Traditional societies depend on it for their food and healthcare needs

The World Intellectual Property Organization (WIPO):

The World Intellectual Property Organization (WIPO) Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore (the IGC), which met for the first time in 2001, is in discussions about draft provisions for the enhanced protection of traditional knowledge and traditional cultural expressions against misappropriation and misuse. WIPO‘s work in these areas involves close cooperation with other international organizations and NGOs, as well as the organization of a wide range of capacity building activities. Capacity-building resources include practical guidelines for indigenous and local communities on developing intellectual property protocols, and information technology tools for managing intellectual property issues when digitizing intangible cultural heritage. In 2000, the WIPO General Assembly established forum for the discussion of intellectual property issues in relation to access to genetic resources and benefit sharing, the protection of traditional knowledge and expressions of folklore. The work program has produced an impressive number of discussion papers, surveys of national laws and data obtained by means of surveys, consultations and fact-finding missions. The technical dimensions of the issues have received a thorough exploration in a number of papers prepared by the Secretariat. The work program also has produced a number of practical outcomes as: A toolkit for the management of intellectual property in the context of documenting traditional knowledge and genetic resources; a practical guide for the protection of traditional cultural expressions and a database of contractual provisions relating to intellectual property and access to genetic resources.

Discussions of WIPO to date have considered the following issues:

- Human rights treaties and other existing or emerging instruments that are applicable to traditional knowledge and genetic resources.
- Elements of customary law that are vested in traditional knowledge protection and transmission.
- Analysis of indigenous participation, including the levels and roles in decision-making, including measures to ensure compliance with free, prior and informed consent.

- Options and opportunities in the proposed certificate of origin, source or legal provenance from genetic resources.
- Role of customary law in the protection of traditional knowledge and development of regimes on access to genetic resources and benefit sharing.

In applying these principles at the domestic and national level, it is envisaged that an international access and benefit-sharing regime would be supported by national legislation that addresses a sui-generis protection of indigenous traditional knowledge, innovation and practices, ensuring compliance.

Food and Agriculture Organization (FAO)

The FAO addresses traditional knowledge in the context of Farmers‘ Rights. According to its Article 43
9.2 (a), the protection of traditional knowledge relevant to plant genetic resources for food and agriculture is one possible measure to protect and promote Farmers‘ Rights. Because the responsibility to realize Farmers‘ Rights rests with national governments and is subject to national legislation, needs and priorities, the Contracting Parties of the FAOIT enjoy great freedom when implementing the provisions of Article 9.2
(a) on the protection of traditional knowledge. National mechanisms realized for this protection may thus take the form of existing and sui generis forms of IPRs or any other legal form the Contracting Parties.

The International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA)

The FAO has produced a treaty in the form of the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA) (adopted by FAO Member countries in November 2001). The treaty recognizes the contribution of ―local and indigenous communities and farmers of all regions in the world‖ to the conservation and development of plant genetic resources. The implementation of farmers‘ rights requires the ―protection of traditional knowledge that is relevant to plant genetic resources for

food and agriculture‖, as well as the rights of participation in the benefits and decision-making related to PGR. In essence, the treaty establishes a principle of farmers‘ rights and provides some guidance as to the areas in which contracting parties should act, but it does not provide detailed standards for these areas. It is not even clear if contracting parties are necessarily obliged to act in these areas since the provision simply says that contracting parties ―should‖ act in this area rather than ―shall‖. The provisions of the treaty are also circumscribed by the scope of the treaty. This treaty is aimed at preventing the loss of agro-biodiversity rather than biodiversity in general. One main difference between the idea behind the CBD and the ITPGRFA is that benefit sharing under the ITPGRFA is linked to a specifically defined trigger point for when benefit sharing shall take place. Consequently, benefit sharing is detached from the individual access situation and provider. Also ITPGRFA provides a standardized means by which countries can exercise their sovereign rights to a specific and limited selection of plant genetic resources for specific uses. It also implies a standardized approach to gaining prior informed consent and mutually agreed terms.

Permanent Forum on Indigenous Issues (Permanent Forum)

The Permanent Forum is an advisory body to the Economic and Social Council established by resolution 2000/22 on 28 July 2000. The Forum has the mandate to discuss indigenous issues related to economic and social development, culture, the environment, education, health and human rights. The Permanent Forum was the outcome of a resolution by the Commission of Human Rights in 2000 that was adopted by the Economic and Social Council. The Permanent Forum has a mandate to ―discuss indigenous issues within the mandate of the Council relating to economic and social development, culture, the environment, education, health and human rights‖. One of its specific tasks is ―to promote the integration and coordination of activities relating to indigenous issues within the United Nations system‖. Many indigenous representatives expressed grave concern over bio-piracy and genetic engineering, and called for the protection of genetic resources and a moratorium on bio-prospecting. The protection of traditional

knowledge and indigenous intellectual property was a high priority for indigenous peoples and could be coupled with free, informed and prior consent. The objectives of Permanent Forum are:

- Provide expert advice and recommendations on indigenous issues to the Council, as well as to programs, funds and agencies of the United Nations, through ECOSOC;
- Raise awareness and promote the integration and coordination of activities related to indigenous issues within the UN system;
- Prepare and disseminate information on indigenous issues The Permanent Forum holds annual two- week sessions.

