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# In the Best of Worlds

– Benefit sharing and sustainable development  
in Babati, Tanzania

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## **Abstract**

Genetic resources are vital to all people, but especially the poor. They are also important for biodiversity, in turn a key factor in sustainable development. Since 1980, the bio industries have utilized genetic resources in their work, for example on pharmaceuticals, and patented their findings. This has created mistrust and malcontent among biodiverse poor countries in the South. To promote biodiversity protection and ensure access to and fair and equitable sharing of the benefits from the usage of genetic resources, the Convention of Biological Diversity requests an international regime. Negotiations for the Access and Benefit Sharing regime began in 2001 and have intensified as its end date, 2010, draws nearer.

People in Babati, Tanzania are as dependant on traditional medicine, which utilizes wild genetic resources, as they are on modern medicine. The status in the regime of communities such as those of Babati is principally important if sustainable development is to be reached. The greatest issue for the model currently under negotiation to deal with in order to truly promote sustainable development is equity.

## **Key words**

Genetic resources, sustainable development, access and benefit sharing, traditional medicine.

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Acronyms

**ABS** – Access and Benefit-Sharing

**ABSWG** – Access and Benefit-Sharing Working Group

**CBD** – Convention of Biological Diversity

**CGIAR** – Consultative Group of International Agricultural Research

**COP** – Conference of the Parties (of the CBD)

**ICGTK** - Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore

**IPR** – Intellectual Property Rights

**ITPGRFA** – International Treaty for Plant Genetic Resources for Food and Agriculture

**MLS** – Multilateral System

**MAT** – Mutually Agreed Terms

**PIC** – Prior Informed Consent

**TRIPS** – The Agreement on Trade-Related aspects of Intellectual Property rights

**UNEP** – United Nations Environment Programme

**WIPO** – World Intellectual Property Organization

**UNEP-WCMC** – United Nations Environment Programme World Conservation Monitoring Centre

## Table of contents

<b>ABSTRACT</b> .....	1
<b>KEY WORDS</b> .....	1
<b>ACKNOWLEDGEMENTS</b> .....	1
<b>TABLE OF CONTENTS</b> .....	3
<b>1 INTRODUCTION</b> .....	4
1.1 BACKGROUND.....	4
1.1.1 <i>Biodiversity and the global environment – our common future</i> .....	4
1.2 PURPOSE .....	6
1.3 RESEARCH PROBLEM.....	6
1.3.1 <i>Key questions</i> .....	7
<b>2 ANALYTICAL FRAMEWORK</b> .....	7
<b>3 METHOD</b> .....	11
<b>4 RESULTS</b> .....	14
4.1 THE NEGOTIATIONS.....	14
4.1.1 <i>The negotiations – up until now, current state, the future</i> .....	14
4.1.4 <i>Swedish researchers' experiences of benefit sharing</i> .....	18
4.2 EMPIRICAL DATA: THE FIELD STUDY .....	19
4.2.1 <i>Babati, Tanzania</i> .....	19
4.3 ANALYSIS .....	22
<b>5 DISCUSSION</b> .....	23
<b>6 REFERENCES</b> .....	31
<b>9 APPENDIX ONE</b> .....	35
9.1 THE HISTORY OF GENETIC RESOURCES .....	35
9.1.1 <i>Timeline: 1980 to 2010</i> .....	35
9.1.2 <i>Genetic resources from Linné to the 21<sup>st</sup> century</i> .....	35
<b>8 APPENDIX TWO</b> .....	40
8.1 CENTERS OF ORIGIN OF SELECTED CROPS.....	40
<b>7 APPENDIX THREE</b> .....	41
7.1 E-MAIL CORRESPONDENCE WITH CARL-GUSTAV THORNSTRÖM, 13-05-2008.....	41

# 1 Introduction

## 1.1 Background

### 1.1.1 Biodiversity and the global environment – our common future

Genetic resources and biodiversity are fundamental to human survival on Earth. The United Nations Environment Programme World Conservation Monitoring Centre (UNEP-WCMC) states that poor people<sup>1</sup> are particularly dependant on ecosystem services for medicines and health.<sup>2</sup> It also says that, “The limited purchasing power of poor people leaves them less capable of buying-in substitutes for local ecosystem services from outside.”<sup>3</sup> Similarly, Maria Berlekom of SwedBio<sup>4</sup> states that biological diversity is a key resource for poor people, and an important aspect of the work of the Swedish International Development Cooperation Agency, Sida.<sup>5</sup>

One country with which Sida has development cooperation is Tanzania. Tanzania is largely poor as a tropical country but fairly rich in biodiversity, exactly the sort of country spoken of by UNEP-WCMC and Berlekom.

The countries richest in biodiversity are nearly all found in the South and often poor in monetary terms. Meanwhile, the biotech industry in the North is utilizing the biodiversity of the South for pharmaceuticals and beauty care.<sup>6</sup> Most of the developments are covered by intellectual property rights (IPR), designed to return profit for investments. In *Out of Africa*, Jay McGown, biopirate hunter, lists 36 cases of bioprospecting and biotechnological development in which the

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<sup>1</sup> In this thesis, focus lies on the rural poor of the South, and this shall be the definition of “poor people” throughout.

<sup>2</sup> UNEP – WCMC 2007, p 1

<sup>3</sup> Ibid. p 2

<sup>4</sup> A Sida-financed program working with matters regarding biodiversity and aid (Biodiverse nr 3-4 2003, p 13)

<sup>5</sup> Berlekom 2007

<sup>6</sup> McGown 2006

prior informed consent (PIC), mutually agreed terms (MAT) and benefit sharing is questionable.<sup>7</sup>

In response to the increasing patenting, biodiversity rich countries set up restrictions on access. This has caused difficulties for researchers and institutions such as the Consultative Group of International Agricultural Research (CGIAR) as well as biotech industries.<sup>8</sup>

In 1992, the Convention of Biological Diversity (CBD) was adopted and called for an international regime to ensure the fair and equitable sharing of the benefits arising out of the utilization of genetic resources.<sup>9</sup> The first article of the CBD states that one of its goals is:

*".../ fair and equitable sharing of the 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".<sup>10</sup>*

Scientists have commented how closed the research climate has grown since the 1980s and the 1992 CBD. One of these is Carl-Gustav Thornström, docent at Swedish Biodiversity Centre<sup>11</sup>, who, while stressing the importance of complying with both national and international laws and helping to shape a trust between the North and South<sup>12</sup>, expresses some regret over the double restrictions on scientists' movements – both from the states' sovereign rights and from intellectual property rights (IPRs).<sup>13</sup> Other researchers have gone so far as to say that CBD should be scrapped because it interferes with their work.<sup>14</sup>

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<sup>7</sup> McGown 2006

<sup>8</sup> Thornström 2005, p 16

<sup>9</sup> Cbd.int 1

<sup>10</sup> CBD 1992:1

<sup>11</sup> Center för biologisk mångfald, CBM; a national centre for research on biodiversity.

<sup>12</sup> Thornström and Björk 2007, p 1477

<sup>13</sup> Thornström 2007:3, p 14

<sup>14</sup> Björk, personal comment 2008-05-09

The task to mitigate private ownership in the shape of IPRs with the sovereign rights of the CBD is not an easy one.<sup>15</sup> The history of the North-South relationship plays in heavily in the debate and many interests are involved.

