Governance and Micropolitics of Traditional Knowledge, Biodiversity and Intellectual Property in Thailand.

Final Research Report

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Abbreviations and Acronyms

ABS	Access and benefit sharing
ARCBC	ASEAN Regional Centre for Biodiversity Conservation
ASEAN	Association of South East Asian Nations
BRT	Biodiversity Research and Training Program, Thailand
CBD	Convention on Biological Diversity
CFB	Community Forests Bill, Thailand
CGIAR	Consultative Group on International Agricultural Research
DIP	Department of Intellectual Property, Thailand
DoA	Department of Agriculture, Thailand
DOO	Disclosure of origin requirement
DPH	Department of Public Health, Thailand
FAO	Food and Agriculture Organisation
FL	Folklore
FTA	Free trade agreement
GRs	Genetic resources
GSP	Generalised System of Preferences
HYVs	High yielding varieties
IARC	International Agricultural Research Centres
IP	Intellectual property
IPRs	Intellectual property rights
IRRI	International Rice Research Institute
ITPGR	International Treaty on Plant Genetic Resources for Food and Agriculture
IUPGR	International Undertaking on Plant Genetic Resources for Food and Agriculture
MTA	Material transfer agreement
NHRC	National Human Rights Commission of Thailand
NGO	Non-government organisation
OTOP	One Tambon, One Product initiative, Thailand
PBRs	Plant breeders rights
PCT	Patent Cooperation Treaty
PIC	Prior informed consent
PVP	Plant Variety Protection
RFD	Royal Forests Department, Thailand
TAO	Tambon Administration Office
TDRI	Thailand Development Research Institute
TFCA	Tropical Forests Conservation Act, United States
TK	Traditional knowledge
TTMI Act	Act on Protection and Promotion of Thai Traditional Medicinal Intelligence
TRIPS	Agreement on Trade Related Aspects of Intellectual Property Rights
UPOV	International Union for the Protection of New Varieties of Plants
USTR	United States Trade Representative
WIPO	World Intellectual Property Organisation
WTO	World Trade Organisation

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Dedication

This paper is dedicated to those many individuals and communities in Thailand who, despite an array of disruptive forces, persist with local practices that contribute to the conservation and continued use of genetic resources, including local plant varieties, medicinal herbs, and crops for their own utilitarian purposes, broader benefits to mankind and for ecological integrity.

Executive Summary (Thai translation pending)

Concerns and debates about the intellectual property, biodiversity (genetic resources) and traditional knowledge (TK) nexus are complicated by competing knowledge systems. On the one hand there is the pursuit of a technical, scientific and legal system of knowledge control which allocates exclusionary rights. This system essentially fractures, and proprietises knowledge as well as aspects of biodiversity such that they can be integrated into the market. On the other hand there are more holistic systems of knowledge which incorporate custom, ritual, agricultural, ecological and medicinal utilisation of biodiversity existing in local environments and conditions. These two systems would appear to be incongruous; however various stakeholders have been working on finding a middle ground such that there are benefits arising from research for both local knowledge holders and society more broadly, and such that the culture of local knowledge holders is respected.

In Thailand mechanisms of control including Constitutional provisions, various legislative acts and organic laws, as well as continuing customary practice have sought to balance competing desires for economic development as well as for the maintenance of more holistic local practice which integrates custom, ritual and subsistence in local environments. Furthermore this compromise has been found through open and democratic processes, through 'ground-up' initiatives and by broad cooperation between seemingly disparate groups. The effectiveness of these laws however relies upon having appropriate and practical means for their implementation, as well as the political will to engage with *all* the stakeholders involved. This has been the primary stumbling block in Thailand, with prolonged debate about the precise nature of the problems that need to be addressed (e.g. how 'biopiracy' threatens various groups in Thailand), how they should be managed and how stakeholders can be adequately involved.

In many international forums solutions have often been sought to these polemics through expansions and exceptions to the techno-legal knowledge systems espoused by epistemic communities of intellectual property and trade lawyers with little or no local experience or expertise in areas where the contrasting holistic knowledge system is practiced. In other words technical amendments to the international patent system, such as a disclosure requirement – whilst perceived as necessary for stopping biopiracy – are only targeting one small part of the complex array of problems at hand. The effectiveness of such provisions is also still under debate internationally.

On the other hand local communities, which act as custodians of biodiversity and associated traditional knowledge, remain reliant upon academics, NGOs, government and activists to disseminate information about the potential effects of biopiracy episodes, and the imposition of external obligations such as those being negotiated in the Thai-US FTA. Through close discussions between such actors and communities, appropriate consultations and control mechanisms can be found that suit Thailand's level of development, and balance against the possibility of inappropriate external political influences. Currently, there is considerable government – civil society interaction. Regarding participation for local communities and TK custodians, government bodies have only made superficial attempts. In order to *respect* traditional knowledge holders, such groups need to be *consulted* on matters of research access, *informed* of the potential effects of the dissemination of TK and related biological resources (especially when commercialised), and given a *right to refuse access* or place *appropriate terms* on the access, should they deem it to be detrimental to their customs and lifestyles. The importance of such a mechanism for prior informed consent (PIC) should not

be understated. The principle of PIC, for it to be something more than a superficial obligation, should apply to both national jurisdictions and local communities (in a two-tier mechanism of consent application). On-the–ground practicalities for PIC (such as the often broad distribution of genetic resources and associated knowledge) have however limited progress on development of national and international consent mechanisms. A model guideline for PIC has been included in the Appendix for consideration and possible implementation into Ministerial Regulations or as appropriate. The guidelines could supplement a requirement for the disclosure of the source of origin of biological resources and associated TK. Local actions such as the facilitation of meetings to inform local groups of their rights of PIC, as well as a possible handbook could assist this practically. The provision of information to local groups is a crucial element in the exercise of a right of PIC. Ongoing work will be made in this regard.

Of further relevance to policy-makers, this study suggests that due to the aforementioned different knowledge systems and prevailing discourses on TK, as well as differences in the situatedness of such fora within their associated worldviews, the *promotion* of traditional knowledge has been sidestepped. In other words facilitated access to genetic resources is driving much of the agenda on international and national levels. Facilitating access to genetic resources no doubt has beneficial aspects to the advancement of science and technology. However 'access'' twin principle of benefit sharing (often narrowly thought of as profit sharing), while necessary, is perhaps wrongly looked towards as a protective mechanism for biodiversity and traditional knowledge. Whilst benefit sharing may in theory be important for the compensation of the custodians of local ecosystems and associated genetic resources; in practice it is not clear how it may provide for the promotion or protection of traditional knowledge. There are a number of means which may be more appropriate than profit sharing, including the transfer of appropriate technologies, training and education, and the establishment or support of networks of traditional healers/agriculturalists. As a further note, the use of intellectual property (such as geographical indications) and disclosure of the source and country of origin as a patent requirement may protect traditional knowledge from 'biopiracy' or related unethical proprietary acts, but these both do not promote the dynamism of local practice where traditional knowledge is embodied and situated in local social, cultural, religious, and environmental conditions. It should be noted that the scope of such mechanisms would be limited if such local practice was lost altogether. All that would remain would be static records of traditional knowledge in databases and genetic resources isolated in genebanks and herbariums.

In Thailand the primary laws of relevance are the Plant Variety Protection Act and the Act on the Protection and Promotion of Thai Traditional Medicinal Intelligence. These two Acts have notable access and benefit sharing mechanisms, (limited) means for prior informed consent, and relate to other policies and actions being taken to protect traditional knowledge and genetic resources. The normalisation of these activities has a long road ahead yet, and the Acts are currently just being implemented in stages. The Constitution of the Kingdom of Thailand provides for the rights of communities to continue their traditional practices including natural resource management. However this right is not easily applied and communities have had to continue to struggle to assert their rights to utilise their local environments as they have for generations. Over more than a decade, the Community Forests Bill has been pursued by these communities, NGOs, academics, a few sympathetic members of the bureaucracy and politicians. It is often suggested that more than 50,000 people were involved in its drafting. This unique bill represents an opportunity to balance traditional utilisation and custodianship of local environments, with broader conservationist ambitions. The Bill could be the first step towards securing broader community rights, however the

passing of the Bill has suffered from polemics over a range of issues, at the core of which is a question of State-minority power relations, different perceptions of how biodiversity should be conserved and consequently a lack of political will to 'de-centralise' forest management.

The Thai-US Free Trade Agreement (FTA) currently under negotiation represents a considerable threat to the progress made and could undermine the democratic processes and cooperation that has occurred to date. Essentially, participative processes were removed from the Thai public when the current Thai Government signed a confidentiality agreement on the FTA negotiations with the US. Past bilateral FTAs sought by the US have established a template for such negotiations, one consistent factor of which is the pursuit of higher standards of patent and/or plant variety protection than that required of WTO member states by the TRIPS Agreement. This is indicative that the outcome of the FTA could go against the wishes of the broader Thai public and may have considerable effects on economic development, science and technology, Thai society, and most pertinent to this study, on biodiversity and traditional knowledge. Although the consequences are unclear, if Thailand were forced to remove patent exemptions on life forms under the FTA, it is evident that many Thai's would view this as an action that could accelerate biopiracy. It could also make the Acts that have been developed either partially or completely redundant. On the other hand, the FTA represents an opportunity for Thailand to attempt to convince the US to implement requirements such as disclosure, PIC and ABS to their patent laws or other respective (eg biodiversity) laws. This however seems unlikely given the stance the US has taken in recent FTAs. The political and economic bargaining power, and even the negotiating terms of the FTA are clearly in the US' favour. Thailand is currently the only country pushing for such provisions in the bilateral arena.

Further, it has been demonstrated by numerous authors that the actions of the US Trade Representative have increasingly been subject to the will of large corporate interests. Such actors have successfully manipulated official policy discourse to enrol the USTR and consequently other countries to their standards. It is important to recognise that these corporate interests are the ones driving the recent FTA negotiations, and Thailand needs to decide if it wishes to compromise its own sovereign state laws to their interests.

1. INTRODUCTION

The links between intellectual property (IP), traditional knowledge (TK) and biodiversity have drawn increasing attention across the globe from a variety of stakeholders and concerned groups. Ecological concerns over the loss of biodiversity, concerns over the loss of plant genetic resources that represent the basis of the world's food and medicines, rapid advances in science and technology, and the emergence of an increasingly 'global' knowledge based economy, have become rapidly intertwined in international law and politics.

Thus four key areas of change have been debated in recent decades with escalating intensity. They can be identified as:

- Biodiversity loss;
- Adequate supply of food and medicines;
- Developments in science and technology;
- The allocation of rights to all of the above.

The protection of traditional knowledge of local and indigenous peoples holds a precarious position amidst these four areas. Because these people are often the caretakers of a vast array of traditional agricultural varieties and medicines, and areas of high biodiversity, increasing international attention has been drawn to their role. However, these local and indigenous people are often subject to extremes of poverty and debt, health issues, cultural suppression, and political marginalisation. Attempting to reconcile threats to these people, their culture and their knowledge with the changing politico-legal environment is central to this research.

There have been numerous comments on the broad geopolitical divide between the global North and South relating to IP, biodiversity and TK (see recently Laird, 2002; and Ong, 2005). Whilst this is a very real phenomenon, there also exists a much more nuanced and complex underlying politics between local and global scales. The raising of minimum standards and the harmonisation of intellectual property is often described in terms of a globalisation 'from above' posited with the international organisations of the WTO and WIPO, and the most powerful states dominating the weakest. This type of depiction of the distribution of power assumes that it is diffused from a somewhat mysterious powerful source, whether it is a function of capital, military or political strength. It is the intention of this research to dispel such a depiction for a translational model of power whereby power is controlled by networks of actors. The most legitimate and dominant discourses and knowledge systems are those that are able to enrol the most people and thus to hold the sway of power. This model thus does not rely upon opposition and resistance, but rather parallel dialogues that compete for attention. The geographical concern of this study is thus to analyse the distribution of power from local to global through networks of actors and their discourses.

The theoretical influence for this report thus comes from Michel Foucault's theories and discussions of 'governmentality', which emphasises the importance of analytical micro-politics between different actors and organisations in investigations of how power is manipulated and negotiated. The study also utilises the closely related writings of Bruno Latour, in describing a translational model of power, whereby it is envisaged that power is translated between different actors by 'enrolling' them to particular discourses, actions, arguments and ideas. This study therefore examines the discourses and knowledge systems of actors and organisations, the processes by which they are enrolled, as part of the overview of

policy and law in this study. The ultimate intention is to illustrate the often fluid 'location' of power in these debates.

Developing countries are internally (and externally) negotiating their ambitions for protection of biological resources, development of science and technology in agriculture and medicine, and the protection of traditional knowledge and culture of indigenous and local groups. The compatibility of these ambitions is highly debatable, yet several developing countries have been able to draft legislation that represents an approximate compromise. The greatest difficulty in making these compromises is that the compatibility of different knowledge systems must be bridged. The adoption of complex western techno-legal knowledge systems should be balanced with the also complex knowledge systems of traditional communities.

This study analyses the discourse and power relations arising from international forums and pressures, those surrounding pertinent pieces of legislation in Thailand, as well as the customary laws of local and indigenous groups. Each discourse is highly situated in the knowledge system championed by the actors or organizations involved and their 'local' contexts. The international arena has been dominated by developed country interests, and is negotiated in terms of their techno-legal knowledge system. But in Thailand a complex array of considerations are being negotiated to satisfy the disparate array of interests, from those of local communities and farmers, to large industry and general economic development. Thus there is not a simple transfer of international obligations onto Thailand, and conversely there is often a poor understanding of the numerous local situations in such international fora. The Thai authorities have had to find the appropriate compromise in the middle and this paper explores elements of this 'micro-political' (i.e. small-scale) process and progress.

What is Traditional Knowledge?

The traditional knowledge of indigenous and local communities has been studied by anthropologists and related researchers for an indeterminate amount of time. The ethical, legal, proprietal and practical treatment of such knowledge, however has taken on a different light in recent years. Historically, medicinal herbs, plant varieties, local conservation techniques, crop protection mechanisms and other items of local knowledge and resources have been expropriated by outsiders for their own benefits. During the past 10 years the intellectual property (predominantly the patent) system became 'globalised' by international agreements and a boom in biotechnological inventions arrived. Companies began to seek patent protection over such inventions, and the IP system expanded to provide a means for biotechnologists and their companies to obtain compensation for their inventions. The patents on some inventions however came to be challenged on the grounds that they improperly or unethically utilised the knowledge or resources of developing countries, and indigenous or local communities. A discourse of 'biopiracy' was developed by certain key individuals and ever since 'traditional knowledge' has entered new fora and discussions. A crucial distinction thus is in the discourse of traditional knowledge that is industrially useful (i.e. that which is discussed by the epistemic IP community) and the extensive array of TK that is not, but remains an important part of their daily subsistence, lifestyles and local economies.

In light of these emerging discussions and discourses there is no one universally accepted definition of 'traditional knowledge' and it is a term that takes on many meanings for different people. There are however, some generally accepted concepts associated with discussions on TK. The following provides some general criteria based on the collective

understandings of the term made in international fora, based on comments by the leading experts and academics and direct research experience. This is not necessarily a finite definition however.

Traditional knowledge is widely understood as:

- Knowledge developed over time;
- Transmitted generation to generation;
- Typically, transmitted orally;
- Typically, collectively held and owned;
- Typically of a practical nature, and relating to natural resources (as has been defined in intellectual property circles, otherwise it falls under folklore or cultural expression);
- Is dynamic and evolving with environmental and external influences;
- Often involves elements of innovation and experimentation;
- Typically is imbedded in specific environmental settings;
- Is imbedded in customs, language, local practices and cultural heritage;
- When removed from its local cultural or environmental setting may still exist in memory, but becomes less 'traditional';
- Often taking the form of stories, songs, folklore, proverbs, cultural values, beliefs, rituals, community laws, local language, and agricultural practices; and
- Having a holistic aspect.[1]

Furthermore, traditional knowledge[2] has been broadly recognised for playing the following important roles:

1. For sustaining or improving the livelihoods of a vast array of local communities,
2. As part of the sustainable use and conservation of the environment,
3. For experimentation and provision of innovations that can be used to benefit society more broadly,
4. For its benefits to national economies.

How is TK Protection Discursively Framed?

If new to the debate on the legal treatment of traditional knowledge, then one might assume that 'TK protection' would entail a broad range of means for which traditional knowledge holders may continue to pursue these roles. This is not necessarily the case. The primary reason that countries have sought to protect traditional knowledge to date has been to stop 'biopiracy'. This term is applied broadly to refer to the use of biological resources and/or associated traditional knowledge (typically from developing countries or from indigenous communities) without adequate authorisation, and/or to patents which utilise such knowledge or resources without adequate compensation or recognition. As Dutfield notes, it is not always clear who the victims are, how they are victims, or even if there are any victims in some

[1] This definition draws upon the discourses of the CBD Secretariat (8(j) Working Group), the WIPO Secretariat (Traditional Knowledge Division), and discussions of traditional knowledge by Dutfield (2004), Posey and Dutfield (1996), Gibson (2004) and local experiences and observations made by the author from several field trips in three of the regions of Thailand.

[2] Reference to 'traditional knowledge' throughout this paper generally refers to the traditional biodiversity-related knowledge of indigenous and local communities, including traditional agricultural, medicinal and ecological knowledge. Cultural expressions and folklore are beyond the scope of the paper unless specifically mentioned.

cases[3], particularly where a resources is widely distributed and traditional knowledge applications are widely applied.[4] This is not to play down the concerns of indigenous and local communities and indeed there have been numerous cases where extensive public outcry has occurred at the potential moral and economic implications of biopiracy. Rather it is important to note that there is considerable variance between 'biopiracy' episodes from very blatant cases of misappropriation under unnecessarily broad patents, to more subtle cases where TK/biological resources are used in the chain of invention without adequate recognition, consent or benefit sharing. In not all cases will groups be excluded from such inventions either, as is often misconceived. Often patents on derivatives or extracts from herbs or plants, or methodological process patents are incorrectly reported as having exclusive effects that will impact local communities. The 'biopiracy episodes and misappropriations' section will cover these aspects in more detail.

A curious result arising from the broad attention that biopiracy cases received was that TK and biological resources came to be recognised as having enormous value. The developing world, where the world's biological wealth is predominantly located, has since taken up the biopiracy discourse as these countries realise the potential to capitalise on such resources and knowledge and thus the importance of protecting it from potential misappropriation. However this drive for protection essentially focuses on the last two roles of TK. In essence, TK and genetic resources (GRs) 'protection' has taken on the meaning of 'protection from biopiracy'. A disclosure requirement has emerged as the primary potential mechanism for TK and GRs protection. Access and Benefit Sharing (ABS) measures are being developed as a compensatory tool and Prior Informed Consent (PIC) has been developed as a principle for the *respect* of TK holders. Means for *promotion* of TK for the maintenance of livelihoods and for conservation/sustainable use of the environment has had a harder time finding adequate policy space. In the case of Thailand, these are perhaps best tackled at the national and local level, but are likely to need various forms of international pressure and support.

Predominantly, the framing of TK protection has taken place in the discourse of western trade-related intellectual property rights, gaining a high profile in trade and IP fora. As Tobin notes, there has also been a tendency to focus on developing mechanisms to control the scientific and commercial use of TK (facilitated access), with the apparent aim of enabling indigenous and local communities to capture the anticipated benefits of the commercialization of TK.[5] It appears that this is largely driven by national governments, in many cases without broader recognition for the need to promote TK's other roles and benefits. It is important to highlight the limited scope of such a mechanism given the array of threats that are posed to TK. While the current focus is important for the exchange of technology and for the reduction of biopiracy, it does not necessarily engage the issues that directly and immediately threaten host communities and the continuity of their culture. As Gibson has suggested, 'there is likely a fundamental difference between the object of protection that is understood in conventional legal discourse, and that sought by traditional and indigenous groups'.[6] Conserving the method of knowledge creation must be more directly addressed in order to support the first

[3] See for example the case of the blight resistant rice strain *Oryza longistaminata* in Mali,.
[4] Dutfield, G. (2004) *Intellectual Property, Biogenetic Resources and Traditional Knowledge*, Earthscan, London.
[5] See Tobin, B. (Undated) Customary law as the basis for Prior Informed Consent of local and indigenous communities. UNU-IAS, Tokyo, available at http://www.ias.unu.edu
[6] Gibson, J. (2004) *Traditional Knowledge and the International Context for Protection*. Script-ed paper. Available at: http://www.ccls.edu/staff/gibson.html

two roles of TK aforementioned, not just the tangible object or a documented version of the knowledge.

This report is based on an analysis of the policy space surrounding the biodiversity/traditional knowledge/intellectual property nexus that has emerged in Thailand. The Thai government has been pursuing mechanisms for the protection of TK and biological resources from biopiracy, but it has also been pursuing some mechanisms for the promotion of community rights and continued local practices linked to TK. Whilst it is considered pertinent that protection from biopiracy should be enforced internationally, addressing the continuation of the local culture of custodian communities in Thailand is also occurring through some national and local initiatives.

Structure of this report

This report first outlines the international developments, pressures, agreements and fora relevant to the intellectual property, traditional knowledge and biodiversity nexus. Second, the national politico-legal regime, that has developed in Thailand will be analysed along with research conditions and biopiracy episodes (both potential and actual). Third, a detailed analysis is provided of the concerns and micro-politics at the local level based on interviews, grass root network discourses and field research.

2. INTERNATIONAL DEVELOPMENTS, AGREEMENTS AND FORA

The relationship between intellectual property, traditional knowledge and plant genetic resources has become politicised as these resources rapidly disappear, their perceived value increases, and the culture of those that have acted as custodians are threatened. In response to the ongoing politicisation, there is a growing body of international law that seeks to clarify the legal uncertainties, but in practice only seems to exacerbate them (Dutfield, 2004). Table 1 provides a summary of international laws relevant to the governance of intellectual property rights (IPRs), TK and genetic resources with details of their most pertinent elements.

This section provides an approximately chronological review of proceedings in recent years, in the international arena, that are of importance to Thailand, and critically analyses the dominant discourses.

Table 1: Chronology of International Laws on intellectual property rights, traditional knowledge and genetic resources.

International Law	Year Drafted	Details
International Convention for the Protection of New Varieties of Plants (UPOV)	1961, revised 1969, 1978 and 1991	- UPOV is essentially designed for protection of new plant varieties for commercialisation. The most recent version has been criticised for limiting farmer's rights.
International Undertaking on Plant Genetic Resources for Food and Agriculture (IUPGR)	1980	- Non-binding, but has rhetorical importance for the consideration of germplasm as the 'common heritage of mankind'.
Convention on Biological Diversity (CBD)	1992	- Established principles of: access and benefit sharing, prior informed consent, national sovereignty over natural resources, sustainable use.
Trade Related Aspects of Intellectual Property Rights (TRIPS) Agreement	1995	- Recognises exclusive rights over genetic resources. - Members must allow patenting of genetic resources or implement a *sui generis* system of plant variety protection. - Raises minimum standards, eg minimum patent term is 20 years.
Patent Law Treaty (and Patent Cooperation Treaty (PCT)) WIPO	2000 (and 1970 (amended 1984)	- Although the Patent Law Treaty and PCT are not specific to GRs and TK, they work to 'harmonise' patent standards worldwide. At the same time WIPO holds a forum on TK and GRs, however WIPO have resisted inclusion of elements of disclosure of origin of inventions in the PCT.
International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGR)	2001	- The ITPGR includes recognition of farmer's rights, and sets up a standardised material transfer agreement for accessing plant genetic resources.

2.1 Historical Developments

Only in recent years has the ownership of germplasm become problematic and highly politicised. This section attempts to provide some historical background of the evolution of control over plant genetic resources and biodiversity, particularly pertaining to agriculture.

Hamilton provides a good summary of the way biological materials in agriculture were treated some 50 years ago, prior to developments in biotechnology and subsequent strengthening and 'harmonisation' of intellectual property rights:

There was no distinction between tangible and intellectual property, and you owned what you bought or bartered or produced or were given.

Farmers were breeders. They produced new genotypes by combining old ones from various sources – the market place, their own fields, their neighbours, or, ultimately, wild species; and they selected, grew and marketed the best genotypes.

When farmers sold seed to neighbouring farmers or in the market place, they sold at the best market price and sold the seed along with all rights to use the seed. If the neighbour used their seed to breed an even better genotype and make more profit, they didn't claim a share of the neighbour's profit.

Living things that had not been bought, bartered or produced by people – i.e. all wildlife, animals and plants and microbes – were not considered the property of anyone.

The result: unrestricted germplasm exchange, hybridization and selection, with literally millions of "breeders" each selecting for adaptation to a different environment and with different perceptions of the kind of product they wanted. This generated an unprecedented incredible new range of domesticated biodiversity. Genetic variation within species of domesticated plants and animals far exceeds that within wild species. The enormous range of domesticated biodiversity is part of what stunned Charles Darwin into working out his theory of evolution. Hamilton, R.S. (IRRI Website, Acc 17/6/2005)

Effectively farmers researched, developed and domesticated a diverse array of plant varieties that contained a vast range of genetic variation. Seeds were shared with friends and other farmers in the interest of developing more varieties and in the hope of finding new adaptations to environmental conditions that may produce higher yields or better quality grains. Scientists and western plant breeders recognised this and sought to collect as much of this crop germplasm with the intent of developing such varieties using modern technologies. Not only did they find agricultural varieties with unique and important qualities for plant breeding, they also gathered herbs and wild plants with medicinal qualities from community healers and shamans, realising the potential these could have in modern pharmaceuticals or cosmetics.

During the late 1960s, through the 1970s advances in plant breeding saw the development of a range of new advanced varieties including hybrids or 'high yielding varieties' (HYVs). These varieties were widely promoted by the Food and Agriculture Organisation (FAO) and Consultative Group on International Agricultural Research (CGIAR) Institutes to achieve a higher agricultural productive output to feed an ever expanding global population and assist in the reduction of existing hunger. Furthermore these were promoted by the Bretton Woods Institutes as part of finance, aid and development packages. It was widely perceived that the only way to achieve goals of hunger and malnutrition reduction was through new agricultural technologies that increased yield, and were supposed to supplement deficient vitamin or calorie intake that is associated with malnutrition and an array of diseases. Since that time many activists and academics have been critical of the way agriculture became rapidly

institutionalised in many developing countries, of the loss of agricultural biodiversity, the environmental impacts of increased chemical fertiliser, pesticide use and loss of agricultural biodiversity, and of lower yields than expected related to the adaptability of the HYVs to different biophysical conditions.

Consequently this 'Green Revolution' saw the spread of these advanced varieties dominate agriculture at the expense of traditional varieties and crop diversity. The conversion of these environments into genetically uniform tracts of land with high chemical inputs meant the extinction of many traditional varieties and the surrounding biodiversity that supported them ecologically. Realising this threat, scientists continued to collect as many of these varieties as possible for *ex situ* storage in genebanks. This set in motion a chain of events, the first of which was the establishment of the CGIAR.

2.2 The Consultative Group on International Agricultural Research (CGIAR)

The CGIAR was established in 1971 and acted as a catalyst for the Green Revolution. The CGIAR is the umbrella body for sixteen International Agricultural Research Centres (IARC), each with their own governing body. The major sponsors are the FAO, the World Bank, the Rockefeller and Ford Foundations, the United Nations Development Programme, the United Nations Environment Programme and the aid programmes of the EU and a number of individual countries. With a budget of some US$340 million per annum, the CGIAR oversees the largest agricultural research effort focusing on crops and materials of interest to the developing world (Blakeney, M. 2002). In addition to conducting research, the CGIAR supports a collection of germplasm which currently comprises over 600 000 accessions of more than 3000 crop, forage and pasture species which are held at the research centres (CGIAR Website Acc 1/7/2005).

Although intended initially for developing countries, much of the research undertaken by the CGIAR, as well as the raw germplasm has been of considerable interest to biotechnology and life science companies in the north that may utilise what already exists in the CGIAR for their own research and development. With increasing northern research utilising the research and germplasm of the CGIAR, came the desire to protect the result of such research using the IP system, primarily in the form of patents and plant variety protection. Blakeney (2002) indicates that a commercial consequence of the intrusion of IP into agricultural research has been the concentration of key IP rights in the hands of a small and declining number of private life-science companies. A result of this market concentration is to lock up key intellectual property rights in the hands of a few powerful entities and to raise the barriers to market entry of others wishing to participate in these activities. Thus by the end of 1998, the top five vegetable seed companies controlled 75 per cent of the global vegetable seed market (Blakeney, 2002). This raises serious questions about the future effects to public sector plant breeding, and for small start-up plant breeders, particularly those in developing countries. It seems that control of R&D will increasingly move away from the public sector and from smaller enterprises.

The allocation of IP rights of patent and plant variety protection over material originating from the CGIAR institutes has proven to be extremely controversial. Furthermore the research conducted by such bodies have often also used the knowledge of indigenous or local peoples over specific traits relating to plant varieties to 'short-cut' the many steps involved in the chain of invention resulting in commercially viable products. Swanson and Hoschl (2000:82)

provide a good illustration of the linear process of utilisation of material, inputs of knowledge, and allocation of rights that typically occurs in the process of breeding new plant varieties.

Where there is no consent obtained and where knowledge or material is used without appropriate consultation these practices have become commonly known as 'biopiracy' by many NGOs and developing countries. Research by the high-profile NGO Rural Advancement Foundation International (RAFI, now known as the ETC Group), furthered by activists and academics such as Vandana Shiva have uncovered many such cases whereby genetic materials and traditional knowledge have been improperly obtained and/or subjected to IPRs without adequate consent, recognition or compensation. Table 2 provides examples of several important cases of biopiracy. Cases of biopiracy relating to Thailand's genetic resources and traditional knowledge have been outlined in Section 3.4.

Table 2: Example Cases of Biopiracy

Biopiracy Case	**Brief Details**
The 1998 Australian 'biopiracy' episode	Application for plant breeders rights by Australian government agricultural agencies to CGIAR accessed chick pea varieties grown by subsistence farmers in India and Iran.
Blight resistant rice.	A blight resistant strain of rice called *Oryza longistaminata* was taken to IRRI where the resistant gene was identified. The researcher who identified the gene then filed for a US patent on the gene which was granted. This proved to be quite controversial. The university where the researcher was also based, UC Davis, consequently set up a benefit sharing arrangement.
Enola beans	A US patent was granted to an individual called Larry Proctor of a company called POD-NERS for an invention relating to "a new field bean variety that produces distinctly coloured yellow seed which remain relatively unchanged by season." The company is then believed to have written to all the importers of Mexican beans in the US, requiring royalty payments. POD-NERS has reportedly also brought infringement actions against two companies that were selling Mexican yellow beans in the US. It is not clear where the beans were originally sourced, however it has been asserted that they were "misappropriated" from Mexico. The USPTO is currently determining challenges to this patent.
Basmati rice	The US company RiceTec sells what it calls 'Long grain American basmati', has applied for trademarks on the word 'Jasmati' or some variant, and has received a trademark on the word 'Texmati'. In 1998 it also received a US patent for 'Basmati Lines and Grains' which has caused much anger in India and neighbouring basmati growing countries.

Source: Blakeney, M. (2005) 'Bioprospecting and Biopiracy' in Ong, B. (ed) *Intellectual Property and Biological Resources*. Marshall Cavendish Academic, Singapore.; and Dutfield, G. (2004) *Intellectual Property, Biogenetic Resources and Traditional Knowledge*. Earthscan, London.

As a result considerations of the ownership and control of the collections of the CGIAR have come into serious question, having been previously neglected. After much meandering, the majority of the institutes have asserted that the materials contained in their genebanks are not owned by anybody, but rather that they are held 'in trust for the international community' and that they would 'not claim ownership, or seek intellectual property rights over the designated germplasm and related information.' This agreement was made in 1994 under the auspices of the FAO which now acts as custodian for these materials.

Now access to such materials held in most CGIAR institutes is subject to a material transfer agreement (MTA) which specifies that intellectual property rights are not to be allocated to

germplasm originating in their genebanks.[7] This MTA is set up to control access prior to the full implementation of the International Treaty on Plant Genetic Resources (ITPGR) discussed in section 2.8. As for materials that were already been taken from the CGIAR genebanks prior to this date, and have since been developed and commercialised, the outcomes are far from clear.

2.3 The International Undertaking on Plant Genetic Resources for Food and Agriculture (IUPGR)

The International Undertaking (1980), although a non-binding international agreement, held some rhetorical importance for the consideration of plant germplasm as the 'common heritage of mankind'. The International Undertaking came about at a time when many developing countries, indigenous and local communities felt cheated by an expanding realm of exclusive or private control over genetic resources, often resulting from associated traditional knowledge. Germplasm and biological resources had been provided by these countries and their people 'in trust' and 'for the benefit of… particularly developing countries' (see CGIAR objectives), with little realisation that their derivatives may in the future become private property for exclusive economic gains. The International Undertaking however did little more than enhance the critique of this process of increasing privatisation of such resources. The increasing threat of destruction, coupled with the misappropriation of such resources prompted the international community to negotiate towards the CBD text.

2.4 The Convention on Biological Diversity (CBD)

The Convention on Biological Diversity (CBD) was drafted in 1992 and became effective in 1993. The three primary objectives of the CBD are the 'conservation of biological diversity, the sustainable use of its components, and the equitable sharing of benefits arising out of the utilization of genetic resources, including by appropriate access to genetic resources and by appropriate transfer of relevant technologies, taking into account all rights over those resources and to technologies, and by appropriate funding' (CBD 1992). Importantly, the CBD also recognises national sovereignty over genetic resources.

The key provisions of relevance here are Articles 8, 15 and 16. Article 8 relates to *in situ* conservation, that each Contracting Party shall, as far as possible and as appropriate:

> *"(j) Subject to its national legislation, respect, preserve and maintain knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity and promote their wider application with the approval and involvement of the holders of such knowledge, innovations and practices and encourage the equitable sharing of the benefits arising from the utilisation of such knowledge, innovations and practices"* (CBD 1992).

Article 15 on access to genetic resources, in Paragraph 1 recognises the '*sovereign rights of States over their natural resources,'* and thus '*the authority to determine access to genetic resources rests with the national governments and is subject to national legislation.'*

[7] This MTA can be found at the Genebanks and Databases page of the CGIAR website at: http://www.cgiar.org/pdf/mta2003_en.pdf

The Article has its origins with the 1962 UN Resolution 1803 which makes a Declaration of Permanent Sovereignty over Natural Resources. The above article has been important for countries that feel they have had their biological materials exploited by bioprospecting, the sharing of genetic resources and previously through the CGIAR system, without adequate compensation. It allows countries to assert that they alone have the authority to control access to genetic resources.

Article 15, Paragraph 2 requires countries to 'facilitate access to genetic resources', which has been a bone of contention, considering the misappropriations of said resources that have occurred in the past. Therefore Article 15.5 requires that '*Access to genetic resources shall be subject to prior informed consent of the Contracting Party providing such resources, unless otherwise determined by that Party*.'

Thus prior informed consent (PIC) basically relates to a contract between the provider and the user. What is often unclear is who can be considered a provider. For the most part it will be a state authority with control over biodiversity, or one of its various forms, due to the sovereignty assertion in Article 15.1. But some countries also extend PIC to local communities, establishing 'tiers' of PIC (Laird, S.A and Noejovich, F, 2002 – see p190).

Article 16 on access and transfer of technology states under Paragraph 5 that: '*The Contracting Parties, recognizing that patents and other intellectual property rights may have an influence on the implementation of this Convention, shall cooperate in this regard subject to national legislation and international law in order to ensure that such rights are supportive of and do not run counter to its objectives.*'

At the time of drafting there were already a substantial number of cases whereby access to genetic resources had been facilitated without appropriate transfer of technology or benefits, and without adequate recognition of the rights of the original holders of those resources. In other words genetic material had been accessed from *ex situ* gene banks (see CGIAR section), or from bioprospecting activities and utilized for research without agreed terms over adequate compensation or sharing of the resulting technology (benefit sharing), or PIC. Hence the terms 'access', 'benefit sharing' and 'prior informed consent' have become both useful and controversial pillars for negotiations and legislative development towards fairness and equity in transaction that involve the use, research, commercialisation and potential proprietisation of such resources and knowledge.

