation plan for training and study tour was designed by Mr. Lu

Dongsheng , CTA. 2.1.2: Done by national experts.
2.1.3: Around 90 persons including local leaders and technicians have been trained by the project. Three
study tour in China have been organized in which 20 people have participated.
2.1.4: Four (4) member of The Seabuckthorn Office of the Yellow River Conservancy Committee were
sent to Canada for one month study.

**Overall Progress Toward Output 2.1**
The training and study tour plan was designed by Mr. Lu Dongsheng, CTA and international expert in SBT. The plan included activities in China and abroad. Through the training and study tour, technicians and local leaders have acquired a better knowledge about seabuckthorn.

**Output** 2.2: **300 local farmers of 65 households be trained for establishing and utilizing their own plantations.**

**Planned Activities**
2.2.1: Draw up training plan for farmer households.
2.2.2: Train 300 farmers in seedling production, planting, plantation and management and fruit harvesting. 2.2.3: Conduct enhanced training for 65 farmer households on grazing and plantation management. 2.2.4: Technicians and farmer household involved in the project of combating desert will be participated
in the training course in Yijinhoulo county.

**Progress Achieved**
2.2.1: Done by CTA during the design of the operation plan.
2.2.2: 360 farmers were trained on seedling production, planting, plantation management and fruit harvesting - both in a class-room context and in the field. Two training sessions were (3 and 5 days respectively).
2.2.3: Done by national experts. The 65 households have planted 1000 ha of seabuckthorn and managed the plantations by themselves with technical support from the local project office.
2.2.4: 7 people came from the county forestry bureau attended the local technical training courses.

**Overall Progress Towards Output 2.2**
Based on the training plan, 360 farmers were trained on raising seedlings, planting, plantation management and fruit harvesting both formally (claw-room) and in the field (hands-on). Currently, about 1000 ha have been planted by farmers with SBT and arer managed by the farmers themselves with limited technical support from the local project office. Some farmers stated they have increased their income through the production and sale of SBT seedlings. However, additional work is still required with respect to the economic benefits of SBT, including market information and processing. Cooperation with the forestry sector should also be strengthened.

**Output 2.3: 10 professional staff and experts will travel to provinces and autonomous regions to deal with the problems in promoting seabuckthorn development**

**Planned Activities**
2.3.1: 2-3 small seminars will be held in Xinjiang, Sichuan and Tibet.

2.3.2: 5-10 professional staff and experts will travel to Xinjiang, Sichuan and Tibet to provide technical services.

2.3.3: 10-20 officers and technicians from the above-mentioned regions will he invited to participate in the



train courses conducted by CRTCS.

**Progress Achieved**

2.3.1: Two seminars were held in Xinjiang, Sichuan with 14 participators from the local water and forestry sections, the local government and CRTCS.

2.3.2: 6 professional staff and experts from CRTCS went to Xinjiang and Sichuan to provide technical services.

2.3.3: 2 pesrons from Xinjiang attended the training courses conducted by the CRTCS. Nobody came from the other provinces.

**Overall Progress Towards Output 2.3**

Visits to Sichuan and Tibet were cancelled due to the lack of personnel affected to SBT development in these regions. Also, there was no representation from these two regions at the training courses conducted by the CRTCS.

**Immediate Objective 3: Strengthened capability of CRTCS in terms of organization, management, coordination, staff devepment as well as improved professional levels and administrative skills.**

**Output 3.1: Overseas training and study activities completed on research and training skills.**

**Planned Activities**

3.1.1: Design the personnel training and study tour plan at home and abroad. 3.1.2: 15 people study tour abroad.

3.1.3: 12 people take short term training (one month).

**Progress Achieved**

3.1.1: Done.

3.1.2: Ten (10) people study tour to Finland (processing), Sweden (breeding) and Australia ( nursery management).

3.1.3: Eight people trained in the USA in project management (4) and in information technology (4).

**Overall Progress Towards Output 3.1**

A critical mass of people was trained in: a) seabucthorn-related issues such growing seedlings, physiological and bio-chemical research, processing and marketing; and b) project management and information technology. The results of these training activities are reflected by the satisfactory management of the project, the technical soundness and sustainability of project results, and the replication of results outside the ptvject aroma.

**Output** 3.2: **International information an experts established**

**Planned Activities**

3.2.1: Personnel trained in computer operation and networking. 3.2.2: Collection in information on seabuckthorn. 3.2.3: International experts invited to

jointly prepare network. 3.2.4: Establishment of integrated information network.