The United Nations University (UNU) Centre on Traditional Knowledge

The UNU TKI aims to promote and strengthen research on traditional knowledge of indigenous and local communities conducted from a global perspective, grounded in local experience. In particular, the Institute seeks to contribute to:

- Change mindsets and paradigms about the role of traditional knowledge in our society and in key sectors such as academia, government and business.
- Increasing the recognition and importance of traditional knowledge.
- Developing the application of traditional knowledge in a broad range of contexts (e.g. ecosystem management and biotechnology).
- Developing strategies for the preservation and maintenance of traditional knowledge.
- Facilitating the development of the capacity of indigenous communities to conserve and apply their knowledge in an increasingly globalized economy.

The UNU TKI will investigate the threats to traditional knowledge, methods to maintain traditional knowledge, and the resilience of traditional knowledge systems. It will also consider the links between conventional and indigenous scientific systems while addressing some of the important questions this raises both in terms of research and capacity development, including:

- Traditional knowledge and climate change
- Traditional knowledge and water management
- Traditional knowledge and biological resources
- Traditional knowledge and marine management
- Traditional knowledge and forestry
- Traditional knowledge and international policy making.

The Traditional Knowledge Initiative was established in 2007 with the generous support of the Christensen Fund, a leading US based foundation active in the areas of cultural and biological diversity. The pilot program is an important step in the process towards the establishment of a permanent UNU TKI.

Key pilot activities include:

- Climate change and indigenous peoples
- A book on the role of traditional knowledge
- Water management and traditional knowledge
- Traditional knowledge Bulletin
- Pacific Islands Programme.

2. Management of biodiversity

In recent years, India is becoming one of the important countries for involving non-governmental initiatives for resource management, environmental and developmental capacity building in order to

achieve sustainable development.

Many government programmes are facilitating linkages between Environ-mental Non-Governmental Organizations (ENGOs) and Developmental Non-governmental Organization (DNGOs) and development decision-making.

This attracted a greater attention after 73rd and 74th amendment to the Indian Constitution, encouraging participatory decision-making and empowerment of the people.

Such organizations respond to social problem fast with more focused approach and often with better success. Several NGOs have been involved in programmes and service delivery for environmental decision-making.

It has been suggested that with the help of the mass media,

traditional knowledge and community education programmes a greater awareness and sensitivity needs to be built in the public and the communities. Such awareness, it is hoped, will contribute to a greater partici-pation by people in programmes and services (Prasad et al., 1999; Siddique, 2001; Phutego and Chanda, 2004, Kunwar and Kachhawah, 2001).

The Indian Forest Act, 1927, The Wildlife Act, 1972, The National Forest Policy, 1988, The Environment Protection Act, 1986 and Biodiversity Act, 2002 provided legal basis for conservation and management. Biodiversity Act, 2002 and Biodiversity Rules, 2004 focus on conservation and sustainable use of components of biodiversity and fair and equitable sharing of benefits.

A National Biodiversity Authority has been set up at Chennai under the Biological Diversity Act, 2002. These Acts initiated establishment of Biodiversity Management Committees (BMC) at local village level. State Biodiversity Boards at state level and a National Biodiversity Authority. Various types of protected areas are included (Government of India, 2007).

Biosphere Reserves:

1. Biosphere reserve has been set up to protect representative ecosystems and also serve as laboratories for evolving alternative models of development.
2. Three biosphere reserves from India are now included in the World Network of Biosphere Reserves. These are Sundarbans (West Bengal), Gulf of Mannar (Tamil Nadu) and Nilgiri (Kerala, Karnataka and Tamil Nadu).

Wetlands, Mangroves and Coral Reefs:

1. For 22 Wetlands Management Action Plans have been prepared.
2. Calimer from Tamil Nadu and East Kolkata from West Bengal have been added to the wetland list of the country.

3. Nineteen sites have already been declared as Ramsar sites of international importance in India.

4. A Directory of Wetlands, covering 2,107 natural and 65,253 man-made wetlands, occupying an area of 4.1 million hectares and information on the status of 183 wetlands of national/international importance, was prepared.

5. Twenty-four wetlands, 35 mangrove and four coral reef areas in the country have been identified by the Government of India for conser-vation and management (Munyati et al., 1999).

National Afforestation and Eco-Development Board:

1. A total of 515 projects in 23 states have been operationalized for treating an area of 0.8 million hectares for the afforestation programme with people‘s involvement for the sustainable management of the country‘s forests.