The CBD contains text not only on the first, holistic goal of conservation of biological diversity; it breaks it down into its component parts. The term 'biological diversity' includes diversity within species, between species and of ecosystems, and refers to ecological complexes to which these are a part (CBD 1992). There is some scepticism that a more holistic approach to the conservation of biological diversity, one which recognises this complexity, has been undermined by scientific genetic reductionism[8] and by placing exclusive rights on such resources. One of the primary economic values (besides that achieved via tourism or basic agriculture) that can be placed on biological diversity is through research on its genetic components for use in food (agro-biotechnologies) and medicines (pharmaceuticals). This effectively means that genetic components utilised for invention may

[8] Genetic reductionism refers to the conceptual reduction of the complexity of biological diversity to its core elements - genes.

be subject to exclusive intellectual property rights, and represents a commoditization of the complexity of biological diversity. Furthermore it embodies an apparently conflicting knowledge system to that of indigenous and local communities who view cultural and spiritual interaction with their environments as intrinsic to existence and lifestyle. To this effect the CBD includes a number of elements which seek to balance holistic concerns with reductionist ambitions. The ABS conditions of the CBD have thus been referred to as 'the grand bargain' (Jeffery, M.I., 2005).

Few would disagree with the notion that the sharing of germplasm is beneficial to mankind, because it allows the opportunity to research and develop new varieties that can be adapted to different conditions. This should, in theory, have beneficial effects on food security and agricultural biodiversity.[9] However, it is arguably the rapid change of institutional arrangements that have meant only limited opportunity for the 'equitable sharing of benefits' and have allowed the disproportionate control and ownership of germplasm to come about.

Through economic rationalism it has been assumed that only through integrating biological diversity into the market system can a situation whereby the 'tragedy of open access' resources can be avoided. However there are a considerable range of practical difficulties relating to how benefit flows can actually be redistributed such that they improve the welfare of indigenous and local custodian communities, and contribute to biodiversity conservation. Furthermore, stopping the perspective of reductionism and commodification of life from overwhelming the broader objectives of the CBD represents a challenge for the Conference of the Parties. This challenge has been amplified with developments in subsequent international laws and forums and has led to a great deal of implementation complications for national governments.

The ABS system is essentially justified by two arguments: *utilitarian* justifications that suggest that apportioning benefits to state authorities and custodian communities will assist them in the conservation and sustainable use of biodiversity; and a justification that such custodian communities have a *right* to benefits due to their contributions generation after generation which would otherwise go unrecognised. This rights-based argument may be made with reference to theories of human rights including Locke's theories of property rights (see section 2.9), and at a more local level it is beginning to be made in terms of 'community rights'.

In terms of utilitarian justifications it has been widely assumed that benefit sharing (monetary profits or otherwise) will assist with biodiversity conservation and the maintenance of traditional practices of local communities. This is problematic because there is little evidence yet to suggest that it indeed will, particularly with regards to *how* the benefits can be equitably shared with custodian communities such that it contributes to biodiversity conservation and sustainable use (see for example Barrett and Lybbert, 2000). Apportioning benefits fairly may be impossible or unfeasible. As Dutfield (2004) notes, new plant varieties are often the product of generations of breeding and cross-breeding, which in turn are the result of selection and breeding by farmers throughout the world and of the evolution of non-domesticated varieties. The new variety may then have descended from numerous locations and compensation of provider countries and communities may involve prohibitively high transaction costs. This is not to suggest that benefits should not be shared, but rather it is important to recognise the practical problems relating to the implementation of ABS regimes,

[9] This is why 'access' has been enshrined as one of the key elements of the CBD.

and to recognise that there are many other aspects to the conservation, sustainable use and traditional knowledge of biological diversity.

What needs to be recognised is that Article 8(j) is not simply about the equitable sharing of benefits, as has been the emphasis of so many countries and fora. The Article encourages countries to 'respect, preserve and maintain knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles'. This also similarly asserted in CBD Article 10(c) on sustainable use. This is *not* achieved through an access and benefit sharing regime per se, but through implementation of legislation and practical measures that provide for a broader set of rights for these communities such that they can pursue traditional lifestyles. Benefit flows may assist in the alleviation of poverty, in the development of infrastructure, and in other ways, but it does not guarantee that a community will be able to continue their traditional practices – it may in reality do the opposite.

Despite these complicating matters the CBD has provided the most important international defence for developing countries seeking to protect traditional knowledge, achieve a balance of activities between conservation and research and development, and limit the breadth of IPRs into genetic resources. It is in achieving the *balance* between its sometimes disparate objectives that the CBD has incredible strength.

In Thailand the ratification of the CBD was at first delayed due to a lack of staffing in government authorities to implement and enforce the conservation of biodiversity, a general lack of agreement about how biodiversity should be conserved, due to concerns about the protection of traditional knowledge relating to biodiversity and due to implications of the terms of protection of IPRs and access to biological resources (Compeerapaap, Jaroen, Pers. Comm., 2005). There was considerable protest from NGOs, people's networks and concerned academics about how the CBD should be implemented in Thailand. Essentially they demanded that Thailand should develop two bills on traditional medicines and plant variety protection, as well as further development of the Community Forests Bill which had already been drafted. Initial development of these bills included broad public consultations, but suffered somewhat from departmental disagreements, and a change of government. The Ministry of Science and Technology and Education put pressure on the new government to sign and ratify the CBD, seeing the potential benefits of opening Thailand's biological resources up to access and benefit sharing arrangements. This set in motion a Cabinet Committee which developed a plan to the implementation issues surrounding the CBD. Several concerned academics and the Barr Association protested that this Cabinet solution was in violation of a section of the Constitution at the time relating to participation. The Constitutional Court then forced the government to come into compliance such that in April 1994, the Parliament approved Thailand as a signatory of the CBD, and finally became fully ratified in 2004 (Compeerapaap, Jaroen, Pers. Comm., 2005). This was the start of a process of broad public participation, NGO activities, and governmental department cooperation on these matters. In Chapter 3, the further development of the aforementioned bills into acts will be discussed.

The development of individual national systems of biodiversity conservation and *sui generis* systems for the protection of traditional knowledge, while important, are limited in their jurisdiction. Because these matters often involve international transactions (such as foreign company access to biological resources) an international framework, especially in the eyes of the developing countries, is considered essential. The Bonn Guidelines on Access to Genetic Resources and Fair and Equitable Sharing of Benefits Arising out of their Utilisation lay out a

guide for countries attempting to implement systems of ABS. However it is believed that an international regime would be of benefit to harmonise and establish standard practice for access and benefit sharing. This has been discussed in an Ad Hoc Working Group of the CBD

Ad Hoc Open-Ended Working Group on Access and Benefit Sharing to Plant Genetic Resources

This working group met in February 2005 in Bangkok Thailand, primarily to negotiate the development of an International Regime on Access and Benefit Sharing, but also to disseminate information on research and progress on this topic from research institutes, organisations, academic circles and other forums. The regime represents a promising opportunity to facilitate international harmonisation of ABS laws and activities, and build a more substantial framework than the Bonn Guidelines.

As mentioned above however, there is more to Article 8(j) than ABS. ABS is a means for which equitable remuneration can be made such that traditional knowledge is valued, typically in monetary terms, but not always. Therefore more is needed to allow for self-determination of such custodians of traditional knowledge and genetic resources. During the negotiations of this working group, the first section of Article 8(j) took a back seat. The difficulty of assuring such continued practice of aforesaid communities is an issue that has a long and difficult history for which there are no simple legal mechanisms to apply. However, another forum within the CBD recently was developed to address this matter more closely.

Article 8(j) Working Group

The Article 8(j) Working Group (and a related Advisory Committee) on the other hand is a forum which deals more closely with indigenous rights issues and has thus received less media and academic attention in IP and trade circles. The forum has a broad mandate for the promotion of TK and associated local practices. One outcome of the Working Groups has been a series of Composite Reports from different regions on the status and trends regarding the knowledge, innovation and practices of indigenous and local communities, including one on Asia (Langton and Ma Rhea, 2003).[10] The reports documented the loss of traditional knowledge and emphasize the relative scarcity of examples of measures and initiatives specifically designed to protect, promote and facilitate the use of traditional knowledge. As a result the Working Group is now discussing options for *sui generis* (unique) systems of protection and promotion of local practice and traditional knowledge, with specific emphasis on the respect of customary laws of local and indigenous peoples. Such negotiations have however been hamstrung by the need to have a framework that is broad enough so as not to limit or exclude the applicability of the wide range of customary laws. It is also worth noting at this point that there has been some reluctance by Parties in such fora to link TK to a broader rights-based approach such as human rights, including the 8(j) Working Group.[11]

For the first time ever a meeting of the Convention on Biological Diversity (CBD) Advisory ("Steering") Committee for the Programme of Work on Article 8(j) and Related Provisions

[10] The Composite Reports can be found at: http://www.biodiv.org/programmes/socio-eco/traditional/documents.asp.

[11] Staff at the CBD Secretariat have noted that there is limited interaction between them and the Working Group on Indigenous Populations and the Office of the UN High Commissioner on Human Rights.

was held in Montreal, Canada on 11-14 July 2005. Among other issues, the participants, most of whom were from indigenous communities, considered a draft document on elements of *sui generis* systems for the protection of TK that had been prepared by the CBD Secretariat on the basis of domestic legislation. During the discussions however participants struggled to describe elements that would be capable of addressing the wide diversity of cultural, social and economic conditions faced by TK holders, with some suggesting that customary practices used by traditional and indigenous communities are enough and that these groups should be left alone (Bridges Trade BioRes, Vol 5 no 14, 22 July 2005).

It is perhaps a matter that is best dealt with on a country by country, and even a case by case basis, as a large range of independent factors may apply. Cooperation such as this forum can only be of assistance however in bridging new ideas about potential sui generis systems that interested countries can develop. In the case of Thailand, the Community Forests Bill will be examined as a source of 'community rights' for the maintenance of traditional practices relating to forest resource management (including that of medicines and agriculture).

2.5 The Agreement on Trade Related Aspects of Intellectual Property Rights (TRIPS)

The Agreement on Trade Related Aspects of Intellectual Property Rights (TRIPS) was negotiated as part of the Uruguay Round of Trade Negotiations, culminating in the Final Act which established the World Trade Organisation (WTO) in 1994. The outcome is supposed to be a compromise of benefits and concessions to facilitate more harmonised rules of trade. According to the theory of comparative advantage, all countries should eventually benefit from reduced protectionism in the form of tariffs, subsidies and other non-tariff barriers to trade. The Final Act with its attached annexes however, have far-reaching implications beyond such a narrow definition of trade. Since then the Doha round of trade negotiations has sought to facilitate a more 'development-friendly' set of provisions, with only limited success. At the centre of their concerns is the TRIPS Agreement, particularly the articles relating to intellectual property protection of genetic resources.

Article 27.3 states that:
"Members may also exclude from patentability…

> (b) plants and animals other than micro-organisms, and essentially biological processes for the production of plants or animals other than non-biological and microbiological processes. However, Members shall provide for the protection of plant varieties either by patents or by an effective *sui generis* system or by any combination thereof. The provisions of this subparagraph shall be reviewed four years after the date of entry into force of the WTO Agreement."

Many developing countries have noted there may be compatibility problems with the implementation of this article in light of their CBD obligations. There are also ethical, social and environmental concerns about the patenting of life forms, and concerns that further biopiracy of genetic resources may occur.

Numerous countries, including Thailand, have therefore sought to design and implement 'effective *sui generis*' systems of plant variety protection to suit their own development needs. The only international example of a *sui generis* system of plant variety protection is the International Convention for the Protection of New Varieties of Plants (UPOV) system

described in section 2.7. The latest version of UPOV (1991) has been criticised for its potential to limit farmers from saving, exchanging and selling seeds (see Dutfield, 2004).

Although the drafting of a unique sui generis system may suit the needs of the individual country, there remains the problem of extraterritorial protection of traditional knowledge and genetic resources. There remains the possibility that in developed countries, where the bulk of large pharmaceutical and agro-industrials are based, will continue to patent inventions (or discoveries) and processes that utilise genetic resources and associated traditional knowledge without disclosing the source and country of origin of such resources and knowledge. By using highly technical language in the description of patents, the origins of genetic materials can easily be obscured.

TRIPS operates with considerable enforcement capacity, as the WTO has established a Dispute Settlement Body which allows for cross-retaliation (essentially trade sanctions against offender countries) where countries are not in compliance with TRIPS' (or other WTO) requirements. Drahos (2003) notes that it was a huge discursive victory for large corporate interests to link IP to trade in the Uruguay Round Negotiations because it meant that IP enforcement could be coercively pursued. Essentially these corporate bodies which rely on IP protection for the 'value-added' elements of their products, were able to convince the US, and the other member of the Quad Group (EC, Japan and Canada) to forum-shift IP from WIPO to the WTO such that enforcement carried the threat of trade sanctions.

So why did developing countries agree to TRIPS in the first place if there were so many aspects that went against their interests? There are several reasons suggested by various commentators. First, these countries did not agree to TRIPS, they agreed to the entire package establishing the WTO at the end of the Uruguay Round, which promised to provide more open markets through tariff reductions, designated agreements on agriculture and textiles (although these have proved to be less advantageous than many first supposed), and trade benefits in the form of the Generalised System of Preferences (GSP). Second, Drahos (2005) indicates that many countries had already been coerced into raising minimum standards of intellectual property protection through the USTR Section 301 process and regional trade agreements. Essentially some countries were giving little or nothing away in terms of their freedom to legislate with regards to patent, or plant variety protection laws.

Importantly TRIPS establishes minimum standards of IP protection, but allows for countries to seek bilateral and regional free trade agreements that comply, or provide higher protection than TRIPS. Such agreements must also comply with the rules of GATT, GATS and other aspects attached to the Final Act establishing the WTO. The US has since therefore pursued a series of bilateral and regional FTAs which go further than the minimum standards of TRIPS, namely requiring higher standards than 27.3(b), including patent or UPOV 1991 protection of plants and animals.

The TRIPS Council

The TRIPS Agreement mandates a review of Article 27.3(b) by the TRIPS Council. The Doha 'development' round of trade negotiations has since broadened the focus of the Council's discussion and review. According to Paragraph 19 of the 2001 Doha Declaration the Council should also look at the relationship between the TRIPS Agreement and the UN Convention on Biological Diversity, the protection of traditional knowledge and folklore. It adds that the

TRIPS Council's work on these topics is to be guided by the TRIPS Agreement's objectives (Article 7) and principles (Article 8), and must take development issues fully into account (WTO, Acc 20/5/2005). These discussions are described as the 'biodiversity triple agenda item' by officials working in the forum.

In the TRIPS Council, Thailand has co-sponsored submissions by Peru, India, Brazil and others for a patent requirement for disclosure of the source and country of origin (when GRs or TK have been used in the invention process), and mechanisms for prior informed consent, access to and the sharing of benefits arising from the utilisation and commercialisation of GRs and TK.

Box 1: Thailand's Submissions to the TRIPS Council.

Submissions to the TRIPS Council Co-Sponsored by Thailand:

Date	Parties	Title	WTO Doc No.
18/3/2005	Bolivia, Brazil, Columbia, Cuba, Dominican Republic, Ecuador, India, Peru, and Thailand.	The relationship between the TRIPS Agreement and the Convention on Biological Diversity (CBD) and the protection of traditional knowledge – elements of the obligation to disclose evidence of benefit-sharing under the relevant national regime.	IP/C/W/442
10/12/2004	Bolivia, Brazil, Cuba, Ecuador, India, Pakistan, Peru, Thailand, and Venezuela	The relationship between the TRIPS Agreement and the Convention on Biological Diversity (CBD) and the protection of traditional knowledge – elements of the obligation to disclose evidence of prior informed consent under the relevant national regime.	IP/C/W/438
21/9/2004 to 10/2/2005	Brazil, Cuba, Ecuador, India, Pakistan, Peru, Thailand and Venezuela	Elements of the obligation to disclose the source and country of origin of biological resource and/or traditional knowledge used in an invention.	IP/C/W/429 with Rev.1 and Add.1,2,3
2/3/2004	Brazil, Cuba, Ecuador, India, Peru, Thailand and Venezuela	The relationship between the TRIPS Agreement and the Convention on Biological Diversity (CBD) – checklist of issues.	IP/C/W/420 and add.1
24/6/2003	Bolivia, Brazil, Cuba, Dominican Republic, Ecuador, India, Peru, Thailand and Venezuela	The Relationship between the TRIPS Agreement and the CBD and the Protection of Traditional knowledge	IP/C/W/403
24/6/2002	Brazil, China, Cuba, Dominican Republic, Ecuador, India, Pakistan, Thailand, Venezuela, Zambia and Zimbabwe	The Relationship between the TRIPS Agreement and the CBD and the Protection of Traditional knowledge	IP/C/W/356 and Add.1
10/8/2001	Thailand	Review of the Provisions of Article 27.3(b) – Information from member.	IP/C/W/125/Add.22

Source: WTO website, www.wto.org., Acc 20/5/2005.

Just prior to the Ministerial in Cancun in September 2003, discussions in the TRIPS Council focused on submissions received from Switzerland (IP/C/W/400), the African Group (IP/C/W/404) and India on behalf of Brazil, Bolivia, Cuba, the Dominican Republic, Ecuador, Thailand, Peru and Venezuela (IP/C/W/403). Both the African Group and the India-led submissions (IP/C/W/404 and IP/C/W/403) stressed the need for a multilateral solution to these issues. The India-led paper proposed amending the TRIPS Agreement to require patent applicants to (a) disclose the source of origin (DOO) of the biological resource and associated TK; and (b) provide evidence of PIC and benefit-sharing where access is sought. The African submission took on stronger terms, calling for revision of Article 27.3(b) so as to prohibit the patenting of plants, animals and micro-organisms. The African Group also sought to have TK classified as a category of intellectual property rights and put forward a draft decision on TK protection for adoption by the TRIPS Council.

Switzerland took an alternate position indicating that it would prefer to see these issues discussed outside the WTO. Specifically, the Swiss submission proposed amending the WIPO Patent Cooperation Treaty to enable countries to require patent applicants to declare the source of any genetic resources and TK in patent applications. On the CBD-TRIPS relationship, Switzerland noted that the two could be implemented without conflict and that there was no need to modify the provisions of either. During negotiations the EU has not clearly indicated whether it would prefer to have this issue addressed in the WTO or in WIPO. In November 2004 the US also asserted that there was no conflict between the CBD and TRIPS, and argued that patent disclosure requirements would be ineffective with respect to PIC and ABS goals, as well as adding an unreasonable burden to the patent system, with consequential effects on technological development (ICTSD, Dec. 2005).

At the 14-15 June 2005 Meeting of the TRIPS Council, discussions continued without any real progress on discussions surrounding the relationship between the TRIPS Agreement, biodiversity issues and traditional knowledge. In December 2004 and March 2005 Brazil and India, along with several other developing countries, have made a number of submissions (IP/C/W/442, IP/C/W/438 and IP/C/W/429) to require patent applications to disclose the source and country of origin of genetic resources and traditional knowledge used in an invention, and evidence of prior informed consent and benefit sharing. Peru has also made strong assertions on the need for disclosure requirements as part of the patent system under TRIPS or under WIPO administered treaties (18 March 2005, revised 19 May 2005 and 8 June 2005 – See IP/C/W/441 and IP/C/W/447), citing numerous cases of erroneously granted patents on Peruvian genetic resources and traditional knowledge. They would also like to see the establishment of penalties for non-compliance of such disclosure requirements.

US responses (see IP/C/W/449 and IP/C/W/434) have been to assert that most effective way to ensure the objectives of ensuring prior informed consent and equitable benefit sharing is tailored, national laws outside the patent system, as well as preferring a contract based system of access and benefit sharing. The US has indicated that the suggested additional requirements would be a burden on the patent system and would undermine technological development incentives. The US has stated that where patents have been granted erroneously, Members should focus on remedies including the use of organized databases, information material to patentability and the use of post-grant opposition or re-examination systems as an alternative to litigation (ICTSD, Dec. 2005).

Since 2004 Members have remained relatively locked in their positions meaning challenges lie ahead before substantive progress can be made. Further work on these issues will be undertaken both through the Director-General's implementation process and in the TRIPS Council. In the lead up to the December 2005 WTO Ministerial in Hong Kong, deals were made under informal consultations of the Director General involving the African Group, EU and US resulting in a permanent amendment to the temporary waiver allowing countries without sufficient pharmaceutical manufacturing capacity to use compulsory licenses to import generic versions of drugs still under patent protection. This landmark development meant the developed countries were not willing to make any compromises in discussions on the biodiversity triple agenda item at the Hong Kong Ministerial. Developing countries, including Thailand, are continuing to negotiate towards DOO, PIC and ABS requirements in TRIPS.

2.6 World Intellectual Property Organisation (WIPO)

The World Intellectual Property Organisation (WIPO) is one of the 16 specialised agencies of the United Nations dedicated to the promotion of the use and protection of intellectual property works for the expansion of science and technology and the enrichment of the world of arts (WIPO, acc. 2005a). WIPO is a driving force for the international 'harmonisation' of (high) intellectual property standards. The Patent Law Treaty and the Patent Cooperation Treaty (building upon the Paris Convention for the Protection of Industrial Property) facilitate harmonisation of patent laws internationally, attempt to facilitate and streamline the process of international patent applications and simplify prior art searches (WIPO, acc. 2005b,c).

It is important to highlight the way WIPO has constructed norms in language regarding intellectual property. In fact it was with the establishment of WIPO, that the term 'intellectual property' came into regular use in the 1950s. Prior to this, patents were still commonly described in terms of the monopoly privileges they accord, rather than a form of 'property'. Linking to property was strategically important in so much as it could be associated with the theories of Locke, and with moral rights justifications. Now that it has become a norm, it is more commonly associated with utilitarian justifications that an investment of research and development demands some protection of the value-added product, or else there will be no incentive to undertake such activities.

The abovementioned term, 'harmonisation' is important to consider also, and essentially has a similar meaning to the term 'globalisation'. Harmonisation in this instance refers to the imposition of intellectual property aspects of the western legal system on all countries, whatever their stage of development. It is claimed that this is for the benefit of all countries, however many developing countries are sceptical of this claim for many reasons. WIPO would argue that harmonisation of IP laws will encourage foreign investment in developing countries and thus enhance technology transfer. Many developing countries would argue that the imposition of IP laws would simply mean a greater transfer of royalties for the use of western products protected by IP, which could effectively discourage home-grown science and technology due to greater start up costs.

Although WIPO plays an important administrative role in the regulation of international patent systems, the WTO and TRIPS retains a much more forceful mechanism in its Dispute Settlement Body, and thus has had a more direct influence on higher IP standards in developing countries. According to Braithwaite and Drahos (2000), the forum shift from WIPO to the WTO was a deliberate and calculated move pursued over more than a decade, such that it could be linked to the economic leverage given by trade related factors.

The Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore has also had a significant effect on the discourse of TK protection.

The Intergovernmental Committee on Traditional Knowledge and Folklore.

The IGC is intended to 'constitute a forum in which discussions could proceed among Member States on the three primary themes which they identified during the consultations: intellectual property issues that arise in the context of (i) access to genetic resources and

benefit sharing; (ii) protection of traditional knowledge, whether or not associated with those resources; and (iii) the protection of expressions of folklore (WIPO Acc 23/6/2005).'

The IGC has provided a useful coordination point for dialogue, fact-finding missions, national case studies, the dissemination of such information and the articulation of the TK issue in a predominantly IP context. It tends to also be the target of a range of criticisms because of its limited mandate, lack of progress on substantive mechanisms for protection from misappropriation in the IP regime[12], and for providing a distraction point for countries such as the US to deflect progress on the disclosure issue in the TRIPS Council. At the WIPO General Assembly in September-October 2005, the mandate of the IGC was extended indefinitely such that it can continue its work on achieving workable solutions to the protection of TK. Recent rounds of discussions, as well as from the work of the TK unit of the WIPO Secretariat have made progress on useful participatory tools such as the Voluntary Fund for Indigenous and Local Communities to directly facilitate and support the participation of representatives from these communities in the work of the IGC (ICTSD, BioRes, 14 October 2005). They have also very recently attempted to develop ideas about the respect of customary laws in the protection of TK and associated cultural expressions or folklore (WIPO, acc 26/2/2006).

During negotiations however, many developing states are somewhat sceptical of the role of this body because of the mandate of WIPO for the promotion of IP. The IGC however has been useful for governments and WIPO itself to delve into the complex nature of TK and develop new understandings and approaches. The forum itself has produced a plethora of documents out of its sessions, but there is still some dissatisfaction and a lot of confusion about how TK 'protection' should in fact be implemented. In IPR terms, 'protection' relates to the legal rights to exclude others from the use of the subject of protection. In general terms, however there is a much broader meaning. Some confusion seems to have also arisen through the use of the terms 'defensive' and 'positive' protection. While most people concerned about TK would assume that in effect a form of IPR protection over TK would be contrary to desires, and that in fact TK needs to be protected from IPRs themselves. However through the manipulation of language, the norm has become such that 'positive' protection of TK occurs through the use of IPRs, property rights and liability regimes, and that 'defensive' measures include databases and other forms of protection. Such issues raise the question of whether WIPO is indeed the most suitable forum for such discussion or whether they would be more appropriately made elsewhere. On the other hand such ongoing discussions in WIPO could be useful for developing countries to strategically block progress on a Substantive Patent Law Treaty (SPLT) as has been noted by some authors (see Dutfield, 2005). What is perhaps most important to note is that discussions on TK in WIPO will likely be restricted due to its limited mandate for the regulation of exclusive advanced and western forms of IP protection.

2.7 International Union for the Protection of New Varieties of Plants (UPOV)

The scope of the International Convention for the Protection of New Varieties of Plants which establishes UPOV[13] is narrower than some of the previous conventions and fora. UPOV was developed essentially for the protection of plant breeders' rights. Whilst UPOV does not have

[12] It has however made an amendment to the PCT such that PCT patent applications whilst undergoing the examination process, must cross-check with prior art databases including journals on traditional knowledge.
[13] The acronym comes from the French name 'L'Union Internationale pour la Protection des Obtentions Vegetales'.

any direct influence on traditional knowledge, it is important to note for its potential effects on the modernisation of agricultural systems through the allocation of plant breeders rights. Some critics have suggested that the scope of plant breeders' rights may be appropriate in countries with advanced breeding methods, but not necessarily in countries with developing or subsistence agricultural systems.

In response to increasing pressures from plant breeders, the 1978 UPOV system was updated to keep up with modern biotechnological techniques. To be eligible for protection under the UPOV system, plant varieties must be novel, distinct, stable and uniform (in UPOV 1991) or homogenous (in UPOV 1978) (Dutfield, 2004). The 1991 UPOV text strengthens protection by widening the array of subject matter. The protection covers not only the propagating material of the protected variety, but also (unlike the 1978 Convention) the harvested material (including entire plants and parts of plants), the products made directly from harvested material of the protected variety, and essentially derived varieties (Changtavorn, Thanit, 1998). The protection of 'essentially derived varieties' represents an important exclusion of farmers that goes against the historic situation whereby farmers would share propagating materials and develop 'essentially derived varieties' adapted to various conditions. This is deliberately intended to suit private interests.

Breeder's rights are extended between the versions as well. Under UPOV 1978, the scope of protection of the breeder's right is for 'the production for purposes of commercial marketing; the offering for sale; and the marketing of the reproductive or vegetative propagating material, as such, of the variety'. Under pressure from plant breeders the 1991 version extends the scope of the breeders rights by increasing the number of acts for which prior authorisation of the breeder is required, including 'production or reproduction; conditioning for the purpose of propagation; offering for sale; selling or other marketing; exporting; importing; stocking for the above purposes'. This goes beyond just reproductive or vegetative propagating matter, but also encompasses harvested material obtained through the use of propagating material and essentially derived varieties (Dutfield, 2004). Furthermore the UPOV 1991 version extends protection from at least 15 years to a minimum of 20 years

The farmer's exemption (or farmer's privilege) allows farmers to keep propagating materials for sowing in a following season. The 1991 UPOV text defines the farmer's exemption more carefully than the previous text, by allowing a farmer to use, for propagating purposes only on his holding, the product of the harvest which he has obtained by planting, on his holding, the protected variety or essentially derived variety (Changtavorn, Thanit, 1998). This limits the scope of farmers who wish to save, exchange or sell their seeds to other farmers where they have used protected materials. National bodies have the right to determine whether to implement the farmers' privilege.

Compulsory licensing is allowed for reasons of public interest, and discourages a plant variety right holder from monopolising production. It does this by encouraging the proprietor to licence voluntarily for a remuneration which is less that the typical royalty.

The review of the UPOV system to its current (1991) version however, is designed for advanced plant breeding and biotechnological techniques, and may thus contain elements that are inappropriate for developing countries which rely on more traditional methods of plant breeding, and which are dominated by small-holder agriculturalists.

2.8 International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGR)

Recognising both the sovereign rights and the inter-dependence of countries over their plant genetic resources for food and agriculture, the International Treaty establishes a multilateral system that aims to facilitate access and benefit sharing (Dutfield, 2004). The ITPGR covers important issues relating to plant genetic resources kept in *ex situ* collection and farmer's rights (see Article 9), which the CBD does not cover. The access and benefit sharing mechanism is to be facilitated through a standard Material Transfer Agreement (MTA). The implementation of the International Treaty is only relatively recent, so its full implications are unknown. Many developing countries are acceding to the Treaty however and it may prove to be useful for the control of genetic resources for food and agriculture. On the other hand it does not cover other forms of genetic resources (such as those used in medicines) and does not in any direct sense promote or protect traditional knowledge.

A research team of legal experts, academics and government officials researched the potential impacts of the ITPGR for Thailand (Kuanpoth et al, 2004). They outlined negative and positive aspects of the ITPGR for Thailand which have been described in Table 3 as follows.

Table 3: Review of the Potential Impacts of the ITPGR.

Negative Aspects - There must be a revision of Thai laws governing the access and benefit sharing of plant genetic resources under control of the government and in the public domain for those plant genetic resources covered by Annex 1 of the ITPGR. - Thailand will lose the domestic sense of knowledge and resource sharing from the use of her plant genetic resources in the sense that it will justify their pilferage if it is done to obtain an exclusive right such as intellectual property right. - The membership of the International Treaty is a reduction of Thai sovereignty since Thailand needs to apply the management of her ex situ collection under the conditions set forth by the International Treaty, especially the use of the Multilateral System instead of the Plant Variety Act B.E. 2542 (1999).
Positive Aspects - Thailand will receive the benefits arising from the utilisation of its genetic resources kept with the IARCs. - The country may have wider opportunity to obtain plant genetic resources in the public domain and under control of other member states.

Source: Kuanpoth et al, (2004)

Based on the abovementioned positive and negative aspects, the report outlined recommendations for Thailand subject to review and the evaluation of developments. These recommendations are detailed in Table 4 overleaf.

Table 4: Recommendations for Thailand Regarding the ITPGR.

Recommendations for Thailand based on the Evaluation of the Report
- At this stage Thailand should not yet ratify ITPGR since the ratification of the International Treaty may have unconstructive effects on Thailand, especially when the constructive gains are not obvious. - Thailand should accelerate its missions in accordance with the obligations for conservation and sustainable utilisation of plant genetic resources as appeared in the International Treaty (Articles 5 and 6) since these are all good practices. Besides the country should build her capacity in order to reduce the negative sides of the International Treaty if it was to become a member by delegating the control of the country's plant genetic resources in the public domain to communities so that these people would be the ones who actually make real decisions on the utilisation of plant genetic resources.
Thailand may change her decision to join the ITPGR by evaluating developments on the following specific features: - The alteration of access and benefit sharing strategies of IARCs subsequent to their membership of the International Treaty. - The criteria and conditions for access to plant genetic resources given to individual researchers or those working for companies following 2 years since the entry into force of the International Treaty. - The movement of countries who possess a similar collection in comparison to Thailand in terms of quantity and diversity of plant genetic resources within the public domain and under the governmental control and IARCs in becoming members of the International Treaty. - The interpretation of equivocal provisions of the International Treaty, in particular the clauses on Multilateral System (Article 11.2), protection of intellectual property rights (Article 12.3(d)) and the reconsideration of conditions for private sectors (Articles 11.3 and 11.4). - The relationship between of CBD and ITPGR on management of plant genetic resources excluded from the Multilateral System of the International Treaty.

Source: Kuanpoth et al (2004)

2.9 Aspects of International Human Rights Law and International Laws on Indigenous Peoples

A number of authors have highlighted the potential human rights implications of intellectual property rights on biodiversity and indigenous traditional knowledge. There is a wealth of legally-binding and non-legally binding instruments to be found.

The legally binding instruments consist of four main instruments including the UN International Covenant on Civil and Political Rights 1976, UN International Covenant on Economic, Social and Cultural Rights 1976, the International Labour Organisation Convention 169 Concerning Indigenous and Tribal Peoples in Independent Countries (ILO 169) 1989, and the CBD 1992, which has already been discussed. Of the non-legally binding agreements it is worth mentioning the UN Draft Declaration on the Rights of Indigenous Peoples 1994, the UN Draft Declaration of Principles on Human Rights and the Environment 1994, and the Leipzig Declaration on Farmers' Rights (now also being addressed under the ITPGR) (Chamarik, Saneh. 2004) (See also Craig, D. (2005), and Cullet, P. (2005) for a more detailed analysis of the IPRs, TK and Human Rights nexus).

Drawing upon these and the highly regarded IUCN report by Posey, D.A. (2000), a number of important principles that need to be addressed have been identified by Chamarik[14] as follows:

(i) self-determination and development;
(ii) disposal of natural wealth and resources;
(iii) protection of minority culture;
(iv) religious freedom;
(v) environmental integrity;
(vi) intellectual property rights;
(vii) recognition of customary law and practice;
(viii) farmers' rights.

In effect, the recognition of these is highly challenging within an international regime of human rights, and elements of each can be found in the disparate array of laws already discussed. With respect to the self-determination and recognition of customary law and practice, the challenge rests with the open-mindedness and resolve of national governments as well as the struggles of indigenous and local peoples. A special place thus also exists for the development of means for the recognition of the collective rights of these groups as 'communities'.

A Place for the Recognition of Community Rights

Although human rights have European origins, suffer in practicality from the broadness of their 'universal' application and focus on the right of the individual, they may offer some principles that are applicable to the recognition of the rights of communities. There is considerable irony in the suggestion that communities and marginalised groups seeking forms of legal pluralism for the assertion of their rights (such as the de-centralisation of resource control, communal land rights, related control over knowledge and cultural expressions, and the respect of associated forms of local customary laws) might seek to do so through appeal to universal rights such as the international human rights system. Such groups have at times used these principles to shape their political claims. In Thailand the link to human rights is often made indirectly or in inexplicit ways, with groups preferring to make claims under a somewhat vaguer and pluralist framework of 'community rights'.

Broadly, community rights can be defined as 'group specific claims to a benefit that should be recognised and upheld by an authority (usually the state)'.[15] One serious limitation facing those arguing for greater community rights is the inherent difficulty of defining what constitutes such a community and to what extend they are extended rights (and by what authority).

Community rights are enshrined in the Constitution of the Kingdom of Thailand. The Community Forests Bill currently being negotiated represents an advancement of one aspect of such rights (forest resource management), and the assertions of certain rights to local communities is also provided for in the Plant Variety Protection Act of Thailand. But there is still only a weak framework for community rights in Thailand (legally speaking). It may seem paradoxical that such groups seek protection through a technical external legal system for the protection of their rights. It is arguable that the their local customary laws are only really

[14] Professor Saneh Chamarik is the Chairman of the National Human Rights Commission of Thailand.
[15] Johnson, C. and Forsyth, T. (2002) 'In the Eyes of the State: Negotiating a "Rights-Based Approach" to Forest Conservation in Thailand' in *World Development* Vol. 30. No. 9. pp. 1591-1605.

effective trans-locally and due to the considerable disruption of the customs and the threats they face, the groups are effectively trying to solidify such norms through an effective and externally recognisable means.

