

ICTSD Project on Trade and Sustainable Land Management



Trade and Sustainable Land Management in Drylands



International Centre for Trade
and Sustainable Development

Selected Issue Briefs

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For more information about ICTSD's project on trade and sustainable land management, visit www.trade-environment.org

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CONTENTS

LIST OF TABLES AND FIGURES	v
LIST OF BOXES	v
ACRONYMS	v
CONTRIBUTORS	ix
FOREWORD	xiii
INTRODUCTION	1
1. AGRICULTURAL PRODUCTION, TRADE AND SUSTAINABLE LAND MANAGEMENT	5
1.1 Trade, Rural Development, Livelihood and Food Security in Dryland Countries <i>Marie Chamay, Christophe Bellmann and Moustapha Kamal Gueye, ICTSD</i>	5
1.2 Drylands' Squandered Wealth: Policy Constraints to Pastoral Economic Development and Sustainable Management of the Rangelands <i>Jonathan Davies, IUCN</i>	15
1.3 Environmental and Trade Effects of Agricultural Production in Drylands <i>Jane Earley and Kevin Ogorzalek, WWF-US</i>	22
2. TRADE POLICIES AND PROCESSES FOR SUSTAINABLE LAND MANAGEMENT	27
2.1 Agricultural Trade Liberalisation, Poverty and Land Degradation in Rural Drylands <i>Karel Mayrand and Marc Paquin, Unisféra</i>	27
2.2 International Trade Rules and Agricultural Production and Trade Patterns: An Overview of Some Tools and Instruments for Promoting Sustainable Land Management <i>Jonathan Hepburn, ICTSD</i>	32
2.3 Opportunities and Constraints for Promoting Sustainable Land Management through Regional Trade Agreements in the Americas <i>Claudia de Windt, OAS</i>	38

3.	INCENTIVES FOR ENHANCING SUSTAINABLE USE AND MANAGEMENT OF LAND AND NATURAL RESOURCES THROUGH TRADE	43
3.1	Policies and Institutions for Promoting Sustainable Land Management in Drylands through Trade <i>Albert Mwangi, UNDP Dryland Development Centre</i>	43
3.2	Mobilising Resources for UNCCD Implementation through Trade and Market Development <i>Eleonora Canigiani, the Global Mechanism of the UNCCD</i>	48
3.3	Trade in Dryland Products as an Incentive for the Sustainable Use of Biodiversity: The Work under the Convention on Biological Diversity <i>Markus Lehmann, Secretariat of the Convention on Biological Diversity</i>	53
3.4	BioTrade and its Implications for Sustainable Land Management <i>Rik Kutsch-Lojenga, BioTrade Initiative, UNCTAD</i>	58
3.5	New Markets and Emerging Opportunities: the Case of Environmentally Sustainable Natural Products from the Perspective of PhytoTrade Africa <i>Rosie Abdy Collins and Lucy Welford, PhytoTrade Africa</i>	64
4.	COUNTRY PERSPECTIVES ON TRADE AND SUSTAINABLE LAND MANAGEMENT	69
4.1	Combating Desertification in Lebanon: Promoting Trade and Innovative Market Approaches for Rural Dryland Development <i>Hassan Machlab, UNDP/Ministry of Agriculture, Beirut, Lebanon</i>	69
4.2	Engaging Local and National Stakeholders in Sustainable Trade of Natural Products: Case Study of Ecuador <i>Lorena Jaramillo, National Sustainable Biotrade Programme – Ecuador (Ministry of Environment Ecuador-CORPEI-EcoCiencia)</i>	74
4.3	Trade and Sustainable Land Management: The Case of Uganda <i>Susan Bingi and Henry Kisu-Kisira, Uganda Export Promotion Board/National BioTrade Programme</i>	78
	ENDNOTES	83

LIST OF TABLES AND FIGURES

Table 1	Some dryland agricultural products and country exporters	11
Figure 1	Arid, semi-arid and dry sub-humid areas in the world	6
Figure 2	Agricultural workers as percent of workforce in countries with large areas of drylands	8
Figure 3	Contribution of agriculture to GDP in some countries with large areas of drylands (2004)	9
Figure 4	Contribution of selected dryland products to food security in 2003	10
Figure 5	Value of dryland product exports by country	12
Figure 6	Contribution of pastoralism to national economies	17

LIST OF BOXES

Box 1	BioTrade principles and criteria	59
Box 2	Examples of relevant criteria and indicators from the BioTrade verification framework	60

ACRONYMS

AGOA	African Growth and Opportunity Act
ASAIL	Action for Sustainable Agro-Industry in Lebanon
BTFP	Biotrade Facilitation Programme
CAN	Andean Community of Nations
CBD	Convention on Biological Diversity
CBNRM	Community-based Natural Resource Management
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
COMESA	Common Market for Eastern and Southern Africa
COP	Conference of the Parties
CORPEI	<i>Corporación de Promoción de Exportaciones e Inversiones</i> (Export and Investment Promotion Corporation - Ecuador)
CRIC	Committee for the Review of the Implementation of the Convention
DDA	Doha Development Agenda
DDC	Drylands Development Centre
DEA	<i>Diplôme D'Études Approfondies</i>
DR-CAFTA	Dominican Republic-Central America Free Trade Agreement
ECLAC	United Nations Economic Commission for Latin America and the Caribbean
EFTA	European Free Trade Association
EGS	Environmental Goods and Services
EPRP	Export-led Poverty Reduction Programme
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
FDI	Foreign Direct Investment
FLO	Fairtrade Labelling Organizations International
FSA	Food Standards Agency
FSC	Forest Stewardship Council
GAFTA	Greater Arab Free Trade Area
GBS	General Budget Support
GDP	Gross Domestic Product
GEF	Global Environment Facility
GM	Global Mechanism
GTZ	<i>Gesellschaft für Technische Zusammenarbeit</i> (German Technical Co-operation)
HACCP	Hazard Analysis and Critical Control Points
HEC	<i>Hautes Etudes Commerciales</i>
ICARDA	International Center for Agricultural Research in the Dry Areas
ICE	<i>Istituto nazionale per il Commercio Estero</i> (Italian Trade Commission)
ICTSD	International Centre for Trade and Sustainable Development
IDAL	Investment Development Authority of Lebanon
IFAD	International Fund for Agricultural Development
IGES	Institute for Global Environmental Strategies
IMF	International Monetary Fund
IPCC	Intergovernmental Panel on Climate Change
IPR	Intellectual Property Right
ISO	International Organization for Standardization
ITC	International Trade Centre
IUCN	World Conservation Union

JAS	Joint Assistance Strategy
LDC	Least-developed Country
LSE	London School of Economics
MAT	Market Access and Trade
MDG	Millennium Development Goal
MEA	Multilateral Environmental Agreement
MSC	Marine Stewardship Council
MTEF	Medium Term Expenditure Framework
MTTI	Ministry of Tourism, Trade and Industry
NAP	National Action Programme/Plan
NAFTA	North American Free Trade Agreement
NGARA	Network for Natural Gums and Resins in Africa
NGO	Non-governmental Organisation
NTFP	Non-timber Forest Product
OAS	Organization of American States
ODA	Overseas Development Assistance
OECD	Organisation for Economic Co-operation and Development
PRSP	Poverty Reduction Strategy Paper
RTA	Regional Trade Agreement
RWAO	Rural Women Advisory Organisation
SADC	Southern African Development Community
SLM	Sustainable Land Management
SME	Small and Medium Enterprise
SBS	Sector Budget Support
SWAp	Sector-Wide Approach
SWOT	Strengths, Weaknesses, Opportunities and Threats
UAE	United Arab Emirates
UBTP	Uganda Biotrade Programme
UEPB	Uganda Export Promotion Board
UNCCD	United Nations Convention to Combat Desertification
UNCTAD	United Nations Conference on Trade and Development
UNDP	United Nations Development Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNFCCC	United Nations Framework Convention on Climate Change
UNIBE	<i>Universidad Iberoamericana</i> (Ibero-American University)
UNITAR	United Nations Institute for Training and Research
USAID	United States Agency for International Development
WBCSD	World Business Council for Sustainable Development
WISP	World Initiative for Sustainable Pastoralism
WSSD	World Summit on Sustainable Development
WTO	World Trade Organization
WWF	World Wide Fund for Nature
YMCA	Young Men's Christian Association

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FOREWORD

Drylands cover 40 percent of the earth's land surface and are home to more than two billion people - a third of the world's population - whose majority suffers from the poorest economic conditions. While dryland areas are located in rich and poor countries alike, a large part of dryland populations lags far behind the rest of the world in human well-being and development indicators.

