Traditional knowledge and traditional cultural expressions take on a variety of names, amongst them indigenous knowledge, community knowledge, traditional ecological knowledge, local knowledge, folklore, cultural heritage and indigenous heritage. Regardless of the term used, it includes an in-depth knowledge of indigenous peoples on plants, animals and natural phenomena, oral practices of native languages, cultural artefacts, ritual traditions and ceremonies, development and use of appropriate technologies for hunting, fishing, trapping, agriculture and forestry, and, holistic knowledge of natural history.

Traditional knowledge (TK) is a source of great value. The value it brings to the environment is seen through its use in resource management, conservation education, environmental assessment and development planning. New biological and ecological discoveries are obtained through traditional knowledge, which, when investigated, leads to the development of scientific knowledge. This is particularly evident within the biotechnology industry.

The Biotechnology Industry in Malaysia

The vast size of the biotechnology industry in Malaysia is evident through its 2008 revenue of RM10 billion, a figure forecasted to grow to RM20 billion by 2013. With the rise of modern biotechnology, genetic resources have taken on increasing economic, scientific and commercial value. Traditional knowledge associated with these genetic resources has, in effect, attracted widespread attention from a growing audience, a signal of its growing value to the economy.
**Closed system**
A management information system that is restricted to specific users to ensure the protection of data, a decision linked with economic purposes. It consists of primary data.

**Information management**
The collection and management of information from one or more sources and the distribution of that information to one or more audiences.

**IPR**
Intellectual Property Rights is a term referring to a number of distinct types of creations of the mind for which property rights are recognized.

**Open system**
A management information system which serves as a knowledge base and is open to users. It consists of processed data.

---

**Biotechnology Industry Size (Revenue 2008), Malaysia**

<table>
<thead>
<tr>
<th>Industry</th>
<th>Revenue (RM Billion)</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Industrial</td>
<td>RM10 billion</td>
<td>50%</td>
</tr>
<tr>
<td>Agriculture</td>
<td>RM2 billion</td>
<td>10%</td>
</tr>
<tr>
<td>Healthcare</td>
<td>RM8 billion</td>
<td>40%</td>
</tr>
</tbody>
</table>

Estimated: 2013 – RM45 Billion in revenue

**Biotechnology Growth Forecast (RM Billion), Malaysia**

<table>
<thead>
<tr>
<th>Year</th>
<th>Agriculture</th>
<th>Healthcare</th>
<th>Industrial</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>1.5</td>
<td>5.2</td>
<td>3.5</td>
</tr>
<tr>
<td>2009</td>
<td>2.0</td>
<td>6.0</td>
<td>3.5</td>
</tr>
<tr>
<td>2010</td>
<td>2.5</td>
<td>6.5</td>
<td>4.0</td>
</tr>
<tr>
<td>2011</td>
<td>3.0</td>
<td>7.0</td>
<td>4.5</td>
</tr>
<tr>
<td>2012</td>
<td>3.5</td>
<td>7.5</td>
<td>5.0</td>
</tr>
<tr>
<td>2013</td>
<td>4.0</td>
<td>8.0</td>
<td>5.5</td>
</tr>
</tbody>
</table>

**Protecting Traditional Knowledge**

Intellectual property refers to the recognition of property rights over a range of types of creations of the mind. Under intellectual property law, owners are given certain exclusive rights to these creations, such as musical, literary, and artistic works, discoveries and inventions, and words, phrases, symbols, and designs.

**Common Types of Intellectual Property**

**Copyrights**
Protection of both published and unpublished creations.
Trademarks
Protection of words, phrases, symbols, logos, designs, or devices that are used in association with a particular brand or good which distinguishes it from other products within the same industry.

Patents
Protection of inventions.

Trade Secrets
Protection of practices, designs, formulas, processes, recipes, or ideas used by a company that allows it to gain leverage in its industry.

