Sustaining Local Food Systems,
Agricultural Biodiversity and Livelihoods

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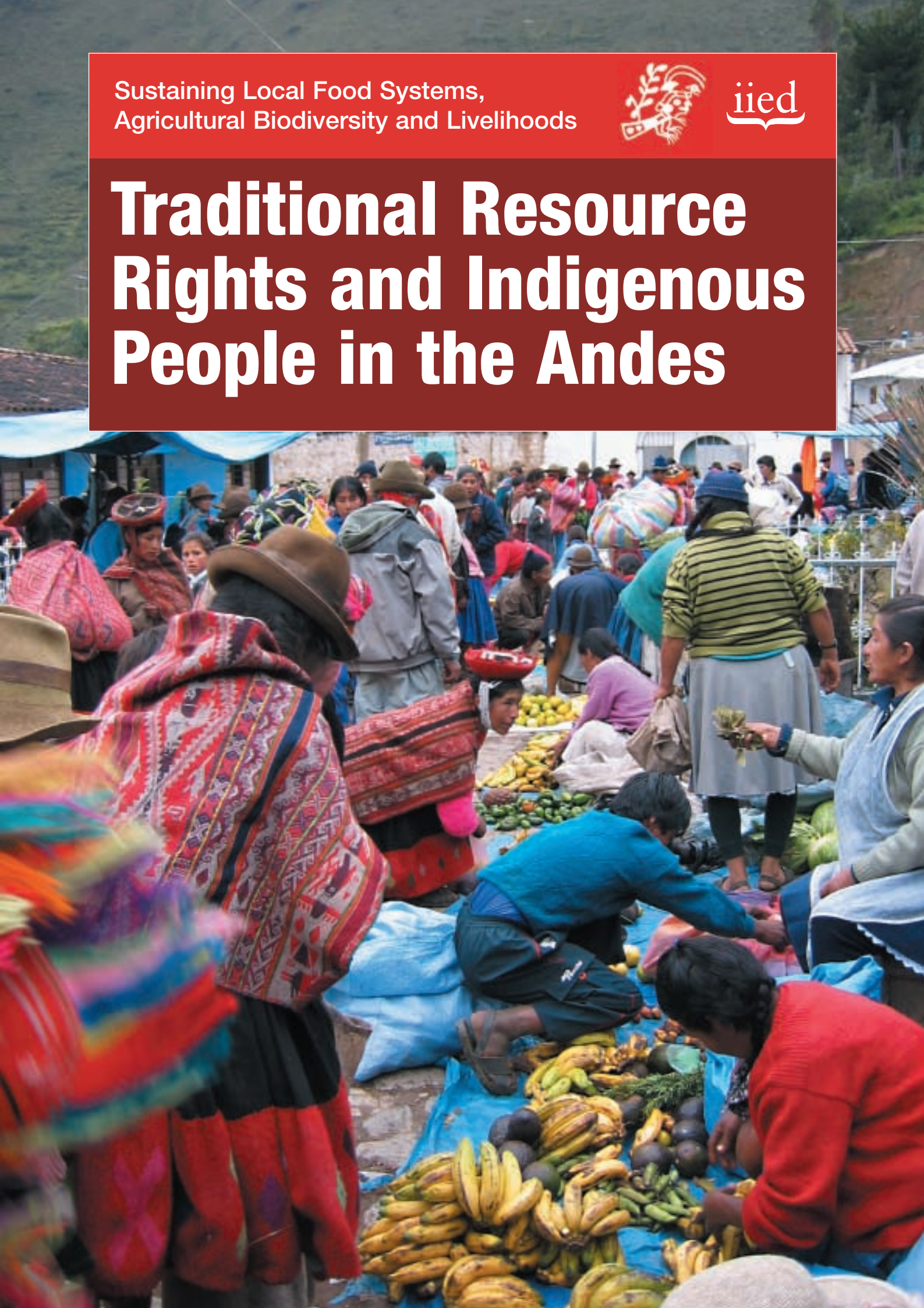
Traditional Resource Rights and Indigenous People in the Andes



Indigenous farmers in the Andean region of Peru are the most extraordinary innovators and conservers of agricultural biodiversity. The potato originates in this area, and during centuries of experimentation and domestication farmers have bred and selected varieties that thrive in each of the many different ecological niches of the Andes. Conserving these varieties, and the historical, cultural and social character of the landscape – in the southern Andes alone there are 18 different agro-ecological zones – is extremely important to the Andean indigenous communities. People's long experience and knowledge of the region's plants and animals enables them to earn a livelihood by developing, using, and managing their resources. But these resources, and the complex systems that ensure their survival, are under threat. The greatest current threats are social, economic and political and include:

- the undervaluation of native crops and animals;
- the introduction of new biotechnologies such as transgenic crops;
- people's extreme poverty;
- inappropriate agricultural policies, including the lack of pro-poor market and economic policies;
- a lack of clear rights over knowledge and genetic resources;
- a lack of political will;
- a lack of secure land tenure;
- loss of cultural identity and spiritual values;
- erosion and marginalisation of traditional knowledge; and
- poor understanding of the role of such knowledge and agrobiodiversity in providing goods and ecological services for sustainable development.

