Sustainable Agro-biodiversity Management in the Mountain Areas of Southern China
PROJECT DESCRIPTION

Location of project:
The Project is located in three mountain areas of southern China of tropical, subtropical and temperate climatic zones as indicated in the following map:

The following table shows the three mountain areas, their respective provinces, counties and number of villages where the project will work. For detailed maps and description of the counties see Annex 1.

Note: * are the areas that the on-going GTZ project is working on. The rests are new project areas for the EU co-financing project. The villages in the new areas still have to be selected.
Agro-biodiversity in the Project Areas

Wuling, Dabie and Wuzhi mountain ranges represent areas of high biological and agricultural diversity in 3 different climatic zones. In the subtropical Wuling Mountains over 3000 higher plants can be found growing on bedrock-related soil type. Three vegetation zones can be observed:

1) Below 400m: evergreen broad-leaved forests as natural vegetation and fruit-tree\(^4\)- and staple-crop\(^5\)-based agro-ecosystems;

2) 400-800m: evergreen and deciduous broad-leaved trees with abundant varieties of mushroom and medicinal herbs as natural vegetation and fruit-tree\(^6\)- and minor/underutilized-crop\(^7\)-based agro-ecosystems;

3) Above 800m: deciduous broad-leaved trees, bushes and herbs as natural vegetation with a fruit-tree\(^8\)-based agro-ecosystem.

Dabie Mountains separate China’s northern and southern vegetation zones, exhibiting elements of both temperate and subtropical climate. In areas below 800 m altitude paddy rice based agro-ecosystems are predominant with different rice subspecies that can be grown under subtropical (\textit{oryzasativa var. indica}) and temperate (\textit{oryza sativa var. japonica}) climatic conditions.

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\(^1\) Wuling National Forest Park, now a UNESCO World Heritage Site.
\(^2\) Dabie Mountains, National Forest Park
\(^3\) Wuzhishan National Nature Reserve
\(^4\) Peach, orange, plums etc.
\(^5\) Wheat, corn, rice etc.
\(^6\) Apple, pear etc
\(^7\) Buckwheat, millet, sweet potato etc as well as Ornamental Plants
\(^8\) Chinese chestnut, walnut etc.
conditions. The altitude range of 800 to 1200 m is characterized by minor crop based agro-ecosystems with more fruits (Chinese chestnut, apple and pear) and vegetables grown as well as cultured an wild mushrooms. Areas above 1200m altitude include cash crop based agro-ecosystems with potatoes, vegetables (carrot, cabbage, radish), fruit trees (apple, pear and walnut), medicinal plants and flowers.

The Wuzhi Mountain range with its tropical oceanic monsoon climate is at the centre of the tropical island of Hainan in the South China Sea. The predominantly rice based agro-ecosystem developed under tropical conditions can be differentiated into low-altitude (less than 500 m) and higher altitude (more than 500 m) systems. In lower altitudes the paddy rice system dominates, including other food crops (sweet potato, peanut, and maize, bean), vegetables and fruit trees (mango litchi, coconut, and cashew nut). Higher altitude systems are characterized by upland rice (different cultivars of the rare local “Shanlan” rice) including different cultivars of food crops mentioned before and fruit trees (banana, mango, litchi and guava). In higher altitudes a larger variety of medicinal plants, mushrooms and rare flower plants can be observed.

In the Wulin- and Wuzhi Mountain areas indigenous communities have played a key role in conserving and enhancing ABD in the project sites. Groups such as the Li (Wuzhi Mountains) Miao and Tujia (Wulin Mountains) embrace the importance of ABD as an intrinsic part of their ethnic culture and collective knowledge. Parts of the mountain areas are remote and closed to the outside. In many cases farmers, who continue to plant traditional cultivars and traditional farming systems are still common. However, the intensification of agriculture poses a threat to those ABD resources as described in the next paragraph.

**Threats on ABD and root causes**

There is a general lack of understanding of the magnitude, causes and consequences of the loss of ABD. This has contributed to a slow take-up of measures to mitigate negative effects (as reported during the International FAO-CGIAR Workshop on ABD, Nairobi Kenya- 2003). Globally, threats to ABD are largely a result of changes to the environment, both human (including climate change) and natural. This leads to loss of species, and alteration of their ecosystems. Challenges such as competitive international trade, climate change and newly emerging diseases need to be considered in their impact on ABD at village level.