Although similar situations exist whereby the collective rights of communities may be marginalised in many countries throughout the world, it is difficult to predict the location of an appropriate international forum at this stage. This highlights the importance of designing effective law and policy within Thailand to address these principles which are currently lacking in many respects. Currently the strength of community rights in Thailand rests with the actions of communities to assert themselves as rightful custodians of their local environments, rather than through legislative means.

Other regional initiatives by international organisations such as UNDP and UNESCO appear supportive of community rights projects. UNDP operates a Regional Initiative on Indigenous Peoples' Rights and Development (RIPP) which engages governments, UN agencies and indigenous peoples in dialogues of indigenous rights and development (UNDP, Acc 27/2/2006). The programme establishes five priority areas of which the Natural Resources Management, and Justice and Human Rights seem the most pertinent. UNESCO also features a project on 'A Place for Indigenous People in Protected Areas, Thailand' with a particular focus on sea nomad communities on the Andaman Coast of Thailand (UNESCO, Acc. 27/2/2006).

2.10 Draft ASEAN Framework Agreement on Access and Benefit Sharing

ASEAN is the only regional organisation in an Eastern Asia that is developing a high degree of interdependence with little concerted institutional basis. The primary objectives of ASEAN have been political to date, and there has been limited success in economic cooperation.[16] Flexible and with few constraints, this particular form of regionalisation is distinct from other regional models; there are no institutional mechanisms to exercise coercion on the member states and the common space can be used as a shield and as a springboard into negotiations with the major external partners (Kermel-Torres, D. 2004).

The Draft ASEAN Framework Agreement on Access to Biological and Genetic Resources and fair and Equitable Sharing of Benefits (full-title) has essentially pre-empted potential problems where there may be biological resources shared across borders, and attempted to establish some regional unity on these matters. Currently there are laws relating to biodiversity and plant variety protection in a few countries but not all.

Thailand is not rich in endemic species (those found only in Thailand) because it shares many ecosystems with its neighbouring countries, yet there are many endemic species to Southeast Asia found in Thailand. The Center for Conservation Biology (2004) at Mahidol University, for example, cites 12 freshwater fish species thought to be endemic to Thailand, and 120 species which are endemic to mainland Southeast Asia. This highlights the importance of inter-state cooperation in the region with regards to access and benefit sharing to species that are found in ecosystems lying across borders. It is probable, to use the example of some plants discussed in this report, that kwao krua and plao noi are found in adjacent countries including Burma and Laos.

[16] Although work on the implementation of an ASEAN Free Trade Area (AFTA) has been ongoing.

The current Draft ASEAN Agreement and surrounding documents are confidential; however a previous version can be found at the GRAIN website.[17] A Technical/ Legal Panel Meeting on the Draft Agreement was held on the 15th to 17th October 2003 in Manila. Since that time some progress has been made on the Agreement, however it remains in draft format.

The Draft ASEAN Agreement basically applies conditions derived from the CBD to member states, for cooperation on matters of PIC and ABS where they have more than one national jurisdiction. It also establishes a clearing house mechanism, initially performed by the ASEAN Regional Centre for Biodiversity Conservation (ARCBC) until a permanent body is designated by the ASEAN. To this end, the ARCBC shall establish and maintain a database on the status of biological and genetic resources, as well as access agreements and applications (Draft ASEAN Agreement, 2000, Acc 1/6/2005). Settlement of disputes is to be pursued through dialogue, and failing that, through a suitable arbitration process according to relevant international treaties. A common fund is also established where benefits arising from the commercialisation of genetic resources can be distributed between provider states.

2.11 US Pressures and Interventions

As well as multilateral considerations and obligations, Thailand has been subject to repeated pressures from the United States relating to intellectual property protection. The work of the United States Trade Representative (USTR) seeks to enrol 'entire governments' including 'customs, courts, prosecutors and police, commitment by senior political officials' towards strong IPR laws and enforcement worldwide (USTR, Acc 7/6/2005). The US, through their Trade Representative body has been the most aggressive actor seeking to influence Thailand's IP laws. Central to this work is the promotion of a discourse that 'to copy is to steal'. US policy is rigorously enforced extraterritorially through bilateral trade sanctions and incentives.[18] Where foreign countries do not provide adequate intellectual property protection for US commercial interests, the USTR has adopted a policy of retaliation and economic coercion.

The first form of bilateral pressure is via the "Special 301" review mandated by Congress in the Omnibus Trade and Competitiveness Act (or as it is commonly referred, the Trade Act) of 1988 (USTR, Acc 7/6/2005). The Trade Act generates three lists of countries including priority foreign countries, a priority watch list, and a watch list, in order of decreasing concern. Thailand has been on the US Special 301 Watch List every year since 1994, primarily for copyright-related piracy and in relation to pharmaceuticals (USTR, 2005). In 1988 it was claimed that US copyright owners had lost approximately $US61 million from piracy in Thailand. Estimates of patent and trademark infringements in Thailand added up to a huge sum of almost $US 2,000 million for 10 US pharmaceutical companies (Kuanpoth, 2004). In 1991 the USTR placed Thailand as a Priority Foreign Country and removed Generalised System of Preferences (GSP) from some export products of Thailand on the

[17] See www.grain.org/brl/

[18] More subtle yet is the 'technical assistance' that the US offers in drafting 'good' IP laws, as well as assistance in IPR enforcement through the FBI, Department of Justice, and US Customs Service (USTR, acc 7/6/2005).

ground of alleged inadequate protection for copyrights and pharmaceutical patents[19] (Kuanpoth, 2003, 2004).

These perceived 'trade barriers' are likely to have been directly reported (and investigated) by private industry and industry groups. USTR Special 301 enforcement cases against Thailand include the 'Thailand Copyright Enforcement' case (USTR 301-82) filed in 1990, and the 'Thailand Pharmaceuticals' case (USTR 301-84) (USTR, Undated) in 1991. The Thailand Copyright Enforcement case was filed by the International Intellectual Property Alliance, the Motion Picture Export Association of America, Inc and the Recording Industry Association of America – all industry groups. Similarly the Pharmaceutical Manufacturers Association industry group filed a petition with the USTR in the Thailand Pharmaceuticals case. In terms of agriculture, Monsanto has also submitted letters to the USTR seeking to pressure Thailand to modify laws relating to biotechnology (Monsanto Company, April 8th 2004, available at www.grain.org). The ability of individual private actors to influence the USTR is well-documented (see Braithwaite and Drahos, 2000; Drahos, 2003; Sell, 2002; Sell, 2003). This is therefore a situation where the interests of large corporations are able to use trade leverage to undermine the sovereign right of states to determine appropriate legislation. Furthermore this is conducted regardless of their status as developing countries, and with little consideration of the specific economic, social, or cultural impacts in those countries.

In April 1991 the US called for a meeting with Thailand on matters of intellectual property, which was held in Amsterdam. The US made several demands in the meeting, including amendment of copyright, trademark and patent laws in order to protect some particular products such as pharmaceuticals, computer software and some living organisms. They also required an extension of the patent term of protection from 10-20 years (Kuanpoth, 2004; Thoosapone Pers. Comm. 2005).

Threatened with trade retaliation as a Priority Foreign Country, Thailand began meeting US demands, and under additional demands to meet TRIPS amended its Copyrights Act (B.E. 2533) in 1997, the Trademarks Act (B.E. 2534) in 1998 and Patents Act (B.E. 2535) in 1999. Kuanpoth (undated) indicates that the attempts to amend the patent law were attacked by many domestic interest groups and academics, on the ground that the law yielded too much to the US demands and that the amendments would cause adverse effects to domestic industries and the well-being of the poorest groups of the population.

The US Department of State has also attempted to interfere in matters relating to the development of draft Thai laws, particularly the Draft Act on Promotion and Protection of Traditional Thai Medicinal Intelligence. A letter was sent dated April 21 1997 to the Royal Thai Government advising them that "Washington believes that such a registration system could constitute a possible violation of TRIPS and hamper medical research into these compounds" – despite the fact that Thailand was not obliged to comply with TRIPS until at least 2000 and medicinal practices may be exempt. In response to this letter there was a considerable international response from a range of organisations and individuals (see particularly the Institute for Agriculture and Trade Policy, letter to Madeleine Albright, co-signed by a long list of concerned parties – dated 30 June 1997).

[19] However one Department of Intellectual Property (DIP) official noted that this removal of GSP was of little concern to the Department and in subsequent years Thailand's record on IP enforcement had improved in the eyes of the USTR (Thoosapone, Personal Communication, 2005).

The use of such bilateral trade pressures against many countries helped to coerce them into developing intellectual property laws according to US norms and standards before and during the Uruguay Round of Trade Negotiations. Once a sufficient number of countries were enrolled, an acceptable framework within the multilateral trade negotiations was established, and the content of the TRIPS Agreement was substantially similar to those minimum standards already demanded by the US.

The Thai-US Free Trade Agreement

The USTR has launched negotiations for bilateral treaties or FTAs with a large number of countries, including Chile, Jordan, Morocco, Singapore, Central American countries (CAFTA-DR), Andean countries, Thailand, Panama, Bahrain, Southern African countries, and many others. In South East Asia, the US up till now has signed bilateral treaties with two countries (i.e. Singapore and Vietnam), and has been in negotiations with Thailand. While negotiations with Thailand are underway, the US is also looking at other three ASEAN countries (i.e. Indonesia, the Philippines, and Malaysia) as its next targets for bilateral FTAs.

The US has also sought to 'ratchet'[20] up higher IP standards through free-trade agreement negotiations (FTAs). These are sometimes referred to as 'TRIPS-plus' standards of IP protection because they go beyond the mandated requirements of the TRIPS Agreement. The US-Chile, US-Morocco, US-Jordan, US-Singapore FTAs and the bilateral treaty with Vietnam have all sought TRIPS-plus standards of IP protection and it seems clear that the US will seek the same with Thailand, after FTA negotiations began between the two countries in 2004 (Kuanpoth, 2005).

US intentions to seek TRIPS-plus standards are indicated clearly in the statement of objectives of the USTR's Letter of Notifications for FTA negotiations with Thailand as follows:

> "The United States concerns about intellectual property protection in Thailand. The United States has worked with Thailand on intellectual property rights issues under the Trade and Investment Framework Agreement. While some progress has been made, bringing Thailand's intellectual property regime up to the standards set in other recent FTAs that the United States has negotiated will be a high priority of these negotiations."[21]

This pressure has been continued during the negotiation including statements made by a US intellectual property expert during talks between US FTA negotiators and Thai academics, on the eve of intellectual property negotiations in Pattaya on April 5 2005 during the third round of Thai-US FTA negotiations (Bangkok Post, 29 April 2005 Acc 09/05/05). Comments made by Barbara Weisel, head of the US negotiating team at the end of the Third Round of negotiations (The Nation, Apr 9, 2005, Acc 1/7/2005) and a statement from Robert Zoellick initiating the First Round (Nation, Feb 14, 2004, Acc 1/7/2005) have also indicated that the US desires TRIPS-plus standards. The primary concern of both countries is with regards to the scope of patent protection and related enforcement measures. The latest (2005) USTR National Trade Estimate Report on Foreign Trade Barriers furthermore mentions concerns

[20] See Drahos (2002) about ratchet and coercion.
[21] Letter of Notification of USTR to US Congress of Intent to Initiate Free Trade Agreement Negotiations with Thailand, 12 February 2004.

over pirated or counterfeit seeds and other related products, suggesting that the implementation and enforcement of the Plant Variety Protection Act (1999) is inadequate. It also notes a growing problem of counterfeit pharmaceuticals.

In Thailand patents on plants and animals, as well as pharmaceutical patents have been area of most concern for public interest groups, academics and NGOs. Such groups would like to see plants and animals remain exempt from patent protection, and would like to see the standard of patent protection for pharmaceuticals not extended[22]. Furthermore the disclosure of origin where patents have been issued on inventions which utilise genetic resources in the US are desired on the FTA agenda by Thai public interest groups. These groups have been particularly persuasive and vocal to date, however the content of the FTA negotiations are confidential leading to criticism of the way the Thai Government has handled matters of participation (See section 3.8 for more details).

Past bilateral FTAs sought by the US have established a template for such negotiations, one consistent factor of which is the pursuit of higher standards of patent and/or plant variety protection than that required of WTO member states by the TRIPS Agreement. Kuanpoth (2005) provides a useful side-by-side comparison of the FTA provisions of the TRIPS Agreement, the US-Vietnam Bilateral Trade Agreement, and the US-Singapore FTA with the implication that the standards demanded will continue to rise. This is indicative that the outcome of the FTA could go against the wishes of the broader Thai public and may have considerable effects on economic development, science and technology, Thai society, and most pertinent to this study, on biodiversity and traditional knowledge. Although the consequences are unclear, if Thailand were forced to remove patent exemptions on life forms under the FTA, it is evident that many Thai's would view this as an action that could accelerate biopiracy. It could also make the Acts that have been developed either partially or completely redundant. On the other hand, the FTA represents an opportunity for Thailand to attempt to convince the US to implement requirements such as disclosure, PIC and ABS to their patent laws or other respective (eg biodiversity) laws. This however seems unlikely given the stance the US has taken in recent FTAs. The political and economic bargaining power, and even the negotiating terms of the FTA are clearly in the US' favour.

There are other concerns related to the patenting of plants and biological materials. Thai academic, Jakkrit Kuanpoth (2005) describes the broader potential implications below:

> The patenting of life when imposed through an FTA could have a considerable socio-economic impact on the developing countries. Granting of patents on biological materials such as genes will cause a power shift in agriculture towards large biotechnology companies and will disrupt the access to essential products such as seeds or foodstuffs the same way as patents are unfairly restricting access to vital medicines for people in poor countries. Stricter protection for IPRs would increase monopoly powers of the right holders, generally multinational firms, allowing them to gain far greater control over the production chain of crops and food… Moreover, gene patenting will have detrimental effects on the research environment and generate negative effects on downstream innovation.

[22] Particularly with regards to patent term, surgical methods and diagnostics, and data exclusivity requirements on the testing of drugs.

A leaked version of the US FTA position on IPRs has since been posted on the website 'bilaterals.org' indicating that they are seeking an extension of the patent term where there have been bureaucratic delays in patent examination, patentability of surgical methods, therapeutics and diagnostics for humans and animals, and complicated data exclusivity requirements on the safety testing of pharmaceutical drugs and agricultural chemicals.[23] This confirms the fears of civil society groups and concerned academics.

This section highlights the numerous aspects of extraterritorial intervention, and economic coercion utilised by US trade and foreign policy. The full 'package' of the FTA, which some Thai politicians have touted as a 'win-win' situation, threaten to degrade or nullify the socially, environmentally and economically appropriate laws that have recently been developed through relatively open and participative means. Considering the methods with which the US has dealt with Thailand on trade and IP matters in recent years, Thailand should be highly cautious about how far it extends its IPR laws as part of the FTA. The ongoing US "ratchet" of higher IPR standards is likely to pressure Thailand to develop inappropriate IP laws that various civil society, academic groups and government departments have continued to oppose. The influence that such groups have had on the negotiations is discussed in further detail in section 3.8.

As Braithwaite and Drahos (2000) note, the actions of the US government have increasingly been subject to the will of large corporate interests. Such actors have successfully manipulated official policy discourse to enrol the US and other countries to their cause. It is important to recognise that these large corporate interests are the ones driving the recent FTA negotiations, and Thailand needs to decide if it wishes to compromise its own sovereign laws to these interests.

[23] Bilaterals.org Website: www.bilaterals.org/ Acc 9/2/2006.

2.12 Summary

Ultimately it is important for national governments to make decisions on the development and enforcement of national legislation with knowledge of the full suite of international agreements and fora of relevance or benefit to them,[24] but also the history of their discourses and the underlying actors that brought about their development. Thailand is fortunate to be in a later stage of 'development' than other developing nations and therefore has competent experts in most of these areas of international law. Other developing countries, including some of Thailand's neighbours, are somewhat less fortunate. The many different forums may however, add to the confusion surrounding IP, traditional knowledge and biodiversity, rather than alleviating it. At the same time the Thai Government has been under sustained pressures to increase its IP standards, and has had to balance these with trade interests, the interests of its society and environment. Furthermore Thai department officials have noted that some national actions will be largely pointless, such as requiring disclosure of origin in Thai laws, if there are is not a similar concerted effort by international bodies (Dansupatra, Thoosapone. Pers. Comm. 20005). As well as dealing with such international obligations, the Thai government has had to deal with the internal administration of such issues which have regularly caused controversy and the concerns of farmers, healers, local and tribal communities. It should be recognised that often local or national laws, projects and initiatives can be important in the establishment of norms including international laws. The laws, initiatives and micropolitics of Thailand are discussed in the following two sections.

[24] Other international organisations that are working on TK issues include the World Health Organisation which has done some investigation on the benefits of traditional medicines to local societies and economies; the United Nations Conference to Combat of Desertification which seeks to utilise TK to alleviate desertification; the Food and Agriculture Organisation Sustainable Development Department as well as the Commission on Genetic Resources for Food and Agriculture; the UN Conference on Trade and Development and various UNEP and UNDP projects either directly or indirectly.

3. GOVERNANCE IN THAILAND

There are some important aspects of Thailand's history which are important to consider, and which affect the current day politics and culture of Thailand. First it is important to consider that until relatively recently there has been a significant amount of change to the politico-legal system in Siam, the creation of the Kingdom of Thailand and after, climaxing in several tumultuous political events. The current Constitution is very new, being drafted in 1997, and thus the political arena of current day Thailand also has many new aspects. That being said however, there is a long history of centralised power in the capitol of Bangkok.

Second it is an important political and cultural facet that Thailand (and prior to that, Siam) has never been forcedly colonised. Unlike other Southeast Asian neighbours they received colonial influence through more indirect means such as trade and migration. Trade and migratory influences have had some important implications. Thai nationalism has promoted unity and pride in Thai culture and heritage as part of official government policy. Consequently the social treatment and separation of mainstream culture from that of ethnic minority peoples has brought about problematic ramifications. History has proved that in a vast number of cases the state is not necessarily paternal of the culture, resources and rights of minority groups. State treatment of minority groups is often controversial and complex and remains so in modern day Thailand for these and other reasons. This will be discussed in more depth in this and the following section.

This chapter discusses some relevant aspects of the political economy and development of Thailand, followed by a short overview of science and technology, the biodiversity of Thailand and implications of bioprospecting, as well as illustrative cases of biopiracy. Section 3.5 provides a detailed analysis of Thai laws relating to the intellectual property, traditional knowledge and biodiversity nexus. This is summarised by an analysis of the discourse utilised by the bureaucracy and a discussion of the role of civil society in the development of these laws.

3.1 Agriculture, Economic Development and Rural Political Economy

Thailand has a long history as an agriculturally-based society, both economically and culturally. The bulk of Thailand's exports were until recently agricultural products, and crops such as rice. These exports are still a highly valued source of income. Furthermore they still retain an important place culturally in the Kingdom, with numerous rituals and public holidays reflecting Thai agricultural heritage. The King and Royal Family itself supports numerous large agricultural projects to benefit agriculturalists and perpetuate *agri-culture*. This history has not been without significant economic, political and social change however.

In Thailand the post WWII period was not without considerable intervention from foreign governments and international bodies under the rubric of economic and agricultural development. In the peace settlement of WWII, the Allied powers demanded Thailand pay war reparations in the form of free rice exports until 1947-8. When these were lifted, the government maintained the monopoly, with wide profit margins that became regularised as

the 'rice premium' (Baker and Phongpaichit, 2002).[25] This allowed the government to effectively dictate agricultural policy, where the agricultural practices of small-scale farmers had previously been subject to little government intervention.[26] The Thai government sought to expand rice production to increase exports and revenues. The FAO and World Bank were involved in the recommendation and financing of large scale irrigation works, dam projects (including the Greater Chaophraya Project in Central Thailand, and dam projects further north) and other forms of infrastructure and services (Baker and Phongpaichit, 2002).

New rice technology was adopted from the International Rice Research Institute (IRRI)[27] in the 1960s which required less irrigation. The government set up research facilities for testing the IRRI strains of rice, and by the mid-1960s had developed varieties adapted to Thai conditions. These were disseminated in the late 1960s (Baker and Phongpaichit, 2002). The rice premium was just one pressure on farmers which soon coupled with increased purchase of inputs (chemical pesticides and fertilisers) to force many farmers into considerable debt. During various meetings and interviews with farmers throughout this study, they invariably considered debt to be the greatest threat to the ability to maintain a livelihood.

Improved domestic varieties such as Jasmine Rice (*Khao Hom Mali*) became the primary crops, and many traditional varieties were lost with the adoption of largely monocultural practices during the Green Revolution. Production had rapidly moved from a system of smallholders selling local and domestic varieties to local grain mills or at local markets, to a system well integrated into the international market. There are exceptions however, and many Thai farmers still grow vegetables that are used on farm or sold at local markets for additional income. Some farmers also persist with local varieties, and wild varieties still exist in areas where land is not overexploited.

Consequently Thailand has become the largest rice exporter in the world, yet it still had a percentage of undernourished people of approximately 19% in the year 2000 (FAO, 2003). The structure of Thai society and Thai institutions may play a significant role in the perpetuation of these conditions.

Although there has been a consistent drive for the modernisation of all sectors of the Thai economy, agriculture included, Thailand has to date resisted movement into transgenic or genetically modified crops (GMOs). For the past few years a cabinet resolution has held a moratorium on the agricultural use genetically modified crops, or even on field trials. Activities related to the genetic modification of organisms are restricted to controlled experiments under laboratory conditions. There is regular concern about possible implications of contamination from GMO crops detailed in the press (see www.biothai.org for press

[25] The net effect of the rice premium was a transfer of surplus generated in rice from the cultivator to the government and the centralised urban economy. Some estimate that the premium extracted 25 per cent of all rural income. The rice premium existed until the 1970s when it was reduced due to rural political protest, and was finally abolished in 1985 (Baker and Phongpaichit, 2002).

[26] Between the 1850s and the 1980s, peasants cleared and cultivated some 140 million *rai* of land, expanding the total agricultural area from about 10 to around 150 million *rai*. The Crown helped to start this movement of peasant colonisation by facilitating access to land, and by refusing legal support for aristocratic landlords or merchant capitalists to impose control (until the post WWII period). Peasant households colonized new lands and sold produce on the world market with little interference by overlords or the government. Furthermore the trading economy saw a shift from high value forest goods as a main export to agricultural goods, particularly rice (Baker and Phongpaichit, 2002).

[27] Note that IRRI was a separate germplasm bank from the CGIAR system at this stage and operated under a different name.

articles). The advocacy of groups such as the Thai Biotechnology Alliance Association for example have to date been more focused on pushing for the removal of the moratorium on GMOs and public education than they have on the patent exclusion on life-forms (BAA brochure, 2006).

The shift from the agricultural sector to the manufacturing sector as the primary source of exports income have also relegated agriculture as a trade concern to a certain extent. Despite the still large population of farmers, trade concerns have become focused more heavily on manufactured goods (of low to moderate technological or value added inputs). Agriculture thus runs the risk of being pushed back further as a trade concern in FTAs involving Thailand.

Whilst the economy of Thailand has been growing rapidly with the exception of the 1997/1998 economic crisis and recovery, the benefits of such growth in terms of standard of living and income are not necessarily being distributed to the rest of the country. Despite a decrease in the number of people living under the international poverty line, the inequality in income levels is higher than many other Southeast Asian countries and in a global context Thailand ranks high. According to national estimates, the income share of the poorest 20% of households is barely 4% of national income compared with 60% for the richest 20% (Kermel-Torres, D. 2004). This poses the question of whether the government's decentralisation strategies, and economic policies are having any substantial effect on raising incomes in regions other than the central region of Thailand. A positive finding made by a National Statistics Office study was that the proportion of Thai farmers living below the poverty line has decreased from 47 per cent to 27 per cent of the population between 1994 and 2004. Nevertheless, general differences in incomes among farmers remained formidable, with the richest earning 12 times as much on average as the poorest, the study said (Bangkok Post, 09/08/2005, Rural wealth gap lingers, study reveals).

In Thailand the primacy of the capital is an extreme phenomenon, with its origins in the city's geographical location and the country's highly centralised style of territorial management.[28] This central role, which can also be seen in the way other activities and decision making are concentrated, is reflected in the demography of the country, with over 50% of the urban population residing in the greater Bangkok metropolitan region (Kermel-Torres, D. 2004). There is thus a considerable divide between the large rural population (approximately 70% but shrinking [Yuthavong, Yongyuth. 2003]), and the one highly centralised urban area. The importance of this spatial phenomenon is not to be understated due to the centralised Ministerial structure and issues related to peripheral consultation and ideological difference. This could be described as a domestic geopolitics of difference. These differences are in turn reflected in the laws of Thailand whether implicitly or explicitly. With regards to the laws described in Section 3.5, this geopolitics of difference is something that is subtle and complex.

[28] The administration of Thailand is divided into 5 levels: center, provinces (*changwat*), districts (*amphoe* in rural areas and *khet* in Bangkok), sub-districts (*tambon*) and villages (*muban*).

3.2 Science and Technology

As Thailand pursues its current course of rapid economic development it goes without saying that it seeks improved home grown science and technology to help improve quality of life and to provide competitive advantages to industry. Of particular interest here is the ability of Thailand to capitalise on its natural assets and existing knowledge base. This section provides a brief overview of the current trends and organisations in science and technology that are of relevance to this discussion paper.[29]

Historically most intellectual property systems such as patents were designed to encourage technology transfer for the benefit of society. As western intellectual property systems increasingly shift towards the private rights of protection for commercially oriented research, the benefits to society have become less clear, and IPR systems have been accused of raising costs and reducing access to new technologies such as pharmaceutical drugs. In Thailand, the benefits of allowing patent protection over biological resources are quite questionable. One prominent researcher, Somkiat Tangkitvanich, who acts as a Research Director at the Thailand Development Research Institute (TDRI) has warned of the potential effects of higher IPR standards under the Thai-US FTA:

"*A large portion of Thailand's population are farmers. They are located in a tropical area which has high bio-diversity, but our research and development capacity is very low. The Kingdom's overall R&D budget was only 0.27 per cent of the nation's gross domestic product [last year],*" (The Nation, Jul 12, 2005).

Thus until Thailand's home grown R&D has expanded, higher standards of IP, particularly patent, protection will not necessarily be benefiting many Thai researchers. Rather they would be providing protection for foreign interests which have been primarily aimed at biotechnology (which has been considered to be largely controversial by the public).

In an ICTSD report on the indicators of the relative importance of IPRs in developing countries, Lall describes Thailand as a country with low technological activity based on a number of empirical indices. She indicates that:

> These countries are likely to have both significant costs and potential long-term benefits from stricter patents, depending on the level of domestic technological capabilities and their reliance on formal technology inflows. Those that are building their innovation systems on the basis of local firms copying foreign technology and importing technologies at arm's length would gain less than those with a strong trans-national corporation (TNC) presence (Lall, 2003).

In the case of Thailand, its innovative capacities relate primarily to incremental innovations and there has been considerable utilization of copied foreign technologies in the development of its technology base as noted in USTR reports. There is a moderate and expanding TNC presence in Thailand however with significant foreign investment in innovation oriented towards exports. In terms of technology effort, Lall (2003) indicates that Thailand fits a low category with 0.002 'innovation' patents per person. The implication of these indicators is not entirely clear; however it is likely that it would be appropriate for Thailand to have slack IPRs

[29] For a more detailed analysis see Lorlowhakarn, Supachai. And Teth-uthapak, Sasithorn. (eds) (2003) *Science and Technology in Thailand*. National Science and Technology Development Agency, Bangkok.

in some areas and stronger IPRs in others in terms of innovation and technology promotion (Lall, 2003). It is likely that this will be highly dependant upon the industry sector being considered. In terms of agriculture and pharmaceuticals there appears to be little need for higher IPRs. Agricultural innovations are typically incremental and through conventional breeding methods, with little TNC presence in Thailand as yet. As for pharmaceutical innovations, Thai society benefits from a moderately strong generics industry which provides affordable medicines to the public and relies heavily upon the copying of foreign technologies. It is clear that higher IPRs and stricter enforcement in pharmaceuticals will raise the operating costs of such generics companies significantly.

Mr Somkiat Tangkitvanich indicates that a staggeringly high proportion of 'innovation' patents – 94 per cent – belong to foreign companies or individuals and this hasn't changed much over time (Pers Comm. 16/2/2006). However Thai innovators are much more likely to utilise the utility model or 'petty patent' system to register their more incremental innovations, with approximately 93 per cent of utility models registrations currently being held by Thai nationals. Dr Somkiat indicates that there is a considerable 'disconnection' between the production sector and the inventor - inventions in Thailand are typically lower-technology and 'indigenous' having local application, hence the preference for utility model protections (Pers Comm. 16/2/2006). To put this into perspective, in the ten years since the Patent Act was amended in 1989, only 32 Thai citizens patented their inventions, compared to 2412 foreigners (Buntoon Srethasirote, Bangkok Post, 9/2/2006).

Patent protection in Thailand currently includes eligibility for micro-organisms and their components that do not occur naturally, and the Plant Variety Protection Act to protect the work of plant breeders. Donavanik (Bangkok Post, 29 April 2005, Acc 09/05/05) notes that this already forces struggling Thai breeders and scientists into innovations or more advanced areas of breeding not yet protected by patents. The small number of individuals involved in these more advanced areas of R&D in agriculture and pharmaceuticals are already stretched to their limits catching up, rather than keeping up, on many developments in science and technology. Under the FTA, the US wants to expand patent protection to plants and animals. But Donavanik notes that almost all entities possessing the capability to come up with novel and inventive kinds of plants or animals, especially using genetic modification techniques, are multinational corporations. In relation to biodiversity, medicinal herbs and agriculture, Professor Visut Baimai (Pers. Comm. 2nd August, 2005) notes that before such advanced techniques are pursued by Thai researchers, there is much still unknown about the biodiversity of Thailand and such 'basic' research should be given more emphasis first.

Such higher standards may see greater foreign direct investment, which is often argued as an incentive for higher IP standards, however it would mean greater royalty flows back to foreign countries, the entry of some controversial technologies, and the potential of foreign purchase or mergers with Thai companies.[30] Central to many NGO and academic concerns about higher IP standards is the loss of 'food sovereignty'; in other words domestic or local control over agricultural production in Thailand. In many developed countries there has been a trend towards centralisation of agriculture within a few large companies. As these companies expand and merge with other companies, it is argued that the control of agricultural production becomes further removed from small scale farmers. As market share is dominated, farmers are thus provided with few choices and their food sovereignty is eroded.

[30] 80% of foreign direct investment actually occurs through mergers and acquisitions, little in the form that produces jobs and exports (Rodrik, D. Undated, *Making Openness Work*, Harvard Mass, cited at www.gatt.org).

Aside from technical matters, there are some ingrained social and philosophical objections in Thailand to certain aspects of science in technology, for example biotechnology and the patenting of genetic resources:

> '*The worldview of the Thais in general is to create harmony with nature and the universe, rather than to control them as in Japanese or Western societies with their great scientific and technological advances.*' (Wallipodom, Srisak, cited by Yuthavong, Yongyuth. 2003).

Thus there are certain economic as well as social, environmental and philosophical considerations to be made about the future of science and technology. This includes considerations of the kind of protection allocated to these technologies.

There are few organisations designated specifically to the scientific research of biodiversity in Thailand. The Biodiversity Research and Training Program of Thailand (BRT) is the largest such designated body, however biodiversity research is also undertaken in various university centres and institutes, and through the National Parks, Wildlife and Plant Conservation Department. The Director of the BRT has noted however that biological researchers are generally poorly treated and the research is not made a high priority by funding authorities (Baimai, Visut. Pers. Comm. 2nd August 2005). This makes it hard enough to get researchers to undertake taxonomic studies and catalogue biodiversity such that it can be monitored, let alone ethno-botanical studies that involve an understanding of local utilisation of biodiversity.

The other primary research bodies of relevance to this study are the Department of Agriculture who undertake research on crop varieties, and the Institute for Thai Traditional and Alternative Medicines in the Department of Public Health, who undertake research on Thai herbs. Both of these bodies undertake botanical (and some ethno-botanical) research in order to improve opportunities to produce and commercialise crops and medicines in Thailand. As yet it is not clear how these bodies share such benefits with custodian communities from which the genetic resources are obtained.

3.3 Biological Resources and Bioprospecting in Thailand.

Thailand is a country rich in biological diversity; however Thailand also has a history of land clearing and extensive exploitation of biological resources, particularly forest logging. This has been carried out such that there have been many species extinctions and there are currently 213 species listed as threatened (Centre for Conservation Biology, 2004). Thailand was slow to ratify the CBD due to a range of reasons, particularly including concerns over access to genetic resources and because of ongoing debates about the appropriateness of different forms of conservation (whether exclusive of forest dwelling people, or inclusive). In recent decades with growing concerns over biodiversity and the development of the CBD, the establishment of national parks and protected areas has become a high priority of successive Thai governments.

This discussion will consider biological resources in Thailand in two categories: in situ and ex situ. In situ biological resources, or biodiversity, can be broadly defined to include genetic materials, associated species diversity and ecosystem complexes in 'natural' conditions. This

is opposed to ex situ resources which occur in 'simulated' environments[31]. Ex situ conservation of biological diversity has the advantage of saving genetic material, or individual examples from a species that could be threatened or may become extinct. Genetic material can thus be utilised in controlled research, or used to reintroduce a species back to the environment. Ex situ conservation has the disadvantage of removing the genetic material, individual plant or organism from its original environment, such that it will no longer be influenced by the same environmental conditions, such as climate, soils and interactions with other species (including humans).

Ex Situ Biological Resources, Government Policy and Access

Thailand has a history of making donations to CGIAR research centres, particularly IRRI, and cooperation with their research projects. At the same time that the IARCs were being established in Thailand genebanks were also established and administered by government departments and in universities for research and academic purposes.

As a guide this section describes some of the current requirements for accessing biological material from *ex situ* sources in Thailand. It should be noted this is an area where laws, regulations, policy and standards regularly change, and thus it should be taken only as a guideline.

In Thailand there is no standard for accessing material, but rather several depending upon the provider body. Government bodies where genetic resources are accessible include the Department of Agriculture which maintains a bank of crop and plant germplasm; the Insititute for Thai Traditional and Alternative Medicines which maintains a herbarium of potential herbal remedies and tonics; and Biotec, which maintains a culture collection of primarily fungi, but also some other micro-organisms.

The Department of Agriculture was the first department to establish a Material Transfer Agreement (MTA) policy, and a policy of permission to access genetic resources (similar to a PIC policy), as a result of a research project into facilitation of MTAs in Thailand. These policies should in theory apply to *ex situ* and *in situ* genetic resources, as the department policy operates concurrent to the PVP Act. For example if a researcher seeks to obtain a strain of rice held by either the DoA or a local strain registered by a farming community, they must approach the DoA. When the Ministerial Regulations of the PVP Act are passed by the Council of State and Cabinet it is assumed that they will formally establish a standard MTA. At the moment those who wish to research and breed using crop germplasm held or administered by the department or under the PVP Act, they must gain permission as per DoA policy and sign an MTA. If something new is found as a result, they must provide a proportion of the profits in a benefit sharing arrangement as stipulated by contract also to be established by the Ministerial Regulations of the PVP Act (Tithipraesert, Wichar. Pers. Comm., 6th May 2005; and Changtavorn, Thanit. Pers. Comm., 1st June 2005).

