

GOAL  
10**Reduce inequality within and among countries**

Photo: National Biodiversity Centre of Bhutan

*SDG 10 seeks to empower the vulnerable, poor and discriminated, promoting social, economic and political inclusion for all. This should be enabled through the elimination of discriminatory laws and policies and the adoption of fiscal, social or wage policies supporting greater equality. It also supports greater representation of developing countries at a global level, as well as a better regulation of global financial markets, and safe migration and mobility of people.*

**How do ecosystems and biodiversity support this SDG?**

Not everybody has equal access to the biological resources and ecosystem services that we all depend on for our social and economic wellbeing and prosperity. Very often it is more marginal and vulnerable groups (such as the poor, women, indigenous communities and those living in remote areas) in developing countries who depend most on the biodiversity, and who stand to be most affected by ecosystem degradation and loss. It is also often these groups (and countries) who host and act as stewards of some of the world's most significant biodiversity and critical ecosystems. Yet, at the same time, there are high and growing demands for land and natural resources among urban and industrial consumers, both within and outside high-biodiversity countries. Many poorer countries and communities are being left to bear the costs of conserving biodiversity to benefit spatially and socio-economically remote consumers, even though they are often left with only a very small share of the benefits generated, and are thus effectively subsidising the supply of ecosystem services to richer and more privileged groups. In many cases, access and rights to land and natural resources are also being progressively transferred away from the more marginal and vulnerable groups who have traditionally managed and used them, thereby alienating them from their basic means of production, survival and security. Not only is this inequitable, but many cases these groups and countries are the least able to afford to bear either the costs of conserving biodiversity for others' benefit, or of losing the supply of goods and services that is so vital to their own economic survival and prospects for future growth.

Setting in place (or supporting existing) fair and sustainable systems for biodiversity conservation, sustainable use and benefit-sharing can make a major contribution towards reducing inequality within and between communities and countries. It can also serve to mitigate or avoid the inequities that occur when poorer and more marginal groups lose access to the assets which provide both for their basic means of day-to-day survival and their prospects for future growth, or are forced into a situation where they shoulder the burden of managing the natural environment for others' benefit and gain with no reward or compensation for doing so. Moreover, large-scale conservation and rehabilitation projects are conceived and designed to include dependent local communities in natural resources management processes. Conservation activities can also create opportunities for new jobs and better income through mechanisms and activities such as payments for ecosystem services, bio-business development, and eco-tourism.

Biodiversity conservation is conditional to fair and equal access to natural resources for all, as much as equality of representation enhances sustainable management of resources. The recognition of the value of indigenous and local knowledge and practices, for instance, contributes to a more comprehensive and efficient management of forests and watersheds. The Nagoya protocol on access and benefit sharing of genetic resources is thus supporting biodiversity conservation and equity by guaranteeing that the benefits yielded by the use of genetic resources are fairly shared between the providers, the local knowledge holders, and the users. It contributes to empowering indigenous communities by giving them the rights to be informed, and to decide about the use of natural resources on which they depend and about which they hold specific knowledge.

## How does UNDP's work **SUPPORT** this SDG?

### **Case study:** Ensuring equitable access and benefit sharing of genetic resources in Bhutan

In the past Bhutan was referred to as the southern land of medicinal plants, "Lhomenjong", because of the diversity of medicinal plants found at the different altitudes of its highly rugged terrain, ranging from 150 to 7,800 meters above sea level. The country's geographical diversity contributes to its outstanding floral and faunal diversity. Bhutan's forests are home to more than 5,600 plant species of which as many as 750 are endemic to the region, with 100 or more endemic to Bhutan itself, resulting in an impressive genetic diversity. Bhutanese livelihoods largely rely on this diversity of plants and forest products. Aromatic plants are used all over the country to make religious offerings, while in most villages local people collect forest foods such as ferns, mushrooms, wild greens, tubers, bamboo shoots, and orchids for their own diet or to sell in urban markets. These uses involve a transfer of local knowledge about plants and their parts from generation to generation within the communities.

Yet, even though Bhutan's natural environment has been well preserved, threats and pressures are quickly rising as the country makes its transition to a consumption-based cash economy. Overharvesting of non-timber forest products is a serious concern, in particular for medicinal and aromatic plants, forest foods, and bamboo or cane. For instance, bamboo and cane in the Monpha area of Jigme Singye Wangchuck National Park, which were once abundantly available in the immediate vicinity of the villages, now



Plant sample collection based on traditional knowledge of local communities. Photo: National Biodiversity Centre of Bhutan

have to be collected from three to four hours walking distance. Moreover, the country's wealth in medicinal plants has been attracting "bio-pirates", and poaching of wild plants has increased in the border areas. Not only are these practices a threat to biodiversity, they also often result in unfair patenting of plant extracts by foreign pharmaceutical companies, yielding high economic benefits with no return to the country and local communities.

In order to conserve Bhutan's diverse genetic resources, the potential of genetic resources lying in the country's forests must generate tangible local and national economic benefits.