The report from the 2000 IUCN Red List of Threatened Species highlights habitat loss as one of the most serious threats to biodiversity. Agricultural activities affect 70 per cent of all world’s threatened bird species and 49% of all plant species.

In China with its rapid economic development, increasing demand on land resources and structural changes in agriculture there is increasing loss of biodiversity and ABD resources (traditional species/varieties and their wild relatives, traditional agro-ecosystems) as well as of related traditional knowledge and practices.

With transportation and communication constraints, crop growing and livestock rearing follow traditional, subsistence patterns, and income generation opportunities are limited. As population levels increase there are few viable options that can improve economic conditions. Expanding the area of cultivation or herding as well as intensification of the production processes are common responses. Intensification in farming, increasing application of pesticides and mono cropping has led to reduction of habitats for birds and smaller animals as well as the diversity of micro organisms and Arthropodes in the soil that provide the food basis for other small animals.
Factors influencing loss of ABD identified by previous missions and surveys\(^1\) in the proposed project areas include:

1) In the last two decades, China has lost about 13% of arable land while population increased by 22%. Massive expansion of transportation infrastructure, increase in mining activities, construction of energy-related (hydropower, coal) and industrial facilities as well as development of town and city perimeters have led to direct loss of habitats. The forestry sector has also been responsible for large scale logging or mono-crop plantation projects, with corresponding negative impacts on biodiversity.

2) Extension of intensive agriculture (including indiscriminate use of pesticides, mineral fertilizers and modern high-yielding plant varieties). At present, farmers in the mountain areas still work a “family based” production style. Pesticide, herbicide and fertilizer use is poorly understood. Farmers often use them excessively or during unsuitable periods, resulting in damage to ecosystems and to the loss of small animals such as birds, frogs, snakes and micro-organisms.

3) With limited local economic opportunity, young farmers leave the mountain area to find work in the urban centres. Those who remain, often elderly or very young tend to focus on simpler farming techniques, thus losing the traditional farming knowledge and capacity to manage diverse local species.

4) Low awareness for the business opportunities available in more diverse ABD products means low investment levels locally as well as regionally.

5) Local Government structures focus on short term economic development. More sustainable approaches, with longer buy-in periods are neglected.

6) Institutional constraints impede the implementation of ABD conservation regulations (e.g. insufficient inter-sectoral communication and collaboration).

Even low intensity farming areas such as the project mountain areas have realized increasing application of mineral fertilizer and pesticides (insecticides, fungicides and herbicides) and with it the risk of environmental pollution. In many cases fertilizer and chemicals tend to reduce soil biological activity and have detrimental effects on natural predators of plant pests. In addition, residues of chemicals and fertilizer pollute the environment and scarce water resources by leaching and surface water transport.

**Legal framework**

Conservation, Usage and Enhancement of ABD are specific goals of the Convention on Biological Diversity (CBD) ratified by China in 1992. Since the ratification, the Chinese Government has initiated a series of policy and legislative documents to implement the Convention:

- *The China Biodiversity Conservation Action Plan, BCAP (the State Council, 1994)*;
- *The China Agriculture Biodiversity Action Plan (Ministry of Agriculture, MoA, 1993)*;
- *The Regulation on the Protection of Wild Plants (the State Council, 1996)*;
- *The China Agricultural Agenda 21 (MoA, 1999)*; and

\(^1\) Carried out by GTZ and MoA in Hainan and Hunan in 2004 and 2006.
China has set up different institutional mechanisms to implement laws, regulations and policies for biodiversity protection. Two leading groups were created by the State Council to ensure application of new measures, one for the Implementation of the CBD, the other an inter-ministerial coordination group for Species Conservation. State Environmental Protection Agency (SEPA) Executive Offices were then designated to carry out decisions made by these two leading groups.

Efforts taken and the existing problems
The MoA has programmed ex-situ and in-situ conservation of crop genetic resources, collection and conservation of livestock, fish and microbes etc. So far conservation strategies mostly concentrate on ex-situ strengthening and the establishment of protected areas1 with compensation payments to farmers who give up their land. This type of conservation is costly and unsustainable. There is no encouragement for the farmer to actively participate in the conservation.

