

PRIORITY ECOREGIONS AND THEIR GLOBAL SIGNIFICANCE IN THE WESTERN REGION

A. Global Significance of Biodiversity in the Western Region

1. PRC ranks in the top three countries in the world for biodiversity, and has a higher proportion of endemic species than any other. It hosts 30,000 species of seed plants, 6,300 species of vertebrates, including 1,186 species of birds and 3,862 species of fish¹. There are 17,300 endemic seed plants (58 percent of total in PRC) and 667 endemic vertebrates (10.5 percent).

2. While the Western Region has less than a tenth of all species found in PRC, its endemic species richness is higher than elsewhere and associated with a high degree of threat of extinction. Many species are ancient, relict species with localized distributions. About 700 endemic plant species (16 percent of total species in PRC) and 199 endemic vertebrate species (28 percent of total species in PRC) are currently known from the Western Region. Steppe and desert ecosystems have disproportionately higher rates of endemism (16-23 percent) compared to most other ecosystems of PRC (2-14 percent). Many dryland species are threatened in the wild. Among plants, examples are in the genera *Ephedra*, *Salsola*, *Ammopiptanthes*, *Nitraria*, *Zygophyllum*, *Reaumuria*, *Tamarix*, *Brachanthemum*, *Haloxylon*, *Populus* (sp. *euphratica*), *Cynomorium*; and among the animal species, *Camelus bactrianus*, *Procapra picticaudata*, *Testudo horsfieldii*, *Phrynocephalus* spp., *Bufo viridis* and *Gazella subgutturosa*. In recent years, species that have become extinct in PRC include *Betula halophila*, *Glyrrhiza triphylla*, *Panthera tigris lecoqi*, *Equus przewalski*, *E. ferus*, *Saiga tatarica* and *Aspiorhynchus laticeps*.

3. The existing 85 established nature reserves in western PRC (12 percent of total reserves in PRC by number and 54 percent by area) cover all of the ecoregions identified in the World Wildlife Fund (WWF) classification of ecoregions (see para. 6), although much of the biodiversity lies outside protected areas.

4. Numbers of species of major taxonomic groups, endemic biota, numbers of endangered species and the present status of established nature reserves in PRC are shown in Tables A3.1, A3.2, A3.3 and A3.4.

Table A3.1 : Numbers of Species of Major Taxonomic Groups compared to World Totals²

Taxonomic Groups	Species in PRC (SPRC)	Species in the World (SW)	SPRC/SW (%)
Fungi	8,000	46,983	17.0
Bacteria	5,000	26,900	18.6
Algae	500	3,060	16.3
Mosses	2,200	16,600	13.3
Ferns	2,600	10,000	26.0
Gymnosperms	200	750	37.8
Angiosperms	25,000	220,000	11.4
Insects	40,000	751,000	5.3
Fish	2,804	19,056	12.1
Amphibians	279	4,184	7.0
Reptiles	376	6,300	6.0
Birds	1,186	9,040	13.1
Mammals	499	4,000	12.5

¹ China's Biodiversity: a Country Study. 1998 State Environmental Protection Administration, Beijing. China Environmental Science Press. 476pp.

² Biodiversity Conservation Action Plan 1994

Table A3.2: Numbers of Endemic Genera and Species in PRC

Taxonomic Groups	Known Genera or Species in PRC	Endemic Genera or Species in PRC	Endemics as a Percentage of Known PRC Genera or Species
Bryophytes	494 genera	8 genera	1.6
Pteridophytes	224 genera	5 genera	2.2
Gymnosperms	34 genera	8 genera	2.5
Angiosperms	3,116 genera	232 genera	7.4
Fish	2,804 species	440 species	15.5
Amphibians	279 species	30 species	10.8
Reptiles	376 species	26 species	6.9
Birds	1,186 species	99 species	8.0
Mammals	499 species	72 species	14.8

Table A3.3: Estimated Number of Endangered Species in PRC

Taxonomic Groups	Number of species	Endangered species	Endangered Species as a Percentage of Total Species
Animals (Vertebrates)			
Mammals	499	94	18.8
Birds	1,186	183	15.4
Reptiles	376	17	4.5
Amphibians	279	7	2.5
Fish	2,804	97	3.5
Subtotal – (animals)	5,144	398	7.7
Plants			
Bryophytes	2,200	28	1.3
Pteridophytes	2,600	80	3.1
Gymnosperms	200	75	37.5
Angiosperms	25,000	826	3.3
Subtotal – (plants)	30,000	1,009	3.4
TOTAL – (animals and plants)	35,144	1,431	4.1