The project is thus supporting Bhutan's efforts to harness the benefits of its still largely unexplored wealth of genetic resources through the full establishment of the Access and Benefit Sharing (ABS) framework. By conducting a share of drug discovery research spending to the exploration and exploitation of land, ABS policies enable the transfer of benefits to Bhutan through higher investment and royalties, and to local and remote communities through the creation of business, employment, capacity building opportunities, and premium prices for genetic resources. But to become effective, the institutional framework for implementation of ABS needs to be reinforced with clear rules and regulations, which ensure that bio-prospecting and product development create tangible and fair benefits to the country and concerned institutions and communities.

This project focuses on this long-term solution by supporting the operationalisation of a stronger national regulatory and institutional ABS framework combined with capacity building and awareness raising

**PROJECT:** Implementing the Nagoya Protocol on access to genetic resources and benefit sharing in Bhutan

**MAIN DONORS:** GEF, UNDP

**LOCATION:** Bhutan, National level and Pilots in Chhukha, Thimphu and Trongsa districts

**DATE:** 2014 - 2018

**WEBLINKS:** <http://www.undp.org/content/bhutan/en/home/operations/projects/e2iprojectlist/access---benefit-sharing.html>



Rhododendron sample collection by Bio Bhutan for distillation. Photo: Bio Bhutan

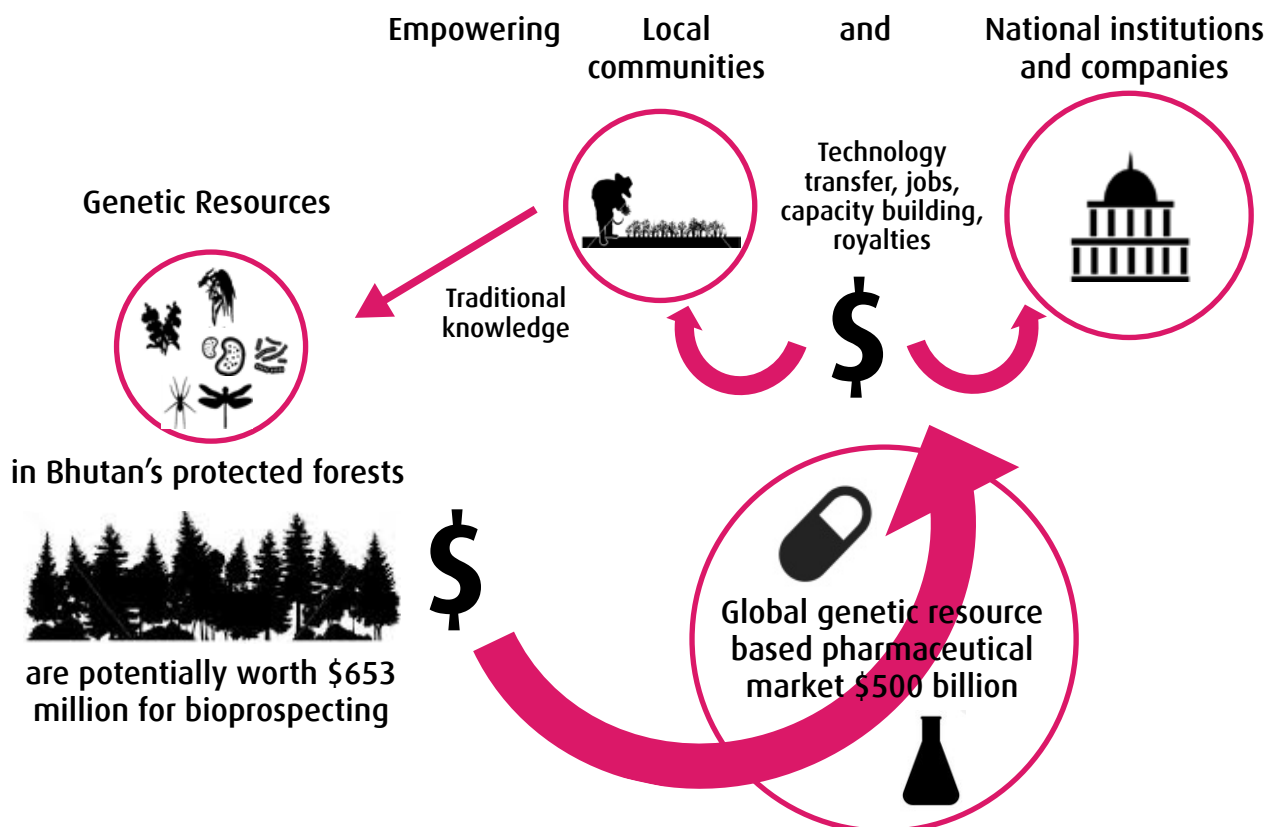
targeting parliamentarians, policymakers, scientists, researchers, communities, academia, the private sector, and civil society. It thus facilitates the creation of ABS agreements across the country.