2. The NAEB has seven regional centres located in universities/national level institutions. During the year, these regional centres have conducted a number of training programmes on Joint Forest Management (JFM), interactive workshop on forestry programmes, micro-planning exercise, etc.

In India, Environmental Impact Assessment (EIA) is emerging as a measure tool for ensuring that environmental quality is fully taken into account in the decision-making processes of any developmental programme (Singh and Parijat, 2001; Singh, 2002). This technique will help the devel-opment planners in to identify environmental impacts and minimize degradation of environment as well.

Geographers may evolve consensus and resolve conflict coming from different interest group. Different stages of environmental assessment, i.e., objectives, scoping, policy alternatives, prediction, significance assessment, evaluation, public participation, plant implementation, mitigation and monitoring will be accurately understood by the geographical communities.

With different domains such as environmental, economic, social,

developmental, structural-functional, institutional, organiza-tional, regional and geo-political, the geography can bridge the gap between physical and social sciences. Under ecological change research, environmental and social approaches should be linked and established for better under-standing of Indian environment (Singh, 2000).

The National Environment Policy, 2006 also focuses to conserve the biodiversity, inter-generational and intra-generational equity, sustainable utili-zation of biodiversity, integration of environmental, social and economic concerns and principles of good environmental governance.

3. Food security of the country and protection of TK

Food security is a measure of the availability of food and individuals' ability to access it. According the United Nations‘ Committee on World Food Security, food security is defined as the means that all people, at all times, have physical, social, and economic access to sufficient, safe, and nutritious food that meets their food preferences and dietary needs for an active and healthy life. The availability of food irrespective of class, gender or region is another one. There is evidence of food security being a concern many thousands of years ago, with central authorities in ancient China and ancient Egypt being known to release food from storage in times of famine. At the 1974 World Food Conference the term "food security" was defined with an emphasis on supply; food security is defined as the "availability at all times of adequate, nourishing, diverse, balanced and moderate world food supplies of basic foodstuffs to sustain a steady expansion of food consumption and to offset fluctuations in production and prices". Later definitions added demand and access issues to the definition. The final report of the 1996 World Food Summit states that food security "exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life."

Household food security exists when all members, at all times, have access to enough food for an active, healthy life.Individuals who are food secure do not live in hunger or fear of starvation. Food

insecurity, on the other hand, is defined by the United States Department of Agriculture (USDA) as a situation of "limited or uncertain availability of nutritionally adequate and safe foods or limited or uncertain ability to acquire acceptable foods in socially acceptable ways". Food security incorporates a measure of resilience to future disruption or unavailability of critical food supply due to various risk factors including droughts, shipping disruptions, fuel shortages, economic instability, and wars. In the years 2011–2013, an estimated 842 million people were suffering from chronic hunger. The Food and Agriculture Organization of the United Nations, or FAO, identified the four pillars of food security as availability, access, utilization, and stability. The United Nations (UN) recognized the Right to Food in the Declaration of Human Rights in 1948, and has since said that it is vital for the enjoyment of all other rights.

The 1996 World Summit on Food Security declared that "food should not be used as an instrument for political and economic pressure". Since multiple different international agreements and mechanisms have been developed to address food security. The main global policy to reduce hunger and poverty is in the Sustainable Development Goals. In particular Goal 2: Zero Hunger sets globally agreed on targets to end hunger, achieve food security and improved nutrition, and promote sustainable agriculture by 2030.

The National Food Security Act 2013 (also 'Right to Food Act')

It is an Act of the Parliament which aims to provide subsidized food grains to approximately two thirds of India's 1.2 billion people. It was signed into law on 12 September 2013, retroactive to 5 July 2013.

The National Food Security Act, 2013 (NFSA 2013) converts into legal entitlements for existing food security programmes of the Government of India. It includes the Midday Meal Scheme, Integrated Child Development Services scheme and the Public Distribution System. Further, the NFSA 2013 recognizes maternity entitlements. The Midday Meal Scheme and the Integrated Child

Development Services Scheme are universal in nature whereas the PDS will reach about two-thirds of the population (75% in rural areas

and 50% in urban areas).

Under the provisions of the bill, beneficiaries of the Public Distribution System (or, PDS) are entitled to 5 kilograms (11 lb) per person per month of cereals at the following prices:

- Rice at ₹3 (4.2¢ US) per kg
- Wheat at ₹2 (2.8¢ US) per kg
- Coarse grains (millet) at ₹1 (1.4¢ US) per kg.

Pregnant women, lactating mothers, and certain categories of children are eligible for daily free cereals.

The bill has been highly controversial. It was introduced into India's

parliament on 22 December 2011, promulgated as a presidential ordinance on 5 July 2013, and enacted into law on 12 September 2013.

Odisha government implemented food security bill in 14 districts from 17 November 2015

Assam government implemented Act on 24 December 2015. Total 67% (rural 75% and urban 50%)