Table A3.4: Present Status of Established Nature Reserves in PRC

Category and Type	Number of Reserves	Percentage of Total Reserves	Area (x1000 ha)	Percentage of Total Reserve Area
Ecosystem Type				
Forest	335	47.3	11,080.7	19.8
Grassland	12	1.7	1,297.2	2.3
Desert	8	1.1	29,488.7	52.6
Inland wetland	16	2.2	1,019.1	1.8
Marine and seashore	18	2.5	116.8	0.2
Species Category				
Wild animals	211	29.8	1,246.2	22.2
Wild plants	69	9.8	40.9	0.7
Relic remains or cultural heritage	39	5.5	18.5	0.3
Total	708	100.0	5,606.7	100.0

5. The greatest threat to biodiversity in PRC is habitat loss through forest and woodland clearance, desertification and other forms of land and vegetation degradation. As natural habitats shrink and become fragmented, individual species become increasingly threatened by direct or indirect human exploitation and may face extinction.

B. Priority Critical Ecoregions

6. *China's Biodiversity: A Country Study* reinforced the need to prioritise specific ecosystems and species as critical biodiversity regions. More recently WWF has developed a classification of ecoregions that has a higher level of resolution to assess biodiversity features and priorities³. Ecoregions are defined as relatively large units of land or water containing a distinct assemblage of natural communities and species, with boundaries that approximate the original extent of natural communities prior to major land-use change. Existing conservation status (if known), physical accessibility, a general assessment of land degradation and degree of threat have also been taken into account. Table A3.5 lists the 23 ecoregions represented in western PRC and their conservation status and ecological characteristics (western PRC includes nine of the world's ecoregions). Detailed profiles of individual ecoregions can be accessed at www.worldwildlife.org/wildworld/profiles. The available data on presence/absence and the distribution and status of species and the other information on ecoregions located within those provinces included in the Western Development Strategy (e.g. WWF classifications of ecoregions), focus attention on localities where core projects could be located to maximise the representation of globally important ecosystems and through integrated ecosystem management, to arrest land degradation and restore habitats and ecosystems

Table A3.5: Ecoregions of Western PRC

Ecoregion Name		Provinces	Ecological Characteristics
WWF Name & Code	Comparable Ecoregion Name		
1. Qilian Mountains Sub-alpine Meadows; PA1015	Middle Asian Mountains Temperate Forests and Steppe	Qinghai, Gansu. Demonstration Projects i, ii	<u>Montane grasslands & shrublands.</u> <u>Conservation Status:</u> vulnerable. Qilian Mts are barrier between deserts to the north and alpine ecosystems to the south; several endangered ungulates; extensive meadow & scrub vegetation, some forests; degraded lands, overgrazing that has caused habitat damage; high globally significant ecosystems occur.
2. Qilian Mountains Conifer Forests; PA0517	Middle Asian Mountains Temperate Forests and Steppe	Qinghai, Gansu. Demonstration Projects i, ii	<u>Temperate coniferous forests.</u> <u>Conservation Status:</u> vulnerable. Qilian Mts are barrier between deserts to the north and alpine ecosystems to the south; many vertebrates occur, many are endangered (mammals & birds); Much of the ecoregion is undisturbed because of inaccessibility but land degradation is locally pronounced due to logging and heavy grazing; Yangtze and Yellow River headwaters; high globally significant ecosystems occur.
3. North Tibetan Plateau-Kunlun Mountains Alpine Desert; PA1011	Tibetan Steppe	Tibet, Qinghai, Xinjiang.	<u>Montane grasslands & shrublands.</u> <u>WWF Conservation Status:</u> relatively stable/intact. Kunlun Mts located on north edge of Tibetan Plateau; mainly alpine, desert ecosystems; several large rare Tibetan mammals occur; a small, vulnerable forest area; access difficult to much of the ecoregion; the harsh climate limits biodiversity; community pressures are probably low; much of the ecoregion is remote and lightly inhabited; some globally significant ecosystems probably occur.