In order to enhance ABS management, the project also improves facilities and capacity for bio-prospecting by promoting traditional knowledge documentation, increasing project stakeholders' technical skills, and strengthening support for a full bio-prospecting laboratory. The project is also piloting three ABS agreements implemented by three different institutions: the National Biodiversity Centre, a government research and development institution which is also the national focal agency for ABS and Nagoya Protocol; Menjong Sorig Pharmaceuticals, a government company with the mandate for research and production of traditional medicines; and Bio Bhutan, a private sector enterprise developing and producing bio-products with the involvement of local community groups. All three are engaging with international partners for analysis and product development and will ensure that a fair share of the yielded benefits goes to local communities.

## Nature count\$: Key impacts of the project on equality

Through the enforcement of ABS agreements and ABS policy at a national level, the project safeguards genetic resources and traditional knowledge potentially worth \$906 million. It also avoids potential costs from bio-piracy including costs of patent revocation that can be up to \$600,000 for each patent, and potential harmful practices threatening biodiversity. The project therefore enables concerned institutions and local communities to protect and access the benefits of their rich biodiversity by participating in the development of products entering a \$500 billion global genetic resources-based pharmaceutical market. Institutions and local communities receive monetary and non-monetary benefits such as royalties, job creation, transfer of technology and capacity-building. For example, in the small village of Dzедhokha, farmers were trained on *Zingiber cassumunar* field preparation, irrigation, manure application, weeding, harvesting and post-harvest techniques. Bio-activity tests confirming villager's traditional knowledge about the plant's joint pain reliever properties will create opportunities for the development of a medicinal bio-product for sale in national and international markets.

### Ensuring equitable access and benefit sharing of genetic resources in Bhutan



The implementation of the Nagoya Protocol with the help of the project enhances the economic and political inclusion of local communities from remote areas (✓SDG Target 10.2), as well as their employment opportunities and income (✓SDG Target 10.1). The enforcement of ABS policies and agreements thus helps to achieve greater equality within the country (✓SDG Target 10.4). By guaranteeing a fair share of benefits yielded by genetic resources the project is also helping Bhutan, a country classified among the least developed countries, to partner equally with international companies and defend its rights in international markets (✓SDG Target 10.6).



Members of the women's group of Dzedokha village, Bhutan. Photo: National Biodiversity Centre of Bhutan

## How the economic impacts were calculated:

More than 80% of Bhutan's territory is covered by forests, representing around three million hectares of conifer, pine, tropical and subtropical forests of which 1.967 million hectares are protected areas (Ministry of Agriculture and Forest). These mostly primary forests are home to at least 200 species of medicinal plants used for traditional medicine and represent a great potential for further prospection. The potential value of Bhutan's forest genetic resources is derived from Rausser and Small's (2000) speculative estimate of marginal prospecting values per hectare in Eastern Himalayas ecosystem. Their probabilistic estimates are a function of the density of endemic species in different biodiversity hotspots—4.2 per 100 hectares in Eastern Himalayas. As a result they estimated that, if species with potential pharmaceutical values were prospected, identified and then developed commercially, with an average of ten successes every year, and an average

revenue of \$450 million per success, Eastern Himalayas genetic resources' value would be \$461 per hectare of forest at current price level<sup>1</sup>. This means that if genetic resources and their related traditional knowledge were to be prospected and used for pharmaceutical research, Bhutan's 3 million hectares of forest could potentially be worth more than \$1 billion, and protected areas only could be worth \$906 million.

The project enhances institutions and communities' knowledge about the value of their traditional knowledge on biological resources and the benefits it can generate. Their improved capacity to negotiate coupled with traditional knowledge documentation enables them to denounce misappropriation of their knowledge and prevent unfair patenting, thus avoiding the costs of patent revocation. It takes on average five to seven years and costs between \$200,000 and \$600,000 to revoke a patent granted by a patent office while traditional knowledge documentation can decrease the cost of protection to almost zero (Gupta 2011). A UNDP-commissioned report had estimated that bio-piracy would cost developing countries around \$8.7 billion of benefits<sup>2</sup> from stolen knowledge and genetic resources each year (UNDP 1994).

While preventing these potential costs, the implementation of ABS agreements links a global pharmaceutical market based on genetic resources and worth around \$500 billion, with institutions of a country whose GDP is around \$2 billion, and with local communities making a living from subsistence farming, in a fair and equitable manner. Global sales of pharmaceuticals have passed \$1 trillion in 2014, and between 25 and 50 percent of this market turnover is attributable to genetic resources-based products (TEEB 2009).

In Dzедhokha village, farmers, the National Biodiversity Centre and the international company Quantum Pharmaceuticals Limited partner in making a certified joint pain reliever balm based on *Zingiber cassumunar* extracts. More information about this pilot project can be found at:

<https://www.thegef.org/news/linking-communities-global-market-traditional-knowledge-conservation>

<sup>1</sup> The study reports an estimation of \$332, with a cumulative rate of inflation of the US dollar of 39.9% between 2000 and 2016, the estimation at current price level equals \$461

<sup>2</sup> The study reports an estimation of \$5.4 billion in 1994, worth \$8.9 billion at current price level (cumulative rate of inflation 1994-2016=61.4%)



Sample products. Photo: National Biodiversity Centre of Bhutan

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