The Department of Public health (DPH) has adopted a similar policy and is also waiting on Ministerial Regulations to be passed in relation to the Act on Protection and Promotion of

[31] There may be very broad interpretations of what constitutes 'natural' and 'simulated' environments. For the sake of this discussion, natural environments include national parks, wilderness areas, farms, and open green space. Simulated environments relate to significantly controlled conditions in laboratories, herbariums, enclosed storage, greenhouses or similar.

Thai Traditional Medicinal Intelligence. Thus access to herbs is in theory subject to a similar process of contract and/or MTA. It is less clear under this Act how facilitation of benefit sharing will be made upon commercialisation of a product (Santikarn, Chamaiparn, Pers. Comm. 24th May 2005; and Changtavorn, Thanit. Pers. Comm. 1st June 2005).

Biotec similarly has an MTA policy for academic use only of their microbial cultures. If research is successful then the team is required to come back to seek a further contract securing a benefit sharing arrangement prior to commercialisation (Changtavorn, Thanit. Pers. Comm. 1st June 2005).

It is not clear to what extent local communities or farmers who act as custodians of such resources (and associated knowledge) will be consulted and provided adequate prior informed consent as part of these policies. It is clear that the government bodies want to control access from researchers through some sort of access permission requirement or an MTA, however it is not clear whether this transfers down to 'original' holders of GRs and associated TK. In many cases the government bodies or research institutes learn about the qualities of plants from TK in the first place (see the bioprospecting incident noted in Section 4.2 on Baan Soplan, Amphoe Samoeng). The relevant departments could expand and clarify the scope of their policies, or they could utilise and adopt the model guidelines provided in Appendix One as part of the Ministerial Regulations.

In the case of 'herbs' which may be used for medicinal as well as agricultural purposes (for example many shrubs, vegetables and spices) both DoA and DPH must be consulted. Furthermore, in all circumstances where access is sought to genetic resources in situ, the Department of National Parks, Wildlife and Plant Varieties (for national parks, wildlife sanctuaries, no hunting areas, botanical gardens and other areas established by the Cabinet Committee for example protected mangrove areas) or the Royal Forestry Department (for preserved forest areas) should be consulted as well (Srethasirote, Buntoon, Pers Comm. 29th July 2005). In protected areas there may be up to 10 pieces of legislation administered by these bodies that are of relevance when attaining access to genetic resources (Baimai, Visut, Pers. Comm., 2nd August 2005). Thus it is often unclear or burdensome on the researcher seeking access for academic research which authorities have jurisdiction over the genetic resources sought. These complications, and slow approval rates for applications may be the cause of dwindling numbers of researchers from foreign countries in Thailand. It is estimated that maybe only 10-15 academic research projects from overseas are currently researching in Thailand's conserved forest areas under the jurisdiction of the Department of National Parks, Wildlife and Plant Conservation (Hutacharern, Chaweewan. Pers. Comm. 18th August 2005). None of these have made applications for commercial exploitation yet and therefore no benefit sharing arrangements have been made with this Department.

Regarding benefit sharing Dr Hutacharern, the Director of the Forest and Plant Conservation Research Office, has indicated that under the conditions of current research permits there is not enough involvement with Department staff, but mostly only collaboration with National Parks superintendents. Dr Hutacharern indicated that it would be more beneficial for both parties if the law and regulations included greater staff involvement, training, scholarships or other capacity building to develop department staff during academic research (Hutacharern, Chaweewan. Pers. Comm. 18th August 2005).

Due to the confusion and complications that this may cause seeking access through several authorities it has been suggested that it would be appropriate to have a National Technology

Licence Office. This has been suggested as part of a competitiveness strategy by the National Board of Social and Economic Development, to look after national intellectual property management in a strategic sense (Changtavorn, Thanit. Pers. Comm., 1st June 2005). A Prime Ministerial Regulation on Access and Benefit Sharing for Plant Genetic Resources was drafted in 2000 for similar purposes but quickly became redundant due to bureaucratic reshuffling.

As mentioned in Section 2.4, the CBD requires prior informed consent for access to genetic resources whether *ex situ* or *in situ*, but it is not always necessarily clear who is the provider. For the most part it is assumed to be the state government bodies that have authority over such resources; however some states now have established mechanisms whereby the local custodian communities are consulted for consent.

In all probability much of the genetic resources and associated traditional knowledge collected by the plethora of academic, government and private research institutes in the past would have been appropriated with little PIC of local communities. Even where consent was sought the materials and knowledge were likely to have been given with little knowledge on the part of the individuals or communities of the future implications relating to intellectual property rights over such materials. A situation remains today where these bodies control these resources (and often the associated knowledge of its properties and uses) with little incentive or practicable means to provide benefits to these original providers. Furthermore the original custodians would often have great difficulty making claims to benefits unless the transactions were documented, or unless they were relatively recent. Due to the legal procedures that would be involved, the cost and formality of such claims would also be prohibitive for the vast majority of original custodian groups. Thus such retrospective actions are unlikely. The uneven distribution of biological resources poses another problem.

Aspects of the PVP Act of Thailand do not strictly require for PIC of local communities, but rather rely on them for registration. In cases of wild or general domestic varieties, it is claimed that there is some form of PIC involved on the part of the DoA, but it is vague, and has not yet been refined. The Department of National Parks, Wildlife and Plant Varieties has a policy of PIC for academic research which must be sought of the Department (Baimai, Visut, Pers. Comm., 2nd August 2005). The Department does not however have a policy of seeking PIC of local communities, at least not in written terms, but it has been suggested that there is often a common understanding between department officials or local government and such local communities about accessing such resources (Pragtong, Komon, Pers. Comm. 18th Aug 2005).

Although a single authority may help resolve some issues relating to conflicting or confusing department policy, it may also run the risk of further removing the issue from its source. In other words, the reality of the problem at a local level may not adequately filter up to the ministerial level, especially with the highly centralised system of government that operates in Thailand. After all, many of these resources are found in provinces far removed from Bangkok and their custodians may often be poor small-scale farmers. Thus a single centralised agency would have a positive effect on coordination of activities relating to biodiversity, but there would be a broader range of benefits if it had within its mandate the close consultation of local farmers and community groups within its purview of conservation.

This report contains some model guidelines for access PIC of traditional knowledge holders and custodians of biological resources (see Appendix Two) which are an attempt to try and

respect the rights of such groups to be informed and consulted about research access to their resources and knowledge. The guidelines are intended to facilitate participation by a broad range of stakeholders.

In Situ Biological Resources

Due to extensive commercial logging (primarily teak) and clearing for agriculture during the past two centuries, the central plain of Thailand has been virtually devoid of forest since the 1950s. In recent decades, the northeast region has been most affected by deforestation: with 60% of forest lost on average between 1973 and 1995. In the North, very extensive stretches have been cleared of their forest cover around the valleys and in the intra-mountain plains (more than 1.5 million ha for Chiang Mai, Chiang Rai and Nan combined), but this represents only a little more than 30% of the area considered as forest (Kermel-Torres, D. 2004).

For the 1990s, the estimates of forest cover vary between 15% to almost 30% of the total area, so great are the divergences on defining what is considered as 'forest' (Kermel-Torres, D. 2004). To conserve plant and animal resources, the government brought out laws at the beginning of the 1960s creating national parks and wildlife sanctuaries (an area officially covering 15% of the country), before setting up the principle of 'forest reserves', to be managed commercially. Since the survival of populations settled in these areas long before the reserves were created is compromised, the application of these measures raises strong opposition from farmers, indignant because of the concessions made to industry (replanting with eucalyptus or bamboo for the paper pulp factories) or tourism (installations within the perimeter of parks) and anxious about the repercussions of the major infrastructure planned (dams) (Kermel-Torres, D. 2004).

The degradation of biological resources, particularly tropical forest resources in Thailand has been regularly documented and criticised. Thailand has had considerable difficulties balancing the 'conservationist' drive to secure land that is separated from humans in the style of western designed national parks, and the recognition of the rights of communities to co-manage or fully manage forest areas where they have historically resided.

As countries around the world continue to emit large amounts of greenhouse gases, primarily carbon dioxide, a parallel concern has heightened which is the conservation of the world's tropical forests which represent a large carbon sink. The conservation of these forests has thus become a priority to see reductions in the rate of global warming. Although the developed countries also have a long history of deforestation, they have sought to pressure developing countries that have extensive forests into conservation programs – largely of a western design. The primary means are the establishment of national parks and reserves. It is important to note that in the establishment of 'nature reserves', in a country like Thailand where there has been a long history of community forestry, the separation of such communities from their traditional environments may in fact have deleterious effects on both these communities and the local environment. A 'global' environmental ambition for the preservation of carbon sinks may effectively be compromising the self-determination and rights of local communities, the maintenance of local biodiversity, and the continuation of associated knowledge, skills and techniques.

The hypocrisy of this situation will be understood by many. Global warming is constructed as a 'global' problem for all to solve, despite developed countries representing the highest per

capita greenhouse gas polluters on earth by a huge amount.[32] An onus is then put on the developing countries that harbour large forest reserves to limit their (highly valuable) exploitation for the sake of this 'global' problem that has been primarily caused by the developed world. The intervention of developed countries in the conservation activities of developing countries has thus come with a great deal of scepticism, no matter how 'honest' forms of assistance may at first appear. The US Tropical Forest Conservation Fund described in Box 2, is one such example where, upon first glance the US is making a legitimate attempt to assist in the conservation activities of developing countries, but upon closer inspection the terms of such assistance could have problematic ramifications.

[32] The US alone is responsible for 30 per cent of total carbon dioxide emissions, yet its population is only a fraction of Asia's largest greenhouse gas polluters – China and India (Kuanpoth, 2002). Despite ongoing international pressure, the US refuses to sign the Kyoto Protocol.

Box 2: US Tropical Forests Conservation Fund

On July 29, 1998 the US Congress adopted the US Tropical Forest Conservation Act of 1998 (TFCA), authorising the government to reduce certain debts owed to the US lending agencies i.e. the United States Agency for International Development (USAID) and the Commodity Credit Corporation. According to the TFCA the reduction of debts must be, however, granted on condition that the debtor country will agree to set up a "Tropical Forest Conservation Fund" for the restoration and conservation of the rainforest in its country.

The US claimed that the deforestation and the decline of the world's rain forests results from poor environmental practices employed by many of the nations that control them. It also claimed that conservation, maintenance, and restoration of tropical forests can be achieved through allocation of money to activities such as establishing parks and reserves, sustainable use of plant and animal species, and identification of medicinal uses of tropical forest plant life. The fund will also be used to support training programmes for scientists and support of livelihoods of individuals living in or near tropical forests to prevent exploitation of the environmental resources.

The establishment of such a fund seems to reflect a good intention of the US in providing debt relief to developing countries and in conserving the world's natural resources. However, it also allows the US government at a great extent to take part in conserving and managing its natural resources and rain forests in debtor countries.

Thailand has all reason to be cautious of the proposed debt reduction agreement in exchange of the establishment of the fund. There is no better way to persuade poor countries like Thailand to open up its resource coffer than setting up such a forest fund, which may be linked with the attempts to search for valuable bio-resources. Through the fund, the US researchers and multinational companies can also circumvent all legal restrictions in Thailand at one stroke.

Moreover, the nine-member Tropical Forest Conservation Board to be set up under the agreement will be dominated by the US since its appointment must receive the consent of the US government. The Board can disperse the fund to non-governmental, environmental, forestry, and conservation organizations, as well as private firms, to conduct a wide range of activities, especially collecting flora and fauna samples for the purpose of research. The identification of medicinal uses of tropical forest plants, which is the first step towards further biotechnological studies is also under their powers. All supported activities will be approved and monitored by the Board.

With the virtual unrestricted power of the Board, it is a cause of concern that it will operate outside the purview of the Thai government. Particularly, its power to award grants to private entities can commercially exploit Thailand's biological resources. The draft agreement, which allows non-governmental organisations and other private entities to apply for funding, does not make any distinction regarding the nationalities of persons or private entities who will benefit from the fund. This means the authorised parties can enjoy the access to Thailand's biological resources without seeking permission from the Thai authorities.

Given its potential effects, it is rather fortunate that the Thai government exercised caution in considering whether to enter into the agreement with the US. By refusing to sign the proposed draft agreement, Thailand has reflected its resentment in transferring control of their national resources to an outside power. It is now time for the developed world to learn that developing countries' natural resources are no more part of global commons or common heritage of mankind, but under the sovereign rights of those nations.

Source: with minor adaptations from Kuanpoth, J. (2002) 'US Tropical Forests Conservation Fund: Its Implications to Thailand.' In *Right Angle*, Vol 1, 1. National Human Rights Commission of Thailand, Bangkok. Available at www.nhrc.or.th.

There is a clear value of Thailand's biodiversity for reasons of conservation, as a carbon sink, but also for utilisation in foods and medicines. Thus sustainable *in situ* use has been enshrined as one of the crucial components of the CBD. Such uses can have market values allocated to it. For example, the Kasikorn Thai Research Centre has reported the value of Thai herbal products including those used in medicines, cosmetics, food supplements and food in the year 2001 as reaching 40000 million Thai Baht or about 1 billion US Dollars (Subcharoen,

Pennapa et al, 2001). It is claimed that this rate has been continually increasing by approximately 20 per cent per annum.

Regarding agricultural biodiversity, the number of species being commonly harvested is steadily decreasing for a smaller range of high yielding varieties. These are primarily being encouraged by the Department of Agriculture, however private industry is playing an ever greater role. In 1991 Setboonsarng *et al* indicated that most of the seed used in agricultural production is the seed that the farmers have selected and retained from the past harvesting season (farmers' saved seed). Dr Vanakorod (Pers. Comm. 5th July 2005) indicates that this is still the case, but the practice of saving and use of traditional varieties is rapidly being lost.

Examples of the use of herbs for traditional medicines, and diverse arrays of plant species in agriculture can best be found in community forest areas throughout Thailand. In such situations land tenure may not be recognised by government authorities, may be shared between families, or may exist in somewhat defined property boundaries where shared communal activities and rituals continue. These are generally fairly isolated areas. Throughout the rest of the country a certificate of land tenure is more often held, but this does not mean that traditional use of herbs and agricultural varieties are not continued as well. Section 4.2 provides an analysis of different contexts whereby traditional knowledge of biodiversity is applied.

Databases of various types of genetic resources correspond to the herbariums and genebanks that retain and research them, for example in DoA, Biotec and DPH (websites with some links to such databases have been provided in the Appendix). Further documentation has been undertaken by the BRT, however as discussed in the previous section, biological research has not been made a high priority by funding authorities, and there are still considerable gaps in the documentation of the taxonomy of Thailand. One estimate suggests that less than 80 per cent of plant species have been documented, nearly 100 per cent of mammals, but very few invertebrates or micro-organisms (Baimai, Visut. Pers. Comm.. 2nd August 2005). Ethno-botanical knowledge or traditional knowledge which relates to genetic resources is even more partially documented.

There are however a growing number of documents which detail aspects of plant and animal biology in various ways in Thailand. 'Biodiversity' is however a relatively new concept and thus the bulk of materials refer specifically to a topic area within the broad scope of this term (i.e. there are few biodiversity of Thailand textbooks per se[33]). There are however numerous English language books which document uses of plants for medicinal purposes and food in Thailand. The list on the following page is not exhaustive:

[33] Probably the best text on biodiversity in Thailand is BaiMai, Visoot (1995) *Status of Biological Diversity in Thailand*. Thailand Biodiversity Research Fund, Bangkok (in Thai only).

- Anderson, E.F. (1993) *Plants and People of the Golden Triangle: Ethnobotany of the Hill Tribes of Northern Thailand*, Dioscorides Press, Portland, Oregon.
- Brun, V. and Schumacher, T. (1994) *The Traditional Herbal Medicine of Northern Thailand*, White Lotus, Bangkok.
- Gardner, S., Sidisunthorn, P., and Anusarnsunthorn, V. (2000) *A Field Guide to Forest Trees of Northern Thailand*, Kobfai Publishing, Bangkok.
- McMakin, P.D. (2000) *Flowering Plants of Thailand: A Field Guide*, White Lotus, Bangkok.
- Pecharaply, D. (1994) *Indigenous Medicinal Plants of Thailand*, Department of Medical Sciences, Ministry of Public Health.
- Salguero, C. P. (2003) *A Thai Herbal: Traditional Recipes for Health and Harmony*, Silkworm Books, Chiang Mai.
- Saralamp, P., Chuakul, W., Temsiririrkkul, R., Clayton, T., and Paonil, W. (Vol 1-1996; Vol 2 – 1997) *Medicinal Plants in Thailand*, Mahidol University, Bangkok.

Differentiating between plant genetic resources for agriculture and pharmaceuticals

The bargaining opportunities for biodiversity-rich countries are more promising for benefit sharing relating with the pharmaceutical industry, than for agricultural industries (plant breeding and agro-biotechnology). The first reason is that a new pharmaceutical is likely to be derived from a single active compound isolated from a particular species, or a few plants, hence there would likely be fewer benefit claimants. Second, international transfers of biogenetic resources are more likely to flow in a general South to North direction for this industry than in the more complex crop germplasm situation (see previous section, and section on CGIAR). This suggests that there is a lower degree of interdependence between countries than for the supply of suitable crop germplasm (Dutfield, 2004). The complicated nature of the crop germplasm situation often detracts from the ability of advocacy groups to legitimise their discourse or 'prove' that there may be chronic detrimental effects caused by higher standards of intellectual property protection.

Somkiat Tangkitvanich, a Thai Development Research Institute research director, has indicated that in Thailand the pharmaceutical industry, coupled with public health interest groups (such as the Network for People Living with HIV/AIDS), have been able to draw greater attention to the issue of intellectual property protection for drugs than farmers have for agriculture (The Nation, July 12 2005). This is largely due to the smaller size and concentrated nature of the pharmaceutical groups, as opposed to the many farmers and farmer's advocacy groups spread throughout Thailand. Furthermore the threat of higher costs for life saving drugs is often perceived as a more urgent or imminent concern than the potential long term effects on agriculture.[34]

[34] Malnutrition and under-nourishment rates in Thailand have been steadily decreasing in recent years according to FAO statistics. On the other hand, the number of victims becoming infected with HIV/AIDS in Thailand rose rapidly in recent decades, before government campaigns were able to stabilise the infection rate with great success. Compared to other countries, there are still a relatively high number of people in Thailand living with AIDS.

3.4 Alleged Biopiracy Episodes and Misappropriations

The generosity, kindness and hospitality of the people of Thailand is well-renowned. Therefore when visiting researchers frequented Thailand during the past century or longer, the Thai people provided their traditional knowledge of herbs and plant varieties as well as samples, often with little hesitation. During village interviews as part of this research in Thailand, local farmers, elders and healers regularly indicated that they are generally very happy to share their knowledge with outsiders and others, seeking nothing in return. Unfortunately this has been taken advantage of by some people. Due to the changing international conditions for the legal treatment of information and knowledge, these local people are now concerned about what may happen if they continue to share their knowledge as they have in the past.

There have been several cases of biopiracy or misappropriations of plant genetic resources in Thailand in the past few years. The most widely publicised case has been that of Jasmine Rice or 'Khao Hom Mali' for which there are a number of incidents to consider.

Rice represents Thailand's largest agricultural export for which Khao Hom Mali makes up a significant proportion (approximately 20 to 25%). Furthermore Thailand's long history as a rice growing country whereby rice represents an integral part of culture emphasise its importance both economically and culturally.[35]

Jasmati Case

In 1998 an international network of NGOs informed the Thai NGO BioThai that a US company had registered Jasmine rice under the US intellectual property system. Scrutiny of the claims revealed that a US company named Ricetec, Inc., based in Alvin Texas had made several attempts to trademark the name 'Jasmati' or some similar derivation of the word 'Jasmine' and had successfully registered a trademark associated with a rice product called 'Jasmati' in 1993.[36]

The concerns were rapidly and widely reported in the Thai press with varying degrees of accuracy.[37] Because Ricetec had also successfully registered a US patent called "Basmati Rice Lines and Grains" in 1998, some confusion may have occurred between the two cases. It was widely believed by the Thai public at the time that there as a trademark *and* a patent on Jasmine rice. In fact there was only the 'Jasmati' trademark. DNA fingerprint analysis has since been done comparing the US varieties in question with the most common Jasmine rice varieties, revealing that Jasmati is genetically unrelated to Jasmine rice.

Consequently there were a number of protests held throughout the country, including a mob of about 500 Jasmine rice farmers outside the US embassy in Bangkok led by Assembly of

[35] It is worth noting that the Thai word for 'food', is 'khao' which literally means 'rice'.
[36] The Jasmati trademark can be found on the USPTO website in its Trademarks Electronic Search System (TESS) at http://tess2.uspto.gov/. It has registration number 1807817 and serial number 74372314.
[37] For example the Thai language 'Matichon Newspaper' placed an article on the 23rd of July 1998 entitled 'Farmers Mob Demand the American Embassy to Revoke the Jasmati Patent', despite there being no patent on the Jasmati product. The concern and confusion is understandable though, given the patent on Basmati by the same company.

the Poor leader Wirapol Sopa and Witoon Lianchamroon of the NGO BioThai, amongst others.

The group made the following three demands of the US:

- The US Government must revoke the Jasmati patent and must refuse to grant any patents on Jasmine rice or other indigenous rice varieties from Thailand;
- Must urgently cancel the trademarks on Jasmine, Jasmati, or other marks that may confuse the public into believing that such rice is Jasmine Rice;
- Must stop direct and indirect pressures to force developing countries to provide patent protection of lifeforms (Tanasugarn, 1998).

The Thai government was in the midst of dealing with Thailand's sizable national economic crisis at the time, and therefore it is reported that they did not adequately inform the public or attempt to reconcile their concerns in a timely manner. Consequently, the King of Thailand, who does not usually become involved in such political matters, granted an audience to executives of IRRI, where it was believed that the genetic material had been obtained by Ricetec, Inc. IRRI quickly made a public statement that they did not condone the 'Jasmati' trademark, and believed it may 'mislead consumers that such rice is Jasmine rice, grown in Thailand, or Basmati rice, grown in other Asian countries' (Tanasugarn, 1998).

The Jasmati trademark has since been approved for renewal in 2003. Only one challenge has been made on the trademark by another US Company named Sun Lee, Inc., likely to be a claim over a similar logo graphic used by both companies. The action was dismissed by the US Trial and Appeal Board (USPTO, Acc 2006). The Thai Government and Thai companies to date have not challenged the trademark.

Another interesting US patent has since been identified as Patent Number 5,208,063 assigned to RiceTec, this time the subject of a process patent that yields fluffy and tender cooked rice with similar characteristics to that of Jasmine rice (Tanasugarn, 1998). The patent does not however mention Jasmine rice, and thus did not arouse significant controversy. This does however arouse curiosity about whether Ricetec, Inc. were intending to use this process to give the 'Jasmati' product characteristics more like Thai Jasmine rice, thus contributing to further possible deception.

It is a common belief for the Thai people that plants and animals should be excluded from intellectual property protection. Tanasugarn (1998) argues that many Americans who complained that the Jasmine rice crisis was blown out of proportion to its actual severity should understand that the Thais' resentment towards any attempt to monopolise plants is base on their agricultural background and heritage. Since rice is the most important crop culturally and economically for Thailand, the issue became particularly sensitive.

Thailand has since been considering the geographical indication of Jasmine rice, under its new Act on Protection of Geographical Indications B.E. 2546 (2003) discussed in Section 3.5. However Thailand has reportedly been under pressure from the US not to provide such protection, but rather to undertake trademark protection for individual companies that sell and export the rice. This would clearly be a less favourable option for Thailand. Trademark protection would not necessarily stop similar misuses of Jasmine rice, but only protect individual companies.

While the use of geographical indications to protect Jasmine rice may be able to stop similar deceptions of the public relating to the name 'Jasmine' as has been reported here, it would not necessarily protect Jasmine rice from cases where the germplasm is accessed, modified and potentially patented. Such concerns arose in Thailand with media coverage of the Stepwise Programme for the Improvement of Jasmine Rice for the US. Concerns relating to the Stepwise Programme are described below.

Stepwise Programme for the Improvement of Jasmine Rice for the US

The 'Stepwise Programme for the Improvement of Jasmine Rice for the US' has also been the subject of potential biopiracy (of tangible and intangible property) and competitiveness concerns. The programme has been the subject of debate in numerous meetings in Thailand and has appeared in the press with outraged comments made by NGOs and members of the Thai public (see the Nation, Nov 6 2001).

The purpose of the Programme is to develop jasmine rice that US farmers can grow easily and profitably, and thus compete with Thai imports according to Dr J. Neil Rutger, project coordinator and director of the Dale Bumpers National Rice Research Center, US Department of Agriculture/Agricultural Research Service in Stuttgart, Arkansas. Public concerns and news media coverage in Thailand has focused primarily on the partner project run by plant breeder Chris Deren in the University of Florida Everglades Research and Education Center (see for example, Bangkok Post, 11th Dec 2003; Nation 6th Nov 2001). The programme uses two methods including induced mutations of Jasmine rices using gamma ray irradiation, and using conventional breeding methods, cross-breeding Jasmine rice varieties to improve the varieties to US conditions.

Regarding the conventional method, Deren has been cross-breeding Khao Dawk Mali with Jasmine 85. Scientists selected Jasmine 85 as IR841, from the 841st IRRI cross, made in 1966 by Dr. Ben Jackson, Rockefeller Foundation rice breeder and IRRI liaison in Thailand from 1966 to 1983. Organic Jasmine 85 sells well as a "niche rice" to upscale U.S. customers who want new, healthy products--but not to the larger ethnic Asian market (Nation 6th Nov 2001). Thus the Stepwise Programme uses two varieties that originated in Thailand and have since been modified to suit US conditions. The improvement of these varieties by Thai farmers, and the generosity of the Thai people to have allowed such germplasm exchange in the past have arguably been taken advantage of. These breeders can thus reduce the need for the US to import Jasmine rice products from Thailand, and also compete with Thai Jasmine rice in international markets. An even greater concern has been that they may yet decide to patent the products in the US and thus potentially monopolise the use of such germplasm there.

Deren's rice is very similar to a variety of Thai jasmine rice called Khao Pathum Thani 1. If Deren were to patent the varieties that he bred or mutated, there could be consequences for Thai exports. Kuanpoth notes that if there are doubts about the similarity of the two varieties, Thai exporters will have to provide scientific evidence that the rice they sell in the US is a different variety from Deren's. They have to prove that they did not violate Deren's exclusive rights over his new variety. The testing could take a long time, could cost Thai exporters, and sacks of Thai jasmine rice could sit idle at US ports for considerable amounts of time (The Nation, 6th Nov 2001).

The feelings of many Thai farmers are well summarised by Mr Ubon Yuwaa, a Jasmine rice farmer from the Issan region and well-known commentator on farmer's rights:

"KDM 105 would not have existed had our ancestors not developed and nurtured it through decades of conventional breeding. Jasmine rice belongs to our ancestors, not scientists. How dare [scientists] claim ownership of it by simply changing a few characteristics?" (The Nation, 6th Nov 2001).

Thus this case of perceived biopiracy relates to the tangible property rights of the genetic materials as much as the intangible (intellectual) property rights. When the germplasm was transferred, the Thai people never perceived that it would be used to compete against the exports of Thai farmers.

The bone of contention is thus that Thai farmers in the arid Thung Kula Ronghai in the Northeast (Issan Region) have through generations of conventional breeding and selection improved the quality of jasmine rice. Today many communities and consumers are attracted by its specially soft texture and unique aroma. These Issan farmers had never thought of seeking exclusive rights to the fruit of their labour. They freely shared seeds with other farmers. To them, and indeed most farmers elsewhere, rice and other food crops are the "common heritage of mankind" (The Nation, 6th Nov 2001).

On the 6th of November 2001, IRRI issued a press statement in response to concerns in the Thai press. IRRI admitted that in 1995, they shared a sample of Khao Dawk Mali 105 with Dr. Neil Rutger at the USDA's Dale Bumpers Rice Research Center, however no MTA was signed because at that stage they weren't required by IRRI. Both scientists have since publicly agreed to accept all the terms and conditions in the current IRRI MTA and have issued signed letters saying so (IRRI, 2001, Acc 1/7/2005).

Dr Padolina of IRRI has noted that "It should be clearly understood by all concerned that it would be very difficult for Dr. Deren to patent any results of his research concerning jasmine rice, and he has publicly stated he would not seek any patents. It is also important to note that American rice breeders have been trying for years to improve the quality of their rice to match Thailand's but have been unable to do so," (IRRI, 2001, Acc 1/7/2005).

Thai farmers remain concerned about the potential effects of the program to their exports. Furthermore they remain concerned and distrustful of such organisations as the US research centres and IRRI due to the many other cases whereby their genetic resources have been utilised in patented materials without adequate recognition or compensation of their past contributions. Under the US system a patent on such a variety would only really benefit US breeders and farmers, with any royalties flowing back to the US patent holders. The US patent system is designed to only recognise such top-end technological developments, not long term contributions to the improvement of a variety.

Marine Fungi – University of Portsmouth Case

A collection of more than 200 strains of marine fungi were originally collected by researchers from mangrove and coastal areas in Southern Thailand. These were initially taken to the National Centre for Genetic Engineering and Biotechnology (Biotec), in Bangkok, however Biotec did not have adequate storage facilities for the strains. The marine fungi specimens

were then taken by a Portsmouth University professor in 1993, as part of a research project sponsored by a pharmaceutical company.

In 1998 the Thai government asked for the specimens back, citing a "gentleman's agreement" that they would be turned over when requested. Portsmouth University staff then proceeded to give conflicting answers to that request for several months (Daoreung, 1998, Acc Biothai web).

Thai officials and academics began to fear that the country could lose the right to develop and benefit from the fungi strains if western pharmaceutical firms discover and patent the drug potential in them (Kuanpoth, cited by Daoreung, 1998). Kuanpoth echoed the concern that Thai scientists would lose their right to develop the same fungi strains even if they could still be found in the country. These concerns are based upon a chronology of confusing replies received by Portsmouth University as described below:

- In January 1998, Dr Richard Greenwood, head of the university's School of Biological Sciences, said he would "endeavour to repatriate the Thai isolates" and asked Thailand to contribute to the cost of dispatching the cultures.
- In February, he wrote back saying that he would not take any action which might have a "financial or legal repercussion". Greenwood also indicated in an electronic mail message to Biotech in February the university was willing to return the fungi specimens, but would ask Biotech to shoulder technical and shipping expenses. Weeks later, he said a number of strains collected from Thailand had already been sold to commercial companies.
- Another letter from the university's business development director, dated Aug 10, implied the institution would not return the specimens because the fungi strains had been collected by its own staff and therefore, legal title to the collection resided with the university.
- On another occasion, Howel-Jones was told that the university could not return the strains because they belong to the company which sponsored the fungi strains collection and research in 1993.
- Yet in August, a Portsmouth University spokesman was quoted in 'The Independent' newspaper as saying the strains "are being looked after properly and have not been sold to science".
- And on August 27, Biotech received a reply from John Craven, university vice chancellor, saying that his institution had no use or interest in the cultures and would have them returned as soon as possible. (Daoreung, 1998)

This is a case where the transfer of genetic materials has had unclear tangible property rights allocated. Thus consequential research and commercialisation of products based on the material should, according to the CBD, have benefit sharing arrangements in place. Fortunately for stakeholders in Thailand the situation did not escalate beyond such concerns.

Eventually the fungi were returned to Thailand on an unknown date shortly after this chain of events. What has concerned Thai researchers and officials is the possibility that samples of the cultures were sold to other researchers without their consent and cannot now be tracked down. There have been numerous speculations about transfer of some of the cultures to foreign companies, subsequent research and associated patents (Jaroen Compeerapap, Buntoon Srethasirote; Pers. Comm. 23 Feb. 2006).

Thai Patents on Kwao Krua (Pueraria Mifica)

Considerable confusion has also surrounded a number of attempts to patent compositions containing Kwao krua. The herb Kwao krua has been known for its cosmetic and revitalising qualities for more than 100 years by Thai healers, communities and households. In more recent years, scientists have identified that the effects are related to the presence of phyto-oestrogens, or plant-produced female hormones. Scientific claims have since been made that the extracts may enlarge and firm breasts and assist with male sexual performance and erection, similar to the Pfizer trademarked drug Viagra.

In 1998 a number of patents were filed on inventions based upon the extracts of Kwao krua. The first patent granted was Thai patent application no. 8912 named 'Medicinal herbal Composition from Kwao krua' and listed as the invention of Mrs Mantana Uawitaya, a Thai National. After the patent was granted, Matana Panich Chiang Mai Co. Ltd, the filing company, put up advertisements and notices from a local law firm in local newspapers informing the public and other producers that the company now has exclusive rights to the (conditional) production of Kwao krua and was determined to enforce them (Lerson Tanusagarn, 1999). Under the Patent Act of Thailand this Patent was approved in May 1999, being considered to be based on a chemical derivative of a plant product as part of a composition, and thus avoiding the scope of the patent exclusion on plant and plant extracts under Section 9(1). The scope of application of this exclusion is controversial in Thailand and has also met with concerns in CBD fora, with some parties indicating the need for broader coverage of patent exclusions to 'derivatives' of biological materials.

Considerable public outcry was made over the claims by other local competing pharmaceutical and cosmetic companies that they would be heavily restricted in their use of products containing Kwao krua extracts. The Thai Drug Act B.E. 2510 has required traditional medicine manufacturers to register their formulas, and current data shows that there are more than 35 companies producing more than 50 formulas containing Kwao krua. There are therefore concerns that patents on kwao krua extracts may inhibit the use of others to continue their original business practices (Subcharoen, Pennapa. et al, 2001).

Thai scriptures collected since 1931 by Luang Anusarn-Sunthorn provide evidence of the prior art of Kwao krua in considerable detail. It appears that in the examination process the Department of Intellectual Property (DIP) did not know about the documents establishing prior art, making the claimed invention fail a non-obviousness test. Officials at DIP appear now to be waiting for someone to bring the case to the Intellectual Property and International Trade Court (Lerson Tanusagarn, 1999).

Tanusagarn (1999) has suggested that preventative measures could include further training for patent examiners, access to traditional medical formulations in databases or textbooks, and social responsibility by private lawyers and IP counsellors such that they do not seek to inflate or obscure the scope of patents in the public's mind. Requiring disclosure of the source of origin of the materials and knowledge used in the invention process could have potentially facilitated the patent examiners rejection of the patent on grounds of prior art. If the inventor had attempted to conceal the source of origin however, the patent examiner still would not have known. This indicates the importance of searchable databases or consultation with external expertise, as well as possible penalties for failure to disclose the origin of materials and associated knowledge used in an invention.

A number of subsequent Thai patents and US patents have also emerged since. Dr Wichai Cherdshewasart of Chulalongkorn University in Bangkok is the claimed inventor of three different inventions under patent examination in DIP Thailand relating to Kwao krua. These apply to Thai patent numbers 046779, 048605, and 052443, of which the latter has been the source of considerable controversy. According to the head of the Patent Division of the Department of Intellectual Property, the approval of these patents has been challenged, having spent 2-3 years in the Intellectual Property and Trade Court, and then 3-4 years in the Supreme Court (Suradet Assawin Tharanggun, Pers. Comm. 21/02/06). Each of the patents refers to extracts of one or more of Pueraria mirifica (white Kwao krua), Butea superba (red Kwao krua) and/or Mucuna collettii (black Kwao krua).

As IP expert Jade Donavanik describes in Box 3, Thai Patent number 052443 appears to be the direct foundation of USPTO patent number 6,673,377. The claims, in both the Thai and US patent applications include an extract of Kwao krua, a method for extraction, and a method for manufacture. The primary concern here is that the extract is not new, novel, or non-obvious.

