



Protection of Nature and Biodiversity

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Chaired by:

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Introduction

People have an enormous impact on their environment and, although nature is very tolerant, the results are often negative. Such impacts can be direct; through over-exploitation of natural resources by agriculturists, pastoralists, and hunters; or indirect when, for instance, the climate is changed by desertification or when the numbers of wildlife are dwindling due to the loss of habitats.

In all cases impacts are serious because the livelihood of future generations is dependant on the well-being of natural resources. The natural ecosystems in Central Asia are not stable because of the extreme climatic conditions, but they are ecologically unique. Rich wildlife resources include rare species, of which some are endangered.

In the Wakhan/Pamir area, for instance, one still finds species of ibex, urial, Marco Polo sheep, snow leopard, and brown bear, but all face extinction under current conditions.

In many isolated areas, there is peace but there is also abject poverty and lack of schooling (no funds to pay the teachers) and health facilities (no health clinic is functioning here). The only economic activities are very primitive livestock husbandry and traditional agriculture. Under these conditions, the local people try to improve their living standards by hunting game, as long as there is a market for it. The conservation of natural resources for the future is not a high priority for people at present.

One special aspect is the possible change in climate as a result of the negative impact of the degradation of the environment. In this respect, the Glavgidromet organization in Uzbekistan is studying the 'aerosol impact' (of solid particles

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such as dust in the atmosphere) on the climatic system. This 'dust' has arrived in the atmosphere through sand/dust storms and its intensity has increased together with desertification in the region. As was the case with the volcanic eruption of Krakatoa in Indonesia in 1883, when the volcanic ashes thrown into the atmosphere affected the global climate for about one year, one can imagine that a similar effect will take place here with increasing desertification. A climatic change in its turn will bring about changes in agricultural production and in the availability of water resources (for instance less melting away of snow/ice in the mountain ranges).

A recent study by the 'National Agency for Meteorology and Environmental Monitoring' in Mongolia shows that these countries are undergoing a change in climate. Average temperatures have increased in winter and have decreased in summer (-0.8°C to -0.7°C), while, apart from the Gobi and desert areas, precipitation increases of 28 to 46 per cent have been observed during the growing season in June and July. Probably this will have, at least partly, to do with the above-mentioned aerosol impact on the climate. Adaptation measures should be developed for the potential negative impacts of such climate changes.

There is a wide variety of organizations/foundations created for and studies being carried out on the environment.

Several activities in the field of environment and eco-tourism are underway. Any action should have the support of the local community and this means that people need to be aware about the importance of environmental protection. Making laws or plans will not have the anticipated impact without the support of the people, as government control in isolated areas is almost impossible.

Bringing about environmental awareness amongst all strata of society is a

long-term activity. It may take a generation, so it is of utmost importance to start from primary school.

The current period of economic crisis actually distracts attention from environmental problems. The huge waste brought about through the irrational use of natural resources remains unrecognised. It is essential for ecological NGOs to recognise their role and significance in the process of environmental protection and to take appropriate action. The problems involved can often best be tackled for a well-defined territory; and this often requires an inter-regional approach.

It is proposed to establish a protected nature reserve along the borders of the Central Asian states. This will be positive for both the protection of wildlife and the environment. It will help achieve demilitarisation and a consequent reduction in defence expenditure. Maintaining a park is cheaper than maintaining an army in high altitude mountain areas, while the effect on peace-keeping might be the same or even better.

Major Issues and Experiences

BIOSPHERE RESERVES IN CENTRAL ASIA

Stephen Dompke

*People and Nature
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There have been various initiatives on the development of biosphere reserves in the Central Asian countries. The present principles underlying biosphere reserves include (a) a core zone surrounded by (ii) a buffer zone and surrounding this (iii) is the transition zone. The transition zone is the area for sustainable development. Different use intensities are reflected in the various zones and involve very large areas.

In 1996 a conference was held on the establishment of biosphere reserves and a resolution proposed to establish 16 reserves in different Central Asian coun-

tries. All of these are in various stages of planning. In all the proposals, agricultural and grazing areas are included. One proposal is for a former nuclear test site which is now abandoned. The objective is to promote these as unified economic and cultural areas. In some countries, the focus is on preservation of the traditional way of life. Land use zoning, reflecting various stages of intensification, has been a major issue. Efforts are also underway to develop tri-national biosphere reserves involving certain countries. It was also pointed out that more action was needed to push through planned biosphere reserves, establish new ones, and promote transboundary cooperation in the establishment and management of biosphere reserves in Central Asia.