Dryland regions are among the world's most vulnerable ecosystems. This vulnerability is further exacerbated by human activities such as unsustainable land use. Land degradation takes many forms, including depletion of soil nutrients, salinisation, agrochemical pollution, soil erosion, plant degradation (resulting mainly from inappropriate agricultural practices), overgrazing and deforestation. All of these types of degradation cause declines in the productive capacity of the land, eventually reducing yields. Land degradation is perhaps the most threatening ecosystem change directly affecting the livelihoods of people living in arid areas. The degradation of ecosystem services in drylands could threaten future improvements in human well-being and even reverse gains in some regions.

Drylands provide critical ecosystem services on which humanity relies for food, shelter and livelihoods. They offer a variety of land use options from hunting and gathering to pastoralism, from ranching to farming and from cultivation to the provision of dryland ecosystem services including tourism. Many of our major food crops, such as wheat, barley, sorghum, millet and cotton as well as animal species such as horses, sheep, goats, cows, camels and llamas originated in drylands. Medicinal plants in these regions also supply essential products for our health. One third of plant-based drugs in the United States are derived from dryland biodiversity.

Despite this potential, international trade has not been able to fully support social and economic development, increase income generation or significantly improve livelihoods in drylands. Major dryland commodities such as cotton face a number of distortions in international markets arising from tariffs, subsidies and other trade barriers, while niche products such as medicinal plants, face non-tariff barriers. Moreover, dryland developing countries generally lack supply-side capacities including investment, marketing and market access tools to be able to derive meaningful benefits from trade.

While trade flows at the national, regional and international levels can act as incentives to foster economic growth and sustainable land management, they can also lead to changes in land ownership and use with systemic results on both the fertility of land and the populations who live on it. International trade regimes and related government policies, macroeconomic reforms and a focus on raising agricultural production for exports can affect, directly or indirectly, the resilience of dryland ecosystems. These factors can lead to inefficient and wasteful use of land and water resources, inappropriate crop intensification - especially under monocropping systems - expansion of agriculture to marginal lands and the use of farm machinery and agronomic practices that are not suitable for local soil and water conditions.

While a range of agricultural crops are grown under intensive production systems, countries could explore opportunities for diversifying trade into products which may allow them to promote a more sustainable use of natural resources, as well as looking at ways to improve the environmental and social impacts of those products which are currently traded in large quantities.


Emerging markets for natural products, such as aloe or gum arabic are creating many new opportunities. However, gains from these opportunities still remain very limited because of the lack of basic infrastructure, investment capital, research and development and an adequate policy

framework that regulates these markets at national, regional and international levels. Building an enabling environment that would allow these markets to grow, would create incentives for increasing investment in the sustainable use and management of land and natural resources, including by the private sector and local communities.

Reforming the current distortions in global agricultural trade, especially those related to agricultural subsidies, is crucial to address problems in the relationship between land degradation and trade. Certain types of agricultural subsidies, for example those directly linked to production, are believed to have a harmful impact on sustainable development - including on sustainable land use. Tariff escalation is also known to prevent the development of industries focusing on processed products which are often less land-intensive than agriculture.

The international trade regime offers a number of opportunities that could contribute positively to sustainable land management. In particular, the process of trade liberalisation and trade rule-making under the World Trade Organization (WTO) including in the areas of special products, environmental goods and services (EGS), full duty-free and quota-free market access for least-developed countries (LDCs) and the reform of production and trade distorting subsidies, could provide opportunities for promoting investment in sustainable land management.

This publication aims to provide a wide range of perspectives from various stakeholders on how trade policies and processes could contribute to advancing the objectives of sustainable land management and sustainable development in dryland regions of the world. It is also meant to provide an intellectual input into the ongoing process towards the ten-year strategic plan and framework to enhance the implementation of the United Nations Convention to Combat Desertification (2008-2018). We hope that readers will find these papers stimulating reading and that they will inspire further reflection and debate.



Ricardo Meléndez-Ortiz
Chief Executive, ICTSD

INTRODUCTION¹

Drylands encompass all lands where the climate is classified as dry sub-humid, semi-arid, arid or hyper-arid. This represents 40 percent of the earth's land surface, home to more than two billion people. Dryland climatic conditions strongly influence the natural and socio-economic environment. Inhabitants of these areas have traditionally adapted their cropping patterns, farming systems and management of water resources to cope with a dry environment (Ekaya, 2007).

Drylands are often characterised by land degradation which takes a number of forms, including depletion of soil nutrients, salinisation, agrochemical pollution, soil erosion, vegetation degradation as a result of unsustainable agricultural practices, overgrazing and forest clearance. With a focus on arid, semi-arid and dry sub-humid areas, the United Nations Convention to Combat Desertification (UNCCD) in Article 1 (f) defines land degradation as *"the reduction or loss [...] of the biological or economic productivity and complexity of rainfed cropland, irrigated cropland, or range, pasture, forest and woodlands resulting from land uses or from a process or combination of processes, including processes arising from human activities and habitation patterns, such as: soil erosion caused by wind and/or water; deterioration of the physical, chemical and biological or economic properties of soil; and long-term loss of natural vegetation"*.

Land degradation is potentially the most threatening ecosystem change directly impacting on the livelihoods of people living in arid areas, as it causes a decline in the productive capacity of the land and reduces potential yields. The Millennium Ecosystem Assessment (2005) observes that degradation of ecosystem services in drylands could threaten future improvements in human well-being and possibly reverse gains in some regions.

The direct causes of land degradation are inappropriate land use - mainly unsustainable

agricultural practices - overgrazing and deforestation. These practices are most prevalent in places where land, water and other natural resources are under-priced. Additionally, when farmers and herders do not have control or long-term security over the land they use, incentives for maintaining environmentally sustainable practices do not exist. Instead, people tend to focus on meeting their short-term economic needs, to the detriment of long-term sustainable practices. By shortening the fallow period for land under intensive cropping systems, farmers reduce soil stability and fertility of rainfed agricultural lands, leading ultimately to land degradation, lower crop yields and reduced incomes. In the case of irrigated cropland, the main cause of land degradation is poor water and irrigation system management, leading to waterlogging and soil salinisation. This loss of arable land leads to lower production and reduced incomes (GEF, 2003).

Livestock farming is one of the main causes of land degradation around the world. When large herds are kept on small amounts of land for long periods of time, overgrazing happens, damaging soil structure and causing soil erosion. Overgrazing is particularly problematic on slopes, where soils are more easily eroded and some grasses are crushed by the animals' hooves. Overgrazing also thins and eventually removes ground cover, increasing soil erosion by wind and rain. In addition, the repeated trampling of animals over the same areas results in soil compaction which can destroy soil structure and harm soil microorganisms. As a result, because of land degradation, livestock growth and survival are threatened which in turn affects local populations by reducing both their income and food.

Deforestation is another direct cause of land degradation. Loss in tree cover results in local aridification, reduction of soil fertility, biodiversity loss and increased erosion, which in turn has an impact on water quality. The loss of biodiversity has a direct impact on the availability of useful genetic varieties of

crops for agriculture and genetic material for medicinal products. In addition, deforestation increases the severity of flooding, runoff, droughts, sedimentation in rivers and reservoirs and contributes to depleting groundwater, with adverse repercussions for agriculture production and local populations.

Natural disasters (drought, climate change and fires), poverty, population dynamics, inadequate policy planning and management of land, promotion and use of inappropriate technology and production systems, as well as economic factors at the local, national and global levels are all recognised as having impacts on land degradation.

Global trade regimes and related government policies, macroeconomic reforms and a focus on raising agricultural production for exports can also affect, directly or indirectly, the resilience of dryland ecosystems. The growth of large-scale, export-oriented agriculture often pushes small farmers onto marginal lands - those that are inherently incapable of sustaining food production. This in turn can exacerbate land degradation. Trade liberalisation can stimulate structural economic transformation towards cash crop production; however, while sometimes raising incomes and improving food security, it can also have negative effects on the livelihoods of people in rural areas. By competing more effectively for access to land, water, farm inputs and state support, the export sector can marginalise small farmers, forcing them to adopt unsustainable farming practices simply in order to survive.

The degradation of ecosystems in drylands has many environmental and socio-economic consequences. When land is degraded, soil, vegetation, freshwater supplies and other dryland resources cannot recover from climatic disturbances, such as drought, or from human-induced impacts, such as overgrazing. Therefore, unique ecosystems become undermined. The soil's physical structure and bio-chemical composition are negatively affected by wind or water. If the water table rises due to inadequate drainage and poor irrigation practices, the

soil can become waterlogged and salts may rise to the surface. Land degradation also reduces biodiversity habitat, which leads to the extinction of plant and animal species, therefore contributing to global biodiversity loss.

Given that large populations in drylands depend on agriculture for their livelihoods, by undermining agricultural and food production, land degradation can contribute to worsening poverty by undermining the food production of people living in rural drylands and food insecurity in drylands. Malnutrition, undernutrition and ultimately famine may result. However, the relationship between soil degradation and crop yields is complex and depends on many different factors, such as the weather, disease and pests, farming methods, external markets and other economic forces.