## **1.2 Purpose**

This thesis has the purpose to explore the Access and Benefit Sharing (ABS) regime and its potential environmental and eco-social outcomes against the background of sustainable development. Focus lies especially on the benefit-sharing aspect of the regime, and attempt is made to answer the question: When and how should benefits derived from genetic material be shared? To provide a face to the concepts discussed, a small field study undertaken in Babati, Tanzania is included. More expressively, the purpose of the interviews was to estimate the dependency on wild genetic resources<sup>16</sup> and the traditional uses thereof in Babati. This because such an assessment might illuminate the potential consequences of the ABS regime, especially in regards to the solution of the benefit-sharing issue.

The subject is interesting both because biodiversity, and the Access and Benefit Sharing regime is so fundamental to sustainability, in turn vital to mankind's continued existence on Earth, and because it encompasses some important issues of justice, global and national alike. For environmental science, both of these concepts are important to study.

## **1.3 Research problem**

The Access and Benefit-Sharing (ABS) regime is meant to consolidate the different perspectives on genetic resources, but with so many different stakeholders and interests, a common solution to fit all might be hard to come by. In Babati, where people are likely to be dependant on natural medicines, the effects of a regime will be the most important, yet the inhabitants are on the bottom of the ladder of negotiations.

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<sup>15</sup> Thornström 2007:1, p 20

<sup>16</sup> Specifically, wild plant genetic resources used within traditional medicine.

### 1.3.1 Key questions

- What role do genetic resources play in medicine in Babati?
- What might the consequences of an Access and Benefit Sharing regime be for people in Babati?

## 2 Analytical framework

Sustainable development is a vital concept in the matter of biodiversity. The United Nations Environment Programme, UNEP, describes the Convention of Biological Diversity (CBD) as one of the key agreements adopted at the 1992 Earth Summit in Rio de Janeiro, and part of a comprehensive global strategy for sustainable development.<sup>17</sup>

Sustainable development is by no means an uncontested term. Connelly and Smith, Professor of Political Thought and Lecturer in Politics, respectively, describe it as an “umbrella concept”.<sup>18</sup> The definition most commonly used is that of the Brundtland Commission: “development that meets the needs of the present without compromising the ability of future generations to meet their own needs.”<sup>19</sup>

The core ideas within sustainable development are:

- Environment-economy integration
- Futurity
- Environmental protection
- Equity
- Quality of life
- Participation<sup>20</sup>

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<sup>17</sup> Cbd.int 2

<sup>18</sup> Connelly & Smith 2003, p 6

<sup>19</sup> Brundtland 1987 p 43, in Adams 2001, p 4. The Brundtland Commission, or more formally the World Commission on Environment and Development, was established by the UN General assembly in 1983 and was chaired by Norwegian Gro Harlem Brundtland. (Adams 2001, p 70)

<sup>20</sup> Connelly & Smith 2003, p 6



These can be divided into three main objectives, all required to work in harmony for true sustainable development to be achieved: the ecological objective, the economical objective, and the social objective.<sup>21</sup>

The Brundtland Report's insistence on inter- and intragenerational solidarity (or as Lorraine Elliott, Fellow of the Department of International Relations of Australian National University, phrases it: "social justice and equity within and between generations"<sup>22</sup>) is an expression of seeing all humans as equals, something Professor of Political Science Avner de-Shalit describes as a liberal notion.<sup>23</sup> The sustainable development of the Brundtland Commission is often described as a form of environmental modernism, also called ecological modernization, which according to William M. Adams, Reader in Conservation and Development, "involves working towards improved and more 'rational' planning, management, regulation and utilisation of human use of the environment."<sup>24</sup> Adams writes: "Above all, the Brundtland Report's vision of sustainable development was predicated on the need to maintain and revitalise the world economy."<sup>25</sup>

Ecological modernization is a liberal ideology in which the environment and the economy are seen as two non-rivalling fields. The solutions to environmental problems promoted by ecological modernization are based on a technology-optimistic and market-friendly ideal, where policies are made on a central state level according to that ideal.<sup>26</sup>

De-Shalit explores the connection between environmentalism and liberalism, asking himself: "Is liberalism environment-friendly?" De-Shalit describes liberalism as non-chauvinist (viewing all humans as equal and having equal rights) and individualistic ("Most liberals would find it difficult to adhere to 'holism' /.../ which rests on the premises that the individual is a member of a

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<sup>21</sup> Adams 2001, p 128

<sup>22</sup> Elliott 2004, p 160

<sup>23</sup> De-Shalit 2000, p 66

<sup>24</sup> Adams 2001, p 111

<sup>25</sup> Adams 2001, p 72, quoting Brundtland 1987, p 89

<sup>26</sup> Elliott 2004, pp 232-233; Connelly & Smith 2003, pp 65-70

community of interdependent parts/.../'<sup>27</sup>).<sup>28</sup> He also depicts the common ground for the two schools of thought, stating that “liberal societies have become a fertile ground for promoting ecological attitudes and environmental philosophy.”<sup>29</sup>

Connelly and Smith write that environmental thought was influenced in many ways by early liberalism and its ideas of rights, freedom, and democracy, but that it is “incompatible” with recent turns such as “laissez-faire free-market economics” of neo-liberals.<sup>30</sup>

De-Shalit concludes that liberalism *could* be a policy capable of tackling the environmental challenge, by describing a hypothetical ideal:

“A politics of the common, however, which at the same time does not arbitrarily restrict liberties, *may* perhaps be found in the more neglected tradition of liberalism when it is coupled with a strong welfare state.”<sup>31</sup>

But he also states that while liberalism encourages discussion on environmental issues, the outcome of such discussions – the implementation, maintenance, and justification of environmental policies - lie outside what liberalism can permit.<sup>32</sup>

Connelly and Smith agree that “the individualism which lies at the heart of liberalism” becomes problematic for environmentalists striving to form communities and political participations necessary for a sustainable society.<sup>33</sup>

The liberal ecological modernization approach to the issue of genetic resources would be to clearly define rights of ownership, through among other means

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<sup>27</sup> De-Shalit 2000, p 67

<sup>28</sup> Ibid. p 66

<sup>29</sup> Ibid. p 66

<sup>30</sup> Connelly & Smith 2003, p 56

<sup>31</sup> De-Shalit 2000, p 92, emphasis added

<sup>32</sup> Ibid. p 65

<sup>33</sup> Connelly & Smith 2003, p 57

immaterial property rights (IPR) such as patents.<sup>34</sup> This is by no means a non-controversial subject.

Maria Byström of SwedBio writes that part of the problem in the discussions of traditional knowledge – intimately tied to the matter of genetic resources not least through medicinal use – lies in the interpretation of the word “protect.” Protection of traditional knowledge can be read to mean protection of the entire social, economic, cultural and spiritual context in which it exists, as she says it is used in daily speech. Or it can be read as a “private, exclusive economic right to hinder others from using or reproducing a certain knowledge or product.”<sup>35</sup>

Physicist and environmental activist Vandana Shiva is known for her critical stance on IPRs.<sup>36</sup> In *Earth Democracy*, she writes: “Commons are the collective economic assets of the poor. Enclosures of the commons are thus a theft of resources on which the poor depend for their livelihood.”<sup>37</sup>

Shiva is not the only one critical: in 1995, Professor of Law Michael Heller wrote in *Science* about the risk for a tragedy of the anti-commons<sup>38</sup>, where the genetic resources of a certain organism are owned by so many different people that research in biomedicine becomes impossible. Though their reasons are very different – Shiva's concerns are mainly ethical in nature – they touch upon the same conclusion: the IPR system leads to an enclosure that in turn excludes people from the use of resources.