Peru is one of four countries in which IIED and its partners are analysing how decentralised governance, farmer participation and capacity building can promote the adaptive management of agricultural biodiversity in such a way that local food systems and livelihoods are improved and supported.[1] The others are India, Iran, and Indonesia. IIED's partner in Peru is ANDES – the Quechua–Aymara Association for Sustainable Livelihoods. ANDES is governed by a general assembly which is largely composed of indigenous people in different villages in the Andes. They have three professional staff in their office in Cusco, in southern Peru, while another 15 technicians and university- trained professionals and 25 local villagers work in the field with a number of local communities.

All four of the country research teams share the same basic principles and understandings, and there is a shared aim and objectives. It is up to each country, however, to decide exactly what activities would be most helpful in their situation. In Peru ANDES has from the beginning worked with local communities, making sure that at each stage those communities were able to say whether they wanted to slow down or not, whether they needed more information, and whether they were happy with the process. In the end the decisions about what activities to pursue and prioritise were made by the communities themselves. ANDES

1 See: www.diversefoodsystems.org for more information on the 'Sustaining Local Food Systems, Agricultural Biodiversity and Livelihoods' action research.

Words and pictures

The Andean communities that are part of this action research have a very rich oral culture which relies on symbols, ceremonies, rituals and elements in the natural environment. As an important part of this action research is about documenting indigenous knowledge to help the communities to demonstrate their ownership of it – and learn from sharing it with others – it was felt that video would be the most appropriate tool to record that knowledge. As part of the project's farmer exchange activities, a collective of women 'barefoot' videomakers from India were able to visit the communities in Peru. The Indian women shared their experiences with using video not only to record events, but also to look back and analyse, and to edit and make the choices about how to present information to people outside their community. The 12-day exchange was a rich encounter for all those who took part.

The Potato Park Women's Video Collective increased their knowledge about not only the research process, but also the project overall and its outcomes. The Video Collective works with both the Potato Park and barefoot technicians to document traditional knowledge, making documentaries that show how the Park came into being and why a rights-based approach can help sustain not only local livelihoods, diverse food systems and culture, but also biodiversity – from genes to whole landscapes.

and IIED arranged training for community members in the facilitation and technical skills needed for collective deliberation, planning, analysis and action. It is evident from the successes achieved so far that people are putting their new skills into practice.

The action research facilitated by ANDES and IIED emphasises participatory and people-centred processes in sustaining local food systems, diverse ecologies, livelihoods and culture. In the language of sustainable livelihoods, the research partners focus on the relationship between 'livelihood outcomes' and the role of 'transforming structures and processes' such as organisations, institutions, laws and policies that transform assets (natural, physical, financial, human, social, cultural) into those outcomes. Examples of indigenous 'transforming structures and processes' include:

- **The development of community- to-community and farmer- to-farmer learning networks based on the principle of *Ayni* (reciprocity).** Exchange is promoted through the sharing of information, practices and learning processes. 'Barefoot technicians', who are elected by their own communities, network with other communities and create opportunities to share and transfer traditional knowledge and innovations.
- **The consolidation of local, grassroots enterprises.** These groups are anchored in Andean principles of reciprocity and a local definition of well-being, and work using the principles of Andean economy with the goal of reinforcing local food systems.

The research methods combine traditional Quechua research techniques with ethnographic and contemporary participatory enquiry methods that promote equity and social justice through the direct involvement of, and control of the process by, the local indigenous population. Quechua methods include the use of prophesies and myths (where community processes and practices are communicated through myths); traditional forecasting and backcasting techniques; visual and narrative techniques; and memory, writing, recordkeeping and informationcoding traditions. Contemporary participatory methodologies include Participatory Rural Appraisals, community-based evaluation, methods for deliberation and inclusion, and practical participatory governance evaluation.

Within this framework emphasis is given to:

(1) The goals and interests of the Quechua communities, which are about:

- solving problems;
- achieving through this process political goals such as social justice and having a voice in policy and decision-making; and
- emphasising knowledge systems, the Quechua world view, and particularly the importance of indigenous cultural and spiritual values.