Land degradation reduces economic opportunities. Globally, it is estimated that economic losses from desertification amount to approximately USD 42 billion each year. The costs of land degradation and desertification are generally measured in terms of productivity, i.e. reduced crop yields or grazing intensities. Secondary costs include loss of ecosystem services and indirect costs are those associated with mitigating desertification.

The social and political impacts of land degradation include migration and environmental refugees. Droughts and loss of land productivity are predominant factors in the movement of people from drylands to other areas. An influx of migrants may reduce the ability of populations to use ecosystem services in a sustainable way. Such migration may exacerbate urban sprawl and, by competing for scarce natural resources, bring about internal and cross-boundary social, ethnic and political instability.

How can trade help and not hinder sustainable land management?

Sustainable land management can be defined as the implementation of land management systems that combine technologies, policies and activities aimed at integrating socio-economic

principles with environmental concerns to satisfy the five pillars of sustainable land management. These five pillars of sustainable land management are to: maintain or enhance production services (productivity), reduce production risks to acceptable levels (security), protect the potential of natural resources and prevent degradation of soil and water quality as well as of flora and fauna (protection), be economically viable (viability) and be socially acceptable (acceptability) (IBSRAM, 1997).

The text of the UNCCD explicitly acknowledges the relevance of trade in pursuing the objectives of the Convention. Under the “General obligations”- Art. 4 Par. 2(b) - the Parties are required to *“give due attention, within the relevant international and regional bodies, to the situation of affected developing country Parties with regard to international trade, marketing arrangements and debt with a view to establishing an enabling international economic environment conducive to the promotion of sustainable development.”*

Although the text of the UNCCD and its draft ten-year strategic plan and framework to enhance the implementation of the Convention (2008-2018) explicitly acknowledge the relevance of trade in pursuing the objectives of the Convention, the linkages between trade rules, the environment and sustainable development have not been widely recognised to date. Building on the explicit mandate of the UNCCD, there is an opportunity to identify the roles that market access and trade can play to increase investment in degraded areas and mobilise additional resources for sustainable land management (SLM).

Trade rules set the parameters for trade liberalisation policies adopted by national governments, which in turn affect the trade flows that filter down to rural communities in drylands. Trade liberalisation could open up new opportunities for rural communities, for example by enabling them to capture value-added processing of basic commodities, by developing high-value «niche» exports or by linking producers

to environmentally-conscious consumers through eco-labelling initiatives. At the same time, such trade promotion initiatives, if not managed well, and if not supported by a conducive policy environment, could have detrimental impacts on vulnerable drylands, for instance by encouraging land conversion, unsustainable levels of harvesting or adverse forms of industrial development. A systemic examination of these linkages is necessary to avoid generalisations, capture hidden opportunities and make explicit the positive impact that trade can have on the environment upon which some of the world's poorest people depend.

This collection of papers results from an exploratory dialogue on «Building an Enabling Environment for Increasing Investment in Sustainable Land Management through Market Access and Trade» organised by ICTSD and the Global Mechanism of the UNCCD on 31 January and 1 February 2007. It is intended to build on the expertise of a range of stakeholders to highlight the contribution that trade can make to sustainable land management and sustainable development in the world's dryland regions.

Section 1 on “Agricultural Production, Trade and Sustainable Land Management” looks at the relationship between agricultural production and trade, including pastoralism, and dryland management. The first paper aims to broaden the analytical context that frames the links between agriculture and sustainable development in drylands, by exploring the implications of agriculture for rural development, livelihoods and food security so as to capture the many parameters that need to be taken into account in the discussion on sustainable land management. The second paper focuses on the policy constraints to pastoral economic development and sustainable management of rangelands. Finally, the third paper examines the environmental and trade effects of agricultural production in drylands.

Section 2 on “Trade Policies and Processes for Sustainable Land Management” looks at opportunities and constraints for promoting

sustainable use and management of land and natural resources under the present trade regimes at the international and regional levels. The first paper looks at the relationship between agricultural trade liberalisation under the Doha Round of negotiations at the WTO and dryland management. The second paper focuses on some opportunities for promoting sustainable land management in agricultural trade within the international trade regime. The third paper looks more particularly at opportunities and constraints for SLM through regional trade agreements in the Americas.

Section 3 on “Incentives for Enhancing Sustainable Use and Management of Land and Natural Resources through Trade” first offers an overview of the appropriate policies and institutions needed to encourage communities and countries to invest in sustainable land management. Second, it looks at the need for

resource mobilisation for UNCCD implementation through trade and market development and the role of institutions such as the Global Mechanism to achieve this objective. It also examines the work on trade in dryland products under the Convention on Biological Diversity (CBD) as an incentive for the sustainable use of biodiversity. This section finally provides an overview of ongoing initiatives on trade, sustainable use and management of land and natural resources. These are: the BioTrade Initiative and PhytoTrade Africa and the Southern African Natural Products Trade Association.

Section 4 on “Country Perspectives on Trade and Sustainable Land Management” provides a review of the emerging market opportunities for products from drylands as well as an analysis of approaches to mainstreaming SLM in trade policies in three countries, namely Lebanon, Ecuador and Uganda.

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1. AGRICULTURAL PRODUCTION, TRADE AND SUSTAINABLE LAND MANAGEMENT

1.1 Trade, Rural Development, Livelihood and Food Security in Dryland Countries

Marie Chamay, Christophe Bellmann and Moustapha Kamal Gueye, Agriculture and Environment Programmes, ICTSD

Introduction

Dryland regions are characterised by fragile ecosystems that tend to exacerbate the challenges of sustainable agriculture. Not only is dryland agriculture a dominant economic sector, with significant contribution to GDP (gross domestic product), it is also the primary source of employment and an essential element of livelihoods. International trade in dryland products also represents a major source of export earnings including for less advanced developing countries such as Mali or Burkina Faso, and as such, a potential engine for economic growth and poverty alleviation. It is critical to address land degradation and ensure that agriculture can be undertaken in ways that minimise adverse impacts on fragile ecosystems; a holistic approach to sustainable development in the context of drylands requires a broader understanding of the socio-economic importance of agriculture in these regions.

This paper aims to broaden the analytical context surrounding the links between agriculture and sustainable development in drylands by exploring the implications of agriculture production and trade for rural development, livelihoods and food security so as to capture the many parameters that need to be taken into account in the discussion on sustainable land management (SLM).

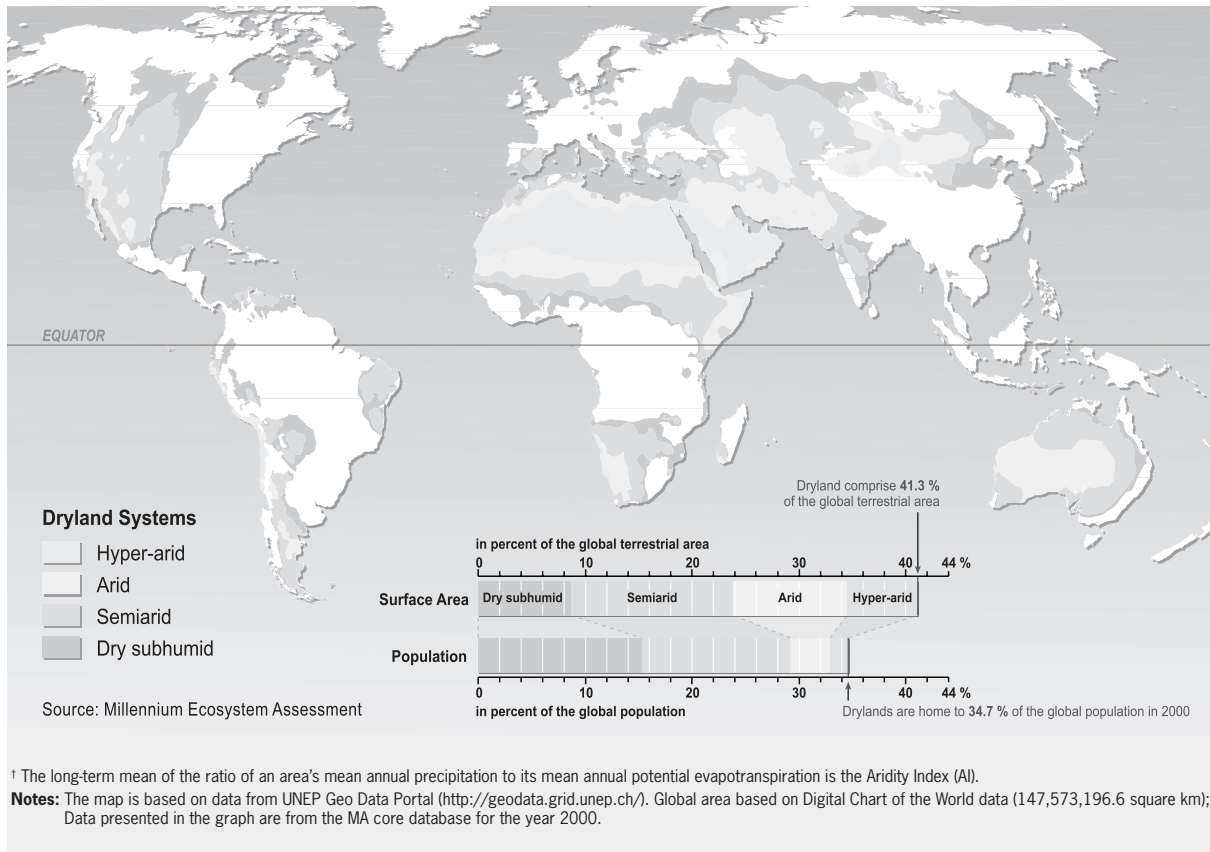
Indeed, advancing the objectives of sustainable land management would require sustaining

ecosystems and ecosystem services in drylands and even reversing the trend of degradation. At the same time, it would require ensuring that livelihoods that depend upon agriculture are also sustained and improved, including through improvements in productivity of traditional crops such as maize, sorghum, millet, groundnuts and cotton, that represent primary sources of food intake, employment, income generation and export earnings.