Box 3: US Patent on Kwao Krua by a Japanese Company

A very recent case of bio-piracy involves Kwao krua, specifically white Kwao krua, a plant about which little was widely known until three or four years ago but is now recognised for its ability to firm or enlarge breasts and revitalise sexuality. Interest groups and NGOs identified that white Kwao krua has become an essential subject matter in US Patent No 6,352,685, owned by Kose Corporation of Tokyo and Shiratori Pharmaceutical Co Ltd of China. There is strong evidence that at least one of the four inventors of the product patented has worked extensively with local scientists in Thailand.

The patent's foremost claim, couched in the sophisticated language of patent professionals, is ``an external composition for skin comprising, as an essential ingredient, a liquid extract of a dried root lump of Pueraria mirifica; wherein said liquid extract comprises an extraction solvent which is at least one selected from the group consisting of water, lower alcohol, liquid polyhydric alcohol; and wherein said external composition for skin contains 0.00001 to 5 wt % of said liquid extract of said dried root lump of Pueraria mirifica as dried solid in the composition".

What this means in everyday language is that the product is nothing more than an extract of white Kwao krua using water; a lower alcohol such as methyl alcohol or ethyl alcohol, and a liquid polyhydric alcohol such as glycerol as extraction solvents, resulting in a dried solid active constituent of white Kwao krua which is combined with other ingredients in a quantity 0.00001 to 5% by weight to form a liquid composition that could be a cream, gel or the like for use on the skin.

A similar, simpler claim already exists in traditional Thai medical scriptures on the use of white Kwao krua as a cosmetic. Hence, the claimed invention under US Patent No 6,352,685 is nothing novel, or would fail a non-obviousness test, which presents a statutory argument for revoking the patent under the US Patent Act.

But the Japan-owned patent is not the only one with the US Patent and Trademark Office. Cheil Jedang Corporation, a company based in Seoul, holds US Patent No 6,673,377 for a product which also uses white Kwao krua as its main ingredient. This might be a copy of the Japanese patent were not the inventor of the patented Korean product a Thai scientist (Dr Wichai Cherdshewasart of Chulalongkorn University).

The product is no doubt of value to Thais and the rest of the world, but it would seem that there has been an unfair exploitation of Thai traditional knowledge and genetic resources. The situation would have been much less controversial if there was consultation and consent from traditional knowledge holders and conservators of the herb, if references were made to Thailand, and the benefits were shared among the Thai people.

The principal claim of the Korean patent is that it is ``an extract derived from Pueraria mirifica having an effect on improving breast firmness, breast enlargement and wrinkle removal from the breast, wherein said extract is prepared by the steps of: drying tubers, roots, stems, leaves and/or tissue-cultured calluses of Pueraria mirifica, optionally by spray-drying, freeze-drying and/or vacuum-drying; pulverising the dried tubers, roots, stems, leaves, and/or tissue cultured calluses into pieces or powders and then immersing the plant pieces or powders in a mixture of methanol and water; extracting the mixture; and filtering the resulting extract and then concentrating it in a vacuum to remove the solvent".

Again the description uses technical language that would obscure the origins of the product. There are however a number of patents already listed in the Thai language at the Department of Intellectual Property, as Thai patent application numbers 046779, 048605, and 052443, specifically the latter since it appears to be the direct foundation of US Patent No 6,673,377. The detail in the three Thai patent applications and the abovementioned US patent bear striking similarities to entries in Thai scriptures collected since 1931 by Luang Anusarn-Sunthorn.

The only real difference is that the products covered by the four patent applications employ more advanced extraction methods and sound more scientific than what Luang Anusarn-Sunthorn recommends. But on the whole, these patents have little or no novelty or inventiveness. They merely re-invent the wheel. The problem may not be that traditional knowledge has been built upon, but rather it is that the lack of recognition that these patents pay to traditional wisdom has the effect of undermining and downplaying the importance of this system of knowledge.

Source: Donavanic, J., Bangkok Post, 22nd Nov, 2004.

Of the biopiracy cases discussed here, this Kwao krua case presents possibly the strongest argument for a DOO requirement. Had there been a requirement under US patent law, then as mentioned the proponent would have likely had the patent refused based on prior art, or otherwise established have a benefit sharing arrangement. If a prior informed consent requirement was in place, the proponent would have also had to consult and deal with the concerns of traditional knowledge holders under some form of agreement or contract.

It should be noted that the plant is endemic to the region, but not only Thailand. The plant exists in Burma and Laos (and possibly also Cambodia) (Nation, 2/3/2005, Acc 9/2/2006). This represents a challenge for providing fair and equitable benefits to the custodians of the plant and associated traditional knowledge. This highlights the potential importance of the Draft ASEAN Agreement on ABS.

In response to the increasing value of Kwao krua it is pertinent to note that over-cultivation is emerging as a potential problem. The cultivation of the herb is already limited in National Parks and restricted areas by the laws governing them. However in other areas the quantity allowed for cultivation has been less clear. The Thai Traditional and Alternative Medicines Institute of the Department of Public Health has since enacted a regulation under the TTMI Act for the protection of the plant from excessive cultivation (Nation, 18/5/2005, Acc 9/2/2006). This does not yet exclude cultivation by traditional medicinal practitioners, but limits commercial quantities from being poached or harvested due to the increasing rarity of the herbs.

Plao Noi

Plao noi is a local herb whose medicinal properties were recorded centuries ago on palm-leaf books. In a series of related patents issued to the Japanese Sankyo Company Ltd. Protection has been sought over the process and derivative extracts of the plao noi (or plau noi) plant (scientific names of the varieties include Croton sublyratus, and Croton Columnaris Airy Shans). Related plants used in the extract of derivatives include: Plau-luat (Croton Hutchinsonlanus Hosseus) and Plau-yai (Croton oblongifolius Roxb.). The patents were assigned under USPTO number 4260551 (filed in 1979 and approved in 1981) and also number 4,192,953 **(**filed in 1979 and approved in 1980**)** which is based on earlier claim 4059641 (filed in 1975 and approved 1977), and a continuation of the abandoned patent Ser. No. 807,913, filed June 20, 1977 (USPTO, Acc 24/02/2006).

The patents are on ‘Polyprenyl derivatives’… ‘useful as medicines for treating peptic ulcer’. The claim covers a series of esters and their chemical derivatives, which when combined have been called ‘plaunotol’ (USPTO, Acc 24/02/2006). This has since become the active ingredient in a commercial drug called Kelnac.RTM.

In the description, the inventors indicate that:

> We have for many years been engaged in studies for finding out novel pharmaceuticals by way of isolating a physiologically active ingredient from plants. As a result of our studies, we have isolated a diterpenediol compound, (E, Z, E)-7-hydroxymethyl-3,11,15-trimethyl-2,6,10,14-hexadecatetraen-1-ol, from plants belonging to the genus Croton, particularly ***Plau-noi*** (Croton Columnaris Airy Shans), Plau-luat (Croton Hutchinsonlanus Hosseus) and Plau-yai (Croton oblongifolius Roxb.) ***growing in Thailand*** and also succeeded in chemical synthesis of this diterpenediol compound as well as its homologs and derivatives (USPTO, Acc 24/02/2006, emphasis added).

How exactly the Japanese researchers obtained the material is unclear and during this research interviewees gave various responses. Some have speculated that during the Japanese occupation of Thailand in World War II, Japanese scientists working with local scientists and traditional healers obtained the materials and the local understandings of its use for the treatment of various ailments including peptic ulcers. Rachan Pooma (Pers. Comm. August 29, 2005) indicates that Plao-noi was first collected from Prachin Buri, in open disturbed areas, not in protected or forest areas. Mr. Chana Phromdej, a botanist of the Forest Herbarium, National Park Wildlife and Plant Conservation Department apparently led the Japanese team to explore Plao-noi following the information from specimens recorded in the herbarium. After several trips were made, materials from Prachuap Khiri Khan had the best quality extracts. Apparently no benefits were shared with the Thai authorities or local knowledge traditional knowledge holders or possible individuals conserving the plant, with the exception that Mr Chana Phromdej has been offered to be a company consultant to the Japanese researchers (Rachan Pooma. Pers. Comm. August 29, 2005). The fact that the plant was found in open, disturbed areas raises the question of whether the plant is actually conserved where it was found at the time. There is evidence today that the plant is conserved by local groups and healers (both Thai and groups such as the Hmong and Karen) in the north of Thailand (field research, February 2006), however this is not always the case throughout Thailand, and over time the perceived conservation value of the herb may have since been inflated by the research and patents.

Dr Chaweewan Hutacharern (Pers. Comm. 18th August 2005) indicated that as a consequence of the research she thought that a *process* patent was made on the isolation and purification of the medicinal properties of the herb. If this were the case then this would not restrict people from use of the product, but clearly the text of the Sankyo Company Ltd. patent indicates that it is the extracts and derivatives of the plant. This may be exclusive in terms of the commercial use of such extracts, at least in the jurisdiction of the patent. This could potentially affect the export of Thai medicinal products based on the plant; however this does not appear to have occurred in practice.

But in terms of justice and compensation, the Japanese researchers and the company holding the patent have extracted and monopolised something that was not originally theirs, something that was commonly held by groups in Thailand. Arguably there should be some kind of benefit sharing because of the evident use of traditional knowledge in the chain of invention. Plai-noi is a well known herb in Thailand and it has fairly wide distribution, particularly in the mountainous and densely forested north, as well as the north-east. It is therefore possible that it also occurs in the nearby mountains of Burma, Laos and Cambodia. But if the plant is only conserved by certain groups, then how could benefits have been shared fairly? This case draws similar parallels to the blight resistant rice *Oryza longistaminata* case

that was investigated by WIPO and UNEP, where the people who conserved the valuable rice strain (an displaced immigrant group called the Bela people) were not clearly understood as the rightful 'owners', however the rice was considered a weed by many local Malian farmers. In the plao noi case it is just as unclear how benefits could be appropriately shared back (WIPO/UNEP, 2001).

There are further patents relating to Plao noi listed in the USPTO. The case which Dr Hutacharern was probably referring to is the USPTO patent 5879916 which is assigned to the Thailand Research Fund, a government research body. This patent is on a process for the extraction of geranylgeraniol-18-hydroxylase from croton sublyratus (a plao noi variety) to form plaunotol, the anti-ulcer medication patented under the Sankyo Company Ltd. Patent. As this is a process patent, it does not restrict the use of plao noi in any way, but as described in the patent documentation, this patent provides a 'less cumbersome and more effective process for the production of plaunotol' (USPTO, Acc 21/02/2006). If a process patent does not restrict the use of a plant, but only aids in the extraction, then should benefits be required to flow back to traditional knowledge holders? It would be fairly problematic to expect this. Although the patent references indicate the use of Plao noi as a medicinal plant with traditional uses, a patent on the process of extraction arguably doesn't interfere with the use of the plant but may facilitate its broader use commercially. Does this affect the conservation of the plant? It is possible, but the pathway between the conservation, sustainable use, and application of traditional knowledge through to commercialisation is less clear than in other cases because the patent is not on the use of the material itself.

USPTO Patent number 5,264,638, an older patent approved in 1993 (assigned to Chulalongkorn University, Bangkok), also covers a 'Process for extraction and purification of plaunotol'. Again the patent claims only refer to processes for extraction and purification, with no claims over chemical extracts. If these organisations wanted to apply socially responsible practices to clear any uncertainty in the public's mind, they could make some form of compensation available, potentially to traditional healer's networks who are actively involved in the use and conservation of the plant.

Other Cases

Subcharoen (*et al*., 2001) also note that Thai patent number 008863 refers to a pharmaceutical composition for AIDS and includes a Thai medicinal plant in the scope of the patent. A similar US patent has apparently also been made by Japanese researchers referring to a 'combination of medicinal plants used to treat the AIDS virus' for which Thai medicinal plants are suspected to be included. A number of the medicinal plants were mixed and dried using modern technology and the source of traditional knowledge was only very broadly specified (Subcharoen, Pennapa. et al, 2001). The only inventive steps relate to the drying process and to the use of the medicinal plants to treat AIDS, where it had not formerly been used as a treatment for this virus. The Industrial Property Information Centre of Thailand however has no data available for a Thai Patent record no. 008863 and therefore these claims could not be investigated further.

***Bad Patents or Bad System*?**

It is likely that this analysis of biopiracy cases in Thailand raises more questions than it answers. This highlights the need for ongoing research into the operation of the patent system as well as some more specific details of the traditional conservation and utilisation of herbs and plants. It also suggests further inquiry into means to prevent 'biopiracy'.

It should be noted that despite the fact that Thailand doesn't allow patenting of plant genetic resources, plant varieties and animals, that doesn't stop other countries such as the US from patenting 'inventions' derived on plant genetic material or traditional knowledge from Thailand, or seeking other forms of IP protection. Hypothetically, this may ultimately result in some form of exclusion from a material or product originally from Thailand, or based on the knowledge of Thais. If the currently negotiated Thai-US FTA includes life patents, the US may be able to patent and sell products derived from Thai genetic resources back to Thailand and exclude them from improper use of this material (but this material must have been changed in some way to make it an 'innovation'). The difficulty and expense for which it is possible to chase up such cases may be prohibitive for local Thai groups and represents an unnecessary strain on the Thai bureaucracy. Arguably the ability to obscure some of the details involved in the chain-of-invention is all too easy for a patent applicant and this has developed calls to amend the patent system internationally.

As the number of documented 'biopiracy' cases rises, and due to the absurdly broad nature of some patents[38] it seems clear that the system is not adequately coping. So what can be done? There are a number of emerging questions. Is it just a matter of improving the patent examination process, or is the examination process inherently limited such that it deserves a disclosure requirement? Given the frequent claims that the patent system is already 'overburdened' as patent application numbers continue to rise, does this mean that patent examination quality will continue to decline? Although NGOs and concerned researchers have done well to uncover and document a growing number of biopiracy cases, why should the burden be on them? Can bad patents be simply remedied through the courts or is the burden of legal and transaction costs too high for those who feel they have been exploited? These are questions for which the WIPO Secretariat, the Parties to the IGC, and the TRIPS Council have been increasingly searching for answers. The Thai bureaucracy has also consequently been reviewing the developments of international fora, in other countries and seeking to understand its own unique needs and responses.

[38] See for example the Yellow Enola Bean Case in Dutfield (2004).

3.5 Legislation and Bureaucratic Micropolitics

Thailand has developed *sui generis* laws which provide for protection of plant varieties, herbs and in various ways may contribute to TK protection. These have only been recently passed and therefore associated regulations, rules and implementation are only partial. These Acts were developed with little external pressure but utilised the experience of other countries such as India, the Philippines, South American and Central American countries. They represent unique examples of *sui generis* systems relating to the protection of plant genetic resources and TK. Furthermore they were initiated by, or with the consultation of public interest groups, farmers groups, NGOs and cross-department involvement. They provide good examples of how laws may be developed openly and democratically to suit a country's level of development, culture and environmental conditions.

The implementation of these acts will be the real test of their effectiveness. There is still a considerable amount of trial and error involved in their administration and operation. The following sections should thus be read with an understanding that this progress is being made currently and there is continual bureaucratic change.

3.5.1 The Constitution of the Kingdom of Thailand B.E. 2540 (1997)

There are several provisions in the Constitution relating to community rights, traditional knowledge and biodiversity conservation. Most importantly the Constitution recognises the right of traditional communities to conserve their local knowledge and participate in the management of natural resources:

"Section 46. *Persons so assembling as to be a traditional community shall have the right to conserve or restore their customs, local knowledge, arts or good culture of their community and of the nation and participate in the management, maintenance, preservation and exploitation of natural resources and the environment in a balanced fashion and persistently as provided by law*." Constitution of the Kingdom of Thailand, B.E. 2540 (1997).

Section 46 has been regularly cited by local communities and supportive academics, NGOs and government officials as a source of the protection of traditional knowledge. It provides an important and forceful means for greater involvement of communities in conservation and a whole range of other broader activities. The final few letters 'as provided by law' have however meant that little action has formally been taken to make possible the intentions of the provision.

Also important are principles of participation in the use and preservation of biological resources:

"Section 56. *The right of a person to give to the State and communities participation in the preservation and exploitation of natural resources and biological diversity and in the protection, promotion and preservation of the quality of the environment for usual and consistent survival in the environment which is not hazardous to his or her health and sanitary condition, welfare or quality of life, shall be protected, as provided by law*." Constitution of the Kingdom of Thailand, B.E. 2540 (1997).

"Section 79. *The State shall promote and encourage public participation in the preservation, maintenance and balanced exploitation of natural resources and biological diversity and in the promotion, maintenance and protection of the quality of the environment in accordance with the persistent development principle as well as the control and elimination of pollution affecting public health, sanitary conditions, welfare and quality of life.*" Constitution of the Kingdom of Thailand, B.E. 2540 (1997).

Section 81 also provides mention for the "…promotion of local knowledge'.

Professor Saneh Chamarik (2002), Chairman of the National Human Rights Commission of Thailand (NHRC) notes the importance of these aspects of the Constitution but suggests that there is much to do to effectively realise these ambitions. 'The Constitution does not provide a ready-made respect for the community right, and people must struggle for its realisation.' The concept of community rights has been discussed by Thai academics for some time and is still being articulated and considered for more effective realisation. There has been an ongoing struggle to have various rights asserted as communities (the types of problems which may be faced are discussed in Section 4). This has been a publicly initiated process involving a broad range of actors, groups and networks. With the exception of the Community Forests Bill, which attempts to address the most prominent community rights issue, there isn't a broader governmental action on community rights. However an appropriate forum and context for, say, a 'Community Rights Act' is problematic and remains under consideration. Such organic law can only be as effective as its implementation in any case.

These sections of the Constitution discussed thus have important implications for the Thai Government in dealing with accession to international treaties and development of national laws. In practice though, it has been incredibly difficult to fully implement the goals that these sections aspire to. The following sections describe organic law that has been developed in Thailand to achieve the basic elements of these sections whilst also complying with international obligations.

3.5.2 Intellectual Property Laws

With the exception of copyright which has a hundred year history, the legal protection of intellectual property is a relatively new concept in Thailand. The Patents Act, for example, was not drafted until 1979. Thus a designated Department of Intellectual Property (DIP) was not established in Thailand until this time. The Trade Secrets Act, and Act on Protection of Geographical Indication were only established in 2002 and 2003 respectively. Thus it is worth considering that prior to this, laws and customs relating to the 'ownership' and sharing of knowledge were considerably different, and the adaptation of a western system has required a great deal of cultural compromise. Furthermore implications of the IPRs regime relating to traditional knowledge and genetic resources are relatively recent and typically treated with much scepticism and concern.

There are several aspects of the Patents Act B.E. 2522 (1979, as amended 1992 and 1999) worth discussing. The first are the inventions which are ***not*** protected under the Act in the context of this study. Section 9 of the Patents Act states that protection cannot be accorded to:

(1) naturally existing micro-organisms and their components, animals, plants or animal and plant extracts; and…

(5) inventions contrary to public order, morality, health and welfare.

The Act is thus designed to fit the minimum standards set by TRIPS, and no higher, in relation to biological materials. The Act clarifies that 'naturally occurring' micro-organisms cannot be patented to avoid 'discovery' type applications.

The US has retained pressure on Thailand to take plant seed from the patent exemption since the late 1980s (Setboonsarng *et al*, 1991). Yet Thailand has resisted the entire time due to concern about the role of private foreign investment in the seed industry in Thailand, for social, economic and environmental reasons.

Section 9(5) of the Act also asserts an almost identical clause to that of 27.2 of TRIPS, thereby attempting to provide exceptions where public order, moral, health and welfare issues may arise. The extent that this clause may be used in the case of a dispute is as yet unclear and has no precedent in Thai courts.

When asked about the inclusion of disclosure elements in the Patents Act, the head of the Patent Division of the Department of IP noted that this would be beneficial for the protection of TK within Thailand, from possible misappropriations by Thai persons or companies, but is not enough to stop such occurrences overseas (Suradej, pers. com. 9th June 2005). Disclosure requirements are currently being considered by DIP, but have not yet been included in the text of the Patent Act. A Draft Ministerial Declaration on disclosure of origin has been developed by DIP officers and is awaiting approval from senior officials and the Minister. It is noted however, that there is considerable conflict within the department itself about whether a disclosure requirement is beneficial or detrimental to innovation and knowledge protection in Thailand (Suradet Assawin Tharanggun, Pers. Comm. 21/02/06). In the ongoing amendment of the Patents Act (last amended 1999), the disclosure requirement has not yet been included.

As noted in the previous section there has been some consideration of the protection of Jasmine Rice by geographical indications law. Protection of the Jasmine rice name may be made using the Act on Protection of Geographical Indications B.E. 2546 (2003) such that it can be internationally recognised as originating from a particular region, similar to the recognition provided to some wines (eg Champagne and Bourdeaux), cheeses and other products. However the US has pressured Thailand to seek trademark rather than geographical indications protection for Jasmine rice. At this stage a decision has not been made however it has arisen in the FTA negotiations. In the WTO, Thailand has been a strong proponent for the extension of the level of protection afforded to wines and spirits to other agricultural products.

There have also been suggestions that trade secrets may be one form of IP protection of use for TK (see for example Dutfield, 2004). There seems to be considerable hesitance among IP academics and DIP itself about the use of such protection however, because it requires technical registration of such knowledge that is impractical for local people.

PVP protection has also been suggested as a means for the registration of local plant varieties, and associated traditional knowledge. In Thailand the PVP Act was drafted with some

protection mechanisms for local, wild and domestic varieties and it is administered by the Department of Agriculture.

3.5.3 Plant Variety Protection Act, B.E. 2542 (1999)

Thailand may not yet have developed a plant variety protection act, had it not been for the requirement for a sui generis system or patent protection in TRIPS. Setboonsarng *et al* indicated in 1991 that despite pressure from the private sector to develop a PVP law, it would be unfeasible given the lack of competent personnel in the Department of Agriculture. After TRIPS however, agri-business (both multinational and Thai) and large scale plant breeders quickly jumped at the opportunity to push the Department of Agriculture and the Department of Intellectual Property to develop an Act to suit their interests. Both departments concurrently drafted an act each. At the same time, NGOs and academics became concerned that the Draft Plant Variety Protection Acts contained elements that would not protect farmers' rights, nor would allow forms of protection for general domestic (eg Jasmine rice), local, or wild varieties (landraces). Initially elements were included for the protection of farmers' rights, however explicit mention of these were gradually cut out of subsequent drafts (Compeerapaap, Jaroen. Pers. Comm., 30th June 2005).

Consequently Thailand developed an act that allows a standard of protection for plant breeders with elements similar to that of UPOV 1978 and 1991, rather than the higher standards of patent protection. The Plant Varieties Protection Act B.E. 2542 (1999) (hereafter PVP Act) has unique qualities however, as it also tries to reconcile protection of new varieties with the protection of general domestic, local and wild varieties. For local and wild varieties there are also mechanisms for access and benefit sharing to registered varieties. In this sense it is a true *sui generis* system designed to suit the diverse agricultural conditions of Thailand.

The development of the Act was not without considerable public consultation and input from civil society groups. Notably the Assembly of the Poor, with extensive academic and NGO support made demands for requirement of protection of local and wild varieties (Srethasirote, Buntoon., Pers. Comm., 21st Feb, 2005; and Vanakorod, Surawit., Pers. Comm., 5th July 2005). Table 5 below describes an approximate chronology of events leading to the development of the PVP Act, the concurrent development of the Act on Protection and Promotion of Traditional Thai Medicinal Intelligence (TTMI Act), and the early administration of these Acts.

Table 5: Development and Operation of the PVP Act and TTMI Act

Date/ Event	Description
1991	A Thailand Research Fund supported article (Setboonsarng et al.) suggests that Thailand does not need a plant variety protection act, stating that it would burden the agriculture department with unnecessary additional costs given the current state of agriculture in Thailand.
Early 1990s	Alleged biopiracy episodes and misappropriations in other countries raise concerns over the protection of genetic resources and traditional knowledge in Thailand.
1992,1993	The CBD is developed at Rio and discussions begin on potential ratification in Thailand. Initially many groups are concerned that there is not adequate protection for genetic resources and traditional knowledge and thus advocate for the government develop new legislation before becoming a signatory.
1994	The CBD is signed by Thailand for gradual ratification and a process of drafting the PVP Act and a Thai Traditional Medicines Act (TTMI Act) begins.
1995	The TRIPS Agreement comes into effect requiring developing countries to develop at least a *sui generis* system of plant variety protection by the year 2000.
1995 - 1998	-The DoA develops a draft PVP Act focusing primarily on new plant variety protection initially, and concurrently DIP develop their own draft PVP Act. -Assembly of the poor asserts concern over biopiracy and loss of TK. Pressure government to include elements of domestic, local and wild variety protection. - The DoA include elements of domestic, local and wild variety protection in the Draft PVP Act. - The DPH develops a draft TTMI Act. There is cross-department collaboration, particularly during the latter stages of the development of this Act. - Cases of 'biopiracy' including the Jasmati case and the Marine Fungi/University of Portsmouth case are reported in the media in Thailand. - Protests ensue and there is extensive public criticism, particularly of the Jasmati trademark.
1999	-Lower House of Parliament favours the DoA Act, but components of the DIP Act are incorporated as well as aspects of local and wild varieties protection. The PVP Act is passed by parliament to be administered by DoA. - The TTMI Act is approved by parliament at around the same time as the PVP Act. - Both Acts are passed by the Council of State and comes into effect
2000-2004	- The DoA and DPH begin establishing divisions to handle the affairs of each Act. - Regulations and organic laws are quickly passed for the protection of new varieties of plants under the PVP Act due to industry pressures. - Organic laws of the TTMI Act begin an open and participative, but long process of development. Organic laws reach the Council of State and Cabinet in 2004. - Ministerial Regulations are considered in parliament for the protection of local and wild domestic varieties before being passed to the Council of State.
2005	The local and wild varieties Ministerial Regulations are still being considered and finalised by the Council of State. It is estimated that they will come into effect in late 2005. Similarly the organic laws of the TTMI Act are still being deliberated but are due to be released in the near future.

Sources: Setboonsarng et al (1991), Srethasirote, B. Pers. Comm., 21st Feb 2005; Vanakorod, Surawit., Pers. Comm., 5th July 2005; Tithipraesert, Wichar., 6th May 2005; Chokewiwat, Vichai., 19th Aug 2005.

The rest of this section reviews the contents of the Act to provide an understanding of its implications to farmers, the protection of Thai plant varieties and associated knowledge. Comments are made on potential issues and implementation difficulties. The review is made chapter by chapter.

Chapter One of the PVP Act establishes a commission to oversee the operation of the Act. The Commission consists of ten Director-Generals and officers from a broad range of relevant government departments, and twelve qualified members appointed by the Council of

Ministers as members. These qualified members are appointed from a range of stakeholders across civil society. They include six farmers, one academic in the field of plant variety breeding, one academic in the field of natural resources conservation, two members from agriculture and natural resource conservation NGOs, and two from representatives of associations whose objectives involve the breeding and propagation of plant varieties.

The broad inclusion of stakeholders allows for a balanced and diverse array of views to be shared about the operation of the Act. Some commentators and committee members have complained about certain aspects of the committee.

Chapter Two of the Act defines plant varieties similar to the UPOV 1991 definition. To be eligible for protection a plant variety must be uniform of shape or appearance as expressed by the genotype, stable in each cycle of reproduction, and distinct from other varieties. This description does not apply for wild plant varieties under the PVP Act.

Chapter Three relates to the protection of new plant varieties. The text of the section follows closely to elements of the UPOV Convention. To date this is the only category of plant varieties that has regulations such that the Department of Agriculture can implement their protection. Based on industry demand, the Committee votes to add broad plant groupings (for example, currently on the list are rice, durian and orchids, for which each may have several species) as an umbrella for which new plant varieties can be protected. As of July 2005, the Committee was making a controversial consideration on whether to allow protection of varieties of eucalyptus species (Siripat, Daycha., Pers. Comm. 29th April, 2005).

Chapter Four is designed for the protection of local domestic plant varieties. Thus it allows registration of plant varieties that can only be found in a particular locality in the Kingdom. It is designed such that individuals and local communities are able to register:

> *A sui juris person, residing, commonly inheriting and passing over culture continually, who takes part in the conservation or development of the plant variety…, may register as a community under this Act.*[39]

The community must register the jointly conserved plant variety, with information about the methods of conservation, the names of community members, and a map clearly demarcating community areas.

This section sets up a profit-sharing arrangement in cases where people may seek access to such varieties for academic research or commercialisation purposes. When registered, the local community will have exclusive rights over the local domestic plant variety to develop, study, experiment, produce, sell, export, or distribute the propagating material thereof. Any person who wishes to access the plant variety for purposes of variety development, education, experiment or research for commercial interest must make a profit sharing agreement to provide some monetary benefits from utilisation back to the community. Such authorisation of others to use the local plant variety rights requires the profits to be divided such that:

- twenty percent shall be allocated to those persons who *conserve or develop the variety*;
- sixty percent is allocated to the *community as its common revenue*; and

[39] Note: this content is taken from a tentative translation provided by Dr Wichar Titipraesert of the Department of Agriculture, and the advice of Dr Jakkrit Kuanpoth. The same text is available at www.grain.org.

- twenty percent is allocated to the local government organisation, farmer's group or the cooperative that registers the agreement in the name of the local community.

The finer details of the profit sharing arrangement will be included in the Ministerial Regulations which are yet to be passed. Where there is dispute over this allocation it is to be decided by the Committee. Protection is provided for 12, 17 or 27 years (depending upon the type of plant) from the date of issuance of registration. Communities may apply for 10 year extensions of this period if the plant variety is still confined to the locality.

There is some confusion and concern regarding the division of profits. NGOs have expressed concern that only twenty percent of the profits are given to those who *conserve or develop the variety*, whilst the bulk becomes common community revenue (Lianchamroon, Witoon. Pers. Comm., 7th March 2005). Whilst many communities have local customs, ritual and regulations which deal with distribution of food, goods and money, there are many others in which the sense of 'community' has been eroded, and local customs are lost or changing with other forms of rapid social and economic change. This has the potential to cause some conflict within the community, and there is the risk that the Committee rulings may not fully appreciate the local circumstances. The profit sharing arrangement is something that will have to be tried and tested, with possible clarifications or amendments to the Ministerial Regulations before smooth implementation can be expected. The time frame for this is likely to be long (in the order of ten to twenty years) before the profit sharing arrangement functions efficiently.

It is worth noting here that the local plant protection under the Act essentially simplifies PIC procedures developed in the CBD administratively by requiring the local custodians of the variety to register the variety. PIC can then be sought by researchers through the DOA office as a one-stop-shop. The exception here would be where a local herb has medicinal qualities and is protected under both the PVP Act and the Act on Protection and Promotion of Thai Traditional Medicinal Intelligence. In the future there is some potential for this to occur.

There is a strong incentive for local communities to register their varieties to receive both protection from misappropriation and possible monetary benefit flows. During the drafting of the DOA Draft PVP Act it was believed that the potential monetary incentive would encourage communities to register and conserve varieties that might be useful. Protection from biopiracy was not the primary concern, and the Act does not necessarily provide full protection against this (Surawit Wannakarod, Pers. Comm. 2005). It is important for the DOA to inform farmers about the process of registration, and it is likely that NGOs will also play a key role in this. Even still it is possible that many communities will not learn about registration, or have the means or inclination to apply. In most cases it will be communities that have a strong realisation of the commercial value of certain plant species, and that have the knowledge and means, that will register. This still leaves scope for biopiracy to occur, and hence other means such as databases of plant varieties and associated local custodianship could help close this window. Furthermore varieties that fall out of this scope, and are not new varieties, fit within the scope of Chapter Five.

Chapter Five is designed to protect general domestic and wild plant varieties. The chapter establishes that any person who:

> *Collects, procures or gathers general domestic plant varieties, wild plant varieties or any part of such plant varieties for the purposes of variety development, education, experiment or research for commercial interest shall obtain permission from the competent official and make a profit-sharing agreement.*

Income accruing from this is remitted to the Plant Varieties Protection Fund (established in Chapter Six). Rules and procedures are yet to be established under the Ministerial Regulations.

The profit sharing agreement requires the following:

1. the purposes of the collection and gathering of the plant variety;
2. the amount or quantity of samples of the intended plant variety;
3. the obligations of the person to whom permission is granted;
4. a stipulation if IPRs in the products which result from the development, study, experiment or research of or into the plant variety and which are derived from the use of the plant variety under the agreement;
5. a stipulation of the amount or rate of, and the term for, the profit-sharing under the agreement in respect of products derived from the use of the plant variety thereunder;
6. the term of the agreement;
7. the revocation of the agreement;
8. a stipulation of the dispute settlement procedure; and
9. other particulars as prescribed in the Ministerial Regulation.

Thus an access and benefit (profit) sharing procedure is established with enough flexibility for a wide variety of different agreements. It is then up to the parties to reach mutually agreed terms. The fact that a Department of Agriculture official is the point of contact has certain implications. First, they will likely have experience in dealing with such agreements and therefore should be able to negotiate mutually agreed terms on more even terms with the person wishing to access the plant variety. Second, however, the decisions made about profit-sharing of a domestic or wild variety is removed from farmers or custodians who may utilise or conserve these varieties (where they exist).[40] This again highlights the importance of local variety registration where it exists within a finite area. Where the general or wild variety exists on a broader scale the decision is placed in the hands of the official. Provided that it operates equitably, the Plant Varieties Protection Fund should provide some remuneration to the custodians of domestic or wild varieties

Chapter Six sets up the Plant Varieties Protection Fund. The Fund is intended to be expended for the purposes of *assisting and subsidising activities related to the plant varieties conservation, research and development*. Income reaches the fund from profit-sharing agreements under Chapter Five, income from the registration of plant varieties, government subsidies and other sources. The money may be provided to local government bodies where the plant varieties have been sourced for exploitation. The body then administers the fund to communities for projects on conservation, research and development of plant varieties. The PVP Committee establishes a separate and smaller Fund Committee to administer and allocate funds.

[40] Although 'wild variety' would typically imply that it is not cultivated or utilised by farmers, it may however be conserved by certain individuals and communities for reasons of ecosystem balance, local custom or belief. 'Wild plant variety' is defined as 'a plant variety which currently exists or used to exist in the natural habitat and has not been commonly cultivated' in the PVP Act.

Chapters Seven and Eight essentially deal with infringements of the rights of right holders, and describe penalties. Various infringements, including unauthorised collection of plant varieties or parts thereof, include penalties of short prison terms and fines.

Although the PVP Act is promising in terms of participation, representation and its broad scope, there are currently only Ministerial Regulations for the protection of new plant varieties. Thus far the Committee has largely been discussing the protection of new varieties based on submissions from larger scale breeders and agricultural industry interests. Regulations for domestic, local and wild varieties are yet to be implemented, and have been held up in both Houses of Parliament and the Council of State whilst attempting to reconcile potential implementation difficulties. These regulations are expected to be passed in late 2005, allowing local communities and farmers to register their local and wild varieties (Titiprasert, Wichar. Pers. Comm., 6th May 2005).

In the coming years, it will be important for the Department of Agriculture, and other relevant stakeholders to share their experiences with other countries to gradually improve the inbuilt systems of local and wild plant variety protection, and access and benefit sharing, within their *sui generis* PVP laws.

3.5.4 Act on Protection and Promotion of Traditional Thai Medicinal Intelligence BE 2542 (1999)

The Act on Protection and Promotion of Traditional Thai Medicinal Intelligence (TTMI Act) is one of the only such Acts of its kind in the world. The TTMI Act was developed at the same time as the PVP Act and there was considerable cross-department cooperation and discussion. The development of the Act also saw considerable input from many groups and individuals within civil society. Table 5 provides a chronology of the development and operation of the Traditional Medicinal Intelligence Act.

Chapter One of the Act establishes the Committee on Protection and Promotion of Intelligence of Thai Traditional Medicine. The Committee is made up of ten Director-Generals from a broad range of relevant government departments and similar to the PVP Act, it balances the these bureaucrats with selected practitioners with knowledge, capacity and experience in traditional Thai medicine, the production or sales of traditional Thai medicine, and plantation or transformation of herbs.