(2) The equity and fairness of the research process, including:

- local control of decision-making;
- fair selection of participants; and
- in-depth participation by the different members of the community.

The overall aim of each of the country studies is to analyse how, and under what conditions, decentralised governance, farmer participation, and capacity building can help farmers to manage ecosystems well, ensuring that local food systems continue to provide both food, medicine and incomes for local people, as well as conserving the landscape and agricultural biodiversity for future generations.

People have special rights when it comes to food, and claiming and exercising these rights to 'Food Sovereignty' has become a movement that is very much in tune with the work of this project. The People's Food Sovereignty Network defines the concept like this:

Food Sovereignty is the right of peoples to define their own food and agriculture; to protect and regulate domestic agricultural production and trade in order to achieve sustainable development objectives; to determine the extent to which they want to be self reliant; to restrict the dumping of products in their markets; and to provide local fisheries-based communities the priority in managing the use of and the rights to aquatic resources. Food Sovereignty does not negate trade, but rather it promotes the formulation of trade policies and practices that serve the rights of peoples to food and to safe, healthy and ecologically sustainable production.

Context of work in Peru

The action research involves indigenous Quechua people who live on the western slope of the Eastern Mountain Range of the Andes, between a latitude of 72°00'31" and 71°21'20" west and a longitude of 13°13'10" and 13°58'43" south.

The research area spans a corridor 221km long covering approximately 1,285,970 hectares between 1,200 and 6,000 metres above sea level. It has been described as a micro-centre of origin for potatoes and other important Andean crops. The Cusco region has more wild potato species than anywhere else in the world, as well as a high cultivated (native) potato diversity. This research area alone contains more than 400 of

Mapping history

The Potato Park project has been using a mix of high-tech and innovative participatory mapping to capture the wide range of knowledge connected to the Park. A Geographic Information System (GIS) specialist has created three-dimensional topographical models of the Park, which barefoot technicians and ANDES staff have used to help the communities to identify and show the locations of sacred sites and culturally critical areas, social areas, and social infrastructure such as schools, health and community centres, meeting places, water supply points, roads, communication facilities, etc. They have also recorded patterns of access, control and tenure, and land use. The distribution of different varieties of potatoes and other Andean crops, medicinal plants, and wildlife is mapped, along with patterns of settlement, erosion, sedimentation and development. At the same time, sketches, aerial photos and relief models are used in group discussions as a jumping-off point for people to describe knowledge that is not so easily recorded. These maps are used to record the relationships between culture and biodiversity that are an integral part of Quechua life, and will support the design of part of the agro-ecotourism project by identifying landmarks, old routes and trails, and biocultural hotspots.

The Tawantinsuyu

The Inca civilisation was the largest and most advanced society in the Americas before its invasion by Europeans. At its height, the Inca state extended from northern Ecuador to central Chile and from the Andes to the coast. Their domain spanned 4,000km, including all of the highlands and coast of Peru, most of the highlands of Ecuador, northern Chile, part of western Bolivia, and part of northwestern Argentina. In Quechua, the language of the Incas, the empire was known as 'Tawantinsuyu' which means 'land of the four quarters'. As the name implies, the realm was divided into four parts, coming together at the capital of Cusco: Chinchasuyu to the northwest, Condesuyu to the southwest, Antisuyu to the northeast, and Collasuyu to the southeast.

The Incas were originally a highland tribe who spoke Quechua. According to a mythological account, they came from the south and settled in the Cusco basin, to which they were at first confined. The Inca economy was based on the intensive terracing of mountain slopes and irrigation. They developed urban centres, a road network, and a well-organised and efficient administration, and had remarkable skills in metal refining and metalworking, architecture, weaving, pottery, and other arts. The Spanish invasion brought to an end the Inca civilisation in 1532.

the approximately 1,300 different varieties of native potatoes found in the region. It also has seven of the eight known cultivated species and about 32 per cent of wild cultivars. (The distinction in this region between cultivated and wild potatoes is rather blurred and there is a constant geneflow between the two groups.)