**ENVIRONMENTAL CHALLENGES FOR
CENTRAL ASIA**
Prof. Hirono

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Three issues are introduced: first, globalisation and its impact on sustainable development, second the environmental deterioration we see in Central Asia, and third, the role of the international community.

The financial crisis that was seen in some Asian countries is a reflection of the globalisation process that has both negative and positive aspects. If it has promoted efficient resource allocation, income growth, and increase in employment, it has also had substantial adverse impacts on the environment. Economic development should be consistent with both social justice and a healthy environment.

Looking at the Central Asian Countries, the recent Human Development Report for 1998 shows the environmental profile in these countries to be quite alarming. Many of the indicators, such as CO₂ emissions, are as high as in the developed countries and indicate the extent

to which the environment has suffered during the past decades. The pivotal role has been played by man-made factors rather than natural ones.

The same report also discussed human development indicators, and it is important to look at both as sustainable development includes both human and environmental aspects. In the transition to market economies, the Central Asian countries have suffered greatly in economic terms in as much as incomes and outputs have actually declined many times. In the process of transition, the economic downturn has been very serious and represents the single biggest challenge for these countries in the short run. There is a need to help these countries to improve their standards of living, so that it does not deteriorate and can provide a reasonable basis for sustainable development.

Insofar as future action is concerned, there are a number of points. The concept of 'ownership' is essential so that countries can identify their vision and retain their identity in the process of globalisation. Continuation of economic and social reforms is essential even if it is painful. The resources allocated to the environment should be increased in order to undertake meaningful investment activities. There should be a continued emphasis on human resource development.

Without strong partnerships it is difficult to move ahead in a sustainable manner. Along with governments, the business, private, and NGO sectors should play a greater role. There is also scope for subregional cooperation, as many environmental and economic issues have transboundary implications. Finally, countries should move towards the concept of a 'global village' in which there is no super power in economic, financial, or military terms. There is cooperation and room for diversity of nations and people. This is different from

globalisation, which is focussed on trade, capital flows, and investments. While globalisation is going on and will continue, in spite of all the financial turmoil seen recently in different parts of the globe, there is a need to promote the concept of a global village.

The international community has a key role to play in moving from lip service to concrete action by providing Overseas' Development Assistance/aid (ODA) that is more based on the recipient's needs and priorities and less on donor priorities. The private sector needs to be more involved and there is a key role here for the new multinationals from Asia. In conclusion it should be emphasised that investment in the environment is also investment in human and institutional capital for the future. Environmental investment should not be seen as consumption; a common mistake. It is an investment in the future.

THE PROBLEM OF LAND TENURE IN MONGOLIA

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Land tenure in Mongolia is of three types: namely, land use, land possession, and land ownership. Land use is the most restrictive form, permitting only the use of a particular piece of land. Possession is distinguished from land use by the associated contract and by the rights of transfer to another person for use and by the right of inheritance. It is intended that land ownership, in addition to those, will grant the owner the right to dispose of the land including the rights to sell, bequeath, and mortgage.

According to the Constitution, all natural resources, including land, in Mongolia are common property under state protection. This implies that it is not unrestricted common property. The gov-

ernment, as the nominal owner of land, has an undoubted right to lay down rules for its use.

Classical examples of restricted common property are the special protected areas, (Strictly Protected Areas, National Conservation Parks, Natural Reserves, and Monuments) with several zones with varying levels of protection. The total protected area for all four categories by mid-1998 was 18.2 million hectares or roughly 11.6 per cent of Mongolian territory. Pastures in Mongolia are the best example of common property.

Privatisation of land ownership has certain problems.

- ▶ Although the land owner might be interested in its sustainable use without overuse, the land's limited capacity and the scarcity of land for alternative use may lead to unavoidable deterioration. It should be noted that, in Mongolia, many cases of market distortion and misuse of the market economy have led to land degradation.
- ▶ It could lead to the polarisation of society, increasing the differences between rich and poor. Through private land ownership, a few people could accumulate a lot of capital, and the number of poor who do not own any property would grow. Because there is no limitation on livestock in Mongolia for families or individuals, the common property right to pasture cannot ensure the declared rights of citizens to have equality in access to land. According to the Law on Land Fees, which became effective on July 1, 1997, every herding family is exempt from pasture use fees, regardless of the numbers of livestock. This means that a significant proportion of pasture land would, indirectly through their livestock holdings, be owned by a few people, while the majority of local people will have less opportunity to increase their livestock

holdings due to the limited carrying capacity of the pasture.