Such an approach to agriculture and sustainable land management centred around securing livelihoods could form a basis for the development of emerging markets for medicinal plants, gum arabic and other crops that could contribute to diversification and expansion of economic opportunities in dryland regions.

Characteristics of Dryland Regions

Dryland regions are defined as regions where annual potential evaporation and plant transpiration exceed annual precipitation. They encompass all lands where the climate is classified as dry sub-humid, semiarid, arid or hyper-arid. This represents 40 percent of the earth's land surface, home to more than two billion people (Millennium Ecosystem Assessment, 2005). The vegetation cover of these areas varies from forests in the dry sub-humid zone to virtually nothing in the hyper-arid zone. In the arid and semi-arid zones vegetation tends to be irregular and to vary widely in productivity from year to year.

Figure 1: Arid, semi-arid and dry sub-humid areas in the world

Source: Millennium Ecosystem Assessment, 2005.

The low average rainfall and the variability in rainfall patterns of arid climates substantially limit the opportunities for plant growth and the productive capacity of the land and also increase the risk of crop failure, livestock losses and resource degradation. However, dry ecosystems support a large variety of plants and animals which frequently exhibit a wide range of morphological, physical and chemical adaptations to their harsh environment. Globally, there are a number of dryland areas that have a particularly high diversity of plant species.

Finally, dryland biodiversity provides critical ecosystem services on which humanity relies for food, shelter and livelihoods. Many of our major food crops, such as wheat, barley, sorghum, millet and cotton as well as animal species such as horses, sheep, goats, cattle, camels and lamas originated in drylands (Bie and Imevbore, 1994, cited in Dregne, 1997). Medicinal plants in these regions also supply essential products for our health. One third of plant-based drugs

in the United States are derived from dryland biodiversity (CBD website).

Agricultural Production Systems in Dryland Regions²

In arid regions, food is mainly produced through rainfed farming systems for local consumption and markets. They are usually located close to water resources (such as rivers, wells and reservoirs). Crop species and varieties are produced according to climatic and soil adaptability, availability of seeds and inputs, food customs and suitability for storage and processing. The main constraints to food production in dryland regions are limited topsoil with poor organic matter, variable structure (from hard clay to sand) and often high salinity. These lands are usually exposed to wind erosion and runoff. Moreover, unless irrigation is provided, availability of water is poor and variable. Services and inputs, roads and other infrastructure are often poorly developed.

Food grains and legumes are the basic crops grown by small farmers. These include maize, sorghum, millets, cowpeas and pigeon peas. In the higher areas, the grains include wheat, barley and teff. Crop farmers also grow small quantities of oilseeds (sunflower, sesame, groundnuts), root crops (cassava, sweet potatoes), fruit and vegetables. Generally, these are varieties that mature quickly under rainfed conditions. Cropping patterns are adapted to local conditions. Crops are often grown in rotation or as intercrops to minimise the risk of drought and to manage soil fertility. Most crops are annuals, intermixed with a few permanent and tree crops.

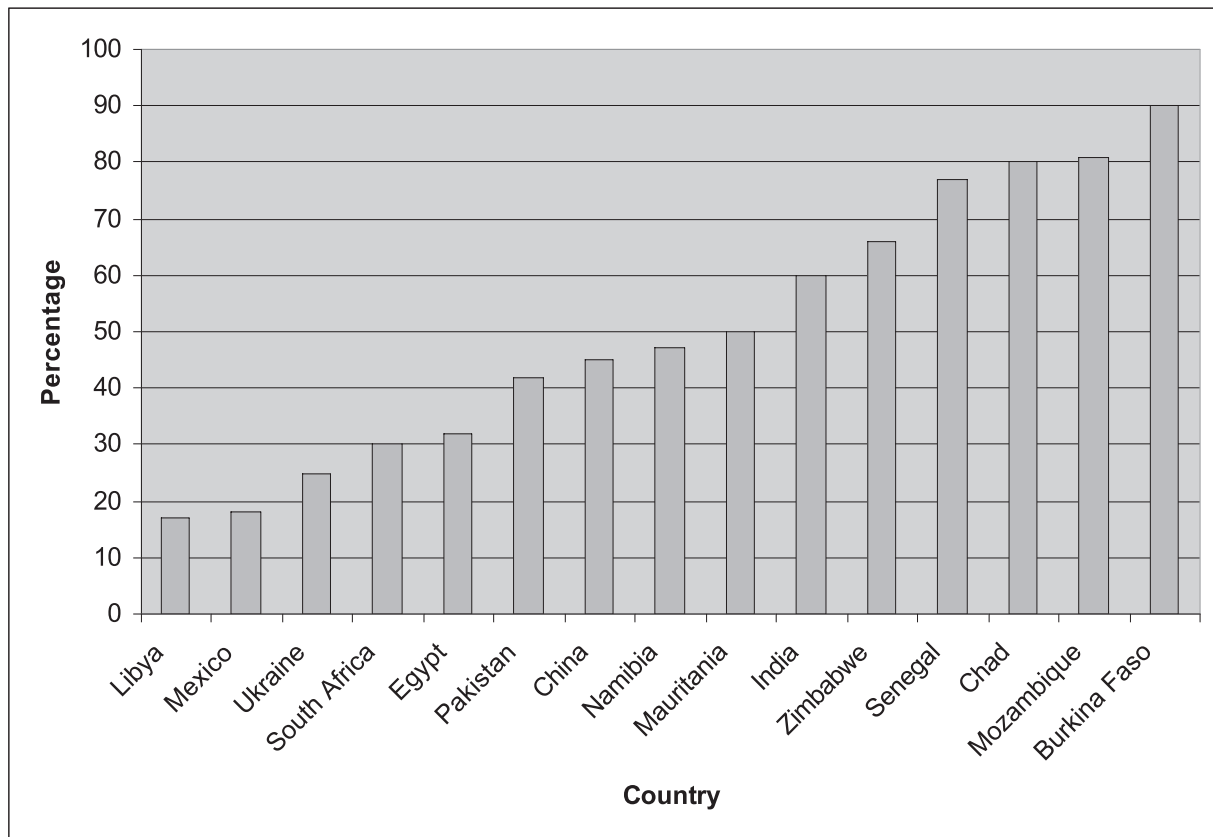
The expansion of cash crops is usually limited to irrigated areas and to species tolerant of high temperatures, water stress and high salinity. They may include food crops for national and international markets (e.g. dates and tropical fruits) or industrial crops (e.g. cotton). Intensive farming may prove difficult, with high input requirements and low yields. Smallholding units may prove profitable when food security is ensured and low-input farming systems are developed. Arid soils are rapidly exhausted by intensive cropping and monoculture. The availability of rainfall or irrigation is a limiting factor for cash crop production. Surface irrigation may prove inefficient or even negative, with high evaporation rates and a potential increase in salinity. Limited access to mechanisation

in most arid regions in developing countries represents an additional constraint to cash crop production.

Livestock, such as sheep, goats, cattle and camels, are adapted to arid conditions. Extensive farming in these regions is characterised by the movement of livestock according to seasonal rains, water resources and pasture. Stock health and productivity vary according to seasons and nutrition. Poor and variable edible vegetation cover, with little nutrition value in dry seasons and sensitivity to overgrazing, as well as poor and variable quantity and quality of water, are constraints to the production of livestock. Local animal species and varieties are characterised by low productivity, but good adaptation to harsh conditions.

The Role of Dryland Agriculture in Sustaining Livelihood and Food Security

In spite of all these constraints, agriculture plays a critical role in livelihoods particularly in poorer countries with large areas of drylands. As illustrated in Figure 2 below, in countries such as Chad, Mozambique or Burkina Faso, agriculture provides up to 80 - 90 percent of employment. Such high figures reflect the large number of small-scale subsistence farmers involved in dryland agriculture and, in most cases, the lack of alternative employment opportunities prevailing in these countries.