Small corridors bordering the cultivated farms link the agricultural landscape with other habitats such as high mountain native forests, grasslands, and wetlands and they play an important role in hosting a rich variety of endemic plant and animal species. The area is a critical genetic reservoir for wild food species. There are also many varieties of other Andean crops such as Ollucu (*Ollucus tuberosus*), Oca (*Oxalis tuberosa*), Mashua (*Tropucolum aestium*), Tarwi (*Lupinus mutabilis*), Kiwicha (*Amarantus caudatus*), and Quinua (*Chenopodium quinoa*) and many native horticultural species and medicinal plants. Andean camels such as the vicuña (*Vicugna vicugna*), alpaca (*Lama pacos*) and llama (*Lama glama*) live in the area and have significant social, economic, cultural and scientific importance. Threatened or endangered wild mammals in the area include the taruca (*Hippocamelus antisensis*), the Andean fox (*Pseudalopex culpaeus*), weasel (*Mustela franata*), vizcacha (*Lagidium peruvianum*), and the puma (*Felis concolor*). The most notable of the local bird species is the condor (*Vultur gryphus*). As for vegetation, the *Stipa*, *Festuca*, and *Calamagrostis* genuses of the Poaceae family are dominant. There are also unique shrubs such as Quena (*Polylepis sp.*) and Quasar (*Buddleja sp.*).

About 4 million indigenous people live in the project area, where farming is the main way of life. Indigenous communities live in relatively isolated cultural pockets and their farming systems function mainly outside of the global market economy. According to the World Bank some 19 per cent of poor and 27 per cent of extremely poor Andean Peruvians are indiginous people. More than 90 per cent of the Quechua people – proud descendants of the Incas – are included among the 'extremely poor'. This action research primarily involves Quechua communities whose main economic activities are agriculture and livestock. About 10 per cent of people are also either trading within the region or working in the nearby mines. Indigenous and rural people in the region have seen very little benefit from tourism. Education levels in Cusco District are low: less than 20 per cent of local people have more than a primary education and 40 per cent do not read or write. Only 33 per cent of households have access to potable water, either private or from a public fountain/basin, 73 per cent have no sanitary facilities, and only 0.5 per cent have motorised transportation.

Most people speak Quechua and maintain many pre-Hispanic cultural traditions. They still identify intensely with their historical origins in agrarian

communities and rural lifestyles, and continue to contribute to the enhancement of biodiversity that is important for food and agriculture. Communities are organised into Ayllus, or traditional communities, which maintain collective land stewardship and social relations. Their agricultural management systems are based on principles of ecological, productive, and social sustainability which have at their core a profound respect for Mother Earth (*Pacha Mama*) and reverence for the power and fragility of the Mountains (*Apus*). The present-day inhabitants of the area manage, as did their ancestors, a large array of plant and animal species in different stages of domestication, and have helped to create the area's rich genetic diversity. Their ecological knowledge system is unique. Traditional agriculture in the region has long been based on ecosystem approaches that nurture the diversity of domesticated and wild food crops, the biological or life support of the production system (for example soil biota, pollinators and predators), and the ecosystem functions and resilience of surrounding landscapes (for example maintenance of water availability and quality, wildlife habitats and soil structure). Cultural beliefs and practices such as Sacred Groves (*Pakarina*) have played a crucial role in conserving biodiversity in the region. The area's indigenous knowledge is rich in information, attitudes, values, skills, and practices relating to a diversity of local biological resources and landscapes.

Community Conserved Areas for sustainable food systems

Local knowledge systems are the basis for the adaptive management of highly complex Andean ecosystems. Knowledge is highly dynamic and farmer-led innovation is high, especially in natural resource management, for example in the management of ecological niches and plant breeding. Moreover, the local Quechua farmers are well known for their remarkable ingenuity in the use of habitats and species. The majority of indigenous people in the area continue to farm traditional crop varieties and animal breeds, maintaining a high level of genetic diversity that is well suited to their complex and risk-prone environments. Many plots contain more than 100 different varieties of potato.

Since 1997 ANDES and six communities of the Pisac area began the conceptual work and implementation of the Potato Park. In early 2000 the Peru team and communities celebrated the opening of the Potato Park, as a 'Community Conserved Area' (CCA). This is a remarkable result of great vision and years of hard work. The Park concept is unusual in that unlike some conservation projects this one is protecting not only the natural environment, but also the socio-cultural systems that created the landscape in the first place. It is also slightly unusual in that many of the most important forms of biodiversity in this CCA are domesticated – in fact they are the product of hundreds of years of deliberate ecosystem management, genetic selection and breeding by the Andean farmers. Most importantly, along with the park itself there is an 'Association of Communities of the Potato Park', which is responsible for running the park. The Association's members include the