Many changes in Intellectual Property Rights (IPR) have occurred in the 21st century, hastened by modern technology. The protection of intellectual property is no longer seen solely as the granting of rights, but as a means to create a balance in community, culture and social development. One of the most controversial debates at an international level related to IPR is to do with the protection of TK, traditional cultural expressions (TCE) and genetic resources (GR). These resources are important in medicine and health, agriculture and food, trade and development, transfer of technology, as well as for cultural and humanitarian rights. Protecting TK, TCE and GR can prevent immoral activities related to its use, avoid its destruction and loss, avoid exploitation by irresponsible parties, assist in its conservation and preservation, and provide benefits to indigenous and local communities from commercial gain.

Malaysia has responded to the growing issue and expanding value of TK, TCE and GR by recognizing the need for:

- a legal framework for its protection, which includes intellectual property;
- laws on Access and Benefit Sharing;
- a database collection on TK, TCE & GR, to allow for efficient management of information.

Types of Management Information

There are two potential methods to manage information.

1. Open System
This system, which serves as a knowledge base, is open to users. It consists of processed data, and is vital for learning purposes such as research.

The Clearing House Mechanism (CHM) is an example of an open system. It is used to assist policy makers and interested stakeholders to meet obligations under the CBD. Its strategies are wrapped around three major goals:
- the promotion and facilitation of technical and scientific cooperation
- the promotion and facilitation of information exchange among relevant parties (including ministries, government agencies, research institutes, academia, media and business), and
- the establishment of a fully operational mechanism with participation of all.

In Malaysia, the Bio-D Database is maintained as part of the CBD National Clearing House Mechanism. This database has links to more than 100 web locations, membership particulars and relevant documents of multilateral environmental agreements (MEAs), environmental policy documents and relevant legislation, data on implementing agencies, national focal points, research institutes, universities and NGOs, biodiversity, and environment-related publications. Other data are on experts, habitats and ecosystems, and threat assessment and conservation statuses.

### Conceptual Framework of the Malaysian CHM

*Source: Development of Malaysia’s Biodiversity Clearing House Mechanism, Presentation by Dr. Gary Theseira*

The Bio-D Database is in line with Malaysia’s National Biodiversity Strategies and Action Plans (NBSAP), which aim to transform Malaysia into a center of excellence for conservation, research and sustainable use of tropical biodiversity by the year 2020. A comprehensive database supports efforts to develop additional sectoral policies and laws governing biodiversity by providing access to a significant amount of data required to allow decision-making on important matters such as increasing the number of existing Virgin Jungle Reserves and implementing the National Policy for Integrated Coastal Zone Management.

### Challenges and Opportunities of the Bio-D Database

#### Challenges
- data fragmentation (data scattered across research institutes, universities, government agencies and NGOs)
- different administrative systems (causing a lack of coordination by, and between federal, state and local governments)
One example is the Traditional Knowledge Digital Library (TKDL). Under this system, data is protected to allow for patents, bio-industry development and promotion, and policy and strategy formulation. A pilot project named MyTKDL was launched on 23 April 2009 as a result of collaboration between the State of Sabah, Department of Orang Asli Affairs Malaysia, UKM Institute for Environment and Development, and Intellectual Property Corporation of Malaysia (MyIPO). MyTKDL serves to avoid the total degradation and loss of traditional knowledge and information, avoid the exploitation and misuse of related information, stimulate innovation based on available knowledge, and ensure equitable benefit sharing.

2. Closed System

This system is restricted to specific users to ensure the protection of data, a decision linked with economic purposes. It consists of primary data.

One example is the Traditional Knowledge Digital Library (TKDL). Under this system, data is protected to allow for patents, bio-industry development and promotion, and policy and strategy formulation. A pilot project named MyTKDL was launched on 23 April 2009 as a result of collaboration between the State of Sabah, Department of Orang Asli Affairs Malaysia, UKM Institute for Environment and Development, and Intellectual Property Corporation of Malaysia (MyIPO). MyTKDL serves to avoid the total degradation and loss of traditional knowledge and information, avoid the exploitation and misuse of related information, stimulate innovation based on available knowledge, and ensure equitable benefit sharing.