Cooperation and information exchange between departments on these programs is rather weak. At provincial and county level inter-departmental discussion on biodiversity and ABD issues is non-existent. Many stakeholders, such as government officials, entrepreneurs, farmers etc., have limited knowledge and little awareness on sustainable management of biodiversity and ABD resources. Traditional knowledge about ABD is not acknowledged.

Strategy

General Strategy
The Project will work in selected mountain areas of Southern China with their diverse ecosystems and landscapes. These regions are unique and important, not only for China but for the rest of the world as well. Three different models for sustainable ABD management will be applied for each of the three mountain areas, which are themselves very different. In Wuzhi Mountains, the conservation of tropical rainforests and related species around the villages will be strengthened through improving farmers’ awareness and the health of the ecosystems. In Wuling Mountains, the project will focus on the traditional cultivars and special livestock and their related local knowledge, while in Dabie Mountains conservation and utilization of medicinal plants, cash crops and mushrooms will be a priority.

Specific attention will be attached to promotion of biodiversity friendly farming methods that can sustain high levels of biodiversity. These methods apply a holistic approach to farming and integrate crops, livestock and small wildlife habitats (such as hedges, small stands of trees for birds and other small animals) as part of the farming system. They aim to increase the diversity of crops and to reduce the reliance on agrochemicals to control changes in soil and environmental conditions. Biodiversity friendly methods thus encourage the expansion of varieties grown, and the preservation of older, local varieties and breeds, which are naturally adapted to the local environment.

The Project will develop best practices for sustainable management of ABD together with village communities. These practices are the basis for capacity building and advisory support

1 Protected Areas defined in the MoA “Conservation of Agriculture-Related Wild Plants” Program.
to the Project’s intended beneficiaries (see paragraph below). It will foster close interaction and cooperation between village, township and county committees to promote a harmonious society in rural areas.

The following table provides an overview over new project activities supported by ECBP in the three mountain areas and ongoing GTZ activities.

<table>
<thead>
<tr>
<th>Area</th>
<th>New project activities supported by ECBP</th>
<th>Ongoing GTZ activities</th>
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<tr>
<td><strong>Wuzhi Mountains</strong></td>
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<tr>
<td>Hainan Province: 3 counties (Sanya, Baoting, Wuzhishan), 6 villages</td>
<td>Promotion of biodiversity friendly farming practices in 6 villages of the on-going GTZ project.</td>
<td>Sustainable management of ABD in 6 villages</td>
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<td><strong>Wuling Mountains</strong></td>
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<tr>
<td>Hunan Province: 4 counties (Sangzhi, Yongding, Baojing, Guzhang), 8 villages</td>
<td>• Sustainable management of biodiversity and ABD on farmer level in (3 counties or 8 new villages.</td>
<td>Sustainable management of ABD in 8 villages.</td>
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<tr>
<td>Chongqing Municipality: 2 counties (Youyang, Pengshui), 4 villages</td>
<td>• Promotion of a biodiversity and ABD friendly development concept for Wuling Mountains as pilot area.</td>
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<tr>
<td>Hubei Province: 1 county (Laifeng), 2 villages</td>
<td>• Promotion of biodiversity friendly farming practices in 8 villages of ongoing GTZ project.</td>
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<td><strong>Dabie Mountains</strong></td>
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<tr>
<td>Hubei Province: 2 counties (Luotian, Macheng), 4 villages</td>
<td>Sustainable management of biodiversity and ABD on farmer level in 4 counties or 12 villages.</td>
<td>No ongoing activities by GTZ</td>
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<tr>
<td>Anhui Province: 2 counties (Jinzhai, Huoshan), 4 villages</td>
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Up to now the project has introduced management practices for ABD in selected tropical and subtropical mountain ecosystems of the southern part of China. Through collaboration with ECBP where the Grantor (ECBP) contributes financially to the joint project, this project will increase the focus on biodiversity conservation on village level. New, innovative concepts for biodiversity and ABD management on village level will be developed and tested in temperate mountain ecosystems of the Dabie Mountain areas of Anhui & Hubei Provinces. While the present GTZ project focuses mainly on agricultural crop plant diversity, the joint Project will apply a landscape / ecosystems approach and cover, amongst other plants, animals and micro-organisms within the village landscape. The Project will further introduce biodiversity friendly farming practices to provide better living condition for farmers and enhance the protection of small animals such as birds, frogs, snakes, micro-organisms, etc. In addition, the project will start pilot activities to integrate ABD management in a concept for sustainable development of a mountain area that includes the Wuling Mountain Forest Reserve. This will link the Project to Chinese Government biodiversity conservation and protected areas initiatives for the Wuling Mountains.
Expected impacts
The ECBP grant will help to promote conservation of biodiversity and ABD on farm and village landscape level in China with the following impacts:

1) Models for biodiversity and ABD conservation on farm and village landscape level of different low intensive agricultural mountain ecosystems can be applied to other areas of China.

2) Methods of ABD conservation by utilisation and marketing of rare ABD cultivars (for example Shanlan sticky rice, buckwheat, kudzu, wild ginger and medicinal plants, e.g. star anis-seed) are applied in other mountainous regions of China.

3) Chinese Government authorities make ABD an integral part of the development plans of the Project region (institutional impact).

Intended beneficiaries
Decision makers and managers in the agricultural and related sectors at town, county and provincial level will learn how to apply innovative approaches on sustainable management of ABD and biodiversity conservation at farm level. Farming communities will benefit from better livelihood options and the creation of new income opportunities (sustainable use of ABD through innovations such as processing and marketing). The general public will learn about the importance and significance of biodiversity and ABD for local and global benefits.

Outcome
The Project focuses on sustainable management of ABD genetic-, species-, and ecosystems diversity by improving stakeholder awareness, capacity and knowledge for effective management and sustainable use of ABD. At the same time it will assist farmers to implement biodiversity conservation and sustainable ABD measures at village and field level. The outcome is defined: “With support from local agricultural authorities and institutions, villagers implement biodiversity friendly farming practices in selected mountain areas in southern China.” It will be achieved by applying the following guiding principles:

- **Promoting inter-sectoral cooperation:** In project planning, implementation and steering, horizontal and vertical organisational links will be established between the various institutions of MoA, SEPA, SFA, the Chinese Academy of Agricultural Sciences (CAAS) and active NGO’s in the Project area.

- **Applying participatory approaches:** In order to build ownership and promote stewardship of ABD resources at village level, the Project will apply participatory approaches such as participatory village planning and Farmer Field Schools (FFS) throughout implementation.

- **Emphasis on Conservation by Use:** The term “conservation” can be misleading, suggesting that natural resources should not be used. The project concept advocates sustainable utilisation of ABD and access to ABD information wherever possible (“use it or lose it”). In this context, the private sector involvement is an innovative and promising option.

- **Addressing women and ethnic minorities:** Active participation of women and ethnic minorities in project activities can help better meet their needs in a changing and often insecure environment. Women have long been the custodians of biodiversity resources and play a key role with respect to nutrition and health in the community. At the same

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1 Relevant NGOs are to be identified during the Project’s stakeholder analysis.
time, both women and their children are relatively more vulnerable to poverty and disaster. The summary below shows key features of the role of women in rural areas. A more detailed investigation of the role of women in the Project area will be carried out in the socio economic survey which will be part of the assessment survey.

<table>
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<tr>
<th>Feature</th>
<th>Description</th>
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<tr>
<td>China's population is</td>
<td>48.5% female and 51.5% male</td>
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<td>Women aged 25 years and over, illiterates and semi-illiterates constitute 32% whereas the corresponding proportion for men is 13%</td>
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<td>Women represent 45% of all employed people</td>
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<td>Women account for 41.2% of the rural labour force in agriculture and rural enterprises</td>
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<td>Women work more on the farm than men in sparsely populated regions such as the mountain areas of the Project region</td>
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<td>Women have extensive work loads with dual responsibility for farm and household production</td>
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<tr>
<td>Women's work is getting harder and more time-consuming due to ecological degradation, male out-migration and the shift to the household responsibility system</td>
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<tr>
<td>Women have an active role and extensive involvement in livestock production, forest and water resource use but their input needs are poorly addressed</td>
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<tr>
<td>Women contribute considerably to household income through farm and non-farm activities</td>
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<tr>
<td>Women's work as family labour is underestimated</td>
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Ethnic minorities, their culture, traditional knowledge and land-use practices have an ancient link to ABD and other elements of biodiversity use, access and conservation. Especially the Miao, Tuja and Bai ethnic groups in the Wuling mountain areas still follow traditional rules and customs. In the Wuzi Mountains of Hainan, where the Li and Miao groups are predominant, the Li have developed highly skilled handicraft and the Miao traditional cuisine using ABD crops of the local area.