**Progress**
**Achieved**
3.2.1: Done. 3.2.2: Done. 3.2.3: Done. 3.2.4: Done.



**Overall Progress Towards Output 3.2**
A web page was developed covering technical, research and extension aspects of seabuckthorn development (wwwww.1crts.orn). Information is available in Chinese and English. The information network is used by national as well as international experts (Russia, Canada, USA, etc.). Through the good quality of its work, the CRTCS has achieved international recognition as evidenced by the frequent contacts with and visits of international experts.

**Output 3.3: Integrated Training textbooks on seabuckthorn compiled**

**Planned Activities**
3.3.1: Install compiling group.
3.3.2: Gather relevant information.
3.3.3: Obtain national and international experts for editing. 3.3.4: Compose and print textbooks.

**Progress**
**Achieved**
3.3.1: Done. 3.3.2: Done. 3.3.3: Done. 3.3.4: Done.

**Overall Progress Towards Output 3.3**
Relevant textbooks and publications on seabuckthorn were compiled and edited by the CTA and an international consultant. They were distributed in desertification-affected regions through the extensive network of the Ministry of Water Resources. The information was also distributed to universities and ministries involved in desertification control.

**Output 3.4: Workshops held and proceedings published.**

**Planned Activities**
3.4.1: Recruit 5 international experts as senior advisors.
3.4.2: Organize one international workshop.
3.4.3: Hold 3 national workshops.
3.4.4: Publish proceedings.
3.4.5: Edit and publish "Hyppophae Research" and "Newsletter" (2 issues per year), in English.

**Progress**
**Achieved**
3.4.1:
Done. 3.4.
2: Done. 3.
4.3: Done.
3.4.4:
Done. 3.4.
5: Done.

**Overall Progress Towards Output 3.4**
Three national workshops were in Sichuan, 1)alsan and Beijing in 1997, 1998 and 1999 respectively. An international workshop was held in 1999 wiiIi attend;mcc Cnsnl ['ati;ida, Russia, lJSA, etc. This workshop strengthened the leading role of the CRTCS in Eliu ricI%I u~1 ,ca huckthorn tic %cIopment. Proceedings NN cre published.

**Output** 3.5: Establishment of necessary equipment for rcwearch and training on seahuct thorn. I



Planned Activities
3.5.1: Establish need and purchase
equipment. 3.5.2: Train technicians on
use of equipment.

Progress
Acheeved
3.5.1:
Done. 3.5.
2: Done.

Overall Progress Towards Output 3.5
The national office was adequately equipment with training and information technology equipment. There is clear evidence of improved project management through the effective delivery of services and results. Regional offices in the target counties were adequately equipped with training equipment and a state-ofthe art SBT nursery was established in Inner Mongolia. The 10-ha nursery provides 3.3 million seedlings annually to various desertification-stricken counties. Considering the success of operations, the authorities are planning to expand the nursery shortly.

Output 3.6: Strategy for increased awareness implemented.
Planned Activities
3.6.1: Conduct promotional activities.
3.6.2: Publish relevant books, newsletters, etc.
Progress
Achieved
3.6.1:
Done. 3.6.
2: Done.

Overall Progress Towards Output 3.6
A national media campaign was conducted focusing on the provinces and autonomous regions subject to desertification. There is perceptible awareness about seabuckthorn a the national and regional levels: a) A national seabuckthorn program has been established with an annual budget of RMB 20 million; b) The World Bank has initiated a US$ 13.6 million environmental rehabilitation program in the project area with a heavy focus on the use of seabuckthorn for desertification control; c) The area planted with SBT in one of the target counties has increased by 20 folds over the past 4 years, etc.

Output 3.7: Establishment of seabuckthorn germplasm resources (gene pools).
Planned Activities
3.7.1: Conduct field surveys and collect wild species and sub-species of Hippophae. 3.7.2: Establish gene pools for conservation and utilization of enhanced cultivars. 3.7.3: Conduct research on characterization of collected material.
Progress
Achieved
3.7.1:
Done. 3.7.
2: Done. 3.
7.3: Done.
Overall Progress Towards Output 3.7
Field studies were conducted in areas where native species and sub-species of Hyppophae are located, i. e. in Xinjiang, Qinghain and Tibet. The material collected was characterized and three gene pools have . ucces'Fu,lly .t ~l,li hc~1 in 13c~j~n:r,, ClinLhain and Sichuan. Research and development activities are



supervised by Dr. Lu Dongsheng, the CTA of the project and a leading international scientist in the field of SBT development. New species have been characterized for future use such as H. *Icbetana* (larger fruit size and increased oil content) *and H. Salicifolia* (thorn-free plant)