- ▶ Limitation of one individual's rights by another's is clear in the case of land. One option that can be considered is the transfer of rights to possess land but not the transfer of land to private ownership. In this regard, the few provisions on land ownership are intended to anticipate the eventual privatisation of land in Mongolia.
- ▶ The Constitution stipulates that pastures can not be owned since they are used seasonally and alternately. The winter and spring grazing of livestock cannot be separated from their pastures. Therefore, livestock breeders cannot own land. However, settled people, mainly city dwellers, would have the right to own land.

As the Constitution stipulates, only the citizens of Mongolia have the right to own private land. However, citizenship is also a relative matter and foreign citizens and persons without citizenship who are married to Mongolian citizens could become land owners in the economic sense, even without legal entitlement. There is a probability that foreigners could take over the most fertile lands and lands with better locations.

Would organizations have land ownership rights? There is a debate about whether NGOs and religious organizations, such as temples, should have the right to land ownership. It is an important issue that affects the relationship between the State and religion.

A master plan for land management should be worked out by the state concerning the regulation of the land as well as to clarify the definition of terms within the framework of the Constitution. If the State were to distribute the land among its citizens and hold them responsible for their land, then the citizens should know the quality of the land they are receiving, and the State should know how the quality of the land is changing over time.

At present, there is a strong feeling in Mongolia that for just solutions there should be state involvement. Because of this, there is a clause in many laws providing for state involvement. As laws are implemented mostly by administrators, it is not difficult to see why the views of some administrators dominate, often leading to negative outcomes. The above-mentioned difficulties indicate that land privatisation in Mongolia requires a certain period of time. A step-by-step solution could be the right way to accumulate experience in dealing with land tenure. It is also important to educate people about private ownership and self-reliance.

LAND RESOURCES IN THE ALTAI REPUBLIC

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Polluting and destroying nature, we bring harm not only to ourselves but also to future generations. We therefore have a moral responsibility to sustain our peoples and to protect the diversity and wealth of our natural world. Ecological problems are serious in the Altai Republic; but it appears to have been somewhat protected from the impacts of a modern society.

Geographically speaking, the Altai Republic is located in the central part of the Eurasian continent on the boundary of the Altai Mountains and serves as the mountain divide for many watersheds. The Altai Mountains are a unique natural monument, unprecedented in beauty and diversity. They form a natural reserve of rare and endemic species of animals and plants, a centre for especially valuable wild species of medicinal plants. Around 50 per cent of the territory is covered by forests.

The river network includes over twenty thousand large and small rivers with a total length of over 62,000 kilometres. There are over two thousand lakes with a total area of 600sq.km. Altai's minerals have remained unexploited for the most part. There are large deposits of useful minerals — including rare metals.

Regarding biodiversity, the Altai Mountains have 2,200 species of plants of which 300 have some medicinal or food value. There are 62 species of mammal, 290 bird species, over 30 fish species, and over 15,000 species of invertebrate. Many species are rare or endemic, are included in the Russian and Soviet Red Books, and are protected by international organizations.

As with the many mountain peoples of our planet, the Altai native peoples confer a metaphysical meaning on certain territories and sites. These sites are respected and are used ceremonially. An aura of spirituality surrounds many sites in the mountains; viz., cliffs, caves, peaks, springs, and certain plants and animals.

The Altai people are aware that they are caretakers for future generations. There is a legislative and normative base for the complex regulations protecting nature and natural resource use. The Republic has adopted close to 10 laws and over 30 decrees on the environment.

Considering the richness of biodiversity, the aesthetic, spiritual, cultural, and historical values of our land, over 22 per cent of our territory is set aside for protection. Therefore, an important aspect of our strategy for sustainable development is the establishment of a network of protected areas. An Altai-Sayan Mountain Agreement has been signed between eight administrative regions of Russia and the State Committee on Environmental Protection. The Agreement concerns the sustainable use, production, and protection of natural resources,

as well as public health, in the Altai-Sayan region. These two agreements are now being used to create a federal-level programme and laws. A Council has been formed to implement the Mountain Agreement.

The Altai Republic has held many symposiums and meetings on the protection of nature in the Altai-Sayan Mountain Region. Today, the geographical location of the Altai Mountain system, its biodiversity, and its unique nature dictate the need to establish an international nature reserve on the borders of Russia, Mongolia, China, and Kazakhstan.

The Altai Republic side of this international nature reserve is characterised by unique geological formations and landscapes, a wealth of historical-cultural heritage of world importance, and rich biodiversity. The area is well endowed with rare or endemic species such as Argali mountain sheep, snow leopards, and unusual bird and plant species.