Chapter Two outlines means for the protection and promotion of intelligence on traditional Thai medicine. This section is devoted to protection of formulas of traditional Thai drugs and similar texts on traditional Thai medicine. Such formulas and text documents can be of three categories – national, general or individual/personal. National and individual formulas and documents can be registered and intellectual property rights applied to them. Such intellectual property rights should be valid for the life time of the bearer of the registration and for another 50 years from the time of the registration owner's death. Patents on drugs can also be applied for under the Act.

Chapter Three details the protection of herbs. Under this chapter the Committee can specify the kind, characteristic, type and names of herbs that are of study and research value, or have important economic significance, or may become extinct and designate them as 'controlled

herbs'. Controlled herbs are thus given special treatment designated by the Minister, with advice from the Committee with regards conservation, transport, use for medicinal and study purposes, export and other matters. For controlled herbs there is thus certification required by individuals outside government bodies to undertake the aforementioned activities on such herbs. Ministerial Regulation has not been developed to fully implement this chapter.

For the benefits of conserving herbs and the areas from which the herbs naturally originate in the ecological system, the Minister with advice from the Committee can designate a 'Plan for the Conservation of Herbs' which must then be approved by Cabinet. The Plan designs powers to restrict access to conservation areas to conserve natural resources with minimal human disturbance. The plan also requires surveying and researching of the herbs to assist with conservation.

The Act is quite strict in prohibiting *ownership of land, or plantation, or construction, or cutting, or destruction, or burning, or destruction of trees, plants, or biodiversity or the ecology system, or digging of minerals, stones and soil* in the conservation area. It also restricts changes to waterways that might affect herbs in very broad terms. If the owner or possessor of the land registers the herbs on their property they are eligible for assistance or support under this Act, however this assistance is not yet specified.

A potential conflict arises here where local communities following traditional lifestyles have conserved or utilised such herbs. In such cases the medicinal value of the herbs may not have been known were it not for those communities, and there could have been unwanted disclosure which brought about such discovery. Thus it is important to question whether such exclusion is necessary or justified, and whether there has been prior informed consent about such knowledge of herbs in the first place. Although there is a fairly balanced membership on the Committee, the final word rests with the Minister and Cabinet and it is conceivable that custodian communities could be excluded from herbal use and conservation. Such exclusion however, could be construed as a breach of the Constitution of the Kingdom of Thailand, Section 46, as discussed previously. The Committee, Minister and Cabinet will have to be very cautious how it approaches such cases.

Chapter Four is designated to conservation; however Chapter Three deals with most of the substantive content for the conservation of herbs.

Chapter Five describes the role of officials. Officials authorised under the Act have quite strong powers including the confiscation of items believed to be in violation of the Act, as well as the relocation of people from herb conservation areas. Chapter Seven describes penalties that are similar in nature to that of the PVP Act.

Chapter Six establishes the Fund on Traditional Thai Medicinal Intelligence. The fund receives its income primarily from state subsidies, and money from the private sector relating to the operation of the Act. The Fund is controlled by the Office of the Permanent Secretary, from the Ministry of Public Health. No benefit sharing arrangement has been established for communities that reside in areas to be designated as herb conservation areas, and there are few limitations on the expenditure of the Fund.

Commentators such as Professor Jaroen Compeerapap have warned that careful consideration needs to be made about implementation of certain aspects of the Act, namely that the mechanism for benefit sharing through the Fund is not clear or necessarily transparent.

Furthermore he notes that it is not clear how the Act will *promote* traditional knowledge of medicinal herbs, that some revision of the Act may be necessary, or the organic law will have to clarify this aspect (Compeerapap, Jaroen, Pers. Comm. 30th June 2005). Subcharoen (2000) indicates that the Fund on Traditional Thai Medicinal Intelligence will ultimately operate like an ABS mechanism, but it is not yet clearly stipulated how. Santikarn (Pers. Comm. 24th May, 2005) indicates that the Ministerial Regulations will clarify this when they are passed from the Cabinet Committee and Council of State where they have been deliberated for some time. The control of herbs essentially comes under the authority of the state and there is no guarantee of continued access or benefit flows to custodian communities (BaiMai, Visut, Pers. Comm., 19th August 2005). Furthermore there is a question of whether prior informed consent has been obtained of said communities in disclosing the value of such herbs and assuming state control over them. The continuing traditional practice by village shamans on such herbs could thus be threatened for a classic western version of conservation which requires that humans be separated from nature, despite a history of interaction. The Director-General of the Department of Public Health (Chokewiwat, Vichai., Pers. Comm. 2nd August 2005) allays such concerns, saying that it is department policy to obtain prior informed consent of these communities, and that the control of herbs should be conducive to continued traditional medicinal application. He notes that a pilot project will be needed in the very near future to test the implementation of these policies and the organic law when it is passed. There could in reality be problems of inter-jurisdiction over protected forest areas between DPH, the National Parks Department, and RFD.

The CBD has attempted to address eco-imperialist applications of conservation in Article 8(j). Efforts to encourage the continuing practice have been made under the Community Forests Bill, which is discussed in the following section.

3.5.5 Community Forests Bill

The Community Forests Bill represents an important opportunity for Thailand to balance desires for forest and watershed conservation areas, and the maintenance of the culture and livelihood of indigenous minority groups and local communities in situ. The context of the Bill could also provide an important example to the international community of the plethora of threats and pressures facing indigenous communities, which all too often seems lost to other debates such as 'facilitated access' in international fora. 'Biopiracy' threats, and the debate over control of access and benefit sharing arising from the utilisation of genetic resources, are things that seems far removed from the daily lives of these communities, their culture, beliefs and environments (See Indigenous and local communities section). Such concerns are thus primarily consulted via NGOs who attempt to closely represent their interests, and secondly by tambon or provincial government and department bodies.

The Community Forests Bill (CFB) was initially drafted in 1991 by NGOs and concerned academics (such as Ajaan Saneh Chamarik and Ajaan Yos Santasombat) with close consultation and input from local communities. The CFB has since been through extensive parliamentary and public consideration, has had to contend with Royal Forestry Department versions or drafts, and is still under ongoing scrutiny in a joint-parliamentary committee.

The main contentions about the CFB relate to whether or not to allow local communities to reside in protected forest areas. On one hand there are deep green conservationists who believe that these areas should exclude local communities from accessing them because they

are of national significance as protected forest for conservation, they contain endangered species, or they are watershed areas. Dr Santita Ganjanapan (1996) notes also that in Thailand bureaucrats are still sceptical about local people being stewards of nature as well as about the value of indigenous knowledge itself. The knowledge is often regarded as inefficient, inferior to scientific knowledge and an obstacle to development.

Opposing them are pro-community individuals and organisations, who argue that there is a long history of local practice within certain community forest areas, and that such broader concerns in recent years have had the effect of excluding communities and limiting community rights. They argue that in fact their long history of conservation and sustainable use through decentralised and people-centred development is more appropriate.

The Bill has changed significantly since it was first drafted in close consultation with local communities, but it still retains some of the most important principles of the first draft. The Bill essentially attempts to provide for a system of co-management of forest resources. The Appendix contains a chronology of events during the negotiation of the Community Forests Bill.

The remainder of this section discusses the content of the CFB from a tentative translation of the document since it has entered the joint parliamentary committee (version 12).

Chapter 1 of the CFB provides a series of definitions. Many of these definitions are still undergoing consideration and could change considerably.

Chapter 2 of the CFB establishes committees for the administration of the Act and community forest areas. A primary Policy Committee on Community Forests is established to develop policies of community forests establishment, to enact ministerial regulations and other organic laws, to assign experts in the field to province governors where they are appointed to Provincial Community Forests Committees, to prepare annual reports on the conditions of community forests, to consider appeals of community forests prohibition and other responsibilities.

Chapter 3 of the CBD establishes Provincial Community Forest Committees. These committees are to be administered by the provincial governor and are made up of a balance of government officials and ‘qualified people’ being community members, academics or experts to act on the board. Apart from general administrative duties, the committee administers community forest management plans and considers community expressions and opinions of such plans.

Chapter 4 provides for community forest establishment. A group of at least 15 adults (over 18 years) dwelling in a locality containing forest areas may make a petition for community forest establishment. The petition must include identification of the individuals that make up the community, a brief history of their occupation of this area including a map showing its territories and neighbouring areas, and a plan for preservation or restoration of the natural resources and ecosystem diversity. This petition is decided by the Provincial Community Forest Committee.

Chapter 5 describes community forest management. Once a community forest is approved by the Provincial Committee, the community must abide by the Community Forest Management Plan, and work with the relevant government officials to look after the forests and natural

resources. A Community Forest Management Committee is assigned to the forest and is the primary point of contact between officials and community members. The Committee is obliged to take care of the public properties of the community forests. Essentially the Community Forests Management Committee has juristic rights over the public properties of the community forest. There are restrictions, for example, on activities sch as logging and collection of trees and plant in preserved zones within the community forest area. Where these rules are violated there is a liability of prosecution.

Chapter 6 discusses the control of community forests. This section outlines that the Provincial Community Forests Committee may allow research in the area for academic purposes, as well as research by private sector bodies subject to PIC. The section also discusses the role of community forest officials who operate under the Provincial Committee.

Chapter 7 allows for the withdrawal of community forests, either partially or entirely if the Act (when passed) is not complied with. Unmovable property becomes state property, and moveable property may be transferred to other community forests if the Provincial Committee approves.

Chapter 8 establishes a Community Forests Fund to be administered by the Royal Forestry Department and the Ministry of Agriculture and Cooperatives. The fund is to be spent on the support of community forests management, the support of local communities concerning this, and in the administration of the Act. Community Forest Management Committees may apply for money from this fund.

Although it is yet to be seen how the CFB will operate in practice, it represents an opportunity for local communities and the government to co-manage forest areas such that it can be appropriately preserved or restored. This allows communities that would otherwise be excluded from their land and continued local practices, to continue their traditional lifestyles and participate in the conservation of biodiversity in these areas. Whilst the Act has only tangential relevance to intellectual property, it does establish one means for prior informed consent of local communities upon accessing their knowledge or resources and could potentially help facilitate benefit sharing arrangements. Most importantly it provides for the promotion of traditional local practice and thus the protection of traditional knowledge.

The Community Forests Bill, however, has been through 12 drafts and is still under deliberation in a Joint-Parliamentary Committee, with conflicting opinions over the conservation capacity of the communities, the over-romanticisation of TK, and the rights of individuals and communities that would otherwise have to be relocated. Controversially, some members of the Joint-Parliament Committee have advocated for Special Conservation Zones as part of the Bill, meaning certain areas of high conservation value may be set aside with the exclusion of communities that resided there. The rights of the traditional inhabitants of these areas are in question and the Zones may undermine the other intended cooperative aspects of CFB. A complex local politics over land has held back any politico-legal resolution to these issues for decades now. Many community groups have been developing forest management plans in collaboration with forestry department officials in the interim. Although there is potential for the CFB to be passed in the near future, the strength of community rights in Thailand still rests with the actions of communities to assert themselves as rightful custodians of their local environments, rather than through legislative means.

3.6 Other Relevant Policies

The government has implemented a number of other policies that may have some consequential impact on traditional knowledge and biodiversity. The first is the One Tambon One Product (OTOP) initiative, and the second is a proposed Special Economic Zone power for the Prime Minister.

One Tambon One Product refers to a government initiative to promote local small to medium enterprises. Essentially, as in the title, it seeks to focus the production of a tambon (local administrative sub-district) on one or a few specific products that the area specialises in. The initiative has considerable merit for promoting local products, and promoting local heritage through these products. One commentator however, has warned that there has been a trend toward the production of trinkets targeting tourists, with little or no real 'traditional' or 'heritage' value. Furthermore it might be said that a focus on the promotion of products at a tambon scale, may in effect cause the diversion of production away from products unique to specific villages at the smaller scale.

The OTOP project has implications for the protection of folklore and handicrafts that may be associated with local culture, but is not particularly relevant to traditional knowledge that relates to natural resources (although there may be a few cases where it is). There is considerable scope for further investigation as to the impact of OTOP on the preservation of traditional practices, local culture and folklore.

The proposal by the current Thaksin government that certain powers be allowed to establish Special Economic Zones has come under some criticism for concerns that this power may be used to override existing legislation. The bill would allegedly allow the government and the zone executives unlimited power to bypass many articles of the constitution as well as environmental, city planning and tax laws. The government says it is needed to encourage foreign direct investment and fuel economic growth (Bangkok Post, 6th April 2005, Acc 9/05/2005).

A statement from the National Human Rights Commission has urged the government to scrap its planned special economic zone legislation, which it says violates the constitution by infringing on basic human rights, hinders power decentralisation and circumvents environmental controls (Bangkok Post, 6th April 2005, Acc 9/05/2005). Specifically there are concerns that the legislation may impact upon protected areas, community forest areas or may override other related laws such as the TTMI Act which designates herb conservation areas.

3.7 Traditional Knowledge Discourse in the Bureaucracy

Many government departments have been involved in the discussion over the treatment and protection of genetic resources and associated traditional knowledge. Most of them have specific ideas and interests about TK. Departments include, but are not limited to: the National Human Rights Commission of Thailand, the Department of Intellectual Property, the Department of Agriculture, the Department of Public Health, the Department of Forestry and the Department of National Parks, Wildlife and Plant Conservation. Some departments have explicitly documented their standpoint on the treatment of TK, and others have less clear policy that is often only verbally disclosed.

There have been ongoing meetings attended by relevant academics and officials for the past few years on the treatment of TK by the various departments. There have been suggestions for the development of a more coordinated approach to TK promotion and protection and even for a broader Traditional Knowledge Act, however it is likely that the development of such an Act would be a long time in development (Indananda, Nantana. cited by Bangkok Post, 26th May 2005). The establishment of a single body would certainly help with the coherence, transparency and clarification of registrations and databases.

A questionnaire was developed recently to survey attitudes to TK and folklore amongst academics, NGOs and government body staff. It was distributed at a meeting on Traditional Knowledge and Folklore (TK-FL) held on the 21st April 2005 at Kasetsaart University. There were 25 responses from 43 sets delivered.

The questionnaire[41] first indicated that there were broad interpretations of the terms 'traditional knowledge' and 'folklore' and thus significant disagreement about an appropriate definition. The second question asked what TK-FL protection should be aimed at. Respondents could give more than one answer. The highest response was to 'prevent people from inappropriately taking advantage of TK-FL, followed by the 'restoration and promotion of TK-FL', and the 'preservation of TK-FL for broader social benefits'. Economic reasons factored in further down the list.

The survey also indicated that the majority of respondents were concerned about the use of IPRs to protect TK (most thought that IPRs were insufficient for TK-FL protection), but where it is used they predominantly indicated that it should be to stop exploitation or use without permission, and to protect personal or community rights that have created and preserved the TK-FL.

Protection mechanisms favoured included a *sui generis* mechanism as the most favoured means of TK-FL protection, followed by databases, and then a few respondents agreed with contracts on access and benefit sharing. They also indicated that in cases where some form of TK-FL protection has been provided the rights owner should be the creator, developer or author (where it can be proved), as well as communities (where it is shared knowledge). This was closely followed by responses indicating it should be overlapping systems of rights such as the TTMI Act which has some rights allocated to individuals, some to communities, and some to the state.

The questionnaire, although only a small sample set, provides an insight into the current aspirations for TK-FL protection and promotion. The array of responses to each question highlights the complexity of the issues, for which adequate solutions often appear to be dependent upon highly specific circumstances. This poses a problem for developing a broad Traditional Knowledge Act, or for developing some other framework of protection.

Traditional knowledge databases have also been discussed in the ongoing meetings, for which some already exist, however they are generally poorly coordinated and are not yet widely known about by the public. Members of the public have been urged to register traditional knowledge with a database in the Department of Intellectual Property, however only 3750 have been listed since 2002 compared with more than 130,000 in similar databases in India

[41] This information comes from: TK-FL Working Group (2005) *A summary of the questionnaire on traditional knowledge and folklore protection*. Unpublished document, distributed at a subsequent TK-FL meeting.

(Ruamraksa, Wiboonlasana. cited by Bangkok Post, 26th May 2005). Department officials have noted that this database has primarily received registrations relating to designs, handicrafts and folklore, rather than relating to genetic resources. The DoA and DPH have databases on plant varieties and herbs, however it is unclear to what extent ethno-botanical information or related traditional knowledge has been included in these.

Although some press releases have been made, and there has been significant media coverage of these developments, many farmers are no doubt at a loss as to how they would go about protecting local varieties at this stage, or how they can register traditional knowledge. On visits to local communities some NGO workers thought it strange when questions were asked of local communities about protection of traditional knowledge and local varieties. The response from local farmers and villagers were largely blank stares and confusion because they know little about the PVP Act, the Act on Traditional Thai Medicinal Intelligence or about means of registration.[42] In effect there is no designated 'TK database', but rather several that contain only elements of relevant TK, or are primarily devoted to genetic resources. The process is currently not transparent, and in the case of the PVP Act and TTMI Act the regulations are pending approval from the Council of State, before registration of local varieties and herbs will become more feasible. These considerations point to a potential problem of poor direct representation of farmers and local communities, yet it is perhaps only a matter of patience before Ministerial Regulations are completed and a broad education campaign can be started.

Throughout this paper, it has been suggested that in the development of TK regimes, there has been a tendency to focus on developing mechanisms to control the scientific and commercial use of TK, with the apparent aim of enabling indigenous and local communities to capture the anticipated benefits of the commercialisation of TK. As Tobin (2005) notes, this has often conflicted with the expressed desire of indigenous and local communities to protect the *integrity* of traditional knowledge, as part of cultural heritage, rather than allowing it to become another marketable good. Despite progress in certain aspects relating to the protection of genetic resources, and ABS regimes in Thailand what is additionally needed is a more coordinated strategy towards respect, understanding and promotion of TK. The Community Forests Bill may act towards the strengthening of related systems of traditional resource management and customary land tenure to help secure the promotion of TK. However there are aspects of TK that lie outside community forestry per se, and thus a coordinated strategy that also involves databases may be beneficial. Again, a single body would help facilitate such coordinated activities, provided that it operated with decentralised elements and in a participative manner. This is a very difficult task to coordinate however.

[42] This refers to a small sample set of approximately 20 farmers and villagers from the Khan Watershed, Chiang Mai Province; in Ku Ka Singha, Roi Et in the Issan Region (Northeast); and in a village on the outskirts of Suphan Buri (town), Central Thailand. Some farmers were asked individually and some were asked as part of a small forum.

3.8 The Role of Civil Society, NGOs and Academics

Civil society,[43] including mass publics, NGOs and academics, have played an important role in influencing mainstream politics, and inciting change. NGOs and academics play a crucial role in disseminating information to local communities and farmers, as well as often advocating on their behalf in the media, and lobbying government. Mass publics have frequently demonstrated on issues relating to biopiracy, natural resource management, community forestry and similar issues, and have been able to enrol considerable public and political interest.

As has been described in Section 3.5, there has been considerable input and participation in the development of the PVP Act, the TTMI Act and the Community Forests Bill. The arguments provided by such groups have provided incentive for change to benefit local communities, but often these have also been coupled with discourse of benefits for the national interest (including the protection of valuable natural resources). Thus these legislative developments represent a relatively democratic compromise between different interests. Despite these positive developments in the development of laws in Thailand, there are still considerable problems of capacity for implementation, effectiveness and practicality. Due to a lack of staffing and funding in government departments, as well as their typically centralised location and operation, government officers often implied that whilst they do their best, they cannot consult or communicate with all stakeholders about the development and administration of Acts and related programs. During the development of the PVP Act, NGO workers (including Witoon Lianchamroon and Daycha Siripat) offered to inform the communities through the NGO-COD, and various farmer's and people's networks about the registration of local and wild varieties (Compeerapaap, Jaroen, Pers. Comm. 2005).

Similarly with databases, while departments suggest that local and indigenous farmers have been broadly encouraged to register their knowledge related to resources, processes and products, the extent of registration is still considerably low when compared to the relative success of Indian TK registers. The role of NGOs and academics here is important such that TK is protected through things like registers. For example a comment was made by the head of the Patent Division of DIP, that it was important for people like Witoon Lianchamroon (Director of the NGO Biothai) to disseminate to local people that TK registration would be beneficial for their protection.

Whilst these protective measures are important, the respect and promotion of local practice is also a crucial element in TK promotion. The CFB is ultimately an initiative of the people, that works towards this. While it is still being negotiated, local communities are already developing community forest management plans in collaboration with various NGOs, academics and government officials to secure their rights.

[43] Definitions of 'civil society' have historically also included businesses and corporations in their scope, and it was essentially considered the domain separate from government. More recent applications of 'civil society' have tended to exclude business and corporations because their interests have increasingly been perceived as separate from that of the broader public. General shifts in the structure and size of corporations, and shifts in the global political economy to a primarily market based system have perpetuated this effect. The definition of 'civil society' used here excludes business and corporations; however the perspectives of some companies are discussed briefly.

The most recent public rallies, academic and NGO concerns have been in relation to the Thai-US FTA. The most contentious element of which has been the IPRs components, particularly patents on plants and animals (see Section 2.11).

Public participation in FTAs involving Thailand has been minimal to date. During the Thai-Australia FTA negotiations the public were largely excluded from any input. What is even more problematic, was that the Cabinet approved the Thai-Australia FTA without even passing it through the House of Representatives (or National Assembly) prior to signing (Srethasirote, B., and Klomtong, C. 2005). It was argued by concerned groups that the FTA requirements could lead to amendments to national laws, for which the House of Representatives' approval is required as prescribed in the Constitution of the Kingdom of Thailand, Section 224. This FTA would likely impact the implementation of organic laws and regulations, but it is unclear to what extent amendments to national laws were required. In this sense the Thai Government sidestepped this provision in the Constitution.

The current Thai-US FTA is subject to a confidentiality agreement which means that all details of the negotiations must be withheld from the Thai public (The Nation, June 15 2005, Acc 28/7/2005). The US demanded this prior to the start of negotiations. Under Article 214 of the Constitution, it has been argued that a referendum should be held to determine public opinion before the passing of the FTA. In the case of the Thai-US FTA it is highly likely that Thailand will be required to amend its national laws, requiring parliamentary consideration.

In response to the plethora of bilateral FTAs being negotiated by the Thai Government, the NGO network FTA-Watch was established in 2003. FTA-Watch is made up of academics in state and private educational institutes, independent academics, lawyers, environmentalists, social activists, and development workers in networks such as the Alternative Agriculture Network, Thai Network of People Living with HIV/AIDS, and the Consumer Network amongst others. The network of FTA-Watch is well-coordinated and has three primary activities: The development of a knowledge base for public dissemination, the facilitation of a social movement, and political lobbying. These have involved numerous seminars; the dissemination of educational materials and establishment of a website; public protests at Government House (28th June 2005), the US Embassy (29th June 2005, 1st April 2005) at the Ministry of Foreign Affairs (1st April 2005), and at the location of the third round of FTA negotiations in Pattaya (5th April 2005), and many other subsequent actions. The protests and demonstrations at the 7th round of FTA negotiations were significant because it has been reported that public pressure caused the head Thai negotiator, Mr Nitya Pibulsongkram to resign (The Nation, 18 January 2006).

The primary concerns of the network relate to public input and/or disclosure of the negotiations, a referendum on the proposed agreement, and parliamentary consideration of the FTA at the very least. The primary substantive concern is in relation to patent scope including provisions relating to pharmaceuticals, but also in relation to copyright issues affecting consumers, and issues such as investment, agricultural tariffs and subsidies. Ultimately if the Thai negotiators agree to the full 'package' of the FTA, there is the risk that higher IP standards will be sacrificed in order to receive other trade concessions. If this does not receive a referendum, or furthermore if it does not go to the House of Representatives for consideration (which would clearly violate the Constitution, Section 214), the public and their representatives will have been entirely removed from the process. This could threaten to undo the laws that Thailand has developed with broad participation from the public and cooperation between various groups and departments.

3.9 Summary: Participation, Implementation, Transparency and Broader Promotion.

The aforementioned laws developed in Thailand have attracted the interest of international organisations and other developing countries due to their attempt to balance a diverse range of interests, including provisions for the protection of local plant varieties and traditional knowledge related to medicines. This has involved considerable struggle by people's movements, NGOs and sympathetic academics. The process has faltered however with the implementation of these laws. To date Ministerial Regulations have proved difficult to draft and pass through the Cabinet and Council of State. It is not clear whether this is due to the complexity of the issues being considered or due to stalling tactics on the part of the Ministries or both. Thai officials are also concerned that if they push forward with the implementation and establishment of new norms, then they may have to be subsequently modified to suit international or bilateral obligations. A Disclosure of origin patent requirement is probably the best example here, with Thailand demanding such a requirement in the TRIPS Council and in the Thai-US FTA, however the bureaucracy has been faltering on implementation in their domestic jurisdiction.

A broader range of less technical options are evident though. The Community Forests Bill allows for the assertion of rights to land and resource use (having subsequent effects on related knowledge), however it has suffered from competing conservation interests and a lack of parliamentary political will. Practical mechanisms for regulating access to biological resources and TK have been suggested as another consideration, and could be supplemented with a range of measures to promote TK. These could include support for local traditional healers' networks, local farmers networks, facilitation and support of information meetings for such groups, the development of a clearly described 'Handbook on biodiversity and TK prior informed consent rights', and means for market promotion of TK products.

Democracy is a highly valued freedom in Thailand and there is a very active civil society seeking to maintain such freedoms. An appropriate example has been occurring at the time of writing, with large groups of people assembling and demanding the resignation of the Prime Minister based on claims of illegal business activities (Bangkok Post, 26-28 February 2006). Actually this appears to be only the last of a string of issues under complaint, of which the handling and lack of transparency in FTA talks is one of the other most pertinent issues. As mentioned, many domestic and local interests of Thailand are being compromised by the FTA talks. It is suggested that it could be strategically beneficial for Thailand to continue to stall the negotiations on the basis of the domestic political crisis emerging with the dissolution of parliament, calls for Prime Minister Thaksins resignation, and demands for a redrafting of the 1997 Constitution.

4. THE KNOWLEDGE AND RESOURCES OF INDIGENOUS AND LOCAL PEOPLES.

During one interview with Professor Yos Santosombat (17th May 2005), a highly regarded anthropologist with over a decade of fieldwork with the *chao khao* (indigenous and sometimes immigrant 'hill tribes' as they are often stereotyped) of northern Thailand, a series of complicated questions were asked about access and benefit-sharing, prior informed consent and databases for traditional knowledge. At the end of the sequence of these questions he remarked:

> …*Such things do not matter if there is no continued local practice. I worry most about the disruption of local practice*.

Indeed, if traditional practices are lost, then things like databases and genebanks only become useful as a static source of prior art, or a genetically static sample. So far, the focus of this paper has discussed government policies and laws which are oriented more towards the protection of genetic resources and traditional knowledge from misappropriation. However the day-to-day threats to the livelihood and culture of indigenous and local communities seem, at times, far removed from these complicated 'technical' issues.

This section attempts to address the complexity of traditional knowledge, problems associated with defining and transferring down-scale some legal notions that are poorly understood for the 'local' context, and threats to continued local practice. The first section discusses ambiguities over the identity of an indigenous or local community, an examination of the meaning of traditional practice through a few case studies, an analysis of the property-resource-intellectual property nexus, and threats to continued practice.

4.1 Identity of Indigenous and Local Communities

It is rarely clear exactly which groups fit within the scope of 'indigenous peoples', no matter which country. One common difficulty with the distinction is in regards to whether a dominant population can indeed be considered 'indigenous'. In Thailand, the word indigenous is unclear and could refer to the dominant population, or to smaller tribal groups.

It is also often unclear to where the boundaries of a 'community' may be extended. Community has a great deal to do with self-recognition as well as external or trans-local recognition of the unity of a group of people. Self-recognition may at times be at odds with external recognition, the fringes of community (in terms of land, population and culture) may be unclear, and the holism of a communitarian ideal will also be dependant upon individualism. The internal sense of community may be dislocated by regulatory or forced actions by government, industry, or other groups. Thus a variable view of community is essential.

Clearly then, finding legal and practical means for the recognition of indigenous and community rights must take into account some of these dynamics. Box 4 outlines some of the definitions that have been used in international law and national laws. The last definition is that used by the Thai PVP Act such that local communities can register a local plant variety for protection.

Box 4: Indigenous Peoples and Local Communities: Various Definitions

Tribal Peoples: tribal peoples in independent countries whose social, cultural and economic conditions distinguish them from other sections of the national community, and whose status is regulated wholly or partially by their own customs or traditions or by special laws or regulations (ILO Convention 169).

Indigenous Peoples: peoples in independent countries who are regarded as indigenous on account of their descent from the populations who inhabited the country, or a geographical region to which the country belongs, at the time of conquest, or colonisation, or the establishment of present state boundaries, and who, irrespective of their legal status, retain some or all of their own social, economic, cultural and political institutions (ILO Convention 169).

Indigenous Cultural Communities or Indigenous Peoples: a homogeneous society identified by self-ascription and ascription by others which has continuously lived as a community on communally bounded and defined territory, sharing common bonds of language, customs, traditions and other distinctive cultural traits, and which through resistance to the political, social and cultural inroads of colonization, became historically differentiated from the majority of Filipinos (Department Administrative Order, No 96-20, Section 2.1 'implementing Rules and Regulations for Executive Order 247, the Philippines').

Indigenous and Local Communities: indigenous, Afro-American and local communities are human groups whose social, cultural and economic conditions distinguish them from other sectors of the national community, who are governed totally or partially by their own customs or traditions or special legislation, and who, regardless of their legal status, conserve their own social, economic, cultural and political institutions or parts thereof (Decision 391, Andean Pact).

Local Community: a group of people having a long standing social organisation that binds them together whether in a defined area or otherwise; it shall include indigenous peoples and local populations, and shall where appropriate refer to any organisation duly registered under the provisions of this act to represent its interest (Community Intellectual Rights Act, 1994, Third World Network).

Locality/Local Community (in the context of local plant variety protection): A *sui juris* person, residing and commonly inheriting and passing over culture continually, who takes part in the conservation or development of the (local) plant variety (Plant Varieties Protection Act, B.E. 2542 (1999), Kingdom of Thailand).

Source: Adapted version of Laird, S. (ed) (2002) Biodiversity and Traditional Knowledge: Equitable Partnerships in Practice. Earthscan, London; and Plant Varieties Protection Act, B.E. 2542 (1999), Kingdom of Thailand.

The country of Thailand contains a considerable ethnic, linguistic, cultural and religious mosaic, despite the imposition, from the time of King Chulalongkorn (1868-1910), of a unifying language and culture with the aim of creating national unity. Compared to some of its neighbours though it contains a more homogenous ethno-cultural mix and this is reflected in the fact that 95% of the population are declared Buddhists (Theravada Buddhism) and more than 90% have a Thai language as their mother tongue (Kermel-Torres, D. 2004).

In drafting their Acts, Thailand has deliberately not used the term 'indigenous' because of the ambiguity in many of the definitions. Rather it has used and defined the term 'local community' in the PVP Act, and there are references to traditional or local communities in the Constitution, Traditional Medicines Act, and Community Forests Bill.[44] The term indigenous is particularly problematic in Thailand because it could be broadly interpreted to include all Thais and related ethnic groups, as Thailand has never been colonised by an external power. Using the quite broad ILO Convention 169 definition, one could imply that the bulk of the population of Thailand are actually 'indigenous peoples', and that 'tribal peoples' would adequately describe the 'hill tribes' or '*chao khao*' minority groups that make up a small percentage of the population and primarily reside in the North of the country.

[44] In July 2005 the Joint Parliamentary Committee working on the Community Forests Bill opted not to define 'indigenous peoples' because it was perceived to be too problematic (Srethasirote, Personal Communication July 2005).

Taking a more narrow definition of indigenous peoples would distinguish the national community of Thais as clearly dominant and thus ineligible for such a description, as illustrated in the Philippines administrative order and the Andean Pact definitions. For these reasons it has been preferred to use definitions and text references to 'local communities' and in the Constitution 'traditional communities'. As illustrated in the PVP Act and Third World Network Community Intellectual Rights Act, 1994, people can receive protection of their traditional knowledge and local plant varieties irrespective of their ethnicity. In terms of equal treatment this may prove to be preferable. The nationalist drive in Thailand to assimilate tribal groups however may be another motive making explicit special treatment of such groups unfavourable in the eyes of the parliament and bureaucracy.

Community in Thailand has been an important means for the assertion of the rights of marginalised groups whether they are Thai or within one of the ethnic minority groups largely located in the North of the country and in the far South.[45] Community is not necessarily defined by ethnicity; it may be defined by a range of factors including the form of agricultural production or livelihood, customs and lifestyle, environmental conditions (such as mountain or waterway barriers) or social cohesion.

Politically, a communitarian ideal has gained significant ground, especially in discussion surrounding community forests. By representing themselves as a unified group, many such communities have achieved a more significant voice than they could have otherwise achieved. This has occurred to the point where a large network of communities has also joined together to demand the recognition of rights to land and resources within community forest areas across Thailand.

By assuming or being allocated a group identity may have both positive and negative aspects however. The 'hill tribes' groups of Northern Thailand are often referred to without consideration of their considerable ethnic, cultural and ideological differences. Thus what may be gained in momentum towards securing various desired rights, may be problematic if the diversity of such groups is not recognised – that the particular interests or customs of various villages, ethnic groups, and farming or trading communities may not be acknowledged. Over-idealising the cohesion of certain groups may also be misleading, and there is likely to be considerable particularism expressed by sub-groups, individuals and between communities.

In the desire to have the customary laws respected in the development of international *sui generis* systems for TK protection (as has been pushed for most strongly in the 8(j) Working Group), it must not be forgotten that such local jurisprudential diversity may extend down to the very smallest units. The unifying effect of referring to local customs and rituals as 'customary laws' should also be given some consideration and may in itself be understood as a strategy for the assertion of the rights of indigenous or local groups. A number of authors including Chamarik, Santasombat, Ganjanapan and others have researched the local customary laws of these groups and further connections need to be made between the continued operation of these and the implementation of national laws and international regimes. It is rare however to find experts who may be able to bridge the ideological and epistemological barriers that exist between these scales and issues.

[45] The Muslim provinces of southern Thailand which previously existed as ethnic Malay Sultanates have also exerted forms of community solidarity against perceived oppression from the government or Thai society more broadly. Due to political unrest however this study could not investigate local conditions in this region.

4.2 Traditional Knowledge and Local Practice

Although it was not possible to conduct extensive consultations with local groups as part of this research, a number of sample studies were undertaken to understand local perspectives and issues. Altogether a period of approximately two to three months was spent in the provinces of Thailand on regular field trips to either known and specified villages or to random locations as opportunity arose. Several local case studies involving ethnographic research were chosen to illustrate the ongoing presence of traditional local knowledge and practice relating to biodiversity, threats and loss of such practice and knowledge, as well as the dynamism and adaptations inherent in traditional local practice. The sites came from three of the four different regions of Thailand and thus provide an example of the diversity of agricultural and medicinal uses of biodiversity.

Amphoe Samoeng Community Forest Area and Khan Watershed, Chiang Mai Province.

Community forests exist throughout the four regions of Thailand, but by far the greatest concentration of communities can be found in the Northern region around Chiang Mai, Chiang Rai, Mae Hong Son and adjoining provinces. The lifestyles of community forest dwellers are typically highly connected to the surrounding forest areas through ritual, custom, medicinal knowledge and food collection, and for the most part their daily activities could be described as traditional.

The first community forest area visited was the Khan Watershed in Amphoe Samoeng, Chiang Mai Province. The area is situated in a mountainous area at the source of several tributaries of the Mae Khan River. In recent decades land pressures in such areas have meant the deterioration of forest areas, particularly in the watersheds of such major river basins, resulting in other problems relating to erosion, saltation, water shortage and water quality. The sources of such pressures are numerous, and include increasing local populations, and encroachment of lowland Thai *Khon Muang* who are increasingly involved in activities much more integrated into the broader market economy.