The Project will target specific ABD crops such as local varieties of rice, soy beans and medicinal plants in all project areas. Local cultivars of rice and soy beans are among the most important staple food crops in China and are found in different ecological zones of the project mountain areas. Maize, sweet potatoes, potatoes, ginger, kiwis and tea trees are typically found in the subtropical mountain areas of the Wulin and Dabie Mountains, with wheat and barley restricted to the temperate zones of the Darbie Mountains. Local beans, mangos and litchis are typical crops and fruits of the tropical Wuzishan Mountain area.

**Project Outputs**

To achieve the project outcome, the Project will focus on 6 Outputs that address threats to sustainable management of ABD and biodiversity.

**Output 1: Assessment and Documentation of ABD-resources in the Project areas**

Since the detailed status of endangered and valuable ABD at village level is not known, project activities will start off with an assessment of ABD at village level (including a threats analysis). This assessment will include information on species, their variation, habitat, uses, as well as on the respective cultural practices and knowledge. In addition, the establishment of a plant data-base bank (digital photos of the plant and specimen collection) will complement the assessment. International expertise will be necessary to elaborate a suitable assessment methodology. The assessment as such will be done by national experts in collaboration with local agricultural extension staff and farmers. Suitable cooperation
partners are the Chinese Academy of Sciences and Agricultural Universities in the project provinces.

Based on the assessment results, village communities will be encouraged and supported to establish and maintain community registers on ABD. Such registers document all relevant ABD plants in the village area and their specific location. This database is a tool for the village community, which can help to defend Community Intellectual Property (IP) rights against IP claims from outside.

Parallel to the ABD assessment, an institutional assessment (staff capability, clarity on mandates and responsibilities among departments etc.) will be carried out. All the assessment results will be documented, discussed with farmers and agricultural staff and used to develop site specific in-situ conservation measures as well as training measures for farmers and agricultural staff. The results of the ABD- and institutional assessment will be presented during the Project initiation workshop.

Output 2: Regulation and Policy Development
The Project, with the help of a national consultant specialized in environmental law, will establish a working group to help analyze the constraints and weaknesses of present regulations and policies at county and village level. ABD and biodiversity related recommendations will be drafted for policy development/implementation based on European and other international experiences and concepts, as well as on experiences acquired through the Project. County Governments as well as local communities will be encouraged and supported to elaborate their own regulations and policy to help mainstream biodiversity conservation and sustainable management. Village governments will be supported to formulate village agreements (or by-laws) for ABD protection. The agreements, designed in standardised forms can be used by other villages in the project areas as templates to develop their own regulations for ABD protection.

The Project will organize regular stakeholder fora to support the policy dialogue between relevant sectors and actors. In addition, the project will support organisation and participation in national and international seminars to exchange ideas and experiences on regulation and policy development. In addition, side events during seminars provide ideal opportunities for detailed discussion and exchange. The Conference of Partners (COP) of the CBD convention in May 2008 in Bonn, Germany will be a major forum for dissemination and discussion of first results.

Output 3: Promotion of ABD sustainable management
Successful conservation requires both: “ex-situ” conservation in gene banks, research stations and botanical gardens and in-situ use, conservation and enhancement of ABD by rural communities within the context of the native ecosystem.

As China has vast experience with conservation “ex-situ”, the project will focus on “in-situ” concepts. In-situ is a relatively new concept for China. Mainstreaming of the approach will be supported with pilot villages in the Project intervention units.

Participatory village planning (PVP) with the pilot villages is a first step in identification of measures related to ABD and biodiversity friendly farming practices. During planning, villagers are encouraged to discuss problems related to their livelihood and farming practices. Joint identification of the problems and solution finding is necessary before villagers can be motivated to participate fully in sustainable management of ADB and conservation. PVP
ensures closer contact with villagers and ownership of the planning process. As a result they are more likely to come on board for implementation of activities. Suitable in-situ conservation measures will be identified at this planning phase, taking into account results of the resource assessment, carried out before.