The international nature reserve would also provide opportunities for cooperation in joint scientific expeditions for the protection of typical and rare ecosystems, monitoring and research on the influence of anthropogenic factors, resolution of economic problems, and increasing local environmental awareness through environmental education.

The Altai Republic forms a singular historical-cultural area in Central Asia together with Western Mongolia and Xinjiang Province. During the paleometal epoch (the third millennium before the New Era) the Afanasyev culture thrived in these areas. Recent archaeological findings in the Ukok Plateau have indicated that Altai's greatest ancient culture, the Pazyruk, emerged from an area that is now part of modern-day Northwestern China. Common ethnocultural characteristics are also observed in the epochs of the Great Migration and the early middle ages.

Therefore, one important direction for our work would not only be joint research into the ancient past, but also taking action to protect and restore the more visible objects of natural history in the Altai region. Such action could be discussed in the course of joint archaeological expeditions, or at special conferences and symposiums.

NGOs AS A FORCE IN THE SPIRITUAL-ECOLOGICAL TRANSFORMATION

IN THE ALTAI

Dr. Mikhail Shishin

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NGOs are capable of taking on serious environmental problems and play a significant role in transforming and raising awareness among the Central Asian people, strengthening spiritual-ecological values that are a necessary precondition for preserving biodiversity.

The 'Fund for 21st Century Altai,' can serve as a model for other NGOs. (In Siberia and throughout Russia, NGOs are playing an increasing role in environmental protection.) This organization was formed in 1988 after a massive protest against construction of the Katun Dam and nuclear testing at the Semipalatinsk Test Site. At first this was an informal group of activists. Six years ago, a TV-radio station, Katun, was opened in order to air independent programmes on environment and culture. Three years ago, with support from such organizations as the Pacific Environment and Resource Centre and others, a Geographic Information Systems' centre was established. Currently it has GIS technicians who have undergone training in the US. The organization employs environmental activists, journalists, and GIS specialists to work on the environment; and they organize public awareness and scientific activities.

The first advantage of NGOs is that they detect environmental problems as they arise. People become involved in NGOs because of personal conviction. They have a heightened sense of responsibility for the earth, for our future. Consequently, they tend to react to environmental problems more quickly and define those problems more clearly. Aside from that, NGOs consist of people from different social and age groups, and thus they perform a sort of social monitoring, detecting which environmental problems concern people the most. Government agencies and scientific institutions should pay close attention to NGOs' opinions and find means of cooperating with them.

One illustration based on experience is the NGOs' work to fight the environmental impacts of space launching activities in Altai. After space rockets are launched from Baikonur launching pad in Kazakhstan, the space boosters separate from the rockets in mid-air. Different parts of the boosters fall back on to the land in Kazakhstan, the Altai, and Yakutia. According to specialists, over 1,000 tonnes of 'space junk' can be found on the border of the Altai, Khakasia, and Tuva Republics alone. The fallen rocket parts cause mechanical pollution of the area, sometimes cause fires, and often contain left-over rocket fuel. The Altai Nature Reserve is one of the main areas into which rocket parts have fallen. Local residents are protesting against this. Scientific expeditions to the area discovered large fragments of rocket and consider the situation to be very dangerous. TV-Radio Katun was the first to raise this question in the press.

While CoDoCA develops its strategy for sustainable development in Central Asia, it is critical that the question of rocket pollution be raised, since launching pads are causing similar problems in Kazakhstan, China, and India. This would raise the rocket pollution question in the international forum. In short, the demands include the conducting of

environmental impact assessments for any space launching activity. Secondly, the 'dumping sites' must be restored and local residents must receive compensation for environmental damage. As a result of the NGO awareness campaign on this issue, a grass roots' movement has forced the authorities to conduct initial scientific studies, and there has also been some federal compensation for one district affected by fallen rocket parts. Considering all the future launch activities of the US, France, and many other countries, space activities must be placed under international control and, as a first step, a quota must be set to limit launches worldwide.

A second function of NGOs in biodiversity protection is advocacy. Consider how different types of people have varying attitudes towards protected areas: scientists study them; government officials either help or hinder them; business people dream about obtaining access to their natural resources; and the local population often does not understand the role of protected territories and therefore relates to them either indifferently or negatively. In the NGO movement, there is a philosophy on protected areas, and it holds that nature reserves are cathedrals to nature: nature unites humanity. The traditional world view of the native peoples within the Central Asian region perceives nature as sacred. In the Altai Mountains, this was reflected in a taboo against disturbing the peace of certain mountains, rivers, and valleys. These sacred places are essentially 'people's nature reserves'. NGOs use these two concepts to encourage local people and government officials to understand the meaning and importance of nature reserves.