Database Networks in Sabah

Initiatives to collect biocultural data in Sabah have been conducted by Sabah Museum and Sabah Forestry Department.

Biocultural Database of the Sabah Museum

Sabah Museum’s database is focused on ethnobotany, the study of the inter-relationship between people and plants, people’s classification, management and sustainable use of the plant kingdom. At least 1,835 species of ethnobotanical importance have been documented in Sabah, one of the world’s 12 mega-biodiversity hot spots. Ethnobotany documentation is based on the traditional knowledge of more than 30 indigenous ethnic communities of Sabah.

Ethnobotanical documentation is based on the Traditional Indigenous Knowledge of these indigenous ethnic communities of Sabah and their cosmology.
A Biodiversity Information Management System for Sabah

The Sabah Biodiversity Enactment 2000 (SBE 2000) insists on an effective information management system. This is to enable the Sabah Biodiversity Council to advise the State Government on matters relating to the conservation and sustainable use of biological resources which arms the government with the means to consider, formulate and review State policy with regard to biotechnology and application of biotechnology. To ensure the effectiveness of a management system, plans of the Sabah Biodiversity Centre (SaBC), who acts on behalf of the Council, include:

- Conducting institutional audit on organizations, villages, communities and individuals;
- Identifying issues at an organizational level that need to be addressed, which may include strategic direction, capacity building of personnel, awareness, financial, and technology;
• Identifying issues at a system (inter-organizational) level that need to be addressed, which may include policy, strategy, conflicting vision/mission, individualism, motivation/incentives, awareness, network failure, and financial.

The potential for applications of traditional knowledge in the future is immense. Traditional knowledge is either currently, or has the potential to be, applied (and then expanded), in education, agroforestry, biotechnology, sustainable environmental and resource management, medical sciences, health care, eco-tourism, community/social forestry, environmental conservation education, intellectual property, and TEK digital automation. This potential highlights the need for solid management of biodiversity information which includes, as stated in Article 9(1)(a) of the SBE 2000...... ‘the status, magnitude, distribution, usage and value of the biodiversity in the State’. Solid management of biodiversity supports, amongst others, management decisions aimed at ensuring the sustainable management of biodiversity, regulating access to biological resources (therefore protecting rights to traditional knowledge), and promoting the utilization of biological resources through biotechnology activities.

Suggested Reading


Managing Traditional Knowledge Information

How does information on TK contribute to Biotechnology Promotion in Sabah?

[Source: Biodiversity Information Management System from SaBC’s Perspective, Presentation by Dr. Abdul Fatah Amir]

The project Traditional Ecological Knowledge in Sabah: A Consolidation of Issues and Experiences related to Biodiversity Conservation and Sustainable Resource Management (Jan 2009 – July 2010) is a collaboration between the Global Diversity Foundation (GDF), and the Bornean Biodiversity and Ecosystems Conservation Phase Two Programme (BBEC II), and is funded by the Japan International Cooperation Agency (JICA). The project contributes towards the implementation of the Convention on Biological Diversity (CBD) in Sabah, and Malaysia in general.

~ Component One ~

The Learning Platform for Biocultural Diversity and Conservation is the first component of this collaborative project. Over 18 months, the Learning Platform has delivered a series of workshops and seminars aimed at broadening our understanding of the issues and recent developments concerning traditional ecological knowledge. This exchange of information and sharing of expertise allowed for the strengthening of capacity of conservation agencies, local communities and civil society organizations to address Access and Benefit Sharing issues in Sabah.

~ Component Two ~

The second component focused on the Identification of Potential Indigenous Peoples’ and Community Conserved Areas (ICCAs) in Sabah. We conducted a state-wide review to explore, assess the status, and identify measures to recognize and support community conservation in Sabah. Recently included in the IUCN Guidelines on Categories of Protected Areas, ICCAs uphold indigenous peoples’ rights to their lands and resources as enshrined in the UN Declaration on the Rights of Indigenous Peoples, to which Malaysia is a signatory.

This briefing note was edited, compiled and designed by Marina Aman Sham