Farmer Training is the core activity of the Project. Each project pilot village will establish a Farmer Field School (FFS) where farmers receive training in ABD and related issues. It is a participatory and discovery based learning extension approach, which allows the members to undertake need-based experimentation and interaction among the farmer group members, normally 15 – 25. The members form a group and meet at regular intervals (twice per month) guided by a trainer (MoA township or county staff) to discuss relevant agricultural topics for implementation of project measures. The field school is located in suitable locations (usually the home or courtyard of a farmer or chairperson of the group) and close to the field school demonstration plot and other members’ houses that the beneficiaries can conveniently attend the regular training sessions. FFS group members prepare a plan describing the content of the learning sessions (e.g. biodiversity friendly agricultural practices, local varieties improvement, etc.) and related field activities for implementation of agreed project measures. A detailed concept for implementation of the FFS approach will be elaborated during initial stages of the Project. The following table shows proposed topics and time for FFS training in the provinces supported by ECBP.

Farmer Training of government staff, experts and technicians on sustainable management of ABD will be one of the major tasks of the Project. A pool of core trainers (3 from each province) with experience in ABD will be built up to train assigned Ministry of Agriculture county and township level staff in ABD and ABD related topics. Selected core trainers will also assist in elaboration of an ABD training manual for farmers and a training manual for trainers.

Agricultural field staff trained by the core trainers will then train farmers in farmer field schools in each of the project pilot villages. For each pilot village at least 1 MoA township level will be assigned and 2 county level staff per county will take care of project affairs.

ABD promotion measures in the pilot villages will be carried out by farmer field school groups. Typical measures include training of farmers in seed management, seed conservation, and improved storage of seeds. They also include improved crop husbandry management of specific ABD crops, organization of seed exchange between farmers and villages, assistance in the establishment of small nurseries for valuable fruit and indigenous forest trees. The measures will also include training of farmers in small scale processing of their farm products as well as the establishment of an ABD incentive fund.

As incentive for farmers to cooperate with the Project, a small ABD grant fund will be established for each pilot village. These funds will be used to co-finance (with contributions by the villagers and the Chinese Government) village activities with direct and indirect impacts on biodiversity and ABD, for example to assist in construction of biogas units on village level (reduced consumption of fuel wood, production of slurry as fertilizer); to support erosion control measures like terracing, to establish ABD discovery and learning gardens for local schools. The allocation and provision of the fund to the village will be linked to the condition, that the village is actively involved in biodiversity conservation activities, such as to discourage hunting of wild animals and destruction of nearby forest, plantation of trees, conservation of small biotopes, etc. Farmers will contribute to the fund in kind (labour or provision of materials). The coordination and implementation of fund
activities will jointly be carried out by project staff and relevant county offices of Ministry of Agriculture. The ABD fund will be a grant, managed and controlled by the Project Finance Officer. Wherever possible, the ABD incentive fund will be linked to other projects of MoA and other government institutions.

Assist farmers in marketing of their products. In order to improve the economic use of ABD resources, strategies have to be explored, that enable innovations in processing and marketing. Parallel and complementary to looking at the supply side, market exploration from the demand side has to be supported. Identification of products in demand or with a demand potential will be necessary. This will be achieved in collaboration with private companies for instance in the sector of medicinal plants or of organic food. Public-Private Partnerships (PPP) will be of particular interest in utilizing medicinal plants, either through collection or cultivation. Currently the demand is growing, but increasing production in this sector needs careful observation since large-scale monoculture production of selected medicinal plants would be a threat to biodiversity.

**A Marketing Support Fund** will be established to assist in marketing. The Project will manage the fund and develop criteria and guidelines for its utilisation. Promising areas for utilisation of the fund can be for example to support the establishment of PPP to link contact farmer groups or associations with potential buyers. The allocation and operation of the fund will be guided by criteria developed during project implementation and depends on the short-comings identified in marketing.

Provide training and assistance to farmers who wish set up small ABD related enterprises. In most cases farmers sell their products in bulk and unprocessed. Farmers can add economic value to their products through basic processing. The Project will assist farmer groups or associations to form small scale enterprises, train them in basic business and marketing skills and provide simple equipment to set up the enterprise (e.g. seed cleaning- drying- or packing facilities).