The Mae Khan basin can be divided into three fairly distinct agroecological zones: the lower, intermediate and upper. The lower zone, which accounts for approximately one-tenth of the area, is basically lowland valley with an average altitude of lower than 500 metres above sea-level. The lower zone has a more advanced agricultural system introduced by Thai *Khon Muang*, including irrigated ricelands which allow for at least double-cropping (Ganjanapan, Anan 2000).

The largest of the three zones is the intermediate zone which accounts for approximately 70 per cent of the basin, covering an upland area with an altitude between 500 and 1000 metres above sea level. This area is primarily inhabited by the Karen and the upland Thai or *Thai Lue* who have existed in the area for over two centuries (Ganjanapan, Anan 2000). These groups practice primarily subsistence agriculture including small terraced (wet and dry) rice paddies and various vegetable plots in some permanent fields and some rotational shifting plots (often described as swidden agriculture).

The most ecologically sensitive area is the upper zone where the top of the watershed is located and thus the source of the tributaries. This highland area is between 1000 and 1500 metres above sea level and has been reserved by the Royal Forestry Department as a

watershed area. However Hmong and Lisu minority groups have migrated into this zone in recent decades, previously producing opium, but more recently involved in cash cropping due to government drug crackdowns.

Baan Mae Ka Pu

The visit to the watershed area coincided with a festival on the 26th and 27th March 2005 organised by the Community Forests Network, the Northern Farmers Network and the Northern Development Foundation, as well as other associated NGO-COD groups. The festival, called *Suep cha ta*, or *phii khun nam* in reference to the rain spirit or watershed spirits, was organised to recognise the importance of the local communities in the conservation of the forest areas surrounding the *Hnok*, or source of the river tributaries. The festival was centred on the Karen people (*Khon Pukkhayoh* as they call themselves – they are known as *Karieng* or *Karen* to Thais and foreigners), whose culture and daily activities, broadly speaking, involve the sustainable use and conservation of local natural resources. The Karen people in this area (the festival was held in and near the village of *Mu Baan Mae Ka Pu*) are primarily Buddhist, but retain some Animist beliefs and have some Christian influences.

The land within the village utilises a complicated system of community and private ownership that relates to long held customs. The Karen recognise private ownership of some types of land, for example household compounds, cash crop gardens and orchards. These privately owned properties may be inherited and sold according to Karen custom, but often do not have an official land title deed. Previously in this area an animist religious leader, *Zikho*, had authority in allocating land communally held to individual households on an usufruct basis. In other words the villagers had rights of communality. Through communications with the local spirit, the religious leader was able to locate the village boundary (Ganjanapan, Anan 2000). With the stronger influence of Buddhism in the area, the *Zikho* have less authority over the allocation of land, and disputes over common land are usually transferred to a village leader or leaders.

The Karen practice a form of shifting rotational agriculture which allows field to lie fallow and regenerate for periods of 7-14 years or more depending upon land availability (Chaitap, Varaluk, (Undated) provides a more comprehensive overview of the biodiversity of shifting rotational cultivation). These fields are primarily in lower lying areas near streams. The regeneration period allows for regrowth and replanting of trees such that nutrients are re-supplied to the soil before reusing the land. As land pressures have increased, the ability to continue this practice has been limited, rotation periods have become shorter and more fields have become permanent. In these fields where shifting agriculture is conducted, or when using trees for timber, forked trees typically have only one limb removed close to the stump so that they can plough around stump, and the tree will regenerate rather than having to regrow entirely. The Karen thus practice methods of conservation in their daily activities, as well as applying methods of traditional agricultural knowledge in the use of local varieties and pest control (see Box 5 on the next page).

Box 5: Methods of Karen Pest and Weed Control and Use of Local Agricultural Techniques.

The Karen have an indigenous organic method of pest and weed control using manual labour, site selection and herbal solutions. The selection of cultivable ground and burning are related to pest and weed control. Old-age bamboo groves with foliage cover minimise *lalang* grass infestation after planting. This type of bamboo forest also has loamy soil, encouraging the rice to multiply into clumps easily. Rice seedlings are spaced so that the rice stalks block sunlight and snatch nutritious elements from other weeds, deterring growth of *lalang* grass. If the soil is too rich in nitrates after burning, the rice stalks become too lush and leafy resulting in small and shrivelled paddy ears. The Karen resolve this problem by separating the rice plant clumps.

One organic herbal plant pest control is the bark of the *Pterocarpus* tree soaked in water and poured or spread on the top part of the plot to allow the solution to seep into the rice stalks and leaves to discourage insect infestation.

Source: Santasombat, Yos. (2003) *Biodiversity Local Knowledge and Sustainable Development.* Regional Centre for Social Science and Sustainable Development, Chiang Mai University.

Apart from rotational agriculture fields, village common lands include animal grazing areas, watershed reserved area, and forest area for hunting and gathering of forest products such as herbs for medicines and spices for cooking. During the festival the villagers of *Baan Mae Ka Pu* showed us numerous medicinal plants in the forest, herbs for cooking such as cinnamon, which is cut from the bark of only one side of the tree such that it survives, and other conservation practices which are integrated into custom and ritual in the forest. One such practice is whereby, when a Karen baby is born and the umbilical cord is cut, it is then placed in a bamboo basket and attached to a tree. The child then must care for the tree for his or her entire lifetime, and no one in the village may cut it down. Similarly, when a villager dies, a tall tree is chosen to be their resting place such that their spirit can climb up high and watch over the village (Chaitap, Varaluk. Pers. Comm., 26th March 2005). There are designated forest areas for such rituals and activities and these are upheld with customary laws and protections. These are discussed in Section 4.3 and an example is presented in Table 7.

In terms of genetic resources, the local communities act as custodians of a vast variety of different plant varieties. They rely on a supply of them for food and medicines and thus recognise the importance of conserving them. Furthermore the local communities of this area typically save, exchange and adapt varieties to different environmental conditions. Natural mutation and breeding develops new varieties and actively contributes to a broader gene pool (Santasombat, Yot, Pers. Comm., 17th May 2005). Over 65 herbs, spices, seeds, or local plant cuttings utilised by the villagers of *Baan Mae Ka Pu* for food or medicines were displayed at one meeting of the festival. These were in addition to the main staple rice crops and vegetables. Yet the village has a population of only 978 in 205 households (Northern Development Foundation, 2005).

The villagers do not necessarily document their knowledge and resources, although there is an increasing trend to do so due to outside influences. The local knowledge of the villagers is highly adaptive and evolves with the changing environment, with seasonal and yearly variations in climate, with adaptations of new or introduced species. Such knowledge is highly *situated* in local conditions, and involved in local rituals, practice and customs. To

refer to it as 'traditional' knowledge therefore seems strange. The term 'traditional' implies something static, which is a common misconception about local knowledge in discussions about in situ conservation use of biodiversity. Whilst science is based on the search for universal truths, and requires that knowledge be viewed by its very nature as universal, local knowledge is grounded in a very particular territory, ecology and social structure and is dynamic or adaptive (Santasombat, Yot. 2003). As claimed by a village elder during the festival:

> *"We do not need their new systems of knowledge and education… We have our own system that is just as complex. We can get our certificates from the natural university surrounding us, and our products from the forests, the river, the animals…"* (Anonymous Karen Elder, Baan Mae Ka Pu, 26th March 2005)

The villages presented different responses when asked about their 'local or traditional knowledge'. Due to language and cultural differences, some villagers indicated that they don't really have any 'knowledge', assuming that the question referred to institutionalised or educated knowledge. When asked again about knowledge of local plants and herbs, the response from those asked was that they had extensive knowledge.[46] Village leaders and NGO staff indicated that their knowledge was often disregarded by outsiders, with the exception of NGOs and academic anthropologists who have been trying to help with the assertion of their knowledge systems, conservation methods and rights to community forestry (Hiaw and Yung, 26th March 2005). They also indicated that they generally shared their knowledge with others in the community and even with outsiders, however there were some secrets held by individuals and some rules associated with the use of herbs and plants. These leaders were aware of issues such as biopiracy and had become concerned about the sharing of knowledge.

Thus the proprietisation of certain aspects of local knowledge in specific inventions would seem incongruous to the 'local knowledge system' described above. The individual ownership and exclusiveness of IP control seems incongruous to the communitarian practices of knowledge sharing in such groups, meaning that it is easy for disrespect to occur. The plethora of different customs that may be associated with the knowledge may be disregarded. Thus, in some international forums the reference to a universal 'traditional' knowledge would seem to relegate such knowledge to a lesser 'knowledge system', one that is static and thus easily fractured and proprietised. This would seem to subconsciously denigrate such a knowledge system, put it in second place to the mainstream of science, and thus compound the effects from the broad swathe of other threats.

Local community forestry practices, of the Karen and of other groups are threatened by encroaching land uses, land disputes with other ethnic groups, exclusion from traditional forest lands by government reservations, land tenure and citizenship problems, and a host of other factors. Table 6 on the following page details a range of such threats.

[46] A group of three Karen women were asked at a forest ordainment ceremony where seeds and herbs were openly on display.

Table 6: Description of Threats Affecting Local Practice and Traditional Knowledge.

Threat	Description
Thai Government Policy	The Thai government has sought to intervene with increasing intensity since the 1950s in the affairs of the hill tribe peoples for a number of reasons. These are: increasing concern about slash and burn agriculture in watershed areas; the cultivation of opium poppies was outlawed in the 1950s; national security and border protection with the Laos and Burmese borders; and assimilation with the dominant Thai population.
Tourism	Tourism has introduced a range of outside influences to local communities and has diverted them from local activities into market oriented activities like the sale of handicrafts and even tours.
Land Shortgages	Caused by increasing population with western health care, immigration and natural increase. Also caused by encroachment of lowland agriculture into higher areas, logging and the sale of land to businesses and outsiders. This has had obvious effects on the ability to conduct shifting rotational cultivation, and thus there is more pressure to clear new areas.
Land Rights	The legal owner of most of the mountainous land of the north is the state, as administered by the Royal Forestry Department and the new Department of National Parks, Wildlife and Plant Varieties. Thus most tribal people do not own the land on which they farm and dwell, and the securing of land rights, though often promised by government officials, is infrequent and sometimes impossibly expensive because of bureaucratic "delays." In other cases people are excluded from their traditional homes for the establishment of protected areas or development projects such as large dams or tourist developments.
Lack of Citizenship	Many tribal peoples are legally entitled to citizenship, but often obstacles are created to deny them this coveted status. Two requirements are official house registration documents, which only half the tribal people have, and individual registration documents (ID cards), which slightly more than a third of them possess. Frequently the hill tribes cannot obtain these documents because perhaps they cannot prove where they were born, or their birth was not registered soon after the event, or they cannot prove how long they have lived in Thailand. Citizenship may even be blocked by officials who demand exorbitant payments for completing the process.
Poverty	The hill tribe economy is shifting from a subsistence economy to a cash economy in which people are becoming more dependent upon the lowland Thai markets and travelling merchants.
Social Dominance	Many dominant cultures are ethnocentric. This attitude leads to various forms of discrimination between competing cultures. This problem exists in Thailand where many Thai consider themselves to be more culturally advanced than the tribal people whom they feel are inferior subjects of Thailand. The clash of cultures may be particularly severe because the Thai and hill tribes are competing for limited land and resources.
Education and Language	Most tribal children now have the opportunity of a Thai education as schools are constructed throughout the mountains of northern Thailand and Thai teachers sent to teach at them. This provides an opportunity by which young tribal people may integrate into the dominant Thai society; it also means better chances of technical training, better paying jobs, and improved health. Yet this is also one of the most severe challenges to the perpetuation of tribal cultures and traditional ways. For example school uniforms are usually required instead of tribal clothes, and students are instructed in Thai language, rather than their own which is a great unifying factor among the tribes.
Loss of Biodiversity	The main problem has historically been logging, and illegal cutting operations in protected zones, as well as movement of lowland Thais up the hills. This has been slowed significantly by greater government control.

Source: Anderson, E.F. (1993) *Plants and People of the Golden Triangle: Ethnobotany of the Hill Tribes of Northern Thailand*, Dioscorides Press, Portland, Oregon., and Santasombat, Yos. (2003) *Biodiversity Local Knowledge and Sustainable Development.* Regional Centre for Social Science and Sustainable Development, Chiang Mai University.

Due to greater government intervention in the community forest areas of the north, there have been ongoing conflicts to assert the rights of the communities to continue their local practices in the forest areas. Luangaramsri (Pinkaew, 2001) argues that much government intervention

has essentially established a 'consumable nature' in Thailand. The establishment of protected areas has meant the eviction of many ethnic hill tribes people. She refers to the protection of 'wilderness' areas by government bodies such that dams can be constructed as a means of facilitating economic development, and for the facilitation of tourism on famous mountains. At times the national parks authorities have been blatant in their desire to facilitate preservation of the forest by utilising an exclusionary ideology:

> *The best way to safeguard the forest is to relocate them (hilltribes) all and allow the authorities to manage the forest… This is necessary because [we] must preserve and rehabilitate the forest which has been destroyed by these hill tribes.* (Chief of Klong Wang Chao National Park in Tak Province, Northern Thailand. Cited by Pinkaew Luangaramsri (2001)).

It is a strange irony then that in the past ten years the perceived economic value of medicinal products (and also, but to a lesser extent, agricultural genetic resources) that have been identified and developed locally by hill-tribes people has increased enormously. These groups represent to first 'chain of inventors' in what is potentially a highly valuable source of revenue for Thailand. The Thai authorities have thus had to since rethink their means of conservation and thus the Community Forests Bill has remained in development, with a great number of considerations and contentions.

But the local communities have not been politically static either. Luangaramsri (2001) notes that the (re)construction of 'communality' and rotational swidden agriculture in public discourse, including the March 2005 festival which was attended by government officials and senators, have been important in asserting claims to land rights and continuing activities of community forestry. The process in which local forms of knowledge and organisation are being constantly reworked in response to changing external conditions has been referred to as 're-localisation' (Long, 1996). As Long describes: "To argue for the assertion of local organisational and cultural patterns, the reinvention of tradition and the creation of new types of local attachment, is therefore not the same as arguing for a *persisting* set of local traditions. Rather, these 'reinvented' patterns are generated through the ongoing encounter between different frames of meaning and action." In terms of the hill tribes, particularly the Karen, there is thus an ongoing political and socio-ecological re-localisation.

These re-localisations have gradually been linked to broader societal or 'national' benefits in terms of the use of such knowledge and genetic resources. These represent challenges for the modern conservation paradigm. Academics and government officials in Thailand have taken up the local knowledge discourses and, along with discourses filtering in from international forums and pressures, this has led to some minor re-orientations on the treatment of community forests, and local 'traditional' knowledge. In Thailand this is perhaps best illustrated by the ongoing development of the Community Forests Bill, the development of the Act on Promotion and Protection of Thai Medicinal Intelligence, and the PVP Act discussed earlier. There are however considerable implementation difficulties and it is likely that this has to date been limited by the political will of government bodies to effectively engage with the local aspects of TK issues. These government bodies to date appear to be utilising a more superficial conservation strategy for TK and related medicinal and agricultural biodiversity.

Traditional Medicines of Baan Soplan, Mae Lan Kham.

The visit to Baan Soplan, part of Mae Lan Kham in Amphoe Samoeng (Chiang Mai Province) on the 13-15 February 2006 was intended to gain a better understanding of the customs, taboos and rituals associated with the use of traditional herbs and local plants. The visit coincided with a recent bioprospecting activity by the Faculty of Pharmacy, from the Chiang Mai University only a day prior to our arrival on the 13th February 2006. Villagers from Mae Lan Kham indicated that researchers from the university had come and taken many herbs from the village and surrounding forest after presenting an official looking letter (Kaa Le, Pers. Comm. 13/02/2006). The villagers provided the herbs, having little knowledge about the authority and jurisdiction of herb and plant protection, and assuming that they had little right to say no to the collection. The researchers provided a document to the villagers from the Northern Research Centre for Medicinal Plants from Chiang Mai University. An academic at the Northern Research Centre, Mrs Suwanna Wadapikun (Pers. Comm. 21/2/2006) indicated that she was not sure who the researchers were, but that it was common for them to access material in Amphoe Samoeng from the communities, and that other universities such as Chulalongkorn and Mahidon also conduct such activities. The Centre had a herbarium with extensive collections from the surrounding region. When research activities were conducted, Mrs Suwanna suggested that the head of the community was always contacted and shown the purpose of the project. She also indicated that they provided some benefits back to communities in the form of information sharing and education about traditional medicines. The Centre does not yet commercialise any of its research, but Suwanna indicated that if commercialisation did take place, then the provider communities should be consulted first.

This indicates a common occurrence where Thai academic researchers access biological materials and associated TK from local communities, and there is not a clear transaction process. Although the consultation activities of the researchers from Chiang Mai University may sound adequate, the villagers who provided the resources were left with many questions and concern that the materials might be commercialised, misused according to their customary laws, and possibly patented to the exclusion of others (Kaa-Le; Pathii Ta-Yae and Pathii Dang – Soplan villagers, Pers. Comm. 13/02/2006). This highlights the need for more transparent PIC processes and the dissemination of information of communities about their rights of control over the sharing of herbs, plants and associated TK[47]. Comments to this effect were made to the villagers and about the need to exercise caution when dealing with researchers. The same villagers then agreed to teach us about their customary laws surrounding traditional herbs, and to show us some examples in their local forest. This also indicates the importance of trust in a researcher-provider relationship, but also the complexities associated with potential deceptions, intention, and bridging cultural differences such as language, customs, knowledge systems and information sharing. Even researchers such as this author, seeking to understand local customs for their intended 'protection' must operate under similar ethical principles and be cautious about making assumptions. Often despite the 'good intentions' of the researcher, their ideas may be incongruous with those of the communities, or the disclosure of the herbs and associated knowledge may have unintended impacts. This research project is extremely mindful of these considerations.

One elder – Pathii Ta-Yae (Pers. Comm. 14/02/2006) in Soplan indicated that when their medicinal knowledge was useful, where it could help other people, that he was happy to share

[47] There may also be issues of literacy and lack of familiarity with formal or legal documents. During this research it was not always possible to obtain signed research consent forms due to the illiteracy of the people involved or the formality, therefore transparency of information about the research and verbal trust were crucial.

it with them. Sharing is a typical communitarian principle and lifestyle for their people. He then complained however that under the system of intellectual property he no longer knew what could happen to such knowledge if he shared it with outsiders. He had become sceptical. He thus knew about the potential misappropriation and/or IP protection of biological materials, but didn't know what that meant for them. In the culture of the *Khon Pukkhayoh* or Karen, there are many rules and taboos about sharing such knowledge or resources with outsiders. This section attempts to provide a sensitive documentation of some of these.

Relating to the general use of traditional medicines and herbs are a range of local customs, taboos, rituals and rules (customary laws) held by the Karen people in Baan Soplan, as follows (Pathii Ta-Yae, Paa Mur and Pathii Dang, Pers. Comm. 13-15/02/2006):

- Medicines and herbs should not be hoarded. They should only be collected as needed for the treatment of sick people.
- Herbs should not be over-collected, especially if the plant is rare.
- Before going to collect the herbs, the spirits of the herbs should be first asked and a small donation should be made to the spirits at a shrine.
- It is taboo for single women or women without children to collect medicinal herbs. Only married mothers may collect them.
- Women cannot collect herbs (or do manual work) during menstruation.
- If going to the forest to pick herbs for a specific treatment, then the person collecting will not tell anyone that he has gone to do that. On return, the herbs will usually be concealed in a bag. He/she will keep it secret until they have made the preparation for treatment. If it has been told to people, then it will likely be less effective.
- When herbal treatments don't work, then the person might seek out a fortune teller to find out if there is a problem with their spirit which is affecting their health. The fortune teller will then advise about where a donation can be made to mend the spirit. This custom is no longer believed by a few of the Christians in the village.
- When knowledge of herbs is shared it is often informed by their perception of the character of the person seeking the knowledge as well as based on possible indications from spirits about them. If the knowledge that is shared is used inappropriately, it may adversely affect to spirit of the person who provided the knowledge, in the form of illness or otherwise (as was similarly indicated by a Hmong elder).

Herb or treatment-specific customary laws include:

- The 'Great medicine' can only be collected by the elders. It is only for men older than about 30 years old, it cannot be given to pregnant or single women – only married. The medicine is highly valued so it should not be exploited. It should not be taken by outsiders because it has a spirit. Only those that pay respect may be treated by it. If they take more than they need, it may not be a medicinal herb anymore – it might lose its qualities or it might disappear. It should not be treated as a commodity, traded or involved with money.
- Many herbal teas for vitalisation as well as other treatments can only be taken by adults – it is taboo to give them to children.
- For skin cancers, they perform a ritual involving rice and 'holy water', music and then blow breath on the cancer in a certain way. There are many different ways to blow on an ailment as a treatment.
- Kwao krua should only be used by women.
- Some 'lesser' herbal treatments do not have any ritual or taboo associated and may be used by anyone.

Although a full ethno-botanic investigation was not made, a number of treatments were documented in basic detail to demonstrate the extent of their local medicinal knowledge. Names of plants or full descriptions are not provided to avoid the potentially inappropriate disclosure of medicinal herbs. Specific treatments included:

- They use the leaves of a broad leaf plant, grind it and make a solution for the treatment of ticks on chickens.
- They boil the skin of a common Thai fruit to make a drink that helps new mothers produce more milk for their baby. The same treatment can be used for pigs and cows also.
- They use a broad leaf from a plant wrapped around wounds to help the healing process. This is a basic remedy and doesn't require any ritual and can be used by anyone.
- The leaves of a plant are used to treat the poison injected by a cobra bite. They drink the boiled leaves to help release the poison.
- The leaves of a plant are boiled to make a tonic for recovery and revitalisation of a woman after birth.
- The leaves of a tree are eaten or boiled in tea for the treatment of coughs.
- A vine is used for the creation of a longevity tonic which is used for at least 30 days and can help provide a longer life.
- A rare tree was indicated and can be used for the treatment of women after birth. The leaves are boiled and then put in the bath to soak. The leaves can also help relieve headache when wrapped on the forehead.
- A tree with multiple uses was identified including use of the leaves for stomach ache, use in rituals with spirits, and the sap of a cut branch can be used for children suffering from cold weather.
- The bark of a plant was identified as useful for the treatment of coughs and for women with a shortage of milk.
- The leaves of a bamboo variety can be boiled and drunk for the treatment of diarrhoea.
- A combination of between 7-15 herbs can be boiled and the steam breathed to provide energy and strength particularly for the elderly.
- They use a tree to create a solution for the treatment of sore teeth. This tree is also used for single, young people who have died, in making a small house shrine for them.
- A herb was indicated that can be used as a medicine for pigs that don't grow well and also for pregnant pigs.
- The leaves of a small shrub can be used to coagulate blood and stop bleeding.
- The leaves of another small shrub can be boiled in a babies bathwater for general well-being.
- For the treatment of skin disease, the bark of a tree can be boiled and bathed in.
- A yellow flower can be mixed with rice husks to give children and stop intestinal worms.
- The use of a particular root with a mixture of up to 12 herbs can be used as a permanent birth control method for women.
- Other treatments noted included, the use of leaves of a plant for burn treatment on the skin, extracts from a plant used as an appetite suppressant ('to stop hunger'), and several others. (Pathii Ta-Yae, Paa Mur and Pathii Dang – Soplan villagers, Pers. Comm. 14/02/2006)

The bark of the Pruak tree is known to be poisonous on the skin and if ingested. A man from another village apparently decided to experiment on this plant to see if it is possible as an anti-toxin for poison release. The man consequently suffered from chronic diarrhoea and died as a result. The bark of the Pruak tree can also be used to poison and kill fish. It was claimed that the use of a knife in the water will cause the poison to be absorbed into the metal. This is not a common practice however (Pathii Ta-Yae, Paa Mur and Pathii Dang – Soplan villagers, Pers. Comm. 14/02/2006).

Some of the elders then indicated that they do not experiment a great deal with the traditional medicines to avoid adverse effects. They told a story of a man from another village who was ill and tried several herbal treatments to relieve his symptoms, one after the other. Ultimately he ended up paralysed due to the toxic mix of natural chemicals in his body. This teaches an important lesson for the villagers to be careful, but also to share knowledge with each other and between villagers or even between regions to avoid such occurrences (Pathii Ta-Yae, Paa Mur and Pathii Dang – Soplan villagers, Pers. Comm. 14/02/2006).

Kwao krua (white and red) is present in the forest and has various uses. Pathii Ta-Yae (Pers. Comm. 14/02/2006) learned about the uses of the plant from farmers in the Issan region. He indicated his concern about the future conservation of the plant given the number of people now cultivating it. When explained about the provisions under the TTMI Act for the protection of the herb by limiting the quantities allowed for cultivation, he thought this might be good, but was concerned that it might exclude traditional healers and communities from the local use of the plant in small quantities. Plao noi was also present in the local forest and Pathii Ta-Yae indicated that he knew about the 'copyright' (biopiracy) on the plant by Japanese researchers. The villagers also used Plao-noi for various treatments.

When discussing what can be done to avoid such occurrences, Pathii Dang (Pers. Comm. 14/02/2006) indicated that the government did not often enough visit the regions and the villages and thus did not understand what it is like here. He quoted a famous Karen elder (Pathii Muu Soh):

> *If you want to see, then go. If you want to know then just ask.*

Therefore the government either doesn't care to know, or has not actively sought to know about local conditions related to the rights of communities to not only land and physical resources, but also to associated cultural expressions and knowledge. Pathii Dang related this to the need for villagers to mark out their community territory with posts, maps and global positioning systems (GPS) to show the government that they have a communal right to the land and the forest in this area. Thus their local struggle was now being made on the governments more technical terms involving mapping, planning and the beginnings of forms of exclusion or territorialisation. The elders express a sense of disappointment that their customs too are being lost, along with their knowledge of traditional medicines, of which there may have once been knowledge of thousands, but now there is knowledge of maybe a few hundred (Pathii Ta-Yae, and Pathii Dang – Soplan villagers, Pers. Comm. 14/02/2006).

Baan Khun Khlang, Hmong Village, Khun Watershed, Doi Inthanon, Chiang Mai.

A Hmong village was also visited and traditional medicines discussed. The Hmong typically live in the upper altitudes of the mountains and are renowned for being traders. The use of herbs and associated customs are somewhat different from that of the Karen people. In the village they have many traditional medicines grown in their gardens, but also outside the village in local forest areas and farms. In the school, children are taught about traditional medicines in occasional special sessions as part of the local curriculum. During these classes they get elders in for talks and have field trips to the forest or household herb gardens (Leng, Pers Comm 12/02/2006).

The Hmong villagers, although more likely to sell their herbs than the Karen, trade them in only limited quantities. Medicinal herbs are used mostly for personal use, given to others for free or for a small donation. With some specialist traditional healers you might have to pay more. These healers may experiment with new things but mostly have the knowledge passed down to them from others, they teach their children and the knowledge is retained intra-generationally (Leng, Pers Comm 12/02/2006).

In the tambon there is a local healer's network of about 20 healers set up and supported by the Tambon Administrative Office (TAO). The president of the local healers network was asked if we could speak to her, however she declined because she is wary of outside researchers (Leng, Pers Comm 12/02/2006). Such networks occur sporadically throughout Thailand but are not necessarily coherently organised. The Thai Traditional and Alternative Medicines Institute in Bangkok is attempting to support such networks and will likely set up regional offices to assist in their facilitation (Chokewiwat, Vichai., Pers. Comm. 2nd August 2005).

The local community use both traditional medicines and the local health clinic for treatments. Leng indicates that often if the treatment at the health clinic doesn't work, then the person will try a traditional medicine afterwards. The local health clinic is very cheap due to a government subsidy scheme called the '30 baht scheme'. To date the provision of cheap modern medicines appears to have reduced the amount of traditional medicines used and has reduced traditional practice more generally (as was indicated in a neighbouring Karen village called Mae Klang Luang), however it is evident that such practices are not being lost altogether in the area.

The home of a Hmong Woman Elder, Mee Leng was visited to see her herb garden where she grew more than 20 herbs for various treatments. There are treatments for symptoms including sore back, diarrhoea, coughing, bruises, broken bones, stomach ache and other things. She indicated that she knows about more than 100 traditional herbs and had more available in nearby farms and the forest. Mee Leng decides who she treats based on her sense of the person. When making treatments basic things may be made for free, but for other things a small amount is required, up to 500 baht for certain treatments that use rare herbs or complicated remedies. The donation of a small amount is called *Kha Khruu* (the same as in the Karen village and as practiced throughout much of Thailand by healers) as a means of continuing the knowledge (*Khruu* means teacher). It is also a ritual payment made in the belief that there are spirits which protect the herbs and it is to respect them. If the donation is not paid when appropriate, then Mee Leng may fall ill or have something bad happen to her (Mee Leng, Pers Comm 13/02/2006).

The healer also has a spirit to protect them and not just any person can be a healer. They may have a dream or a vision that tells them that they should be, however Mee Leng indicated that some people who have such visions do not want to take on a healers role due to the many rituals, customs and taboos that are then placed on them. They may not be allowed to eat meat or may not be able to sleep in the same bed as their spouse, lest they receive negative effects from the spirits for behaving improperly as a healer (Mee Leng, Pers Comm 13/02/2006).

Leng and Mee Leng have heard about biopiracy cases and intellectual property rights on herbs and plants from the local healers group. Mee Leng states that it is fine to be treated and to learn about the herbs, however she indicated that if someone steals the herbs she will get sick because a donation wasn't paid – it is taboo. If this happens she must go and ask people and try to find the person who took the herbs and then try to appease the spirits which protect them. To find the person and appease the spirits she may have to visit a fortune teller. Such customs are based on mixed Animist and Buddhist beliefs, and it was indicated that it is not incompatible with the local beliefs of Christians (Leng; Mee Leng, Pers Comm 13/02/2006).

This section indicated some typical customs and rituals of Hmong healers, although it should be noted that it was evident that there would also be variations about beliefs and practices between individuals throughout the community.

Khao Khwan and Farming Communities Around Suphan Buri, Central Region.

Such examples of 'traditional' knowledge are not isolated only to community forests and to the ethnic hill tribes peoples however. Another field site visited was the Khao Khwan agricultural research and education centre. Two visits were made to the research centre in February and June 2005. The primary function of the centre is for the education of farmers about organic agricultural methods. The centre operates under a mix of 'traditional' and modern principles and methods, and highlights the adaptations and different contexts inherent in such a definition.

The centre is principled around the Theravadha Buddhist philosophies that dominate the religion of Thailand. The name of the centre itself refers to the belief that there is a spirit (Khwan) within rice (Khao) and all living things. Thus the centre puts an emphasis on a holistic view of the agro-ecosystem surrounding primary crops and vegetable gardens. The training of farmers in organic methods (agricultural production using no synthetic fertilisers or pesticides) is one of the main goals of the education offered there. The centre uses natural fertilisers such as the *Azolla* plant and nutrient fixing indigenous micro-organisms. Furthermore the centre puts an emphasis on the selection of seeds – a skill that has been lost by agriculturalists in many parts of the country. The selection of seeds allows for the development of higher quality crops in following seasons, and reduces the occurrence of blight, fungus and other grain defects. It is also a key activity in the development of new local varieties that are well adapted to their surrounding conditions. Thus the centre effectively applies 'traditional practice' to modern techniques and even modern plant varieties (Daycha, Siripat, Pers Comm; Vanakorod Surawit, Pers Comm). These techniques are taught to farmers who then apply them on their own land holdings, and share them with friends and neighbours. The program has been so successful that a similar education program has been established by the DoA, primarily with the aim of promoting organic agriculture to fuel the ongoing demand of this niche market (Titiprasert, Wichar, Pers Comm. 2005).

Rather than applying customs and rituals as in other cases, the way the teachers and students of Khao Khwan operate is an attempt to be in harmony with beliefs central to Theravadha Buddhism. This guides their ideas about the treatment of nature, the use of synthetic chemicals, and about agricultural methods such as seed selection for improvement of crops. There is a strong resultant sense of pride about the culture of agriculture amongst the teachers and students.

This brief case study highlights the flexible nature of traditional knowledge, its potential location in sources outside ritual or minority culture, and in an 'educational community' rather than a specific territorial community. It is important to note here however that the traditional practices and knowledge employed here are not necessarily of interest to industry (at least as a patentable commodity) and thus their discursive representation occurs in different circles to that of 'TK', but rather those of organic agriculture and 'food sovereignty'.

Ku Ka Singha Indigenous Seed Fair, Roi Et Province, Northeast Region.

The third case study site was a seed fair organised by the Alternative Agriculture Network to support the sharing of seeds (primarily rice, but also vegetables) throughout Thailand. The fair was held in *Mu Baan Ku Ka Singha*, Roi Et Province in the Northeastern (*Issan*) Region. Farmers were invited to come and share seed from all regions of Thailand however.

The fair, whose name translates to 'Northeastern Indigenous Seeds Fair', was essentially about promoting the use of local varieties, adaptation of these varieties to new conditions, and breeding of new local varieties. The activities of the farmers at such fairs results in a sharing of germplasm across the country, and contributions to the overall pool of genetic diversity.

At this fair there were over 130 different varieties brought to be exchanged. This was an increase on the previous year where just over 100 varieties were brought for exchange. This is due to greater numbers of farmers becoming involved and due to some genetic change resulting in a few newly identified local varieties. One individual named *Wu Pah* is said to grow more than 50 traditional and local varieties on his large farm alone. He shares the seeds from these with other farmers as has been done traditionally for generations.

Visits to adjacent farms were conducted to demonstrate traditional agricultural techniques including the use of indigenous micro-organisms and manure to fix nitrogen. Local vegetable varieties were displayed and a number of herbs with explanations about their applications as tonics and stomach-ache suppressants. The names of these were not disclosed. Rituals were also explained including the use of various varieties of rice for specific rituals, for example *Khao Dam* (or black rice) is highly revered by the local Issan people. The people in this village, as opposed to the first example, have relatively clearly defined land allotments and land titles. There is still a strong sense of community; however amongst the various farms there is a mix of traditional and more modern agricultural methods applied, as well as traditional and advanced varieties planted.

The visit was also useful for understanding the way information is disseminated to farmers by NGOs. Numerous presentations and discussions were held and some of the local farmers were thus well-informed about things like biopiracy, new government initiatives, new laws, the potential impact of using advanced varieties, and even the potential effects of FTAs. One farmer who was interviewed named Watanasa (Dej) indicated that he thought the 'FTA is bad

because it will take the goods from my hand. It will encourage them (companies) to take our knowledge and patent it' (Pers. Comm. 25/4/2006).

This case study also highlights potential problems with the registration system of the PVP Act as there is still considerable exchange of germplasm amongst Thai farmers from different regions. Thus protecting a local variety may be exclusive of other communities within which sharing activities have been made. The administrators of the PVP Act will need to clarify what occurs in such circumstances in the Ministerial Regulations such that registrations of local plant varieties does not limit the age-old practice of seed exchange like modern systems of PBRs.

Summary.

In summary these case studies have highlighted the varied nature of traditional knowledge and local practices relating to genetic resources throughout Thailand. What is important to note is that these practices are adaptive, are frequently shared within local communities and between communities, are subject to a range of taboos and customs, may be independent or dependant upon ethnicity, and only sometimes supported by government initiatives (in many cases they may in fact be hindered by government actions).

4.3 Understanding Community Land Tenure, Resource-Knowledge links and Related Customary Law

During side events of the Ad Hoc Working Group meeting on ABS in Bangkok (February 2005), numerous commentators remarked that much of the difficulty in facilitating ABS measures 'on the ground' was related to the unclear definition of property rights of land tenure. It was argued that where property rights of land tenure were clearly defined, then it is simpler to facilitate a point of PIC and thus an ABS mechanism. It was suggested, that the clearer definition of land tenure should be one goal in developing countries. This is based on the commonly perpetuated tendency to focus on developing mechanisms to control access and the scientific and commercial use of TK, with the apparent aim of enabling indigenous and local communities to receive anticipated benefits arising from the commercialisation of TK. It leads us to question which discourse is driving such debates – is it the desire to facilitate access for commercialisation; or is it the need to protect, promote and respect TK?