The view is contested, but this would be the direct opposite of the ideal of sustainable development.

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<sup>34</sup> Ibid. p 56

<sup>35</sup> Byström 2003. Author's translation.

<sup>36</sup> See, for example, her work *Earth Democracy, Biopiracy, or Protect of Plunder*. ADD YRS!

<sup>37</sup> Shiva 2006, p 40. By enclosure, Shiva means placing under IPRs.

<sup>38</sup> Heller & Eisenberg 1998. Paraphrasing Garret Hardin's famous "Tragedy of the Commons".

### 3 Method

My thesis takes the form of a case study, because such an approach allows for many different methods to be used to answer the research questions, excluding none.<sup>39</sup> I have carried out a field study, supplemented by a literature study and interviews. Before the field study, I collected information on Babati, traditional medicine, genetic resources, and international agreements on genetic resources. After the field study, I gathered complementing information on the same topics.

#### *Definitions*

1. In the thesis, access and benefit sharing will be written alternately with small and capitalized initials to distinguish between the *practice* and the *policy*.
2. By “poor people”, often referred to due to their dependency on genetic resources<sup>40</sup>, I mean people with small means of making a livelihood and sustaining themselves in the rural South.
3. Genetic resources are described in the Convention of Biological Diversity as “genetic material of actual or potential value.” Genetic material, in turn, is “any material of plant, animal, microbial or other origin containing functional units of heredity.”<sup>41</sup>

#### *Text material*

The written material for this thesis can be divided into two groups: theoretical and empirical data. I have chosen the theoretical texts for their relevance in explaining the empirical data, see *Theory*.

Empirical material was found using internet search engines on the keywords: Access and benefit sharing, benefit sharing, bioprospecting, Convention of Biological Diversity, genetic resources. I made an assessment of the relevance and trustworthiness of the sources before the material was implemented into the thesis, based on their association to the issue and academic status. Material was

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<sup>39</sup> Bell, 2000, p 16

<sup>40</sup> UNEP – WCMC 2007, p 1

<sup>41</sup> CBD 1992:2

also received by informants and judged relevant based on the informants' expertise in the area.

### *Field study in Babati*

Given the assumption that poor people are more dependent on genetic resources, I classified the population of Babati as stakeholders and thus interesting to study. My field study in Babati was carried out in a series of interviews on March 10-11 2008. The aim of the interviews was discuss the use of traditional or modern medicine of the population of Babati Town to assess the dependency on and the perceived value of traditional medicine.

With the aid of the field assistant, ten randomly selected common inhabitants and three traditional doctors<sup>42</sup> were identified, in different areas of Babati Town. One of these informants was the field assistant himself. The ten inhabitants, with the exception of the field assistant, were chosen randomly by simply talking to persons in view. The traditional doctors were stumbled upon during interviews, with the exception of the Masai medicine seller who was found by his usual spot. One man was pointed out by an informant, another was found by accident as the field guide passed a group talking.

With the ten, I took care to get a 50-50 ratio of men and women. They were also of mixed ages, ranging from an estimated 18-80. The ten were sought out to provide a general picture of the choice made between traditional/natural and modern medicine and the reasons behind. Additionally, their knowledge of traditional medicine plants was of interest to the study. The traditional doctors were sought out in the hopes of getting some knowledge of their medicine plants and methods. I was also interested to get their views and opinions on people's choices of traditional or modern medicine, hoping it would help show a pattern.

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<sup>42</sup> A correct title is difficult to find. For this thesis, "traditional doctor" is chosen to avoid the negative connotations from options such as "medicine man", but the validity of that, too, can be discussed. Lindberg (1996) writes: "The term in Swahili is 'Mganga', usually rendered as 'witchdoctor'. This translation does not, however, hold water. The correct translation would rather be just 'doctor' (a European doctor is a 'Mganga ya Ulaya'—'doctor from Europe')."

The method chosen for the interviews was semi-structured interviews with structured questions to which follow-up questions and new questions were added as the interviews proceeded.

Problems along the way, inevitable during fieldwork, were a refusal to partake in an interview and a reluctance of the traditional doctors to share their knowledge without payment. There was a fear among the traditional doctors that their knowledge would be used for making money, though whether through biopiracy or competition is unclear. For the sake of preserving the integrity of the study and the information given I decided, in conjunction with my supervisor, against paying for information.

During short interview like the ones undertaken for this study, it can be difficult to get at the "true" facts. In Babati, people might prefer to seem more modern than traditional for fear of coming across as "backwards".<sup>43</sup> This might be a source of error in the study.

Another source of insecurity is the small number of traditional doctors interviewed, and the fact that no female traditional doctors were sought out. Perhaps the view on the traditional doctors' working area might have been different if a larger and wider group had been selected.

Location, too, affects the study. Had the interviews been carried out in more remote areas, rather than in a town, the answers would probably have been very different. This was, however, not possible for logistical reasons.

Lastly, the language barrier might have caused misunderstandings and difficulties in the interviews, and contributed to a loss of information.

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<sup>43</sup> Lindberg, personal comment 2008-05-07

The study is still relevant and interesting because, despite the insecurities, it offers a look at the medical choices of a few people in Babati which can be taken as an example of the realities of many.

### *Interviews in Sweden*

The aim of the interviews in Sweden was to complement and expand on the text material. The informants were chosen by me for their knowledge of the issue of the ABS regime. Some were recommended by other informants, some by the supervisor. The informants were involved in the negotiations as experts and/or contributed to shedding light on the issue through scientific articles and a handbook for policy-makers, leaders of public sector research establishments, technology transfer professionals, licensing executives, and scientists.<sup>44</sup> The interviews have been semi-structured and the question sheets prepared have often been put aside for more informal conversations (although, in the end, care was taken that all questions should be answered at some point during the interview). With the exception of one, all interviews have been face-to-face at the workplace of the informant. The last interview was undertaken via e-mail because the informant was required for an expert panel in Bonn.<sup>45</sup>

The Swedish informants have been chosen as voices from Swedish academia. They lay no claim to representing the whole of it and no such role is given them in the thesis.

## **4 Results**

### **4.1 The negotiations**

#### **4.1.1 The negotiations – up until now, current state, the future**

*For an overview of the history of genetic material, see Appendix One.*

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<sup>44</sup> Thornström 2007:2 Thornström and Björk (2007). Both in *Intellectual Property Management in Health and Agricultural Innovation: A Handbook of Best Practices* (eds. A Krattiger et al), published 2007.

<sup>45</sup> See *Appendix Three*

The negotiations began with the creation of the Ad-Hoc Open-Ended Working Group on Access and Benefit-sharing (ABS WG) by the Conference of the Parties (COP) in 2000.<sup>46</sup> Originally, the ABS WG was mandated to develop guidelines and other approaches to assist Parties and stakeholders with the implementation of the ABS provisions of the Convention.<sup>47</sup> This led to the Bonn Guidelines. In 2004, it was given a new mandate: to elaborate and negotiate an international regime.<sup>48</sup> The work is set to be finished at COP 10 in 2010<sup>49</sup> and to meet with the deadline, the ABS WG has started to meet more frequently.