As an illustration of the NGO role in advocating biodiversity, promoting the inclusion of Altai in the list of World Heritage Sites is noteworthy. In Russia this process is only beginning, and thus far three natural World Heritage Sites (Komi,

Lake Baikal, and Kamchatka) have been included in the list. It is important to note that most of the documents prepared, all of the organization, and most of the financial burden for creating World Heritage Sites have been undertaken by an NGO, Greenpeace Russia. The Altai nomination was additionally organized by this NGO and others. At the end of November, in Kyoto, a commission will consider nominations, and it is hoped that Altai will become Russia's fourth World Heritage Site.

The third function of NGOs is uniting people from various walks of life. NGOs, for instance, ensure that science is used to support protected areas and biodiversity protection programmes. NGOs have the advantage of working quickly as they do not require long and drawn-out agreement processes and scientific sessions. As an example, exactly one year ago, in Hovd (Mongolia), NGO representatives proposed the creation of a Central Asian International Nature Monument (a network of protected areas) on the borders of Mongolia, Russia, Kazakhstan, and China. Work on this project has already begun on a GIS system and a concept has been developed through which the World Heritage Sites will serve as the core for the Nature Monument.

PROTECTION OF WILD CAMELS IN CENTRAL ASIA John Hare

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Protected areas for the wild camel are situated in four areas in Mongolia and three in Xinjiang Province in China. There are about 530 wild camels in China and another 350 in Mongolia. Unlike the 'Prezewalski' or wild horses, which are found in many zoos across the world, there are only about nine wild camels in zoos throughout the world.

The first CoDoCA Conference in 1994 was instrumental in instigating protection activities. Following the presentation of my paper on the situation of the wild camel in Mongolia, I was invited by Prof. Yuan Guo Ying to visit China. Following this meeting, three expeditions were organized in 1995, 1996, and 1997 with support from Xinjiang Environmental Protection Bureau, Chinese Environmental Protection Agency, UNEP, and SHELL China. The visits have been into the Gashun Gobi area over the Tien Shan mountains near the Lop Nur Area. Surveys have also been undertaken of the Kun Tark Sand dunes and the Tarim River Basin. Wild camels in the Gash Gobi area are the most significant because these camels have no contacts with domestic camels. They have been completely cut off from man's activities and from domestic camels and are therefore considered to be among the purest camels that remain.

In 1996 the Chinese Government agreed to establish a sanctuary in the Lop Nur Area. The Lop Nur Sanctuary is huge, with an area of about 107,000sq.km. The objective was not only to protect the camel but also to preserve the desert ecosystem. This area, which was formerly a nuclear testing ground, has now been converted into a nature sanctuary. However, the camel is still under threat from hunting, illegal mining, uncoordinated geological surveys, and uncoordinated tourism.

It is extremely important to protect this endangered animal for a number of reasons. First, it is well adapted to drinking salt water and the other camels would not drink it when they were taken to the area during the expedition. This is of great scientific interest. Second, the camel has survived over 45 overhead atmospheric nuclear tests and is still breeding naturally. Thirdly, all genetic samples of skin and bones sent to the Bronx Zoo in New York have shown distinct genetic differences between this

camel and the domestic camel. This strongly supports the position that these are survivors of wild camels and not past runaways of domestic camels from the Silk Road.

With the cooperation of Prof. Yuan, the Wild Camel Protection Foundation in the UK is also raising funds for the Sanctuary. The agreement with the Chinese authorities is that they meet the running costs, while the capital costs will be provided from other sources. Some funds have been raised, and these are being used to establish checkpoints and telecommunications between these points. There is still a long way to go before the end of this present plan in the next two years. Another important problem is that of the 300 wild camels in the Great Gobi Reserve in Mongolia. These migrate regularly into China's Gansu Province and come outside the sanctuary where they face great danger. It is important that cooperation between the two countries is established soon to protect these animals.

THE LOP NUR NATURE SANCTUARY
John Hare and Dr. Yuan Guo Ying
International Wild Camel Foundation
UK and China

China, rich in biological diversity, contains about ten per cent of the world's plants, mammals, birds, reptiles, and amphibians. However, over the past few decades increasing population pressures and development activities have eroded China's biodiversity resources. The Chinese Academy of Sciences (CAS) reports that about 200 plant species are believed to have become extinct and an estimated 5,000 species endangered in recent years due to human activities.