Vilcanota Spiritual Park

In December 2004 the Quechua communities of Q'eros and Ausangate launched the Vilcanota Spiritual Park in Cusco. The first Natural Sacred Site in Peru, it recognises and promotes Quechua values and principles in the conservation and sustainable use of biodiversity. Like the Potato Park, it is a Community Conserved Area, where the community is responsible for planning and managing the landscape, integrating new and old ideas as they see fit, and making traditional agriculture fit with ecotourism. The Vilcanota region has the second most important glacier system in Peru, dominated by Ausangate (6,372m), the main Apu of the Southern Andes. It is recognised as a hotspot of biodiversity, a critical ecosystem, and one of the main centres of genetic diversity of important Andean crops. For the Q'eros, mountains or Apus are sacred beings that represent the most important expression of human aspirations.

traditional head authority of each of the communities along with representatives of local residents, local co-operatives, non-government organisations, traditional authorities, and others. The community members visited other indigenous community projects in Peru, Bolivia, and Costa Rica to learn from their models, and in September 2003 they presented their plans for the Potato Park to an international audience at the World Parks Congress in Durban, South Africa. Working with other indigenous representatives, local residents of the Potato Park were instrumental in ensuring that the concept of Community Conserved Areas was endorsed as a major policy recommendation by the World Parks Congress.

CCAs are natural and/or modified ecosystems containing significant biodiversity values, ecological services and cultural values, voluntarily conserved by indigenous, mobile and local communities through customary laws or other effective means. CCAs can include ecosystems with minimal to substantial human influence as well as cases of continuation, revival or modification of traditional practices or new initiatives taken up by communities in the face of new threats or opportunities. Several of them are inviolate zones, ranging from very small to large stretches of land and waterscapes. Three features are important:

- The relevant communities closely relate to the ecosystems and species culturally and/or because of survival and dependence for livelihood.
- The relevant community's management decisions and efforts lead to the conservation of habitats, species, ecological services and associated cultural values, although the conscious objective of management may be different (e.g., livelihood, water security, safeguarding of cultural and spiritual places).
- The relevant communities are the major players in decision-making and implementation regarding the management of the site, implying that community institutions have the capacity to enforce regulations; in many situations there may be other stakeholders in collaboration or partnership, but primary decision-making is with the community.

The Peruvian Patent Office has granted the Park Association a 'Collective Trade Mark' that will be used to market potatoes and other products from the Potato Park. This logo will guarantee that products are from the Park and are of high quality, and will enable the communities to highlight both the collective nature of their enterprise, and the cultural characteristics of the Association. The long-term viability of the Park will partly depend on persuading customers that products from the Park are special and worth buying. In the longer term the Association plans to use other soft intellectual property tools to promote and protect their collective biological resources as well as to share their experience with and learn from other indigenous communities.

While the Potato Park is a working, living and culturally unique food system, there are many other benefits that can be earned from preserving such a beautiful landscape. The Park is pioneering a new agro-ecotourism project that will invite people to enjoy the agricultural landscape, watch wildlife, live closely with the local culture, learn how to cook and prepare local foods, exchange knowledge, and share elements of Quechua language and culture. Earning income in new ways from the fruits of their labour is all part of the evolving Quechua culture, and being able to do so on their own terms means living independently and with dignity in our rapidly globalising world.

National Day of the Potato

Recognising the creativity and genius of the indigenous peoples of the Andes and helping to maintain their values is what the Potato Park is all about. To spread the word and encourage other communities in Peru to create their own parks, ANDES-IIED and the Association of Communities of the Potato Park called on the National Office for the Environment (CONAM) to create a National Day of the Potato. The appeal, as well as calling for recognition of indigenous peoples' knowledge and innovation systems, asked for specific policies to support the efforts of indigenous people to conserve and manage their natural resources and to help market and promote the native varieties of potatoes. On 23 February 2005 the Peruvian government, by decree No 009- 2005-AG, officially instituted the 'National Day of the Potato', recognising the potato's contribution to food security, cultural and biological diversity, and traditional knowledge. The Potato Park communities feel particularly proud seeing their initiative recognised.

Indigenous people in Peru

As is common throughout Latin America, indigenous people make up the lowest socio-economic and political strata. Illiteracy is high: until 1998 Peru's education system did not accommodate languages other than Spanish, and the school year is still not co-ordinated with agricultural labour cycles. Many people suffer from intestinal disorders and other illnesses associated with the lack of both potable water and sanitation facilities.

There are two main and very different groups of indigenous people in Peru: those from the Amazon (1.2 per cent of the population) and a much larger group from the Andes (43 per cent). Of 6,030 indigenous communities (961 in the Amazon), more than three-quarters are classified as living in extreme poverty or worse.

Isolated from other sectors of Peruvian society, the Amazonian people maintain unique traditional semi-nomadic or agricultural cultures. Their major rights issues are territorial autonomy and protection from resource development that damages their local environment and communities. In recent years, some of the region's organised political groups have been able to develop links with indigenous groups from other countries to share resources and experiences of interacting with the dominant social and economic systems.