At the sixth and latest meeting of the ABS WG, several speakers urged for progress in the issue of benefit-sharing, and of the agreement as a whole.<sup>50</sup> Marina Silva, Minister of the Environment of Brazil and current President of the Conference of the Parties, speaking through Mr. Coimbra, highlighted the shared responsibility of countries and criticised the “unacceptable level of precaution and resistance to progress in the area of benefit-sharing”. Silva, through Coimbra, also said it is “essential for the developed countries to take the lead”.<sup>51</sup>

#### *Position of developing countries*

Professor Per Wramner, chair of the Research Council for Biodiversity at the Swedish Environmental Protection Agency, describes the genetic resources issue as the one most important to developing countries at the moment and says that they use other issues as leverage to push the negotiations in the direction they want.<sup>52</sup> The African countries are not, Wramner says, as active as their Latin American counterparts, and often represented by personnel from the embassies in the country of negotiations rather than professional negotiators. Wramner says it is, however, not likely to affect the developing countries' position as they largely speak as one and it is enough that one person comes to the COP meetings. The

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<sup>46</sup> Cop.int 4

<sup>47</sup> Ibid.

<sup>48</sup> Ibid.

<sup>49</sup> Wramner, personal comment 2008-04-16

<sup>50</sup> CBD 2008, pp 2-4

<sup>51</sup> Ibid., p 3

<sup>52</sup> Wramner, personal comment 2008-04-16



developing countries press the issue for benefit sharing but have been reluctant to discuss access.<sup>53</sup> Lars Berg of Swedish Ministry for the Environment and national focal point for CBD, like director of Swedish Species Information Centre Johan Bodegård, speaks of old mistrust tainting the issue.<sup>54</sup>

#### *The Gang of the Four*

On the other side, the “Gang of the Four”<sup>55</sup> – Australia, Canada, Japan, and New Zealand – tend towards hesitancy regarding benefit sharing and a greater interest in access.<sup>56</sup> According to Björk, something like ten out of fifteen of the world's bioprospecting companies can be found in Japan. One is in Switzerland, and the rest are located in the USA (which, not having signed the CBD, is only part of the negotiations as an observer).<sup>57</sup> The Gang of the Four, Wramner says, cannot be expected to agree to anything without coercion.<sup>58</sup>

#### *The European Union*

Between these two positions, the European Union (EU) strives to act as a go-between. The Union itself is not fully agreed on the issue; France and Great Britain have been, as Wramner says, “selfish”, while Belgium, Denmark, Italy, and Sweden have been more progressive. This stance has been supported by Norway and Switzerland, the latter with a strong pharmaceutical industry.

#### *Main issues with benefit sharing*

The G77<sup>59</sup> countries have set demands for benefit sharing from products that have long been in use, such as latex. Most industrial countries counter by saying that the CBD, and thus an ABS regime, cannot possibly cover material obtained before the convention was signed.<sup>60</sup>

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<sup>53</sup> Berg (Swedish Ministry of the Environment) 2008, p 2

<sup>54</sup> Berg 2005; Bodegård, personal comment 2007-10-04. Bodegård calls this the “colonial heritage”.

<sup>55</sup> Wramner, personal comment 2008-04-16

<sup>56</sup> Berg (Swedish Ministry of the Environment) 2008, p 2

<sup>57</sup> Björk, personal comment 2008-05-09

<sup>58</sup> Wramner, personal comment 2008-04-16

<sup>59</sup> G77 is a group of 130 developing countries aimed to enhance the negotiating capacity of its members (g77.org, 2008).

<sup>60</sup> Berg (Swedish Ministry of the Environment) 2008, p 8

Opinions differ also on the matter of derivatives, which industrial countries stress are not covered by Article 15 of the CBD. In contrast to this, the Bonn Guidelines contain parts which promote benefit sharing from derivatives.<sup>61</sup> One of the great issues lies in the meaning of the term “derivates”. Björk says that for a pharmaceutical chemist, derivatives are something different than they are to CBM – the natural product plus modifications as compared to all following products of the natural product. No agreement today actually applies to derivatives as a pharmaceutical chemist interprets the word, which means that bioindustrial companies have no issues with the matter.<sup>62</sup>

The EU wishes to limit the demands for benefit sharing on its member states, claiming that it should occur on agreement between specific providers and users. The EU also opposes benefit sharing on material gathered prior to 1992. Some member states, such as Sweden, work to support the promotion of equitable sharing of benefits from derivatives in relevant cases.<sup>63</sup>

In the matter of traditional knowledge, such as traditional medicinal use of genetic resources, the EU is working to ensure that it is respected and preserved and that equitable sharing of benefits as a result of that knowledge occurs. Not all developing countries with indigenous peoples agree to this, however.<sup>64</sup>

### *The future*

Thornström describes the negotiations as being at a stalemate, at least partly due to lack of necessary competence within the delegations:

“Unfortunately most delegations lack the biological competence that can connect to legal regimes. Which biological material can be place under such a regime? On organism-, species-, molecular-, DNA level? Which material can not be placed there (ubiquities)?”<sup>65</sup>

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<sup>61</sup> Ibid. p 8

<sup>62</sup> Björk, personal comment 2008-05-09

<sup>63</sup> Berg (Swedish Ministry of the Environment) 2008, p 9

<sup>64</sup> Ibid. p 7

<sup>65</sup> Thornström, e-mail correspondence 2008-05-13

Wramner sees another picture entirely, where the negotiations are no more stagnated than the successful ITPGRFA negotiations were at the same stage.<sup>66</sup> Wramner believes in a solution by 2010, in time for COP10.

#### **4.1.4 Swedish researchers' experiences of benefit sharing**

According to Wramner, more and more countries are introducing access legislation, especially developing countries. Experience is growing within authorities and at universities, increasing adeptness at processing applications. Meanwhile, it is realized that genetic resources aren't the goldmine they were expected to be and that it can take a long time before a patent, and thus compensation, occurs. Developing countries find it more interesting to get collaborations on science projects and similar.<sup>67</sup>

There are different models for how the benefits are to be shared if the discoveries are commercialized. Lars Björk, lecturer of ethnobotany at the department of Systematic Botany of Uppsala University, says that the largest share of the proceeds from his work goes to the country of origin and their universities in the shape of foundations for scholarships for doctoral or masters' students. A few percent are passed on to people in the villages. According to Björk, companies offer 3-7 % of the proceeds for an invention, and this is the basis for the villagers' compensation. He keeps a similar amount, 3-4%, for himself.

Another form of benefit sharing Björk utilizes is technology transfer in the form of educating doctoral students or, as may come to be the case in Laos, building production on site rather than taking it to the North.<sup>68</sup>

Björk says that the greatest loss of benefits for biodiversity rich developing countries comes through lost patenting opportunities due to published works –

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<sup>66</sup> Wramner, personal comment 2008-05-14

<sup>67</sup> Ibid.

<sup>68</sup> Björk, personal comment 2008-05-09

when scientists or doctoral students publish details in articles, rendering material that could otherwise have been patented “previously known”.