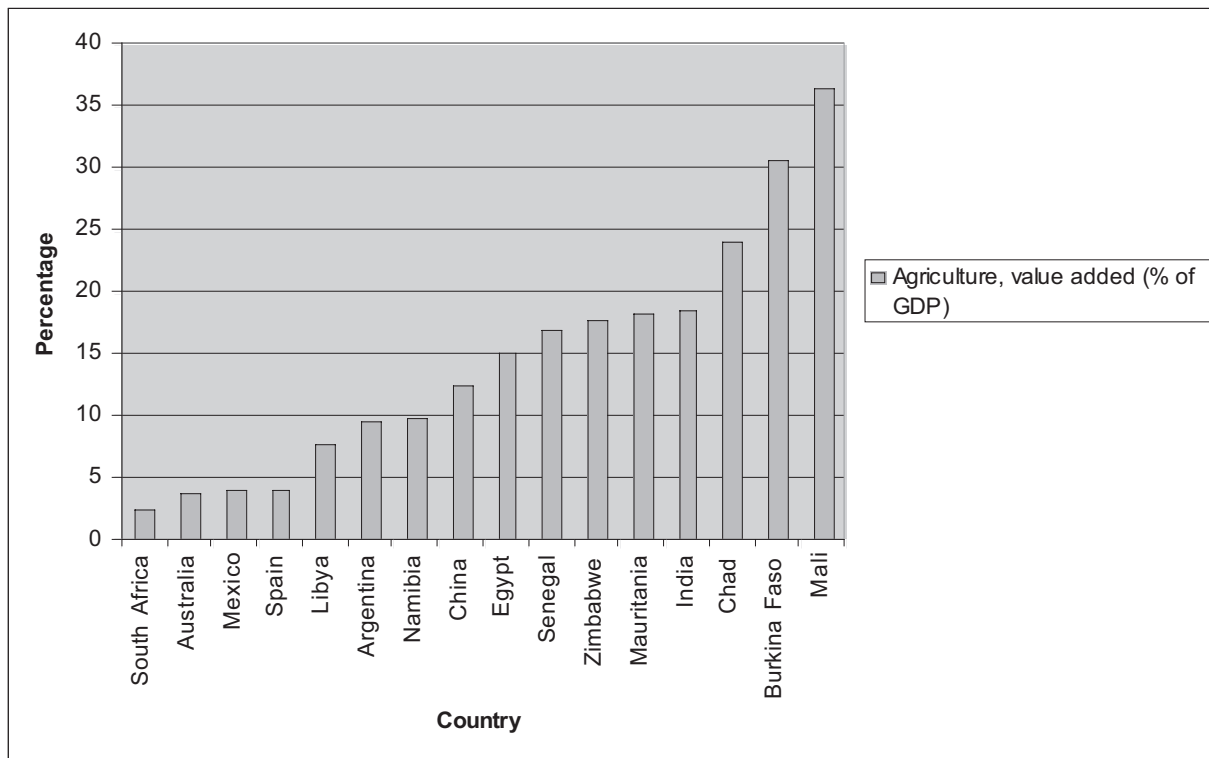
Figure 2: *Agricultural workers as percent of workforce in countries with large areas of drylands*

Source: Data from the World Bank (Data and Statistics website), Organisation for Economic Co-operation and Development (OECD) and World Resources Institute in Harrison and Pearce (2001). Elaboration: ICTSD.
 NB: data is from different years over the period 1990-2004.

Agriculture also accounts for a large share of the GDP of several dryland developing countries and constitutes the dominant economic sector in rural areas (see Figure 3). As such, agriculture plays a critical role in rural development in dryland countries. While the contribution of agriculture to the GDP of the more advanced

developing countries has been declining rapidly, it still remains substantial. Furthermore, if one takes into account the fact that rural areas are home to a large proportion of the poorest of the poor, it is clear that rural development in dryland countries remains of paramount importance to poverty alleviation efforts.

Figure 3: Contribution of agriculture to GDP in some countries with large areas of dryland (2004)

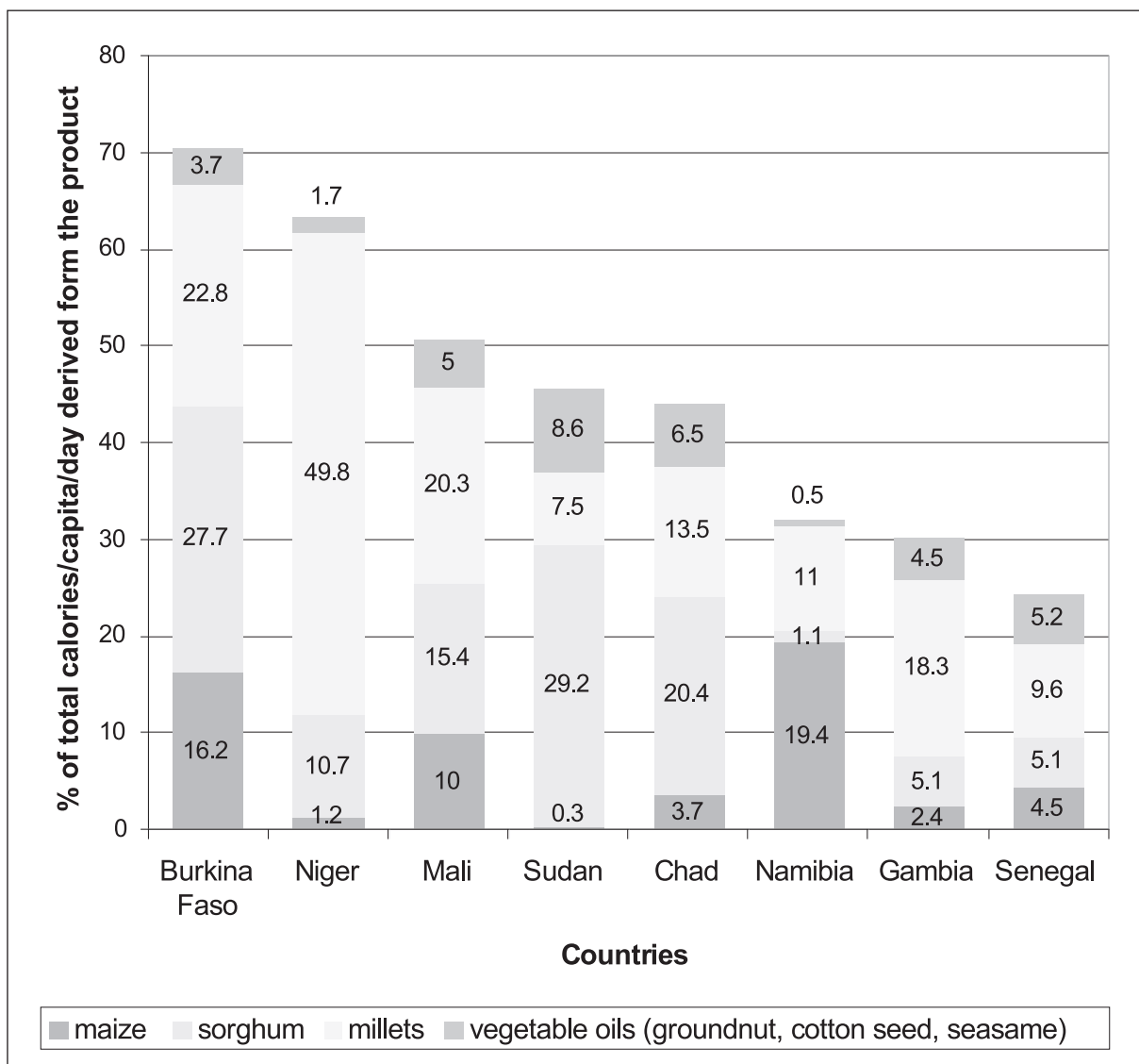


Source: Data from the World Bank (Data and Statistics website), Organisation for Economic Co-operation and Development (OECD) and World Resources Institute in Harrison and Pearce (2001). Elaboration: ICTSD.

Finally, dryland products play a critical role in ensuring food security. As illustrated in Figure 4 below, in 2003, maize, millet and sorghum accounted for one third, and in some cases up to two thirds, of daily caloric intakes of populations in Sudan, Chad, Mali, Niger and Burkina Faso. If one adds vegetable oils produced from groundnut, cotton seed or sesame, these figures

go up to 50 percent of the daily caloric intake per capita for Mali and 70 percent for Burkina Faso. In the cases presented below, these crops are essentially produced domestically with no, or at most negligible, volumes of imports, which not only highlights the importance of the products themselves but also the critical role of domestic production systems in dryland countries.