³ *BioScience* Vol. 51, No.11, Nov.2001, see: www.worldwildlife.org/ecoregions

Ecoregion Name		Provinces	Ecological Characteristics
WWF Name & Code	Comparable Ecoregion Name		
4. Central Tibetan Plateau Alpine Steppe; PA1002	Tibetan Steppe	Qinghai, Tibet.	<p><u>Montane grasslands & shrublands.</u></p> <p><u>Conservation Status:</u> relatively stable/intact.</p> <p>A broad ecotone between cold, semi-arid mountains (north) and cold, arid, high mountains (south); access difficult to much of the ecoregion; ecosystems are mostly intact; Qinghai Lake is in the NE of the ecoregion – an important wetland/lake for birds – and Changtang Nature Reserve; several large rare Tibetan mammals occur; sparsely populated; high globally significant ecosystems occur.</p>
5. Tibetan Plateau Alpine Shrub and Meadows; PA1020	Tibetan Steppe	Tibet, Qinghai Demonstration project iv	<p><u>Montane grasslands & shrublands.</u></p> <p><u>Conservation Status:</u> vulnerable.</p> <p>Cold, dry to warmer, moist ecosystems that are mostly intact; high altitude grasslands & steppe; several large rare Tibetan mammals occur; some land degradation may be occurring; access difficult to much of the ecoregion; sparsely populated; high globally significant ecosystems occur.</p>
6. SE Tibet Shrub and Meadows; PA1017	Tibetan Steppe	Tibet, Sichuan (SW).	<p><u>Montane grasslands & shrublands.</u></p> <p><u>Conservation Status:</u> critical/endangered.</p> <p>Ecosystems are mostly intact; high altitude grasslands & steppe; several large rare mammals occur; some land degradation may be occurring; high biodiversity; access very difficult to much of the ecoregion; high globally significant ecosystems occur.</p>
7. Yarlung Tsangpo Arid Steppe; PA1022	Mekong & Salween River System	Tibet	<p><u>Montane grasslands & shrublands.</u></p> <p><u>Conservation Status:</u> critical/endangered.</p> <p>High, cold, arid, meadow, steppe and desert ecosystems; considerable habitat modification, hunting and land degradation has occurred; several Tibetan mammals and birds occur but biodiversity is less than in less modified ecoregions;</p>
8. NE Himalayan Sub-alpine Conifer Forests; PA0514	Eastern Himalayan Broadleaf and Conifer Forests	Tibet (SE), Sichuan (west), borders with India, Bhutan.	<p><u>Temperate coniferous forests.</u></p> <p><u>Conservation Status:</u> vulnerable.</p> <p>Sub-alpine (cool+moist) coniferous forests; largely inaccessible; considerable ecosystem variation; several rare, restricted range & endangered mammals and birds occur; considerable plant & animal biodiversity; land degradation has followed logging; moderate – high globally significant ecosystems occur.</p>
9. Tian Shan Foothill Arid Steppe; PA0818	Middle Asia Mountains Temperate Forests and Steppe	Xinjiang, borders with Kazakstan, Kyrgyzstan. Demonstration projects i, iii	<p><u>Temperate grasslands, savanna and shrublands.</u></p> <p><u>Conservation Status:</u> critical/endangered.</p> <p>Distinctive forest, grassland, semi-desert and steppe ecosystems occur; considerable biodiversity; several rare, restricted range & endangered mammals and birds occur; considerable land degradation; ecosystem threats are high; high globally significant ecosystems occur.</p>
10. Tian Shan Montane Steppe and Meadows; PA1019	Middle Asia Mountains Temperate Forests and Steppe	Xinjiang, borders with Kazakstan, Kyrgyzstan. Demonstration project iii	<p><u>Montane grasslands & shrublands.</u></p> <p><u>Conservation Status:</u> vulnerable.</p> <p>Ecologically distinctive forest and grassland, high-altitude ecosystems occur; considerable biodiversity; several rare, restricted range plants and animals occur; inadequate nature reserves; land degradation occurring; high globally significant ecosystems occur.</p>