Björk informs that research access has not become much harder to gain, only requires more paper work to be done.

The importance of benefit sharing for access is hard to estimate. Björk says access is a matter of trust, where the biodiversity rich countries are afraid of losing something which might have been worth something. Thornström says that more and more countries realize that scientific usage must be facilitated.<sup>69</sup> But, Thornström adds,

“Few nations have regulated distribution of possible benefits between state, region, local communities etc. Benefits in kind are probably more important: access to equipment, education, new technologies (most often proprietary).”<sup>70</sup>

## **4.2 Empirical data: the field study**

### **4.2.1 Babati, Tanzania**

Babati is a small rural town in the Manyara region of Tanzania. Sida (Swedish International Development Cooperation Agency) describes Tanzania as one of the world's poorest countries with a life expectancy of 50 years and predominantly dependent on agriculture for its sustenance.<sup>71</sup> At the same time, the Tarangire-Manyara region is rich in biodiversity<sup>72</sup>.

#### *A matter of faith*

The main deciding factor for the choice of medical care is what problem one has. Some problems, especially childbirth-related, are seen as hospital business. Others, such as broken bones, are considered quicker mended by traditional means. There is recognition of the new diseases for which traditional medicine

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<sup>69</sup> Thornström, e-mail correspondence 2008-05-13

<sup>70</sup> Ibid.

<sup>71</sup> Sida 2008

<sup>72</sup> Sachedina 2006, p

has no cure (such as HIV). Culture is another important factor, as well as personal beliefs – does the person believe traditional or modern medicine works? Is it in the person's custom to go to one or the other?

With the exception of one *Chagga*<sup>73</sup> woman, older people seemed to put faith largely in traditional medicine, although they would go to a hospital if the traditional way did not work. One woman claimed she would wait (and die) if the traditional medicine did not work, because she believed in it.

Among young people, the preference seemed to be for modern medicine. Again, they were also open to traditional medicine (although one said they could not be mixed; once a choice had been made it had to be followed through), especially if modern medicine failed them. An exception was one woman who did not go to a traditional doctor even though after a year, modern medicine still had not mended her broken leg.

One reason for choosing modern medicine was that “traditional medicine is inherited but modern medicine comes from science”. “If modern medicine can't fix it,” it was said, “nothing can.” Among those who chose only modern medicine, another reason was a fear of side-effects. With modern medicine, side-effects were thought to come only from improper use or poor instructions; otherwise, they were considered safe.

Among some of the informants, there was a view that at the government hospitals, lines were long because the staff often did not care and was not serious.

The knowledge of medicine plants varied widely and seemed to depend entirely on the parents' knowledge. The *Mwarobaini*<sup>74</sup> was by far the most known.

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<sup>73</sup> An ethnic group hailing from the Mount Kilimanjaro area. (Lindberg, personal comment 2008-05-06.)

<sup>74</sup> “The tree of the forty”, said to treat forty diseases. Latin *Azadirachta indica*, or *neem*.

One informant claimed that the poor rather go to the hospital, because the traditional doctors are very expensive. This is challenged by the information given by the traditional doctors themselves, though the Masai traditional doctor's prices might support it.

### *Protecting their knowledge*

Two out of three traditional doctors learned their trade from their parents at a young age and intended to pass it on to their children – if, as one said, they showed suitability. The third learned from another traditional doctor as a grown man and teaches anyone (anyone, it should be noted, who could pay him, as he himself had paid his teacher).

They were very different, making it hard to draw any general conclusions. Their relationships with modern medicine were also different. One man wanted all his patients to go to the hospital first for a diagnosis, and then return for medicine. Another said modern medicine had no solutions for tooth problems (his speciality) except for pulling the teeth out, and that he never sent his patients to the hospital. The third simply sold medicine to anyone who came to him with a problem, but advised them to go to the hospital if his medicine failed.

One piece of information which came up during discussion with our ten informants was that the government is putting restrictions on the traditional doctors, making it essentially illegal for them to do their work. There still seemed to be a steady stream of patients, judging from talks with both the ten common people and the traditional doctors, but this fact might have affected what the traditional doctors admitted to working with – no one claimed to do child birth, for example, though miscarriage was treated.

The question of whether the traditional knowledge is fading away seemed hard to get across – whether this was a misunderstanding or a matter of translation or incomprehension of the concept is hard to tell. All traditional doctors claimed at least some of their patients returned, while others “kept making the same mistakes” and turned to modern medicine. The man specialized in teeth said his

patients always returned for further instructions if his medicine failed at first; he had never, he said, failed to cure anyone.

Upon being asked, one traditional doctor offered to show not only the medicine plants but also where they grew, for a fee. The reason for the fee, he said, was that by being shown the source another might make a profit out of it. The others proved more hesitant, the Masai man willing to show his medicines but not to let photographs be taken of them. The tooth specialist would not show the tree he used, but offered pieces of its root as a gift. It was unclear whether the reluctance was due to tradition or a fear of competition (where the interviewer or, perhaps, the field guide might set up shop on similar terms) or biopiracy (where the interviewer might take the knowledge to the North and make a profit that way).

### **4.3 Analysis**

#### *Benefit sharing in the negotiations:*

The biodiverse South has a high interest in the matter of the ABS regime, but the "Gang of the Four" block agreements and resist agreements on benefit sharing. Europe tries to act as a middle man but it itself divided by its more bio industry-friendly member states and those that are more progressive. Important issues are the inclusion and definition of derivatives, the inclusion of material removed prior to 1992, the scope of the regime, and the manner in which benefits should be shared.

#### *Key aspects of Babati interviews:*

- Traditional medicine is used by approximately half of the informants
- Young people are more inclined towards modern medicine
- Choices are more dependant on personal belief and custom than economy
- Most people know at least the uses of the *Mwarobaini*
- Traditional doctors are reluctant to share their knowledge for free
- Traditional doctors are under restrictions from the authorities but still in practice

*Swedish researchers – what do they think?*

- Benefit sharing is important, either for shaping trust to gain access or for fairness
- It is not impossible to gain access, it only requires more papers
- A structure is needed in industrial countries or work will be much harder than it needs to be
- Sweden and Europe are behind on their legislation
- There are many different ways to share benefits
- The negotiations are slow now, but might pick up

## **5 Discussion**

My key questions of this thesis were: *What role do genetic resources play in medicine in Babati? What might the consequences of an Access and Benefit Sharing regime be for people in Babati?*

In this chapter I will discuss these questions against the background of the theoretical framework, with emphasis on the latter. Then a wider discussion of the regime's implications for sustainable development will follow.

The negotiations of the Access and Benefit Sharing regime run along the ideals of ecological modernisation: market, technology, and central state. The market value of the genetic resources will, the introduction to the Bonn Guidelines states, encourage developing countries to preserve their biodiversity, while technology transfer will aid them towards development and growth. It is also assumed that the necessary adjustments and regulations will be implemented on a central state level, although the sustainable development idea of participation makes a small appearance in Article 8(j).

The three main objectives of sustainable development, as the reader will recall, are economic, ecological, and social in nature. These objectives together



encompass the core ideas of sustainable development: Environment-economy integration; Futurity; Environmental protection; Equity; Quality of life; Participation.