Figure 4: Contribution of selected dryland products to food security in 2003



Source: FAOSTAT. Elaboration: ICTSD.

International Trade in Dryland Products

While food is essentially produced for self-consumption or local markets in arid regions, international trade in selected dryland products plays an increasingly important role as a source of income. Many of the top ten exporters of products such as sesame seeds, millet, cotton,

olive oil, cattle and sheep, are countries which have more than one million square kilometres of drylands or where at least 90 percent of the territory is dryland (see Table 1). This table also indicates that trade in these products is important for some least-developed countries, such as Mali and Sudan.

Table 1: Some dryland agricultural products and country exporters*

Dryland Countries*	Sesame seeds	dates	sorghum	millet	tomatoes	Cotton lint	Olive oil	groundnuts shelled	maize	cattle	sheep	goats
Argentina			x				x	x	x			
Australia			x	x		x		x		x	x	x
Brazil			x			x		x	x			
Burkina Faso						x						
China	x		x	x				x	x			
India	x		x	x				x	x			x
Iran		x						x				x
Mali						x				x	x	x
Mexico	x				x					x		
Morocco							x					
Namibia											x	
Sudan	x		x								x	
Syria						x	x				x	x
Tunisia		x					x					
Turkey					x		x					
US		x	x	x	x	x		x	x			

Source: Export Data (2004) from the FAO Statistics Division; White and Nackoney (2003). Elaboration ICTSD.

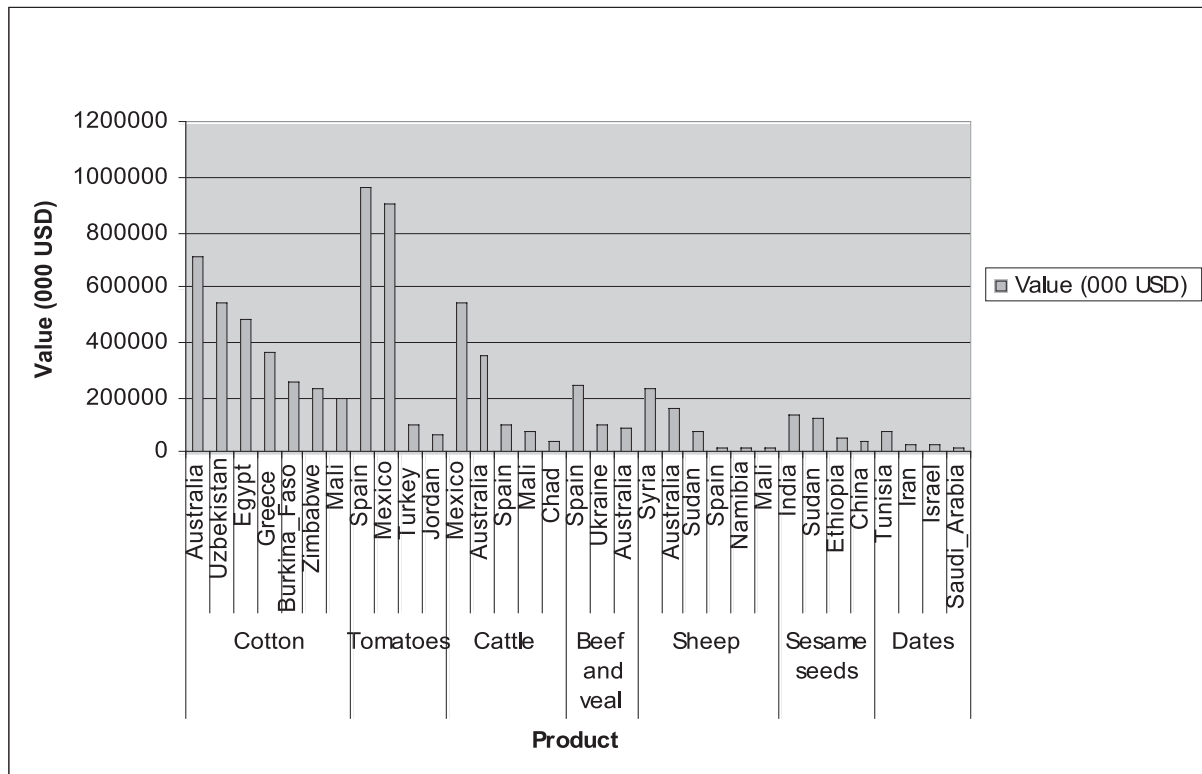
*These selected countries have more than one million square kilometres of dryland or at least 90 percent of their territory is dryland according to WRI calculations based on ESRI (1993) and UNEP/GRID (1991). They are among the top ten exporters (sorted by value).

Furthermore, Figure 5 below shows that internationally-traded commodities such as cotton, tomatoes and livestock represent substantial export earnings for dryland countries, in both developed and developing regions. The production of cotton plays a major role in some least-developed countries in West and Central Africa. In Burkina Faso and Mali, cotton accounts for 5-10 percent of GDP, more than one-third of total export receipts and over two-thirds of the value of agricultural export. Cotton represents also a large part of total exports for Asian countries, such as Uzbekistan which has large areas of dryland (44,265,000 ha according to EarthTrends). Cotton exports in this country account for 45 percent of total merchandise exports and contributes to eight percent of GDP (ODI, 2004).

The livestock sector also plays a major role in countries with dryland areas and is growing at

an unprecedented rate in developing countries. Livestock make an important contribution to most economies, particularly in poor dryland countries. In addition to producing meat, milk and eggs, which are part of the modern food chain and provide high protein value food, livestock provide other non-food functions. For many smallholder farmers, livestock serve as draught power and nutrient recycling through manure, compensating for the lack of access to modern inputs such as tractors and fertilisers. Livestock also provide employment, generate cash incomes for rural and urban populations, provide fuel and transport, and produce value added goods which can have a multiplier effect and create a need for services. Often, livestock constitute the main capital reserve of farming households, which serves to reduce risk and adds stability to the overall farming system.

Figure 5: Value of dryland product exports by country



Source: Export data (2004) from the FAO Statistics Division. Elaboration: ICTSD.

Impacts of Agricultural Production and Trade on Land Degradation

While products such as cotton, livestock and sorghum contribute significantly to rural development, livelihood and food security, and represent substantial export earnings for dryland countries, their production can have negative impacts on the land. Trade in agricultural commodities may lead, directly or indirectly, to land degradation by raising the amount of production for export.

While the interactions between trade, agriculture and land degradation are complex and depend on many factors, trade (by raising demand for agriculture products) can encourage farmers to use unsustainable agricultural practices, such as crop intensification under mono-cropping systems, the expansion of agriculture to marginal lands and the use of farm machinery and agronomic practices that are not suitable for local soil and water conditions. It can also lead to the breakdown of traditional land management systems that regulate grazing.

For instance, the impacts of cotton production on land include: use of agrochemicals leading to soil and water pollution, soil erosion and degradation, and habitat conversion with the associated loss of biodiversity. Under conventional agriculture large amounts of fertilisers and pesticides are required for cotton production. Globally, it is estimated that while the area of land for cotton production using conventional practices represents 2.4 percent of total arable land, it accounts for 11 percent of all pesticides used each year (Clay, 2004). This has resulted in soil depletion and degradation (i.e. reduction in soil quality and fertility) leading to the movement of the cotton production frontier to new areas. Soil salinisation from irrigated cotton production also causes the degradation and eventual abandonment of productive land. Large areas of land in Uzbekistan and Pakistan have lost productivity due to this phenomenon.

Another example of agricultural production leading to land degradation is that of beef production. As seen earlier, livestock farming is one of the main activities responsible for land

degradation around the world. Overgrazing leads to the loss of the vegetative cover of rangeland or pasture and to soil compaction because of trampling. The use of land for pasture represents the largest share of land use within the agricultural sector. More pasture is used for cattle than for all other domesticated animals and crops combined. In addition, cattle eat an increasing proportion of grain produced from agriculture and are one of the most significant contributors to water pollution and greenhouse gas emissions (Clay, 2004).

Conclusion

While the natural characteristics of drylands present a myriad of challenges for agricultural production, crop farming and cattle-raising remain the dominant economic activities, sources of employment and thus, contributors to livelihoods in many arid and semi-arid regions. Sustaining livelihoods requires a fair combination of interventions for the maintenance of fragile ecosystems and services provided by those ecosystems, while improving productivity and economic diversification. A key challenge therefore, is to balance increases in production and productivity with the preservation of ecosystems while sustaining livelihoods.

Trade, especially at the international level, can play an important role in that context. However, the usual concentration of exports in a few commodities such as cotton and groundnuts, combined with distortions in international markets and price volatility have locked many dryland countries into a downward trend of more intensive forms of agriculture with declining revenue generated by exports. In that regard, it would be important to consider how the ongoing process of reform at the World Trade Organization (WTO), if successful in addressing existing distortions such as those created by production and export subsidies, could contribute to enhancing opportunities for dryland countries.