Organize international & national study tours on ABD related issues. Study tours can expose MoA decision makers to relevant experience on the implementation of ABD law, policies and methods at national, provincial and farmers’ level. Participants are exposed to ideas from other countries and ideas from relevant projects in their own county. This will encourage more active implementation of the activities related to the Project. Participants will have to plan the timetable for study-tours illustrating clearly how to utilize the experience gained during the study tour for project activities. This ensures professional attitude to the tour, creation of new ideas, and exposure to innovations for decision makers as part of a planned package. National study tours will take provincial and county level staff to ABD- and biodiversity projects in China. International study tours will take MoA decision makers to Germany to view implementation of ABD policies at national, provincial and farmers’ level.

Establish a participatory M+E system for FFS. The basis for impact monitoring is a baseline study (as part of the resources assessment survey) in which the status quo of farmers in the project village is identified. Representative farmers from each FFS will be interviewed to generate data on socio-economic dimensions of the households, as well as gender aspects. The same survey will be repeated after conclusion of the project intervention. In that way monitoring provides information on the change of living condition of the target group.
The information collected during the baseline study will be supplemented by the results of the participatory monitoring and evaluation (PME), carried out at the very beginning of the farmer group formation process, the Farmer Field School (FFS) meetings. The purpose of PME is not only to provide basic information of the respective field school to the project management but also to train the participants of the FFS to practise goal oriented planning. Farmers, who will be supported by agricultural field staff, play an active role in gathering information and in developing recommendations and activity plans. Results of the PME sessions are documented by the farmers and serve as basic information for assessment of impacts/adaptations during a mid-term and end evaluation.

Agricultural field staff will regularly monitor the quality of FFS meetings. The quality (performance) monitoring is done by especially assigned Monitoring Officers of the County Agricultural Bureau staff. A special format will be designed for this purpose which stresses the active participation of both facilitator and members of the FFS.

**Output 4: Support farmers in pilot villages to demonstrate biodiversity friendly farming practices**

The Project together with village communities will develop and test the landscape approach that links conservation of nature and culture to foster stewardship of people living in the landscape. Traditional knowledge, practices and innovations will be evaluated, documented and used to develop adapted extension recommendations. The Project will assist farmers and villages in the demarcation and development of habitats within their farms and on part of their village land.

**Biodiversity friendly farming practices** will integrate crops, fruit and forest trees, wild plants (mushrooms, medicinal herbs etc.), livestock and small wildlife habitats (such as hedges, small stands of trees for birds and other small animals) as part of the farming system. They aim to increase the diversity of crops and reduce the reliance on agrochemicals to control changes in soil and environmental conditions. Thus, they encourage the expansion of varieties grown, and the preservation of older, locally bred indigenous varieties and breeds, adapted to the local environment. An international consultant and national short term experts will train extension staff on biodiversity friendly farming methods and biodiversity conservation. The Project will train farmers in each project village in application of biodiversity friendly methods through the FFS approach. To assess the effectiveness of the implemented activities related to organic farming, baseline and final surveys are necessary which will be combined with the assessment survey under output 1.

To determine how much fertilizer is suitable for crop production depends on the difference between the required amount for high yield and the existing amount in the soil. Because different crops take up various amounts of fertilizers, the remaining fertilizers also vary in the fields. Therefore, the contents of fertilizers in the soil should be tested before each crop round. At the beginning of the project, exact basic data will be obtained by the tests through professional soil testing institutions. Then, at the start of the cropping season, farmers can test the soil nutrient content by themselves using simple portable NPP (Nitrogen, Phosphorous, and Potassium) testing equipment, and apply fertilizer in a controlled way.

**Controlled use and application of pesticides and herbicides.** Even in remote mountain areas farmers apply pesticides and herbicides to their crops. Farmers often don’t know proper application methods, time of application and safe use and disposal of both pesticides and herbicides. In many cases they are unaware of the side effects of the chemicals on both
humans and nature. The Project will train farmers on how to minimise the use of chemicals for plant protection and weed control, and to choose pesticides which will be least harmful to beneficial insects. Identification and conservation of natural enemies will be an important part during the training.