*Sustainable development aspects of the importance of genetic material for Babati Ecological*

Biological diversity is vital to everyone everywhere. The genetic resources are undoubtedly important in the ecosystem(s)<sup>75</sup> of Babati, filling roles still unknown to mankind. Perhaps, also, the importance of the plants dependant on their biological context will raise the value of that context and ensure its protection. (This thought is similar to that of the CBD; see below.) The genetic resources can also provide natural and hopefully non-damaging alternatives to known manufactured toxics, suggesting an importance for environmental protection. The *Mwarobaini* has insect-repellent qualities which may serve as an alternative to chemical insect sprays. Likewise, there is a flower grown to produce an alternative to DDT.

*Economical*

The dependency on traditional medicine among Babati residents is difficult to estimate considering the small selection of informants. Among the informants, however, it is obvious that traditional knowledge is still very much in use and generally known. It is equally obvious that several people depend upon it for their livelihood, and that they realize the value of their knowledge – as can be understood from the man asking for a fee and the reluctance to allow for photographs of the medicines. It is also probable that these people would like compensation for the use of their knowledge, especially if it was transformed into a product sold to their potential customers in Babati.

In the interviews, young people tended to state a preference for modern medicine. If this generational shift is true, what would the consequences be in the long run? There is a possibility that traditional medicine would fall out of use and

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<sup>75</sup> Babati is a very varied area, ranging from savanna to rainforest.

with that a risk that the knowledge is lost. If the people of Babati themselves prefer modern medicine, their dependency on genetic resources and traditional knowledge is lessened, and the benefit sharing aspects might become less important.

However, that is without considering the justice aspects of the issue; it is still *Tanzanian* traditional knowledge. It can be argued that the practice of first accessing traditional knowledge and removing genetic resources from a nation and then selling the product back to its inhabitants is like asking your neighbours for ingredients and then selling them the cake. If the shift towards modern medicine holds true, this is even more important as people become more dependant upon the derivatives from their own traditional knowledge.

### *Social*

Traditional medicine is important for the health of Babati citizens, as half of the informants depend upon it. It also seems to be an important factor in traditions and identity. As stated, it is necessary for the livelihood of some. Putting these factors together, genetic resources are clearly very important for Babati from a social perspective. Thus the status given indigenous peoples and local communities in the ABS regime can be expected to have an impact on Babati, but the effects the regime may have on biodiversity protection is also likely to affect Babati and its population.

### *Aspects of sustainable development considerations in the negotiations*

#### *Ecological*

The environmental protection aspects of the ABS negotiations seem mostly restricted to the background, where the CBD, set to protect and promote biodiversity, calls for the regime. As can be read in the Bonn Guidelines, however, one ambition of the regime is to provide biodiversity rich developing countries with incentive to protect their resources through the sharing of benefits, essentially by turning them into a valuable commodity.<sup>76</sup> Thus the integration of

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<sup>76</sup> CBD 2002

environment and economy, as predicted in *Theory*, takes the form of putting a price on natural resources through the idea that that which cannot be owned or profited from is worth nothing.

This model of ecological modernisation, if applied, may well work and create a context for protection and sustainable use of genetic resources – or at least, those genetic resources considered valuable. One risk of this approach is the ‘instrumentalising’ effect, where the environment is only worth what you can sell it for on the market. This attitude might make it harder to justify environmental measures which limit or take away financial gains and, if such a situation occurs, counteract sustainable development. The question to keep in mind here is: sustainable development for the sake of whom? The Brundtland Report is anthropocentric and developmentalist in its approach and its view on what sustainable development is will be dependant on that.

The resistance of the Gang of the Four is unlikely to completely stop benefit-sharing from being part of the agreement, but it can render the incentive useless as economic instruments used without conviction carry no weight.

### *Economical*

The question of benefit sharing is at the top of the economic issues in the ABS negotiations. Both the pros and cons cite economic development as a reason for their stance: those in favour of benefit sharing see its potential to aid developing countries toward economic growth, and those opposing it see its threat to the bio industry and the economic development of their home countries.

As long as the Gang of the Four blocks an agreement and resist benefit-sharing, it is unlikely that a sustainable economic development can occur; the inequities in their preferred model of ABS are too great. However, the denial of access from some developing countries is equally problematic, as this blocks potentially life-saving medicines.

The sustainability also depends highly on the extent to which the benefits are shared within the country. On this note, some developing countries are reluctant to recognize the rights of their indigenous peoples in an international agreement, indicating that they would rather not do so in national agreements, either.

### *Social*

Representatives for carriers of traditional knowledge are present during the negotiations and leave statements.<sup>77</sup> Through Article 8(j), the importance of traditional knowledge and its carriers is acknowledged. As the ABSWG meetings are open-ended, they are open to anyone interested in the issue. This is not the same as if the matter had been discussed on a local level through, say, village meetings, but it does offer an opening for some opinions from stakeholders.

It is apparent that one of the key difficulties of the negotiations regarding benefit-sharing lie in the matter of derivatives and material removed prior to the CBD.<sup>78</sup> *When*, some countries seem to ask, *when do we stop paying?* Given the history of the North-South relationship, some believe the answer should be, *Never*. Of course, if the definition of the pharmaceutical chemist is used, bioprospecting countries never really have to pay at all. Even with derivatives as part of the agreement, it will only be a form of lip-service.

Built in into the question is the equity of ownership. The negotiations do in no way question IPRs, although they do tend towards promoting sharing of the benefits from patents. According to thinkers like Shiva, this would be an automatic injustice built in into the regime which cannot be mitigated, as IPRs place power over resources into the hands of private owners, often in the industry. Exacerbating that, groups of people, such as indigenous peoples who carry traditional knowledge, cannot be considered “owners” in the IPR system as it stands today. This immediately renders them at a disadvantage compared to transnational corporations and research faculties and puts them in the mercy of not only the good will of their governments

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<sup>77</sup> CBD 2008, p 7

<sup>78</sup> CBD 2008, p 14

- since it is doubtful that benefit-sharing within national borders will be legislated within the ABS regime - but also of the industry and researchers benefiting from their knowledge.

If these circumstances persist (IPRs are currently under discussion in WIPO and derivatives are still not finally defined), it is hard to imagine a truly equitable ABS regime.

All the factors put together give the impression of a potential regime with possibilities, but no guarantees.

The negotiations and ideas behind them run parallel to ideas of development and what it means and should be. Does development equal wealth, and is wealth immediately beneficial? Is development the same as modernization, and is modernization the same as adhering to the North/Western model?

The idea of development is inherent to the discourse of resource management; it dictates how any given party will act and reason in regards to the genetic resources, and is a large part in the debate. The rhetoric regarding the responsibility of Northern corporations to share their profits seems largely based on the Southern nations' need of those same profits to develop. At the same time, there is an echo of the 1800s/Darwinist approach to development in the solution: Northern corporations will do what they must and use and develop the materials of the South, as the South cannot do so itself. Technology transfer is described as a means of compensation, but also implied is a Northern structure in science and research, as well as governmental/institutional organisation.

Development, thus, equals achieving the heights that are the Northern paradigm of civilization, and is something with which the Northern nations must help the Southern. The solutions discussed in the access- and benefit sharing regime all appear to be Northern constructs. Puleng LenkaBula, doctor of Ethics, suggests

other models based on justice and *botho*<sup>79</sup> would be more adept at addressing the matter of something as difficult as genetic resources.<sup>80</sup> These models, however, appear nowhere in the discussions or negotiations.<sup>81</sup> Instead, the system of immaterial property rights, a Northern construct stemming from colonial times<sup>82</sup> is met by the sovereignty of CBD member states in a clash that appears to have negotiators pulling their hair.<sup>83</sup> This is, however, a matter which could merit its own thesis.