The inherent problem with this kind of thinking is that it poorly understands the many situations whereby 'community' means much more than a land area defined by property rights. It perpetuates the idea that TK is something that can be divided, fractured and commoditised, such that local communities can be sourced for information and then paid-off, with little thought of the perpetuation of their culture. A discussion of the complications of land tenure, particularly relating to community forest areas in Thailand is thus presented, as well as a brief discussion of related customary laws and rituals in relation to community extent.

Despite common misconceptions, communally held land does occur in 'Western', or developed country property regimes, for example a strata-title apartment block is apportioned such that there are areas of private ownership and areas of common ownership. Therefore it would seem strange that there exists so much confusion about communally held land in

developing and many 'Eastern' countries, particularly for, say areas of community forest or community agricultural land. The primary difference is that there are clear definitions as to the extent of the 'community' in the developed country, whereas it may be relatively fluid in the developing country context. Furthermore such communities maintain their livelihoods through a very different system of beliefs. In Thailand, with economic development has come greater clarification of land areas with the issuance of several generations of land titles, and clearer demarcation of state lands, resulting in subsequent cultural change. However there are still many areas (particularly in the remote forest areas of the north) whereby the ownership of land is less clear, and the demarcation of land and community boundaries has caused conflict.

These local communities are typically defined by a number of physical factors such as the local environment, and the size of the local population, as well as by the customs and rituals that essentially establish what we would conceive of as customary laws. Table 7 below provides a broad description of the relation between the type of forest (physical factor), and the customary laws and local protection mechanisms (cultural factors) of the *Chao Khao* of Northern Thailand.

Table 7: Community Forest Classification and Customary Laws

Type of Forest	Size	Customary Law	Local Protection Mechanism
Pa Ton Nam Catchment Watershed Forest	300-70,000 Rai (120-28,000 acres)	-strict rules and harsh punishment against any possible violation either by community members or outside encroachers -logging is strictly forbidden	-*phii khun nam* (watershed spirits) which serve as guardians of the forest
Pa pra-pe-nee Ceremonial Forest	30-300 Rai (12-120 acres)	-preserved for cremation and other ritual purposes -the domain of ancestral spirits, whose wrath and punishment against violators are treated with great fear	-located near to villages -erecting shrines of the various guardian spirits
Pa chai soi Multi-purpose Forest	Large areas close to villages	-economic use: animal grazing, village wood lot, food collection, and construction materials, etc.	-open boundaries, less controlled than other areas

Source: Santasombat, Yos. (2003) *Biodiversity Local Knowledge and Sustainable Development.* Regional Centre for Social Science and Sustainable Development, Chiang Mai University.

In these areas, village land plots are also divided into four types according to use: the household plot (*thi baan*); paddy land (*thi na*); garden land, vegetables, fruit trees or other trees (*thi suan*); and field crop land (*thi rai*). These are often privately held lands and there are a number of different land titles that may be held (and are accorded different considerations by government officials) or often there may be no title held at all. There is also other village land that is communally shared such as public land, roads, burial areas, watershed areas, temple land, watershed areas, along watercourses, community forests and other areas. As government bodies attempt to allocate certificates of land rights (*Nor. Sor 3 Kor*) or title deeds for these shared holdings, conflicts regularly break out (Ganjanapan, Anan. 2000).

The traditional knowledge of these communities is integrated into their local practices and is highly situated in the local environmental conditions. As previously discussed, such traditional knowledge is by no means static, it shifts with cultural and physical changes, including changes to land use in theirs and neighbouring environments. However these environments are now undergoing accelerated change due to government interactions, external cultural influences and the redefinition of property rights in the past 20 or so years. As Ganjanapan (2000) notes, issuing land titles can affect belief systems, customs and other cultural, social, economic, and political aspects of the rural population because the traditional peasant way of life is based upon a very different system from that in which the use of land titles has evolved. Essentially these people have also had little participation in the decision making of the transition from the traditional system to a new system of land tenure, and so it has been highly disruptive to their local practices.

In terms of biodiversity, it is a long held legal principle in many or most cultures that everything that adheres to the land is subject to the ownership regime that applies to that land. Typically this will be private or state ownership. In other cases however it may be communally held or it may be open-access (although open access land rarely exists in reality as land typically comes under some sort of state jurisdiction). Therefore plants are typically considered to be owned by the person that grows them, until they become moveable property and can then be sold and transported to new owners. In the case of valuable plant genetic resources, traditional custodian communities essentially have a right to the ownership of those resources. With the development of knowledge over their medicinal or agricultural qualities such value has increased. As the Thai government redefines property rights however, these rights over such genetic resources and associated knowledge are lost to the changing physical property control, and consequently also the changing intellectual property control.

The physical resources entailed in plants, biodiversity and land are also linked with the complex system of customs, rituals and taboos, and these also have application relating to knowledge as described in the previous section. Indeed the removal of herbs, it has been described, may have the effect of causing illness to locals due to spiritual beliefs. Shifts in land tenure, thus can also affect plant custodianship, traditional knowledge and associated customs. The community forests movement for the assertion of rights to physical resources thus is also linked to a desire to see other cultural and knowledge resources respected. Politically, the potential of using the diverse values (both to local groups and to society as a whole) of cultural expressions and TK as an argument for continued in situ custodianship is still somewhat untapped by local community proponents and supporters.

As has been discussed in Section 3.5 on the CFB, there have been many displacements and encroachments on the traditional lands of community forests for a vast array of reasons. The community forests movement although making appeal to respect local customary laws, legal plurality and custodianship, have since attempted to assert their claims in terms of ‘rights’ which were a previously alien concept to them. The mapping of community areas and pursuit of community forest management plans by local communities are being made in the hope that they will eventually be recognised by the CFB. Such delineation of community boundaries will no doubt have confining effects on such communities, but may alleviate conflicts with authorities and adjacent communities. It is important also that this does not have the effect of causing the local practice to become static instead of dynamic, as external influences increase their control on the community. Greater assertion of community rights in a broader sense would arguably benefit such continuation; however the realisation of such rights is highly problematic.

This section provides an explanation of the complexities of community land tenure, the expansion of land title deeds, resource-knowledge links and related customary laws. These have direct impacts on the ability to pursue traditional local practices and as a consequence affect the utilisation and ownership regimes of genetic resources and associated traditional knowledge.

4.4 Summary: Developing Appropriate National Norms, Local Strategies and Activities.

The desire for the conservation of genetic resources, for food, medicine, intrinsic and ecological value, should take into consideration the support of local communities who maintain detailed and intimate knowledge of such resources. One of the leading academic researchers on biodiversity, Ajaan Visut Baimai[48] (Pers. Comm., 2nd August 2005) notes that local knowledge of biodiversity is still not very well recognised in Thai society, and that communities are often perceived as poorly educated, whilst in reality they are well educated by experience and local practice. He notes that because the study of these communities is ethnocentric rather than purely scientific it is largely ignored by Thai research funding bodies. This highlights the mental and epistemological barriers that exist between local and scientific/technical knowledge systems. Through the persistence of such barriers, traditional knowledge is being disrespected and lost by a range of threats including, but not limited to biopiracy.

The hospitality of the Thai people is well-renowned. Sharing, giving, kindness and a strong sense of community (whether national or local) typify stereotypical descriptions of Thai culture. This was also reflected in the way interviewees usually responded to questions about the protection of their knowledge, particularly in village settings where western influences are less prominent. Locals would previously be happy to share their traditional knowledge with outsiders, however due to recent developments under the expansion of the system of intellectual property; they no longer knew what could happen to such knowledge if it is shared. They have become sceptical and protective.

In an ideal world, the customary laws of indigenous and tribal groups would be sufficient to protect and promote traditional knowledge and related resources. This has been the sentiment of the CBD 8(j) Working Group as it struggles to find an international solution to the misappropriation of TK and GRs, and to the other range of threats facing their conservation and sustainable use. Taubman (2005) describes this paradox as ‘globalising diversity holistically’. But due to the limited effectiveness of the laws in Thailand for the respect of rights of such groups, and as their knowledge and resources continue to be taken with little consideration, it is arguable that further measures (legal or otherwise) need to be taken to limit the potential ramifications. Particularly the assertion of the rights for such groups needs to be made, allowing them to exercise control over their physical, cultural and intellectual resources.

As mentioned earlier, Thailand has supported calls for the international patent system to include requirements of patentability including a requirement to disclose the source and country of origin (or legal provenance) of genetic resources and traditional knowledge used in an invention. The intended target of this legal provision would be the patent system

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(nationally and internationally). Linked to this is a desired requirement for PIC and benefit sharing when access is facilitated to GRs and TK, administered under other departments in Thailand. Sections 3.3, 3.4 and 3.5 provide extensive details about research access policies, alleged biopiracy episodes and national laws in Thailand. The biopiracy cases discussed indicate the relevance of a DOO requirement, however its practical implementation could prove to be complicated, and there could be difficulties convincing those that oppose a DOO requirement, including some members of DIP and the US FTA negotiating team. Section 3.7 indicates that benefit sharing is a secondary concern for experts and this is backed up by comments in interviews and field research.

But such technical solutions exist in a knowledge system that seems far from the daily reality of the local groups encountered. Likely to be of greater concern for the local communities are means to be informed and to understand how their knowledge resources may be affected when researchers seek to obtain access. This highlights the need for practical measures of PIC. Respect of customary laws should be enabled through this process. Actions taken should go beyond the implementation of laws to broader education and promotional activities including the support of traditional healers or farmers networks, information dissemination and consultations that filters down to all relevant groups. Appendix Two details a model guideline for PIC and also makes reference to other practical considerations such as a handbook to help inform local communities of their rights to PIC, problems associated with knowledge sharing, and issues of research access. The handbook could be distributed with the assistance of NGOs and farmers or traditional healers' networks and could be coupled with information meetings.

5. DISCUSSIONS AND CONCLUSIONS

The length of this document, although only a relatively brief overview, is a testament to the complexity of the issues involved. Such an overload of information, polemics and competing interests often clouds the ability of decision makers to effectively and transparently consider all aspects. Indeed the representation of the issues by each actor, must be contextualised by an understanding of their perspective and agenda. There has been a considerable international influence on all factors and an ongoing internal desire for the increasingly 'western' style economic development of Thailand. Hence one impact has been that the dominance of western technical and legal knowledge systems, and consequent discussions being couched in their exclusive language, has obscured much of the reality of the stakeholders at the end of the innovation chain. The culture and subsistence of local and indigenous communities that act as custodians to *in situ* biological diversity, or what remains of it, seems far removed from the broader intergovernmental and academic debates both physically and conceptually.

Whilst the international arena has been persuaded by coercive tactics related to the linking of intellectual property with trade, Thailand's government has been persuaded to adopt broad and relatively balanced laws by the participation of a diverse range of actors. The evolution of the debates in Thailand will ultimately be guided by the discourse that has the strongest enrolment capacity. To date there is still no clear ultimatum or consensus, but rather a continuing negotiation of complex micro-politics played out by a range of actors (or stakeholders). What is clear is that NGOs, academics and people's movements (civil society) have been a considerable force in influencing the Constitution, organic law of Thailand, the stance of the country in international fora and in bilateral talks. The voices of those that are most marginalised have been heeded at least somewhat in the initial development of laws, but there are still considerable implementation issues and practical difficulties to be overcome towards the realisation of traditional knowledge protection and biodiversity conservation in Thailand. Furthermore it is yet to be seen whether the implementation of Thai law and the political re-localisation of indigenous and local groups will succeed in securing realistic and workable community rights.

The context of the political nexus between intellectual property, traditional knowledge and biodiversity in Thailand is not a necessarily adversarial one. This is in part due to the broadness and complexity of the issues, but also due to the nuanced array of positions that have been occupied. This is to say that currently there is not a clear hegemonic/dominant force or resistant force, but a complex array of actors, discourses and power relations in the rhetorically local, national and regional. In terms of multiple understandings of the term 'power', US pressures represent a strongly coercive force that is the primary threat of upsetting the norms that have been (and are being) established under the influence of an array of positions or discourses. Specifically the Thai-US FTA poses a great risk of undermining laws and norms established from the public position on these matters.

The US has taken a strong stance on IP in previous FTAs and in press releases in relation to the Thai-US FTA. Because IP is only a chapter of the FTA negotiations, and furthermore considerations of traditional knowledge and genetic resources are only a subset of that, there is the risk that the Thai government will compromise these to achieve trade concessions secured in the 'package' of the FTA. If this occurs there is likely to be considerable public outcry and the risk of further issues related to higher standards of exclusive control over genetic resources, and traditional knowledge protection.

5.1 Strategic Considerations for Traditional Knowledge.

There are many ways of supporting knowledge and innovation, the system that has emerged under intellectual property rights being just one. The failure of the modern IP system to incorporate limitations, exceptions, and development-friendly provisions to date has been noted by numerous authors. Members are currently scaling back their ambitions for progress on Doha Round agenda items such as a disclosure requirement, ABS and PIC mechanisms as the WTO Director General Pascal Lamy notes there is insufficient convergence among member states for negotiating groups to put together "full modalities" and requiring a "recalibration" of expectations.[49] As has been repeatedly noted by representatives of developing countries, indigenous and local communities, the IP system may not be appropriate or compatible with their own, more holistic knowledge systems. It is confusing then that discussions continue to be centred around amendments to the IP system when other options are surfacing. It is likely that the protection and promotion of biodiversity-related TK in Thailand will need a broader combination of approaches than have to date been put forward.

Much of the focus on the legal treatment of TK and GRs has arisen due to the misappropriation of these resources and knowledge. Biopiracy arguably does not directly erode TK, but rather has important secondary impacts causing disrespect, moral outrage, a sense of injustice, devaluation and inequity. In consideration of the erosion of TK and the ongoing threats posed, it would appear there needs to be a more concerted effort towards TK promotion, particularly at the *national* level. The provision of some basic rights, such as participation in the conservation and sustainable use of natural resources, the ability to continue, conserve or restore customs and local knowledge, as well as rights to communal land tenure are a crucial part of this.

In Thailand the Constitution, the Community Forests Bill, and associated community forest management plans provide the early stages of a framework to ensure traditional knowledge is respected, protected and promoted such that it endures. The potential importance of these initiatives is not to be understated because of the impact that they may have on continued traditional practices, innovation and experimentation, especially in 'TK hot-spots' such as agro-forestry areas.

Other instruments such as a disclosure requirement and benefit sharing mechanisms also have important objectives. However these should be recognized as having a limited focus on the implications of biopiracy and/or are based on a discourse that indigenous and local communities will ultimately benefit from the commercialization of their knowledge and resources. This assumption is somewhat problematic, and despite a number of emerging case studies, there remains a vague definition of what exactly 'biopiracy' means, what exactly needs to be protected, and whether communities are indeed interested in allowing the commercialisation of their knowledge and resources. Thus countries such as Thailand need to consider a policy model with multiple means and options for TK protection, promotion and respect. Internationally and even nationally community rights are currently an undervalued, ill-considered, but also poorly articulated option, potentially due to the lack of policy space in the various international fora, and likely due to a host of broader social, cultural and postcolonial factors at the national level.

[49] ICTSD "Members 'recalibrating' expectations for Hong Kong and Beyond", Bridges Weekly Trade News Digest, 16 Nov 2005.

PIC requirements should however be raised in terms of priority and judging by the host of voices representing indigenous and local groups, is arguably the most important aspect being negotiated for the respect of indigenous and local communities. As such, attached in Appendix Two are 'Proposed Model Guidelines of Prior Informed Consent for Seeking Research Access to Herbs, Plants, Biological Resources and Associated Traditional Knowledge in Thailand.' These are intended to be reviewed for possible implementation under the Plant Variety Protection Act and the Act on Promotion and Protection of Traditional Thai Medicinal Intelligence (and at a later date under a National Biodiversity Agency). Their objective is to facilitate a practical mechanism of PIC of traditional knowledge holders and the custodians of herbs, plants and other biological resources when research access is sought. This should be the first step towards respecting TK, placing terms on the use of TK and associated biodiversity, followed by means for benefit sharing arrangements which may arise from such research if desired.

Other practical measures that could be employed could include the development of a handbook or manual in both Thai and English, which provides information to local communities, research institutes that hold germplasm and related herbariums, as well as for researchers from academic and private organisations. The manual should be written in clear non-technical language such that each group understands their rights and obligations with respect to the sharing of traditional knowledge and biological resources. It should also provide a list of contacts that should be made when seeking to conduct research. The guide should assist in providing appropriate and culturally sensitive access, consultations with communities and other providers, prior informed consent arrangements, information about potential commercialisation and exclusion under IPRs, and potential fair and equitable benefit sharing arrangements.

Further research should also be conducted into the customary laws, rules, rituals and taboos of local and tribal groups in relation to knowledge, plants and other biological materials. To date similar studies have focused more on customs related to land, the environment, and conservation measures, but have focused little on knowledge, plants and cultural expressions.

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APPENDIX ONE

Chronology of the Community Forest Bill

Date (AD/BE)	Policy Milestone
1990 (2533)	People's version 1 of Community Forest Bill (CFB) drafted by NGOs, academics, and village leaders
1991 (2534)	In response, government version of CFB drafted by Royal Forest Department (RFD)
1992 (2535)	NGOs organize first annual conference on community forestry
1993 (2536)	NGOs organize second annual conference on community forestry RFD promotes National Forestry Master Plan, classifying forests into economic zones and conservation zones
1994 (2537)	Designation of national parks accelerated Northern Farmers Network (*KGN*) established, participates in government working group on community forestry
1995 (2538)	Working Group meets, government representatives unable to make decisions Demonstrations in Chiang Mai, march to Lamphun (estimate 20,000 people) Parliament dissolves Chuan 1 government, Banharn elected Assembly of Poor (AOP) formally established December 10
1996 (2539)	AOP organizes 29 day demonstration in Bangkok in March, part of learning process New people's version of CFB drafted, accepted in principle by Banharn cabinet April 30 Parliament dissolves Banharn government , Chavalit elected in November
1997 (2540)	AOP 99 day "Village of the Poor" demonstration in Bangkok begins in January Cabinet Resolutions April 17 and 29 accept in principle that communities existed in conservation zones prior to designation of protected areas, and established process for verifying related information through tri-partite teams Public hearings on draft CFB in May, with backlash from lowland villages and "deep green" urban environmentalists Government revises CFB, result is unacceptable to all parties Chavalit government dissolves, Chuan II government takes over in November Following a lengthy consultation and participatory process, new Thai Constitution is passed. Art 46 supports participation of local communities in the management of natural ecosystems.
1998 (2541)	Forest fires exacerbate conflicts between highlanders and lowlanders; arrests, road blocks New Cabinet Resolution June 30 reverts villages in protected areas to illegal status
1999 (2542)	Rally for Rights in Chiang Mai in May. Emergence of new networks (eg *SGN*), strategy to unite upland + lowland communities. Petition of 50,000 signatures of eligible voters collected by the Northern Community Forest Network. This entitles them to present the people's draft of CFB into Parliament.
2000 (2543)	People's draft of CFB introduced in February under Art 170 of the Constitution Election, Thaksin government replaces Chuan II
2001 (2544)	Parliamentary committee of 35, including 13 representatives of People's Organisations compromise to redraft the CFB; this passes the Lower House of Parliament in November.
2002 (2545)	3 articles of the Draft Bill are amended in the Senate in March, concerning the right to establish a community forest (Art 18), the procedure for changes to the boundaries of the community forest area (Art 29), and the right to gather forest products (Art 31). Amendments prohibit the establishment of community forests in protected areas, the expansion of all existing community forests, and require RFD permission for gathering all forest products. Amendments seriously change the content of the Bill, and so must be considered again in the House of Representatives.
2003 (2546)	MPs debated the issue and the MPs could not agree with the Senators on the text and content of many articles, thus it was sent for consideration in a joint committee of both Houses of Parliament. Communities continue to develop forest management plans, as if the Bill were passed.
2005 (2548)	Version 12 of the CFB is still being considered by a joint committee of both Houses of Parliament. Local communities are still campaigning for the recognition of their rights.

Source: Narintarakun, K. and Leonard, R. (2003), with minor additions made by this author.

APPENDIX TWO

PROPOSED MODEL GUIDELINES OF PRIOR INFORMED CONSENT FOR SEEKING RESEARCH ACCESS TO HERBS, PLANTS, BIOLOGICAL RESOURCES AND ASSOCIATED TRADITIONAL KNOWLEDGE IN THAILAND.

DRAFT V.2, MARCH 2006 (MIINAAKHOM 2549)

NOTE: These proposed guidelines should be understood as a draft measure for the consideration of the Government of Thailand and others. It should not be misconstrued as a legal instrument unless it meets Government approval. In the interim, Government departments have their own respective policies about research access and these bodies should be consulted independent of these guidelines. Subsequent versions of this guideline will be developed and made available for comment.

Recognising: the contributions of traditional knowledge holders and the custodians of herbs, local plant varieties and biological resources, in conservation, sustainable use, knowledge development, sharing of such knowledge for broader societal benefits, and the threats posed to traditional knowledge systems, there is a need to promote and protect traditional knowledge and related biological resources.

Objective: To facilitate a practical mechanism of prior informed consent (PIC) of traditional knowledge holders and the custodians of herbs, plants and other biological resources when researcher access is sought to such materials and knowledge.

This guideline should be recognized as a first step towards the development of a system of providing fair, equitable and appropriate benefits to traditional knowledge holders and biological resource custodians, arising from such research.

Regulatory Framework: These guidelines are put forward for consideration by relevant officials of the Government of Thailand. It is intended that they be considered for provisional implementation as part of the Ministerial Regulations under the Act on Protection and Promotion of Traditional Thai Medicinal Intelligence B.E. 2542 (1999) as administered by the Department for Development of Thai Traditional and Alternative Medicines (TTAM Department), Ministry of Public Health; and the Plant Variety Protection Act, B.E. 2542 (1999) as administered by the Plant Variety Protection (PVP) Division of the Department of Agriculture.

It is *recommended* however that due to the interest of various departments and groups, the gradual establishment of an independent government body called the 'National Biodiversity Agency' or similar. Such a body would be preferential for the facilitation of the regular cross-department issues.

Supplementary Policy Developments: These model guidelines could be supplementary to a Ministerial Order or similar, on the implementation of a patent requirement for the disclosure of origin of the source of origin of genetic resources and associated traditional knowledge, as has been considered by the Department of Intellectual Property.

Practical Considerations: A handbook detailing in clear language, in both Thai and English, should be developed to help inform local communities of their rights to PIC, problems associated with knowledge sharing, and issues of research access. The handbook should be distributed with the assistance of NGOs and farmers or traditional healers' networks and could be coupled with information meetings.

International Obligations: These guidelines should be considered to be supplementary to international agreements and laws that have been signed and ratified by Thailand. Nothing in the requirements of these guidelines is in conflict with the United Nations Convention on Biological Diversity (1992) or the Trade Related Aspects of Intellectual Property Rights Agreement (TRIPS) – Annex 1C of the Final Act of the Uruguay Round Negotiations establishing the World Trade Organisation (WTO).

Definitions:

Providers/Custodians – Individuals, organizations or communities who are owners of biological resources whether existing in *in situ* environmental conditions or *ex situ,* or who can otherwise prove they have a history of conservation and sustainable use of such biological resources for more than one generation (or a period of 20 years).

Users – May be individuals, companies, research institutions, universities, their faculties or divisions thereof, or other organizations seeking access to biological materials for research purposes, whether academic or commercial.

Community – A *sui juris* person or people, residing, commonly inheriting and passing over culture continually, who takes part in the conservation or development of herbs, plant varieties and biological resources.

In situ biological materials – are materials which exist in their natural environment or where human interaction with the materials is limited. Natural environments may include national parks and wilderness, parklands and agricultural land.

Ex situ biological materials – are materials which exist in simulated environments including herbariums genebanks, museums, warehouses, glasshouses and other non-natural settings.

Source owners or custodians – the individuals, organisations or communities in ownership, immediately prior to the provider obtaining the biological materials and/or traditional knowledge.

SECTION ONE – PIC COORDINATION

a. In order to facilitate these guidelines, the TTAM Department and the PVP Division will each employ a PIC Coordinator (and appropriate support staff). The PIC Coordinator will be deemed to be a prominent expert in the use and/or conservation of medicinal herbs and local (or wild) plant varieties under the TTAM Department and PVP Division respectively. The individuals should have a thorough knowledge and experience in the traditional use of herbs and local plant varieties respectively, as well as a good knowledge of research activities on biological resources and related laws. As the individuals will be working with local communities and peoples they should already have a working history of involvement with local healers or local farmers' networks in Thailand.

b. The groups discussed in Section 1.a. should work towards the establishment of a 'National Biodiversity Agency' or similar which operates as an independent government body for the facilitation of cross-departmental activities on biodiversity, including prior informed consent activities.

c. The PIC Coordinators are responsible for organizing and chairing meetings, working closely in cross-department collaborations with each other and with other relevant departments such as the Royal Forests Department, the Biotec Department and the National Parks, Wildlife and Plant Conservation Department on matters of research access, receiving and investigation complaints about access to biological materials without adequate PIC, and acting as a visible contact point for researchers, both foreign and local, who are seeking research access.

d. A PIC Coordinator must not hold the position for more than 5 years. At the end of the 5 year contract the appropriate departments must seek a replacement PIC Coordinator.

e. Ideally, a number of Regional PIC Coordination Officers could also operate at the regional level to facilitate the dissemination of information to groups in geographically isolated locations.

SECTION TWO – PIC COMMITTEE

a. A Prior Informed Consent Committee (hereafter PIC Committee) shall be established to be chaired by either or both of the PIC Coordinators. The PIC Committee shall be made up of the PIC Coordinators and one representative of each of the following Government Departments: the Department of Agriculture, the Department of Public Health, the Royal Forests Department, the Biotec Department, the National Parks, Wildlife and Plant Conservation Department and the National Human Rights Commission. The PIC Committee shall also comprise two representatives of a traditional healers' network, two farmers' representative involved in the cultivation of local varieties, one academic involved in research on the conservation and sustainable use of traditional medicines, one academic involved in research on the conservation and sustainable use of local agricultural varieties, one pharmaceutical or biotechnology industry representative, one academic anthropologist working on the customary laws of community groups, and one representative of community forests or other community rights non-government organisations or networks.

b. The PIC Committee shall meet at least once every six months or more often as demands of research access or complaints require. A majority must be obtained in the PIC Committee to

approve an access application in its decision-making processes. Where even votes are made, the PIC Coordinators have a further vote or may call for continued review of the case until the PIC Committee can reach a majority agreement.

SECTION THREE – RESEARCH ACCESS

a. When access to biological materials and associated traditional knowledge is sought by foreign or Thai researchers, the research parties must provide a 'Notification of Research Intent' to the relevant PIC Coordinator, depending upon whether it is *medicinal* biological materials (and associated knowledge) being sought or biological materials related to *food* and *agriculture* or both. It should be noted that some plant products may be considered both food and medicine. In the Notification of Research Intent, the research party must indicate whether it is seeking ex situ or in situ biological materials and/or associated knowledge, and must specify the location of the materials and/or knowledge being sought as detailed in Section Four and Five.

SECTION FOUR – EX SITU BIOLOGICAL MATERIALS AND KNOWLEDGE

a. If research access is sought to ex situ biological materials and associated traditional knowledge, then the provider must produce evidence of the source of the materials and indicate that the materials and associated traditional knowledge were obtained with some form of PIC of the source owners or custodians of said resources. This may include a proof of legal acquisition contract, material transfer agreement, or other form of evidence of consent. Where PIC was not sought in obtaining the materials and/or associated knowledge, PIC should be sought retrospectively of the original source owners, custodians or their descendants, and provided that they are adequately informed of the reasons for research access, potential future uses, potential for commercialization and an indication of whether intellectual property rights will be sought on product, processes or derivative arising as a result of the research. The PIC Coordinator or the PIC Committee may demand that the provider should trace back the source and obtain PIC from previous owners if the materials and knowledge have been repeatedly moved between ex situ locations.

b. If the original source owners or custodians cannot be identified and consulted then the provider must notify the relevant PIC Coordinator. The PIC Committee must then decide whether to approve access with the possibility of later complaint by the original source owners if they do exist.

SECTION FIVE – IN SITU BIOLOGICAL MATERIALS AND KNOWLEDGE

a. If access is sought to in situ biological materials and associated traditional knowledge then the providers/custodians of such materials must be consulted and PIC obtained. The means through which consultation occurs depends upon the extent to which a biological resource and any associated traditional knowledge is distributed, whether localised or broadly. In the case of National Parks and protected areas, the same conditions should apply to the relevant authority so as not to conflict with the laws administered by such authorities.

b. Where the in situ biological resource and associated traditional knowledge is only found in localised areas, the provider or custodian individuals or communities should be invited to a meeting of the PIC Committee. If the providers or custodians cannot afford to travel to the PIC Committee meeting then transport funding should be drawn from the PIC-ABS Fund.

c. At the PIC Committee meeting the providers or custodians will be informed by the PIC Coordinator of the Notification of Research Intent, of the reasons for research access, potential future uses, potential for commercialization and an indication of whether intellectual property rights will be sought on any product, processes or derivative arising as a result of the research.

d. The providers or custodians may then opt to allow, refuse or place terms on the access to the biological materials and any associated traditional knowledge. The rights of the providers or custodians must be respected by the PIC Committee and the researchers seeking access.

e. Where the in situ biological resource and associated traditional knowledge is found in broad areas across many different groups or communities, then the PIC Coordinators should organise a ‘Special Consultative Meeting’. The meeting should be held in the region where the resource is predominantly found for the convenience of providers and custodians

attendance. The Special Consultative Meeting should be widely advertised in which the attendance of representatives of provider and custodian groups is encouraged.

f. The PIC Coordinators will chair the Special Consultative Meeting with the attendance of the rest of the PIC Committee. The providers or custodians will be informed by the PIC Coordinators of the Notification of Research Intent, of the reasons for research access, potential future uses, potential for commercialization and an indication of whether intellectual property rights will be sought on any product, processes or derivative arising as a result of the research.

g. The PIC Coordinators should allow and encourage providers and custodians to indicate relevant customs, rituals, practices, taboos and local customary rules associated with the use of biological materials and associated traditional knowledge in the Special Consultative Meeting. These should be considered and reflected in the drafting of options and terms on the research access.

h. The PIC Committee should provide a number of options to allow, refuse or place terms on the research access being sought to the biological materials and associated traditional knowledge. Terms may include a requirement for appropriate benefit sharing arrangements, and/or a requirement that the material and associated knowledge being accessed is not patented. A range of benefit sharing options are provided as an appendix. The representatives of communities are then invited to vote on their preferred option. The PIC Committee should ensure that an even spread of voters can be achieved and representation from as many stakeholders as possible is attained.

i. It is likely that the voting process will have to be refined with further meeting experience and condition 5.h. may be revised by the PIC Committee to facilitate fair and equitable representation.

j. A tally of the votes shall be made following the meeting. The majority-vote option shall be adopted as the ‘Conditions of Research Access’. The rights of the providers or custodians must be respected by the PIC Committee and the researchers seeking access.

SECTION SIX – ABS-PIC FUND

a. An ‘Access and Benefit Sharing – Prior Informed Consent Fund’ (ABS-PIC Fund) will be established, with the use of funds authorised by the PIC Committee under the guidance of the National Economic and Social Council.

b. The ABS-PIC Fund shall receive and accrue money from benefit sharing arrangements arising from the commercialisation of products that have been researched. The appropriate departments shall also make annual contributions to the ABS-PIC Fund. No more than twenty per cent of the annual income of the ABS-PIC Fund should be used in the administration of the PIC Guidelines and PIC Committee. Any additional funds required in their administration should be drawn from Department budgets.

c. Money accrued in the ABS-PIC Fund should be distributed or spent as per the terms of the ‘Conditions of Research Access’ of each case, with the primary intention being the promotion of traditional knowledge of herbs and local plant varieties for the benefits of local custodians and providers as well as society more broadly.

SECTION SEVEN – COMPLAINT AND REMEDIES

a. If research access is made without the consultation of the PIC Coordinators or Committee, and the procedures in these guidelines adhered to, then the PIC Coordinators or Committee may seek to have research permits and visas revoked, they may seize any materials taken and they may seek compensation for any costs, inconvenience or disrespect caused to the PIC Committee, the relevant departments or to providers and custodians.

b. If the terms of the ‘Conditions of Research Access’ are breached, then the remedies indicated in Section 7.a. also apply. Consent may also be withdrawn upon a majority vote within the PIC Committee.

c. Providers and custodians may make complaints about unlawful research access, failure to acquire PIC through the guidelines, or breach of ‘Conditions of Research Access’ to the PIC Coordinator who should investigate and report such instances to the PIC Committee. Remedies may apply as indicated in Sections 7.a. and 7.b.

GUIDELINE APPENDIX.

Appropriate benefit sharing arrangements could include:

1. Profit-sharing arrangements based on royalty and profit flows of the commercialised product such that they are distributed in a fair and equitable manner to providers and custodians.
2. The establishment of traditional healers or traditional farmers networks for knowledge sharing, education, training about technological developments, advice about legal implications and other matters. This would be funded by the ABS-PIC Fund.
3. Mechanisms for appropriate technology transfer.
4. Establishment of conservation programs if the biological resource is rare or overexploited, which involve local conservation methods and allow the participation of providers and custodians.
5. Creation of schools or learning institutions to allow teaching of traditional knowledge related to medicines, agricultural varieties or methods, sustainable use and other relevant aspects.
6. Establishment of traditional and alternative medicines health clinics which involve traditional treatments and herbs.

APPENDIX THREE - List of Relevant Websites

International Bodies and Useful Organisations

Convention on Biological Diversity (CBD) - www.biodiv.org

World Trade Organisation (WTO) - www.wto.org

World Intellectual Property Organisation (WIPO) - www.wipo.int

International Union for the Protection of New Varieties of Plants (UPOV) - www.upov.org

Food and Agriculture Organisation (FAO) - www.fao.org

Consultative Group on International Agricultural Research (CGIAR) - www.cgiar.org

International Centre for Trade and sustainable Development (ICTSD) - www.ictsd.org
www.iprsonline.org

United Nations Commission on Trade and Development (UNCTAD) - www.unctad.org

Intellectual Property Commission (IPC) - www.ipcommission.org

World Trade Law Website - www.worldtradelaw.net

Thailand Government Departments

Government Ministry and Departments	**Website**	**Details**
* **Ministry of Commerce** - Department of IP	* www.moc.or.th - www.dip.or.th	- DIP administers and manages patent and IP registrations.
*** Ministry of Agriculture and Cooperatives** - Department of Agriculture	* www.moa.or.th - www.doa.or.th	- The DoA administers the PVP Act.
*** Ministry of Health** - Department of Public Health		- The DPH administers the PPTTMI Act
*** Ministry of Science and Technology** - Biotec	* www.most.or.th - www.biotec.or.th	- Biotec is the national biotechnology authority.
*** Ministry of Natural Resources and Environment** - Office of Natural Resources and Environmental Policy and Planning -National Park, Wildlife, and Plant Conservation Department.	* www.monre.go.th - www.onep.or.th - www.dnp.go.th	* Website in Thai only. - Controls activities such as EIA, Has some documents such as state of the environment reports. - Controls access to national parks and forest areas
National Human Rights Commission (NHRC)	www.nhrc.or.th	- Has relevant documents in English.

Thai NGOs and Other Organisations

BioThai	www.biothai.org
FTA-Watch	www.ftawatch.org
Thai Development Research Institute (TDRI)	www.tdri.or.th
Asia Indigenous Peoples Pact Foundation (AIPP)	www.aippfoundation.org