In addition to commodities which have traditionally formed the export base of dryland countries, the development of production and value addition in crops such as medicinal plants, gum arabic amongst others, may offer promising opportunities. These are explored in other parts of this publication, along with relevant policy processes and initiatives that have been attempted both internationally and at country levels.

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1.2 Drylands' Squandered Wealth: Policy Constraints to Pastoral Economic Development and Sustainable Management of the Rangelands

Jonathan Davies, the World Initiative for Sustainable Pastoralism (WISP)³, IUCN

Pastoralism and Sustainable Land Management

Pastoralists are the best custodians of dryland environments, but their stewardship is undermined by inappropriate policies and strong competition over their natural resources.

Dryland ecosystems are constantly in flux, making it difficult to define an "average" condition. Indeed, it is this climatic variability, as much as the low quantity of precipitation, which gives drylands their special features. In such an environment, when the availability of productive resources varies hugely between years and across the landscape, the most rational management strategy is to be flexible and mobile: go where the resources are, when they are available (Behnke *et al*, 1993).

Mobile pastoralism provides a highly efficient way of managing the sparse vegetation and relatively low fertility of dryland soils. In essence, pastoralists accept the variability of productive inputs (pasture and rainfall) and adapt their social and herding systems accordingly. As a result, biological diversity is enhanced and ecosystem integrity and resilience is maintained.

At various times in the past, policy-makers have tried to lay the blame for land degradation with these resource users. Negative perceptions of pastoralism are strongly influenced by images of overgrazing and soil erosion around water sources and human settlements, or by livestock death and food insecurity during some droughts. These extensive production strategies seldom fit governments' concept of the nation-state or their vision of development, and in many countries pastoralism is considered a national problem and an archaic form of land use (UNDP, 2003).

However, the reality is rather different: while land degradation in pastoral regions is often

simplistically put down to over-grazing, it is often constraints to pastoralism, in particular restriction of mobility and weakening of management institutions, that lead to degradation. Frequently it is the efforts to substitute pastoralism that cause land degradation. Where mobility and locally-owned institutions for land management are maintained, biodiversity conservation and sustainable land management can be seen. Where mobility is constrained, over-grazing and land degradation are the consequences (Niamir-Fuller, 1999).

What is Pastoralism?

Mobile pastoralism is an ancient form of land use, well adapted (both ecologically and socially) to the challenges of maintaining sustainable and productive livelihoods in dryland (and other rangeland) ecosystems. Indeed, dryland landscapes have been shaped over the centuries through the flexible and opportunistic use, by pastoralists, of this unpredictable natural resource base (UNDP, 2003).

Attempting to define pastoralism is a challenge, because pastoralism is by its very nature highly adaptable and therefore it assumes a wide variety of forms depending on the local context. Adaptability is a core feature of any pastoral system, but other common features include a degree of livestock mobility (usually between seasonal pastures), the use of common property and private resources and the use of a mix of indigenous and cross-bred livestock breeds (Davies *et al*, publication pending).

From an economic point of view, most pastoral systems are characterised by the importance of "live products" (milk or fibre) rather than meat. Although economic policy in many dryland areas focuses on meat off-take, meat can be considered as a by-product of the pastoral system. However, the emphasis on meat marketing can act as a distorting incentive and has implications for

the way many pastoralists manage their herds (Hatfield and Davies, 2006). This focus on meat marketing reflects to some extent the legacy of outdated theories of the “cattle complex” and over-stocking by pastoralists. In many dryland regions policy-makers continue to operate in the belief that over-stocking is the cause of degradation, even when confronted with evidence that shows stocking rates to have been static or even declining for decades.

Pastoralists are a large and significant minority, and often an ethnic minority in many countries around the world. They are found in over 60 percent of the countries of the world, from Europe to Africa and from South America to Central Asia. In many of these countries pastoralism labours under an array of prejudices and misunderstandings, which lead to inadequate, often hostile, policies and interventions that create barriers to sustainable land management and which, in many cases, have entrenched pastoral poverty.

What Constrains Pastoral Trade?

Negative perceptions of pastoral economics have been a driving force behind rangeland policies that have undermined pastoral resilience, reduced their adaptive capacity, weakened their livelihoods and led to degradation of their resource base. Efforts to “modernise” pastoralists, through aggressive promotion of settlement, cultivation and inappropriate education, have had the perverse effect of increasing vulnerability and poverty, reducing sustainability of pastoral production and leaving pastoralists marginalised and economically disadvantaged.

Production systems that have been put forward as a “modern” alternative to pastoralism have been shown to be less productive and more environmentally harmful. Systems that produce milk as well as meat have been shown to produce two and a half times greater returns to resource input than meat-only systems (Western and Finch, 1986). Traditional pastoral systems in sub-Saharan Africa have been shown to out-perform

ranching systems in the same environments by a factor of between two and ten (Scoones, 1995). By dismissing pastoralism as unproductive, development planners have invested scarce resources in alternative production systems that are less economically viable and less environmentally sustainable.

Market engagement of pastoralists is much higher than is commonly accepted and the contribution of pastoralism to developing country economies is often highly significant. Nevertheless, most pastoralists face major economic constraints, including high transaction costs, poor infrastructure and financial services, low education levels, and excessive government bureaucracy and fees. The belief that pastoralism is economically irrational and that it operates outside the formal economy leads to loss of investment in pastoral areas, which exacerbates rent seeking in pastoral markets and escalates transaction costs (McPeak and Little, 2006).

Failure to consult pastoralists over development planning and policy contributes to the perpetuation of inappropriate policies in many countries: policies that weaken the pastoral economy, aggravate rangeland degradation and often favour agricultural expansion at the cost of pastoralism. Many pastoralists are constrained by poor social service delivery, low literacy levels, poor governance, weak security over land tenure, absence of basic infrastructure and financial services and, sometimes, by insecurity. In many instances, development of pastoralist landscapes is low on national agendas and receives relatively low investment, compared to areas with higher potential and urban areas.

The combination of poor understanding of rangeland environments by policy-makers and weak dialogue with producers is, in many countries, a driver of the trend towards intensification of rangeland livestock production, particularly the orientation towards meat production. This is influenced by a growing demand for livestock products as a result of population growth and urbanisation. However, in the drive for increased livestock off-take, this

intensification may present an overall loss in productivity of the rangelands, whilst presenting a whole new range of environmental costs (Hatfield and Davies, 2006). The magnitude of these various losses are not well measured, since in many pastoral societies, much of the economy is internal and overlooked by official surveys and statistics, whilst many of the indirect costs are complex and poorly understood (Hesse and MacGregor, 2006).

Hidden Value, Hidden Cost

Policy decisions that affect pastoralists and drylands can only be made effectively if the existing value of pastoralism is well understood. However, there are multiple values associated with pastoralism: some are directly accrued and some are indirect; some can be measured but many cannot; and those that can be measured are often underestimated.

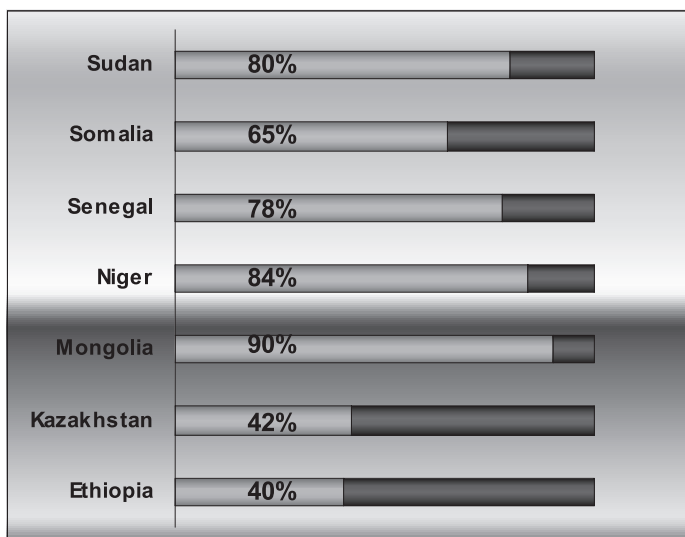
There are the obvious direct values associated with pastoralism, such as milk, fibre, meat and hides. A growing number of pastoralists are engaging in niche markets for live products that can only be produced in their environment: cashmere in China and Central Asia; Alpaca fibre in the Andes; camel milk in Africa's drylands. However, there are less measurable direct values associated with pastoralism, including employment, transport, knowledge and skills.

When pastoralism is rendered unviable, the government picks up a significant social security bill for its newly impoverished population.

Despite widespread under-investment by the government and private sector, pastoralists routinely engage in marketing of livestock and livestock products, to domestic as well as international markets, and through both formal and informal channels. For example, *the nyama choma* (roast meat) industry in Arusha is entirely dependent on pastoral livestock and it demonstrates an annual turnover of USD 86 million, with each head of cattle slaughtered contributing 0.24 full time jobs, supporting 1.07 dependents and providing USD 172 in value-added to the Tanzanian economy (Letara *et al*, 2006).