Ecoregion Name		Provinces	Ecological Characteristics
WWF Name & Code	Comparable Ecoregion Name		
11. Tian Shan Montane Conifer Forests; PA0521	Middle Asia Mountains Temperate Forests and Steppe	Xinjiang, borders with Kazakstan, Kyrgyzstan. Demonstration project iii	<u>Temperate coniferous forests.</u> <u>Conservation Status:</u> vulnerable. Ecologically distinctive forest ecosystems occur; biodiversity is high; inadequate ecosystem protection; land degradation may be/has occurred; ecosystem conservation threats are overgrazing & hunting; globally significant ecosystems may occur.
12. Eastern Gobi Desert Steppe; PA1314	Daurian Steppe or Middle Asia Mountains Temperate Forests and Steppe.	Inner Mongolia, borders with Republic of Mongolia. Demonstration project vi, vii	<u>Deserts and xeric shrublands.</u> <u>Conservation Status:</u> vulnerable. Desert and semi-desert grassland ecosystems; land degradation is caused by excessive grazing; several endemic mammals & birds occur; ecosystems are inadequately protected; main ecosystems threat is from grazing; some globally significant ecosystems may occur.
13. Altai Montane Forest and Forest Steppe; PA0502	Altai-Sayan Montane Forests.	Xinjiang, borders with Russia, Republic of Mongolia, Kazakhstan.	<u>Temperate Coniferous Forests.</u> <u>Conservation Status:</u> vulnerable. Most complete sequence of vegetation zones in western Siberia; very high biodiversity; high species endemism; several characteristic and some endemic mammals & birds; ecosystems are inadequately protected; main ecosystems threat is from grazing; extent of land degradation is unknown; globally significant ecosystems occur.
14. Emin Valley Steppe; PA0806	Middle Asia Mountains Temperate Forests and Steppe	Xinjiang, borders with Kazakhstan.	<u>Temperate grasslands, savannas and shrublands.</u> <u>Conservation Status:</u> vulnerable. A small ecoregion, mostly in Kazakstan; predominantly montane grassland ecosystems; two globally threatened bird species occur; habitat damage has occurred; globally significant ecosystems may occur.
15. Qin Ling Mountains Deciduous Forests; PA0434	Central China Deciduous Forests	Shaanxi	<u>Temperate broadleaf and mixed forests.</u> <u>Conservation Status:</u> critical/endangered. A biologically rich locality, mostly on the Qin Ling Mountains, south of Xi'an; moist temperate climate; several endangered plant & animals species occur, including giant panda; considerable biodiversity; globally significant ecosystems probably occur.
16. Qionglai-Minshan Conifer Forests; PA0518	Central China Temperate Forests	Sichuan (mainly)	<u>Temperate coniferous forests.</u> <u>Conservation Status:</u> critical/endangered. Cool, moist ecosystems, in isolated high plateau and mountains, also dry valleys in the Min Jiang Valley; a biologically rich, biodiverse locality; giant panda habitat; land degradation has occurred through logging and farming on very steep land; globally significant ecosystems probably occur.
17. Nujiang Lancang Gorge Alpine Conifer and Mixed Forests; PA0516	Mekong & Salaween River System	Tibet, Yunnan	<u>Temperate coniferous forests.</u> <u>Conservation Status:</u> critical/endangered. Semi-arid valleys to moist, forest ecosystems occur; high plant and animal biodiversity; several endangered plant & animals species occur; logging has modified forest ecosystems; globally significant ecosystems may occur.
18. Taklimakan Desert; PA 1330	Middle Asian Desert	Xinjiang	<u>Deserts and Xeric Shrublands.</u> <u>Conservation Status:</u> critical/endangered. A harsh, arid, desert environment occupying most of the Tarim Basin and supporting little vegetation; much of the area is largely inhospitable for habitation; globally significant