As in many other countries, biodiversity protection in China has focussed on the establishment of nature reserves. There has been a dramatic expansion of protected areas over the past few years, and

more than 700 nature reserves are now established, with a total area of approximately 56 million hectares covering some 5.5 per cent of the country.

The Wild Camel Protection Foundation is striving to establish the Lop Nur Nature Sanctuary to ensure protection for a highly endangered species, in particular the wild Bactrian camel; to protect unique desert ecosystems and landforms in the Lop Nur area; to train personnel in desert biodiversity conservation management; and to integrate local communities' conservation efforts within the proposed Nature Sanctuary through the medium of a comprehensive educational programme.

The establishment of the Xinjiang Lop Nur Nature Sanctuary is considered essential for the protection of the last genetically pure wild Bactrian camel strain, *Camelus bactrianus ferus*, a unique representative of the world's fauna and the only member of the order *Typoloda* existing in a wild state in Asia; the Asiatic wild sheep, *Ovis mammon*, a separate subspecies of the nominal form that is widespread in the desert mountain massifs of Central Asia; and the goitered gazelle, *Gazelle subgutturosa*. In addition, the Sanctuary would preserve the unique wind erosion landforms and fragile desert ecosystems in the area.

The Lop Nur region is located in the south-east of Xinjiang Province, east of the Tarim River basin. The dried-up lake bed of Lop Nur is in the centre of the region, and it is surrounded by the Gashun Gobi desert to the north, east, and west and by the Aqike Valley and the Kum Tagh sand dunes to the south. The Kuruk Tagh Mountains, an extension of the Tien Shan mountain range, dissect the area north of Lop Nur. The area of distribution of the wild Bactrian camel in the Lop Nur region is the only remaining area in the world where the wild camel can be considered to be genetically pure, as it is isolated

from domestic stock. The camel numbers in this area are estimated to be not more than 120. The illegal mining activity in the area to the west of Dun Huang has increased considerably since the 1995 survey. Evidence was found of four new gold mines. At one iron ore mine further north, miners had been constructing home-made land mines to obtain camel meat by blowing up camels that approached water sources.

There are only about five entry points into the Gashun Gobi. The desert environment is so harsh that it is unlikely that entry would be made from other points. It is proposed that five, 200sq. metre checkpoints constructed of brick and cement be erected at appropriate sites at the entry points to the villages of Tuopexun, Tikar, Nanhu, Yamansu, and Houkeng. All the relevant local authorities have agreed to their construction. Each checkpoint will be manned by two staff and two drivers and their remuneration paid from NEPA funding. Each checkpoint will be responsible for their own sub-division of the Sanctuary. They will prevent the entry of illegal hunters and, if necessary, conduct searches of vehicles. They will also ensure that illegal miners do not enter the Sanctuary and that miners from legally established mines on the fringe of the Sanctuary also do not enter their division. They will report on camel sightings within their division and provide much needed information on wild camel breeding patterns. They will demarcate tracks to be followed within their respective divisions and ensure that vehicles do not make unauthorised journeys off these tracks and thereby disturb the highly sensitive and easily frightened camels.

The vast distances encompassed by the proposed Sanctuary make radio communications between the checkpoints and headquarters essential. Many people have disappeared in the desert over the years through lack of communication with the outside.

The wild Bactrian camel is a very interesting subject for scientific research. It has adapted to drinking salt water and has also demonstrated the ability to survive in an extremely hostile environment.

To the north-east of the proposed reserve, along the international border with Mongolia, the wild camel migrates from a sanctuary within Mongolia into an unprotected area in Gansu Province, China. There is an urgent need for inter-country border talks and cooperation to try to ensure that the wild camel is not harmed during these frequent movements into China.

The production of leaflets, posters, radio and TV spots, scripts, and audio-visual materials is considered essential to the success of the Sanctuary. Disaffected hunters and miners have to be informed about the underlying reasons for its establishment. The local community's cooperation and goodwill is considered essential to the long-term survival of the wild Bactrian camel and other threatened species such as the goitered gazelle. Local people who live on the fringe of the Gashun Gobi will therefore be targetted in a comprehensive education programme, and an agreement to do this and to provide suitable back-up support has been forthcoming from the relevant local authorities and the Provincial Authority of Xinjiang Province.