Andean indigenous people

Most of Peru's indigenous people are from the central and southern Andean regions. They make up 43 per cent of the population and use over 80 different indigenous languages: 30 per cent speak Quechua and 22 per cent speak Aymara or related dialects. Both languages are recognised by the government, but Spanish is the official state language. Despite a recent wave of urban migration, only 6.7 per cent of indigenous people live in Lima, and 16.9 per cent in other cities. Half of the remaining 67 per cent live in the rural areas of the southern Sierra region.

In the seventeenth century, following Incan imperial practices, the Spanish conquistadors organised highland groups into collectives known as Ayllus. Thereafter, the Spanish Crown protected the borders of the Ayllu lands, but in 1854 the Peruvian government rescinded its support, selling many of the lands. Indians were not represented in the government, nor were they allowed to negotiate because, as they were illiterate, they were considered 'second-class citizens'. Literacy voting restrictions were not lifted until 1980.

From 1919 to 1930 the government vigorously pursued a modernisation programme to try to integrate indigenous people into modern markets. In 1926, 59 indigenous communities were officially recognised. The 1920, 1933, and 1980 constitutions all protect communal lands. By 1958, the first indigenous union was formed to mobilise against the selling of indigenous territories; as an official union, they received counsel and were heard in front of judicial bodies.

In 1970 the Statute on Peasant Communities was passed, limiting indigenous organisation and organising a state representative for the groups. In 1979, the Peruvian constitution was reformed to protect all ethnic groups and recognise the right of people to adhere to their own 'cultural identities'. Bilingual education was recognised, including the right to deal with the state in one's own language, through an interpreter if necessary. Article 149 also gives indigenous communities judicial functions within their territory in 'accordance with customary law'. However, the realisation of such guarantees has been long delayed. The 1980s also saw the formation of several peasant organisations that mobilised against agrarian reform and the development of indigenous lands. These include the Peasant Confederation of Peru and the National Agrarian Confederation.

Protecting traditional resource rights

Indigenous people in Peru and elsewhere have been conspicuously absent from the development of policy, legislation or plans aimed at protecting their knowledge, practices and the landscapes in which they live. Existing international and national policy and legislation has so far failed to integrate their worldview and customary laws into such arrangements. Furthermore, much of the work that has been done to date by NGOs, members of government, and multilateral agencies regarding the protection of indigenous knowledge and lands has consisted of single approaches. For example, they usually fail to take into account the fact that indigenous communities already have systems of knowledge control and dissemination. Policies and practices designed to protect knowledge also fail to recognise the dynamism of traditional knowledge that is at the very core of indigenous people's ability to adaptively manage ecosystems and biodiversity at different scales.

This action research has therefore emphasised more appropriate ways of protecting indigenous knowledge systems. Current efforts thus aim to further incorporate indigenous customary laws into local decision-making tools and ensure that they are recognised by existing legal mechanisms or can influence the development of appropriate national legislation. The recently signed potato repatriation agreement with an international genebank (see box on page 10) and the development of Community Biodiversity Registers linked with open source software (see box on page 11) are good examples of this.

By using local customary laws and practices associated with the protection and management of knowledge and innovations, these activities seek to create a Community 'Protocol' to be used to:

- control and regulate foreign access to the traditional knowledge and innovation systems and associated genetic and biological resources contained in Community Conserved Areas such as the Potato Park and the Vilcanota Spiritual Park (see box on page 6);
- develop guidelines for the management of Community Conserved Areas;

Barker markets

The valley of Lares-Yanatile in Cusco is rich in biodiversity, containing three different agroecological zones between 1,000 and 4,850m in altitude: *yunga*, *quechua*, and *puna*. Andean tubers and potatoes are grown in the highest zone, corn, legumes and vegetables in the middle area, with fruit trees, coffee, coca and yucca in the lower part. Every week a barter market is held in the middle area of the valley, where nearly fifty tonnes of goods are traded each market day – ten times the volume of food distributed by the National Programme of Food Assistance. Anyone can participate, and can trade any amount of any crop.

Women are key players in the market, which is vital in ensuring that their families have enough food to eat, and that they have a balanced diet. The rainforest supplies Vitamin C, potassium and sodium through fruits, such as citrus and bananas, that do not exist in the quechua and puna zones. The middle and high zones supply starches, mainly potatoes and corn, which provide desperately needed carbohydrates to the rainforest zone. This participatory action research enabled local actors and outsiders to assess the social, economic and ecological values of the barter markets. The analysis of these non-monetary markets shows that they are helping not only to support and strengthen traditional institutions, but also that they are conserving valuable biodiversity. Principles of reciprocity and solidarity guide the economic exchange of a diversity of foods, ensuring that important needs of people and the land are met in culturally unique ways.