Ecoregion Name		Provinces	Ecological Characteristics
WWF Name & Code	Comparable Ecoregion Name		
			ecosystems may occur.
19. Karakoram-West Tibetan Plateau Alpine Steppe; PA1006	Eastern Himalayan Mountain Steppe	Xinjiang, bordering Pakistan, Afghanistan, India	Montane grasslands & shrublands. <u>Conservation Status</u> : vulnerable. Alpine ecosystems of sparse grasslands & herbaceous vegetation on steep, unstable, rocky slopes; numerous endemic plants & ecologically distinctive animals occur; considerable areas have protected area status; much of the area is largely inhospitable for habitation; globally significant ecosystems may occur.
20. Sichuan Basin Evergreen Broadleaf Forests; PA0437	Central China Evergreen Forests	Sichuan (mainly), Yunnan (slightly)	<u>Temperate broadleaf and mixed forests.</u> <u>Conservation Status</u> : critical/endangered. Strongly modified evergreen broadleaf forest ecosystems although small undisturbed relics areas occur; considerable plant & animal biodiversity; globally significant ecosystems probably occur.
21. Yunnan Plateau Sub-tropical Evergreen Forests; PA0102	Mekong and Salween River System	Yunnan (mainly), Tibet (slightly)	<u>Tropical & Sub-tropical Moist Broadleaf Forests</u> <u>Conservation Status</u> : critical/endangered. Strongly modified monsoon-dominated (humid) mixed species broadleaf forests; considerable plant & animal biodiversity; Limited areas have formal protection; globally significant ecosystems probably occur in limited areas.
22. Guizhou Plateau Broadleaf and Mixed Forests; PA0101	Mekong and Salween River System	Guizhou, Yunnan (slight)	<u>Tropical & Sub-tropical Moist Broadleaf Forests</u> <u>Conservation Status</u> : critical/endangered. Subtropical evergreen broadleaf forests comprising species tolerant of limestone soils; considerable plant & animal biodiversity; ecosystems have been strongly modified by agriculture; globally significant ecosystems occur.
23. Northern Indochina Subtropical Forests; IM0137	Mekong and Salween River System	Yunnan, Guangxi (slight), bordering Vietnam, Laos, Myanmar	<u>Tropical & Sub-tropical Moist Broadleaf Forests</u> <u>Conservation Status</u> : vulnerable. Tropical and subtropical evergreen broadleaf and conifer forests of great complexity although strongly modified – degraded by agriculture and logging; globally outstanding for their biodiversity, especially for birds and mammals; the ecoregion straddles a major zoogeographic ecotone (Palearctic and Indo-Malayan faunas mix).

Note: demonstration projects located in ecoregions are identified using the numbers indicated in paragraph 10, below.

C. Identification of Pilot Sites within Key Ecoregions

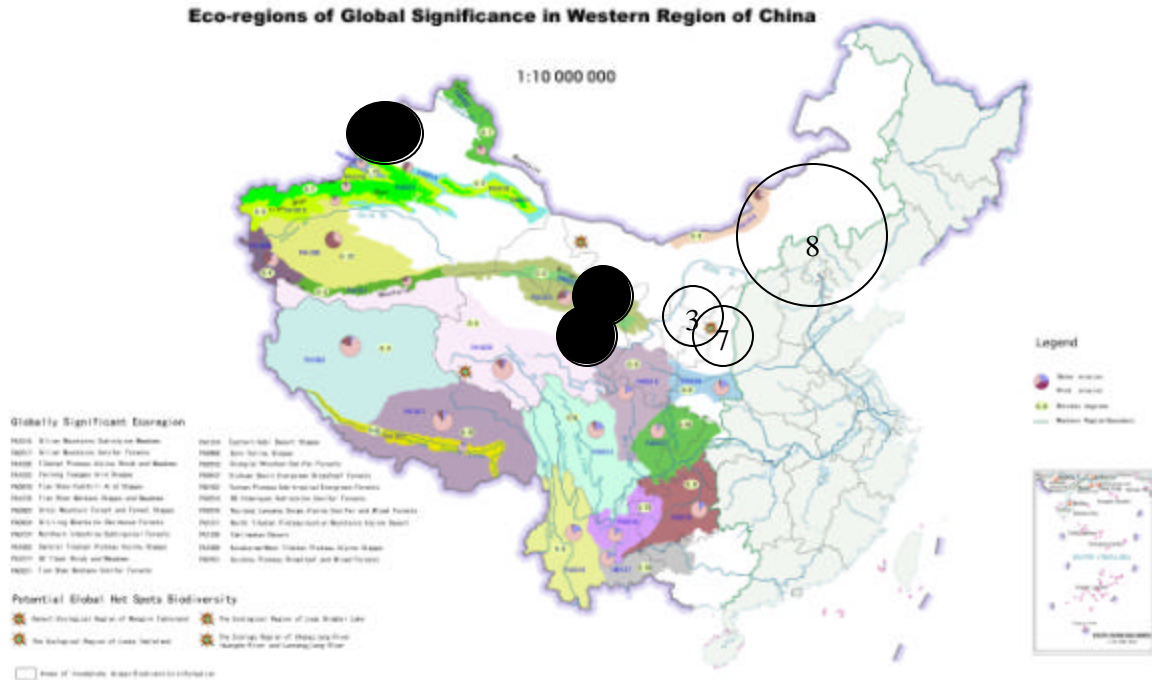
7. The CPF will target specific areas within six provinces identified by the Government⁴ that represent high priorities for combating land degradation from both national and global environment perspectives. The relevant areas have been identified according to the following agreed criteria Pipeline Concept and PDF-B Proposal approved by GEF Secretariat in March 2001:

- (i) national sustainable development objectives (as indicated by national and provincial development plans);
- (ii) global environmental significance (as stated in the Biodiversity Conservation Action Plan);

⁴ Xinjiang, Gansu, Inner Mongolia, Sha'anxi, Qinghai, Ningxia.