**COMMUNITY-BASED NATURAL RESOURCE
MANAGEMENT IN AFGHANISTAN**
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Situated in the heart of Central Asia, Afghanistan is a landlocked country of 652,000sq.km. sharing borders with Iran; the Central Asian republics of Turkmenistan, Uzbekistan, and Tadzhikistan; China; and Pakistan. The geographical features of the country, in-

cluding its land locked nature, mountain terrain, large desert areas, limited cultivated land, and scattered resources and often isolated human settlements — render economic development costly and difficult.

The Afghan Pamir in the Wakhan Corridor is located in the Wakhan district in the north-eastern province of Badakhshahn. There are several glaciated peaks that rise over 6,000m. Most parts are an extension of the Hindu Kush Mountains.

The Society for Afghanistan Volunteer Environmentalists (SAVE) has developed and implemented a WWF-sponsored, community-based conservation management programme. SAVE is the only independent environmental agency functioning in the country.

SAVE has introduced the idea that sustainable resource management is for the prosperity of present and future generations. SAVE has opened a site office and is working with people.

Awareness about the significance of wildlife was generated by distribution of leaflets when people were attending mosques, other places of worship, and schools. People have begun to take an interest and participate in the programme. Information about the environment and natural resources has been given to school children because they are the future leaders of society.

The people have participated by hosting the conservation and education teams. They have provided them with food and shelter, rides, guides, and information. They have pinpointed the problems and also the solutions, and these will be incorporated in our present and future programmes. For the first time rules and regulations have been established. People feel that they have some responsibility towards the resources around them.

Some people now think that the natural resources, including wildlife, are finite and need to be closely protected and preserved. Hunting pressure was reduced by a considerable degree. SAVE has facilitated eco-tourism through adoption of regulated hunting using international organizations that will assist in attracting hunters who can pay considerable amounts of money for a restricted hunting license. The money charged for hunting permitted species will go towards the general well-being of the people. Environmental education will go hand in hand with formal education. The problem of education in the area was discussed with interested parties. SAVE is facilitating the submission of proposals to selected organizations.

People are the real actors in any initiative. Their welfare should be at the top of the agenda. People's awareness plays a key role. No conservation activity can succeed unless its social virtues and economic aspects are adequately explored. Through proper use of indigenous resources, a sustainable future can be built for every community.

Rapid population growth has exerted enormous pressure on the natural resource bases in central Asia. The increase in population has led to overcrowding not only in the villages but within each household as well. The burden on civic amenities has led to overuse and epidemics of various diseases.

Energy is a dominant factor in deforestation. In the absence of energy-efficient technologies or other fuels, the people use local resources such as wood, shrubs, grasses, crop residues, and animal dung. The growth in demand for domestic energy has a negative impact on land use. These factors force the population to seek cheaper alternatives and over use the natural resource for which they have user rights.

CONSERVATION OF WILDLIFE RESOURCES

Yan-ling Song

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Biodiversity is recognised as a critical component in medicine, agriculture, forestry, and fisheries, with a key role in understanding and conserving the earth's life-support system and in improving the quality of people's lives.

Wildlife is the most important component of biodiversity and, as a natural resource, it has been used widely since human beings appeared on earth. Wildlife species provide an array of essential services to human beings: food, clothes, medicine, raw materials for industry, and so on. The profits to the medical industry from wildlife were estimated at over 10 million US dollars a year in China.

Although more and more nations and people understand that biodiversity is the basis for sustainable development, the conflict between natural resource conservation and immediate survival or development needs exists worldwide, especially in the fragile regions where economic development is badly needed to raise the standards of living. More pressure is being placed on wildlife species that have economic value than ever before. This is a big challenge. More attention should be given to protection of endangered and endemic species of mammals, birds, reptiles, and amphibians.

Some important points for China are as follow.

- ▶ The vertebrate fauna of China are unique and valuable. There are 667 species that are either endemic or which are mainly distributed in China.
- ▶ Vertebrate fauna are facing great loss of habitat and over use. Three hundred and four-eight vertebrate species are threatened with extinction.

Among these, 141 species can be found in the western region of China.

- ▶ Great progress on biodiversity conservation and sustainable development has taken place in China. Conservation of some flag species has been successful. Budgets for research projects related to biodiversity conservation and sustainable development have increased in recent years, although less than the requirements.
- ▶ The problem in vertebrate species' conservation is the limited budget. This results in shortage of knowledgeable people as researchers and managers and makes law enforcement very difficult.
- ▶ International cooperation to develop substitute products for wildlife species should be encouraged. Transboundary cooperation in controlling poaching of the Tibetan antelope should be considered as the first priority in the western region of China.