Reclaiming rights over genetic resources

Who owns the seeds and other genetic materials currently in gene banks worldwide? Who controls and profits from that material? Certainly not the farmers whose many years of development go uncredited and unrewarded. The Potato Park communities and the International Potato Centre – working together with the help of a lawyer provided by the IIED project – developed a model agreement that enables them to bring their genetic heritage back home, and to continue to develop it for the benefit of their people. A legally binding potato repatriation agreement was signed between the indigenous communities and the International Potato Centre in December 2004.

The model agreement stresses that the Andean communities are well aware of the importance of conserving their genetic resources for the present and future use of farmers all over the world, but also that they feel that they are the best people to manage and carry out this conservation. The Andean indigenous farmers want to be part of the global community that is conserving, developing, sharing and exchanging knowledge for the benefit of all humankind. A fundamental part of the model is that farmers will be able to save, use, exchange and sell farm-saved seed and other propagating material, and will participate in any decisions about the sharing of benefits from the use of agricultural biodiversity.

This agreement is of historical importance. It creates a significant legal precedent for the CGIAR[3] centres and national gene banks' policies on access and benefit sharing for biodiversity important for food and agriculture. It also opens up new opportunities for more effective conservation of biodiversity by combining both *in situ* and ex situ approaches in complementary ways.

[3] CGIAR – the Consultative Group for International Agricultural Research. The International Potato Centre is one of 15 CGIAR centres that work with national agricultural research systems and that are responsible for the world's largest gene bank collections of agricultural biodiversity.

- create local institutions to manage local knowledge and innovations, and be responsible for providing prior informed consent;
- serve as guidelines for managing the information contained in the Community Biodiversity Registers;
- strengthen customary cultural/'legal' relationships within and between indigenous communities; and
- foster the intergenerational reproduction of the local culture.

An innovative *sui-generis*[2] system of protection and management of indigenous knowledge and associated genetic resources is being generated through this action research.

Unlike knowledge concerning undomesticated biodiversity, in the case of agrobiodiversity, the genetic material and its associated knowledge are intimately intertwined, in the sense that if the traditional knowledge about its use is lost, the same is likely to happen to the genetic material. When the knowledge about undomesticated biodiversity disappears, it is likely to be the only loss. Given the nature of Andean biodiversity it is rather difficult in practice to make a distinction between domesticated and undomesticated forms of life, and both are a matter of great importance to indigenous peoples. Providing IPR protection to Andean biodiversity therefore poses a conceptual problem. While indigenous peoples contend that protection should cover all objects and characteristics that are evidently natural, and that private property over their biocultural assets should not be allowed, the current trend is that possession of organisms implies exclusive control of all of their features.

Against this backdrop ANDES have proposed an alternative model to the exclusive intellectual property system, in order to protect thousands of potato varieties in Andes region. This includes a repatriation agreement with a gene bank, recognises the right of Quechua communities over their knowledge and associated genetic materials, and maintains traditional open exchange models of genetic resources by strengthening them with elements of the modern information technology 'open source' paradigm. The repatriation agreement, signed between six indigenous communities of the Potato Park and the International Potato Centre, allows Andean communities to unlock the potato gene bank and repatriate biological diversity to farming communities and the natural environment for local and global benefit. Protection of rights is established in a provision of the agreement that states that genetic resources

[2] A unique form of intellectual property protection, specially designed to meet certain criteria and needs.

and knowledge remain in the custody of local communities and do not become subject to intellectual property rights in any form. This challenges the trend of privatising genetic resources and indigenous knowledge which is threatening local livelihoods and culturally specific ways of life. To strengthen this challenge the model encourages communities to exchange genetic materials freely, but requires that all modified material and derivatives of the resulting exchange are free as well. The exchange is done, however, under the umbrella of local biodiversity registers and a protocol based on customary laws. The register establishes rights over knowledge and resources and a protocol which underlines the cultural and spiritual values of the indigenous knowledge and traditional concepts of collective ownership and open sharing of resources. The community protocol in particular commits all users to the principles of no patents on life forms and opposition to genetic manipulation and transgenics.