#### *Sustainable development from Babati to the CBD chambers*

It is uncertain whether even a “perfect” ABS regime would benefit Babati. There are many steps from the industry-state relationship to the traditional doctors of Babati, and there appear to be many traditional doctors who have carried the knowledge. Benefit-sharing directly to the carriers of traditional knowledge is unlikely to truly do anyone much good, as the resources will have filtered through so many levels that they are nearly or fully insignificant, even to poor people in Babati. Adding to that, the Tanzanian government's restrictions on traditional doctors may mean that it is unwilling to acknowledge and distribute benefits to them.

A better model may be sharing the benefits on a regional level, placing the resources into, for example, biodiversity preserving projects. There are problems with this solution too. Environmental protection for its own sake is often seen as an interest of industrial countries, not developing countries.<sup>84</sup> Putting the benefits into biodiversity protection may be seen as punishment rather than a reward – “You took our resources and now you take our land, too”.

From the perspective of Babati, it is vital that traditional knowledge is acknowledged and perpetuated. Likewise, it is important that genetic resources

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<sup>79</sup> ”A Sesotho word which refers to the notion of relationality and respect for humanity and the earth.” (LenkaBula 2006, p 157)

<sup>80</sup> LenkaBula 2006, p 223

<sup>81</sup> Wramner, personal comment 2008-04-16

<sup>82</sup> Shiva 1998, p11

<sup>83</sup> CBD 2008

<sup>84</sup> Wramner, personal comment 2008-04-16

remain accessible primarily to the people who depend upon them in their daily lives. For the sake of justice and equity, benefits from the usage of genetic resources should be distributed to the country of origin and the carriers of traditional knowledge in some way which immediately affects them – perhaps through funding schools. Derivates, in the wider sense of the word, should be covered by the regime, so as not to render it a mere “pretty thought”.

The social objective is the ABS regime's greatest Achilles' heel on its way to promoting sustainable development. It is something which will need to be addressed very seriously if success is to be achieved.

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## 9 Appendix One

### 9.1 *The History of Genetic Resources*

#### 9.1.1 Timeline: 1980 to 2010

**Timeline: 1980 to 2010**

**1980:** Diamond vs. Chakrabarty, US High Court

**1983:** The International Undertaking on Plant Genetic Resources for Food and Agriculture

**1992:** The Convention on Biological Diversity

**1994:** The Marrakesh agreement

**2000:** The Cartagena protocol

**2000:** Fifth meeting of the Conference of the Parties (COP5), creation of ABSWG

**2001:** Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore (ICGTK)

**2001:** The International Treaty for Plant Genetic Resources for Food and Agriculture (ITPGRFA)

**2001:** The first meeting of the Ad-Hoc Open-ended Working Group on Access and Benefit-sharing (ABSWG1)

**2001:** African Union Model Law

**2002:** Earth Summit in Johannesburg

**2002:** COP6, adopting the Bonn Guidelines

**2010:** The International Regime on Access and Benefit-sharing?

#### 9.1.2 Genetic resources from Linné to the 21<sup>st</sup> century

The transfer of genetic resources is nothing new; everywhere people have gone, their crops, animals, diseases (microbes), and quite likely medicines have followed.<sup>85</sup> This can clearly be seen from any map over the origin of crops.<sup>86</sup> Without transfer of genetic material, the North would not have sugar, cotton or potato. This transfer has also been the basis for hundreds of years of research and development. New crop varieties have been bred by farmers across the globe. Carl von Linné, the Swedish natural scientist, wrote his *Systema Naturae* in the 18<sup>th</sup>

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<sup>85</sup> Diamond 1999, Pp 85, 90

<sup>86</sup> For an example, see *Appendix two*

century after travelling across the world, collecting samples of plants and animals and bringing them back with him to Sweden.<sup>87</sup> A hundred years later, British scientist Charles Darwin, too, travelled around the globe, bringing home samples which helped him form his now famous theory of the evolution of the species.<sup>88</sup> Thornström writes that the Green Revolution, the global modernisation of agriculture, could not have happened without free access to genetic material for research.<sup>89</sup>

Today, the world is a different place, for scientists, industries, and “ordinary people” alike.

The change can be said to have begun in 1980, when a groundbreaking decision by the United States Supreme Court gave Ananda Chakrabarty the right to patent his oil-eating bacterium.<sup>90</sup> The ruling set a precedent for patenting of life-forms, from seeds to parts of human beings.<sup>91</sup>

In 1983, the International Undertaking for Plant Genetic Resources for Food and Agriculture was accepted, negotiated within the United Nations Food and Agriculture Organization. It stated that plant genetic resources covered by the Undertaking were part of our “common heritage” – that is, they were open for all to use.<sup>92</sup> In conjunction with expanding science and markets, this led to a rise in patenting of life-forms and a growing life industry.<sup>93</sup>

The CBD was signed after the United Nations Conference on Environment and Development in Rio 1992, laying the foundations for a comprehensive strategy for the conservation and sustainable use of as well as the fair and equitable sharing of the benefits from biological diversity.<sup>94</sup> The convention stressed the sovereign rights of countries over their genetic resources. It also requested

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<sup>87</sup> Liv och verk – Linnéjubiléet 2007

<sup>88</sup> AboutDarwin.com 2008

<sup>89</sup> Thornström 2005, p 16

<sup>90</sup> Diamond vs Chakrabarty 1980

<sup>91</sup> Chowdhury 2002

<sup>92</sup> Grain.org 2001

<sup>93</sup> Bodegård, personal comment 2007-10-04

<sup>94</sup> Cbd.int 2

international rules for genetic resources to be drafted. The main ABS-related texts of the Convention are Article 15 (*Access to Genetic Resources*) and 8(j) (*In-Situ Conservation*; the matter of traditional knowledge). For benefit-sharing, Articles 16 (*Access to and Transfer of Technology*) and Article 19 (*Handling of Biotechnology and Distribution of its Benefits*) are also important.