A simple and understandable guideline brochure covering the basic data contents, suitable types and amount, suitable applying periods of fertilizers, types and methods of pesticide and herbicide application etc. will help farmers to apply biodiversity friendly farming methods. Besides, trained extension staffs (agricultural technician) with special expertise (organic fertilizer, biological pest control and controlled herbicide application) will provide technical support to farmers.

**Output 5: Awareness Creation**

Awareness creation on the need and the potential of ABD conservation is a prerequisite for successful project implementation. With its awareness campaigns on the sustainable management of ABD, the Project will address the general public, focussing on young people (schools, universities). Through newspaper articles, TV clips, exhibitions and radio messages, existing knowledge on ABD can be disseminated easily and will indirectly have a great impact on the attitudes and understanding of the general public as well as decision makers towards ABD.

In order to secure proper documentation and capitalisation of know-how, the Project will support publication of brochures/leaflets on ABD management for different readers/target groups and be disseminated to the relevant institutions and public media. An international consultant will assist in preparation and production of an ABD manual that summarizes “lessons learnt” and describes approaches and strategies applied by the Project during implementation as part of knowledge management. In addition to publication, experiences gained and lessons learnt will be discussed and disseminated during workshops and seminars at different levels (provincial and national level). An international regional (Asian countries) seminar will be organised to exchange regional experience on sustainable management of ABD.

The MoA Extension Department at provincial and county level conducts regular extension campaigns for staff members and farmers as part of their extension activities. The Project will use those campaigns to disseminate information on the importance of biodiversity and the sustainable management of ABD.

Different media (TV, radio, internet, newspaper, magazine etc.) will be used to disseminate ABD information in the project provinces. The media will be invited to report about specific project activities and events. One medium for awareness creation that attracts a lot of attention is an exhibition including special events such as discussion forum, singing contest and theatre performances. The ongoing GTZ-Project has already developed materials for a travelling exhibition on ABD that can be used by the new project. Existing materials need to be modified and replenished and new features such as singing contest and theatre performance (both with themes on biodiversity and ABD conservation) will be included. The exhibition will be staged in the project provinces, municipalities and counties, depending on the availability of a suitable venue. It will present a short introduction to biodiversity and ABD, highlight problems associated with the loss of biodiversity and focus on three pillars of sustainable ABD management: a) Genetic resources-capital for the future, b) Stabilisation of the ecosystem-farmers as ecosystem managers, c) Cultural and traditional knowledge.
Output 6: Integration of ABD in sustainable development

The Wulin project mountain area is an area with high biodiversity and ABD resources that plays an important role in regional development of the respective provinces. The project will support this development process through elaboration and discussion of proposals to incorporate concepts for promotion of ABD in a wider concept of sustainable development of the mountain area.

In a first step an international and national consultant will assess existing provincial and regional development plans and strategies on concepts for promotion of ABD. The consultants will develop proposals on how to promote biodiversity and integrate ABD into development planning. Proposals may, for example consider the role of buffer zones for biodiversity- and ABD conservation and how to reduce the negative impact of increasing tourism in those areas. Another topic for consideration is to develop proposals for “biodiversity and ABD friendly” afforestation concepts.

The proposals will then be presented and discussed among various stakeholders during provincial workshops in 2008 where strategies for implementation of proposals will be developed. Production and distribution of a newsletter (three issues per year) will inform about issues discussed development on the matter. During a follow up workshop in 2009 progress achieved will be evaluated and, where necessary, strategies will be revised.

The international experience of GTZ in biodiversity conservation (e.g. Congo, Cameroon) will be of specific benefit for this output. GTZ activities in the Congo (Kahuzi-Biega National Park) for example, concentrate on measures to increase the acceptance of the Park by farming communities surrounding the Park through creation of alternative income generation possibilities. Dissemination of land use methods for sustainable use of natural resources improves the living base of the local population and ensures protection of the Park.

In Cameroon various examples of direct support for the local population to actively engage in biodiversity conservation exist, such as support for a national non-governmental organisation that has been helped to expand its range of eco-tourism services in its area and thus to more than double the number of tourists in a three-year period (Mount Cameroon Ecotourism Organisation). Village self-help groups in the southwest region are now managing the raw material obtained from the tree species “Prunus africana” – a product that is in great demand by the pharmaceutical industry – in line with management plans and in keeping with accepted sustainability criteria.