In sum, the ANDES-IIED action research is actively developing an integrated model to protect traditional knowledge systems based on the conservation and sustainable use of the ecosystems in which indigenous peoples' knowledge and innovations thrive. The model builds on the Andean concept of 'working landscapes' and integrates indigenous people's own concepts of rights over their knowledge and resources. The approach is rooted in local institutions, customary law, collective decision-making and indigenous management systems. Protecting the 'working landscape' or 'cultural space' where local knowledge and innovations are produced, managed and transmitted ensures that such an approach is in line with broader goals of securing indigenous land rights, maintaining the diversity of indigenous cultures and livelihoods. Throughout, the emphasis is on a rights-based approach to sustaining local food systems, agricultural biodiversity and livelihoods.

Community Biodiversity Registers

If Andean communities are to be able to protect and benefit from their agricultural biodiversity, it is essential that they can show in a modern court of law that they have some 'ownership'. Peru is considered the 'biopiracy' capital of the world. Biopiracy is the illegal appropriation of life and the traditional cultural knowledge associated with it, usually for commercial gain and without any acknowledgement or compensation. (This subject is dealt with in depth in another paper in this series.) The project is using Community Biodiversity Registers (CBRs) to make an inventory of the knowledge and resources of the region, building on farmer innovations in Andhra Pradesh, India. When some of the Indian women farmers visited Peru with IIED's Indian partner, the Deccan Development Society, they were able to show how Community Biodiversity Registers can be used to document people's knowledge of plants and their many uses.

Video is again being used to record specific information about how particular plants are collected, prepared, and used and where they grow. It is also recording the process of using a simple matrix to help people to register not only the practical uses of plants and animals for food, medicine, fuel and ecosystem renewal, but also their associated cultural and spiritual values.

This information is currently being stored in a multi-media interactive database with audio, video, text, QuickTime VR, GIS maps, scanned images, and digital photos. IIED partners are now working to define how the information will be arranged and accessed.

The project is now exploring the potential to use a robust, open-source software programme to enable indigenous people to preserve and protect their unique cultural and biological knowledge through digital technology. The software is being developed to ensure that local communities can:

- define and control the rights, accessibility and re-use of their digital resources;
- uphold traditional laws pertaining to secret/sacred knowledge or objects;
- prevent the misuse of indigenous heritage in culturally inappropriate or insensitive ways;
- ensure proper attribution to the traditional owners; and
- enable indigenous communities to describe their resources in their own words through oral annotation tools.

How – and under what conditions – can diverse, localised food systems be sustained in the twenty-first century? Who gains and who loses when local food systems are strengthened? These are some of the questions examined by the Sustaining Local Food Systems, Agricultural Biodiversity and Livelihoods project.

This project combines a political ecology perspective on food systems and livelihoods with action research grounded in local practice. As such it seeks to bridge the gap between the academic orientation of political ecology and the largely activist focus of food sovereignty, human rights and environmental justice movements.

The decentralised management of agricultural biodiversity by farmers and their communities is increasingly seen as a prerequisite for sustaining food systems, livelihoods and environments. Although the international community does emphasise the need to involve farming and local communities more centrally in the management of agricultural biodiversity, there are huge gaps in knowledge and institutional constraints that limit national capacities to scale up these approaches. In order to help fill these gaps, this research seeks to analyse how and under what conditions can decentralised governance, farmer participation and capacity building promote the adaptive management of agricultural biodiversity in the context of localised food systems and livelihoods.

The project is working with partners in four different countries, India, Iran, Indonesia and Peru. The research adopts an international, action-oriented, interdisciplinary and case study approach that builds on the expertise of local resource users and national and international partners. Throughout, the emphasis is on doing research with, for and by people – rather than on people – for learning and change.

PERU

The action research facilitated by ANDES (Quechua–Aymara Association for Sustainable Livelihoods) and IIED emphasises participatory and people-centred processes in sustaining local food systems, diverse ecologies, livelihoods and culture.

IRAN

Dialogues with partners identified in Iran have focused on a 'learning by doing' project aimed at reviving nomadic pastoralism and associated livelihoods and agricultural biodiversity. The Centre for Sustainable Development (CENESTA) is IIED's project partner in this endeavour.

INDONESIA

Working with a new foundation, FIELD – Farmers Initiatives in Ecological Literacy and Democracy – the project builds on the pioneering approach to farmer training, the Farmer Field School, and their work on community integrated pest management (CIPM), which depends heavily on both using functional biodiversity to control rice pests and co-ordinating action by farmers to sustain local livelihoods and change policies.

INDIA

Local control over biodiversity important for food and agriculture in the drylands of Andhra Pradesh is the focus in India. IIED's partner is the Deccan Development Society, and joint work between local farming communities and women's collectives (sanghams) has grown out of village-level dialogues where farmers identified priorities and opportunities for this participatory action research.

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