In 1994, The World Trade Organisation (WTO) was established out of the General Agreement on Tariffs and Trade (GATT) through the Marrakesh Agreement,<sup>95</sup> beginning a new era in international trade. An annex to the same agreement, the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) was also adopted.<sup>96</sup>

The Cartagena Protocol on Biosafety was signed 2000, as a supplementary agreement to the CBD. The protocol “seeks to protect biological diversity from the potential risks posed by living modified organisms resulting from modern biotechnology.”<sup>97</sup>

The Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore (ICGTK) was set up in 2001 by WIPO to discuss intellectual property issues relating to access to genetic resources and the protection of traditional knowledge, including disclosure requirements in patent applications.<sup>98</sup>

The International Treaty for Plant Genetic Resources for Food and Agriculture (ITPGRFA) was a revision of the 1983 Undertaking. It put more emphasis on Farmers' Rights, countering the problems many farmers faced in the wake of the Undertaking, as well as equitable sharing of benefits and conservation, exchange, and sustainable use of genetic resources. It introduced the Multilateral System (MLS) which lists the 64 most important crops for food security and

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<sup>95</sup> Wto.org 1

<sup>96</sup> Wto.org 2

<sup>97</sup> Cbd.int 3

<sup>98</sup> Thornström 2007:2. WIPO is the World Intellectual Property Organization, an agency of the United Nations (wipo.int, 2008).

interdependency. These crops must be shared, but so must the benefits arising from the uses.<sup>99</sup> Several major crops are not on the list, however. These include soya, sugar cane and palm oil.<sup>100</sup>

In July 2001, the African Union Model Law was supported by the Organization of African Unity Council of Ministers. The Model Law was developed based on the Cartagena Protocol and its aim was to “assist Member States to develop comprehensive Biosafety frameworks taking into account the sovereignty [sic] of States to regulate GMO issues but also their relevant international obligations.”<sup>101</sup>

In October 2001, the first meeting of the Ad-Hoc Open-Ended Working Group on Access and Benefit Sharing (ABS WG, established by the fifth meeting of the Conference of the Parties in May 2000) was held in Bonn, Germany. At this meeting, what would become the Bonn Guidelines were discussed.

At the World Summit on Sustainable Development in Johannesburg 2002, the ABS WG was mandated by the COP to “elaborate and negotiate an international regime /.../ with the aim of adopting an instrument/instruments to effectively implement the provisions in Article 15 and 8(j).”<sup>102</sup>

The Bonn Guidelines on Access to Genetic Resources and Fair and Equitable Sharing of the Benefits Arising out of their Utilization were adopted at the sixth meeting of the Conference of the Parties (COP6) in Hague in April 2002. They offer voluntary guidelines for governments on ABS issues and have become a sort of basis for discussions on a binding regime.

Starting in 2001, six meetings have been held by the ABS WG (2003, 2005, 2006, 2007, 2008). Four Conference of the Parties (COP) meetings have been

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<sup>99</sup> Fao.org

<sup>100</sup> FAO 2001, Annex 1

<sup>101</sup> African Union 2008. GMO stands for Genetically Modified Organism.

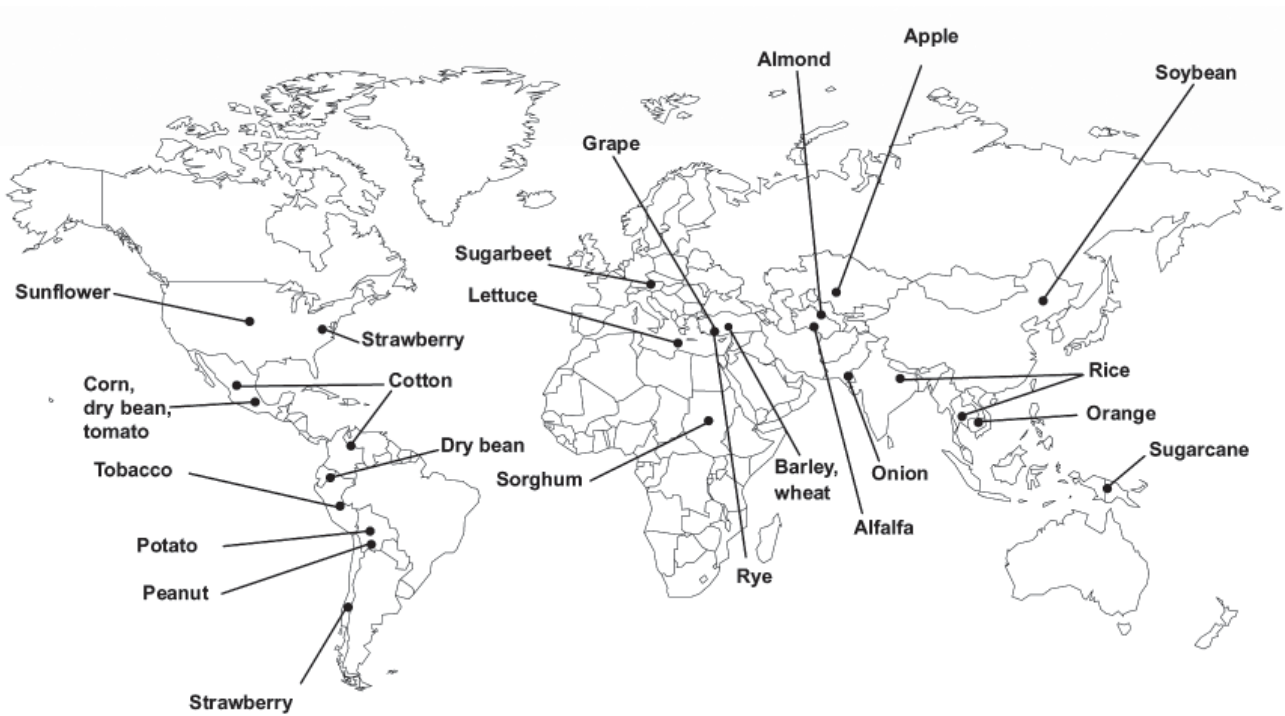
<sup>102</sup> Cbd.int 1

held after COP5 instated the ABSWG in 2000 (2002, 2004, 2006, 2008). COP9 takes place in Bonn in the end of May 2008.



## 8 Appendix Two

### 8.1 Centers of origin of selected crops



Note: The pointer locations indicate general regions where crops are believed to have first been domesticated. In some cases, the center of origin is uncertain. Other geographic regions also harbor important genetic diversity for these crops.

Source: This map was developed by the General Accounting Office using data provided by the National Plant Germplasm System's Plant Exchange Office.

Source: Amber Waves, June 2003, found on Farm&FoodFacts'06.

<http://www.ilfb2.org/fff06/30.pdf> (2008-05-08)

## 7 Appendix Three

### **7.1 E-mail correspondence with Carl-Gustav Thornström, 13-05-2008**

*What is your opinion on the ABS regime and the negotiations as they appear today?*

The negotiations have completely stalled! Unfortunately most delegations lack the biological competence that can connect to legal regimes. Which biological material can be placed under such a regime? On organism-, species-, molecular-, DNA level? Which material can not be placed there (ubiquities)?

*What is your opinion on benefit sharing?*

Dubious! Few nations have regulated distribution of possible benefits between state, region, local communities etc. Benefits in kind are probably more important: access to equipment, education, new technologies (most often proprietary).

*Do you think the shape of the benefit sharing system can affect the access issue, especially for scientists?*

The answer is yes. But more and more realize that scientific usage must be facilitated. So called "further use" can be regulated with more draconian terms (if such are considered useful).

*How do you view the Green Revolution today?*

The Green Revolution spared 1.1 million hectares of rainforests, rare species, and ecosystem services. We should be very grateful for the results of the Green Revolution here. Otherwise there probably would not have been any rainforests

left to protect. Without intensified land use for example through gene technology and super-seeds in combination with ecological agriculture, more rainforests will disappear.

*What do you think of a biorevolution (e.g. in relation to the benefit sharing issue)?*

The biorevolution has been going on for 20 years. It will change our world in the same decisive way as did chemistry/physics/steel/machines etc during the last century. Completely new rules between private/public are now shaping. Unfortunately academia and the CBD Conference of the Parties are living in a world that no longer exists. Without a strong merging of genetic and judicial competence – nothing will get done.