SEABUCKTHORN – A PROMISING PLANT TO IMPROVE THE CARRYING CAPACITY OF GRAZING RESOURCES AND FACILITATE SOCIOECONOMIC UPLIFTMENT OF FARMING COMMUNITIES IN THE NORTHERN AREAS OF PAKISTAN

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In Pakistan, out of the total land-use area of 79.6 million ha, hardly 25 per cent is under cultivation. Livestock grazing still constitutes the most extensive land use in the country. However, the area reported to be under rangelands is 61 million hectares. The rangelands of Pakistan extend from alpine pastures in the north to the arid and desert areas in the south and are used predominantly for livestock grazing. They yield not only forage but also produce fuel, building materials, and medicinal and food plants. According to the Forestry Sector

Master Plan, 86 per cent of the range area in the country is in poor condition and is degraded. It was estimated that, with the level of livestock population in 1986, the rangelands of the country were stocked with twice the number of animals that they could support.

Seabuckthorn, a native plant species of the northern mountains of Pakistan will join the list of multipurpose plant species, because it will play a very special role in future. This plant can thrive on hungry, alkaline-saline soils. It has a highly developed root system and therefore presents an excellent biotic choice for holding the soil on fragile slopes. It also has an outstanding ability to take root even in poor soils, because of its ability to fix nitrogen directly from the air through the nodules in its roots. It is estimated that about 180kg of n/hectare/annum can be fixed in the soil around seabuckthorn forests. Seabuckthorn has a great potential for conserving soil and water by reducing runoff (i.e., >95) thereby reducing soil erosion (i.e., 99%). There is also an extraordinary economic aspect to seabuckthorn. A natural seabuckthorn forest can yield 750 to 1,500kg of berries per hectare. Its small orange coloured fruit is a storehouse of vitamins and important bioactive substances. The vitamin C content is five to 100 times greater than any other fruit or vegetable known. Its pulp and seed contain high quality oil which is important for its medical value. In addition, the seabuckthorn plant is a good source of firewood and forage for livestock. Moreover, it has a wide adaptability and can be grown in cold and arid areas having harsh climatic conditions and poor soil where many other species can not grow well.

It is possible to grow Seabuckthorn throughout the Hindu Kush-Himalayan (HKH) region. The National Arid Land Development and Research Institute (NADRI), the Forest Department, Water and Power Development Authority

(WAPDA), and Aga Khan Rural Support Programme (AKRSP) are setting up a series of nurseries in the northern areas of Pakistan for large-scale propagation of seabuckthorn throughout this mountainous belt. The NADRI is also working as a catalyst to convince the AKRSP and Hamdard (indigenous plant-based pharmaceutical) to set up a seabuckthorn-based industry in the northern areas. These efforts will not only increase the carrying capacity of rangelands but will also improve the socioeconomic conditions of resource-poor mountain communities.

Conclusions

The presentation and the discussions that followed emphasised a number of key points.

Current Economic Crises and Protection of Natural Resources

The region was going through a very serious economic crisis with the expectation that the standards of living of the people would either remain stagnant or even fall. Under such circumstances, people would favour accessing every opportunity to support their present income and consumption levels, even if this meant immediate exploitation of all available resources. Economic hardship was therefore likely to generate further pressures on an already deteriorating resource base and greater efforts were needed at all levels to ensure that the natural resource base did not erode any further, in spite of economic difficulties. ODA has played an important role in this respect.

Balancing State Control/Management and Private Ownership of Natural Resources

This was a dilemma before all the Central Asian States, as they were in a pe-

riod of transition from a state-controlled economy to a market-oriented system. All the natural resources were under state control in the past and movement to private ownership of these resources needed careful analysis of potential problems and phase-wise implementation of programmes. Potential problems such as misuse of resources, concentration of ownership, and increased conflicts regarding control over resources, required durable legal and institutional solutions.

Increased Need for Protection and Management

While there has been a major surge in protection activities in the region, the need was still much greater, both in terms of further strengthening presently protected areas as well as establishing new ones. Numerous threats to protected species still exist from various sources. Better understanding and recognition of the identity of special groups of people and their heritage have expanded the concept of protection of sacred, religious, and historical sites. While countries had agreed to establish various biosphere reserves, the pace of implementation was slow. The role of people's participation was crucial in the sustainability of protected areas.

The Role of NGOs

Although NGOs were a recent introduction in the area, they had already demonstrated their role in taking initiatives and mobilising popular action for environmental protection. NGOs were seen as an important mechanism for furthering the protection of natural resources in the region. Obviously, NGOs could not do it alone without full support of the government and backing of the people.