- (iii) severe land degradation (as highlighted in the Convention to Combat Desertification National Action Plan);
 - (iv) potential for poverty reduction and economic development (as evidenced by agricultural or rural development prospects);
 - (v) opportunity to develop potentially replicable responses for integrated ecosystem management (as signalled by existence of significant areas with similar characteristics); and
 - (vi) ownership by the local government as indicated by a specific decision to allocate counterpart funds.
8. The ecoregions represented within the six provinces are:
- (i) Qilian Mountains Sub-alpine Meadows; PA1015 (Qinghai, Gansu),
 - (ii) Qilian Mountains Conifer Forests; PA0512 (Qinghai, Gansu),
 - (iii) Qinghai Tian Shan Foothill Arid Steppe; PA0818 (Xinjiang),
 - (iv) Tian Shan Montane Steppe and Meadows; PA1019 (Xinjiang),
 - (v) Tian Shan Montane Conifer Forests; PA0521 (Xinjiang),
 - (vi) Eastern Gobi Desert Steppe; PA1314 (Inner Mongolia),
 - (vii) Emin Valley Steppe; PA0806 (Xinjiang),
9. The representative priority areas within these ecoregions are Qilian Mountains - Hexi Corridor (Gansu), Mao Wushu Desert (Sha'anxi), the Gansu-Xinjiang grasslands, Gonghe – Talatan Desert (Qinghai), SW Zhungeer Basin (Xinjiang), Helan Mountains – Yellow River (Ningxia), and lastly, the Tongliao Sand Lands (Inner Mongolia). The project sites, which will require further detailed identification in pre-project fact-finding, are centered on Wuwei, Yulin, Gansu and Xinjiang, Qinghai, Urumqi and Bole, Yinchuan, and Huhehaote.
10. The proposed demonstration project interventions (see map) are:
- i) Gansu-Xinjiang Pastoral Grasslands Development Project;
 - ii) Qilian Mountains, Gansu Province - Hexi Corridor Integrated Natural Resources Management and Water Saving Project;
 - iii) Xinjiang Uygur Autonomous Region - Southwest Zhungeer Basin Integrated Natural Resources Management Project;
 - iv) Qinghai Province - Gonghe-Talatan Integrated Environmental Management Project;
 - v) Ningxia Hui Autonomous Region - Helan Mountains – Yellow River IEM Project;
 - vi) Inner Mongolia Autonomous Region - Tongliao Sand Lands Integrated Natural Resources Management Project;
 - vii) Sha'anxi Province - Mao Wusu Desert Stabilisation Project.
11. The ecoregions of the Western Region are “ecologically sensitive” and show a strong correlation with poor communities occupying various types of land degradation. Consequently, the CPF seeks to address the root causes by adopting an integrated ecological management approach bringing synergy between biodiversity, climate change and land degradation to optimize multiple benefits and help reduce poverty.

Map 1. Ecoregions of western PRC showing indicative location of proposed pilot sites.



Key to pilot sites:

1. Development of Enabling Conditions to Support Land Degradation Control and Management in Dryland Ecosystems (widespread sites)
2. Qilian Mountains - Hexi Corridor Integrated Ecosystem Management and Water Saving Project, Gansu Province
3. Mao Wushu Desert Stabilisation Project, Yulin, Sha'anxi Province in Yulin Prefecture, namely the seven counties of Dingbian, Jingbian, Jixian, Fugu, Shenmu, Yuyang (Yulin), Hengsheng
4. Gansu-Xinjiang Pastoral Development Project in Gansu and Xinjiang Provinces
5. Gonghe -Talatan Integrated Environmental Management Project, Qinghai Province in Hainan Tibetan Autonomous Prefecture, Qinghai Province (selected areas of Gonghe County).
6. SW Zhungeer Basin Integrated Ecosystem Management Project, Xinjiang Uygur Autonomous Region.
7. Helan Mountains – Yellow River IEM Project, Ningxia Xia Autonomous Region in Yinchuan, Helan County
8. Tongliao Sand Lands Integrated Ecosystems Management Project, Inner Mongolia Autonomous Region in Huhehaote, Tongliao Municipality.
9. Land Degradation Monitoring and Evaluation Project