Pastoralists make significant contributions to national economies and export earnings, particularly in developing countries. With the growing global demand for livestock products and an increasing globalisation of trade and communications, pastoralists have many opportunities for raising their incomes. However, in many countries there is a dearth of even the most basic information on the direct economic contribution of pastoralists. Data collection is hampered by the informality of trade in many pastoral areas, exacerbated by low investment in markets and the tendency of many governments to focus on regulation and taxation.

Figure 6: Contribution of pastoralism to national economies



Pastoralism is also associated with certain indirect values, such as inputs into agriculture (manure, traction and transport) and production of complementary products such as gum arabic, honey, medicinal plants, wildlife and tourism. Pastoralism ensures that the labour force can survive in the drylands where these products are gathered and also pastoral range management practices and conservation strategies ensure that these beneficial products are promoted within the constraints of the environment.

Pastoralism also provides less tangible indirect values, such as financial services (investment, insurance, credit and risk management), ecosystem services (such as biodiversity conservation, nutrient cycling and energy flow) and a range of social and cultural values. With the recent rethinking and new understanding of rangeland ecology, it is clear that grazing and browsing are vital for ecosystem health and productivity. Healthy rangelands are of value to many more stakeholders than pastoralists: they provide benefits to tourists and the tourism industry; they provide a range of natural products (gums, resins and henna for example) that are consumed far beyond rangeland boundaries and they provide ecosystem services that have global benefits such as the replenishment of watersheds or the sequestration of carbon.

Yet pastoralists are rarely remunerated for providing these goods and services, and the eradication of pastoralism through neglect, expropriation of land or conversion of rangelands for other uses runs the serious risk of endangering the provision of these goods and services. Of particular concern is the expropriation and conversion of key localised “resource patches” that are particularly coveted by cultivators, which may constitute a small fraction of the drylands but which make survival and prosperity possible across the whole system.

Protecting and Promoting Pastoral Wealth

Mobile pastoralism is essential for sustainable dryland management - where it is replaced or

constrained, land degradation often follows.

The drylands are pastoralists' wealth and wherever pastoralism is found, it is associated with sophisticated systems for resource management and allocation. The real tragedy in Hardin's “Tragedy of the Commons” (Hardin, 1968) is that the term “commons” is so poorly represented: pastoral lands are communally-managed and resource allocation is controlled, and where such lack of control is found, it is invariably associated with the breakdown of customary institutions and the creation of a power vacuum. Misguided economic development is one of the major factors that has undermined customary institutions and led to land degradation and resource mis-management.

In many countries, pastoralism is assumed to be economically unviable and efforts are inadvertently made to replace it with inferior systems.

Reversing this process requires a major effort to enlighten policy-makers and planners who have often been educated in a system that emphatically rejects pastoralism and, in some countries, explicitly represents pastoralism as being an evolutionary step behind crop cultivation. Pastoralism in all its complexity needs to be adequately valued, both to highlight the opportunity cost of its replacement and to ensure that appropriate policies are in place and investments secured.

However, pastoralism is continuously adapting, and this process needs to be further stimulated and supported. Looking at pastoralism around the world offers opportunities to see how it can adapt to emerging challenges and opportunities, including market integration, globalization, demographic shift, technological development and so on. Achieving this sort of breakthrough requires an informed and empowered pastoral labour force, and this in turn requires appropriate policy support for social service provision and an enabling environment for pastoralist decision-making.

Pastoralists need investment in local value-addition and in local marketing infrastructure.

Pastoralism is typically oriented towards live-products, but in many cases these goods are consumed and traded within the pastoral economy rather than in external markets. Marketing investments are often limited, but where they are found they overwhelmingly favour live animal off-take. Yet in places like northern Kenya the total value of milk exceeds that of meat in the pastoral economy by more than double. Policy support and investment is needed to develop marketing infrastructure for milk and fibre, to promote local-level processing and value addition, and to enhance existing marketing channels for meat and livestock.

Improving transparency in markets can increase the benefits received by pastoralists, if they have the capacity to act on the information they receive. Reducing transaction costs, promoting investment and expanding the range of products that are marketed in pastoral systems all require substantial investment in training or education and in financial services.

Enhancing the economic and environmental sustainability of dryland production cannot be achieved through sectoral policy change alone; changes are needed in a range of policies that constrain pastoralism.

Without changes in health and education policies, pastoralists will still face major challenges to enhancing their production, overcoming their poverty and adding value to pastoral activities. Appropriate development in the drylands requires pastoralists themselves to be sufficiently empowered to influence policy and implementation on the national stage.

Policy change and support need to be relevant to the economic and land use management values of pastoralism. Policy processes should be less concerned with what technical options are applied than with how technical and institutional reforms are brought about. A participatory policy development process should be encouraged to accommodate the needs of different stakeholders and to connect researchers and institutions with the pastoralist reality.

In Kenya, the literacy rate amongst pastoralists is below 20 percent, yet the national average is 69 percent, and there are only 2.2 doctors per thousand pastoralists compared with 15 per 1000 nationally (Birch and Shuria, 2001). In the Afar region of Ethiopia, overall adult literacy rates were 25 percent in 1999, but in the rural pastoralist areas they were only eight percent (UNESCO, 2005). Yet breakthroughs have been made, in that region and elsewhere, in appropriately delivering health and education services, such as mobile schools (Iran, Mongolia, Kenya) or mobile health services (Mali, Chad).

Pastoralism has multiple values: conversely, substitution of pastoralism comes with multiple costs

Environmental services (such as carbon sequestration, protecting biodiversity and combating desertification) are increasingly valued in the global context. These services can be enhanced by mobile pastoralism and lost when pastoralism is constrained and replaced. When rich patch vegetation areas, such as riparian strips and forests, are removed from the pastoral system, a significant opportunity cost is incurred in the form of lost economic and environmental viability in the wider rangelands.

However, although there remain many resource conflicts in pastoral areas, it is also increasingly common to find the synergies between cultivation and pastoralism being exploited. This may be in the form of diversified livelihoods, with pastoralists increasingly engaging in cultivation and cultivators increasingly keeping livestock in mobile systems, or it may be in the form of inter-system relationships such as herding agreements and manuring contracts.

Government has to work with pastoralist groups to help them benefit from markets and to ensure that unnecessarily restrictive regulations are lifted.

Many countries favour regulation and taxation rather than investment and facilitation of pastoral livestock trade. Restrictions can

be particularly tight in areas where trade is carried out across international borders, which keeps trade in the informal, or black market, sector. This leads to “legal ambiguities” that generate inefficiency in the market, and create opportunities for markets to be disrupted by rent-seeking behaviour (McPeak and Little, 2006). Markets need to be made more open, integrated and competitive and governments need to see cross-border trade as desirable rather than something akin to smuggling (Little and Mahmoud, 2005).

Conclusions

Mobile pastoralism is the most sustainable way to manage the world’s rangelands, and alternative land-uses come at an environmental and an economic cost. The magnitude of these costs is not fully understood, and they may well be incurred with many people not noticing. If countries that possess significant dryland areas are serious about reversing desertification and overcoming poverty, then it is crucial that they recognise both the environmental logic of mobile pastoralism and its significant economic potential.

Misunderstanding of rangeland ecosystems and the unique adaptive characteristics of pastoralism, have led to impoverishment and desertification in some countries. Yet such phenomena are far

from universal and an increasing number of countries, such as Spain, Mongolia and Argentina, recognise the environmental importance of pastoralism and have implemented measures to ensure its protection. This trend must continue if rangeland environments are to be protected and if countries are to avoid incurring unnecessary costs that could set back their development.

In order to achieve the mutually supportive goals of sustainable dryland management and pastoral poverty reduction it is necessary to overcome anti-pastoral prejudice and bring an end to damaging policy and practice. Key policy gaps include regulation of transhumance, investment in production, delivery of mobile social services, conflict resolution, decentralisation and democracy adapted to mobile populations, alternative and complementary income generation opportunities and “exit strategies” for those pastoralists wishing to leave the system. Pastoralists need to be enabled to capture the economic benefits of their livelihood, for example through improved marketing of livestock products, processing of non-timber forest products and being able to benefit more responsibly from tourism. To encourage investment in these sectors, it is incumbent upon government to ensure that the full range of values of pastoralism are recognised and protected.

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1.3 Environmental and Trade Effects of Agricultural Production in Drylands

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Introduction

Agricultural production, and particularly intensified production, has affected drylands in many ways. Cultivation of some areas has caused soil erosion, salinity and acidification. Grazing of some drylands has also resulted in erosion, as well as a loss of vegetation, soil compaction and an alteration of grassland vegetation composition. In many instances, river water is allocated beyond sustainable levels to allow for cropping. Greenhouse gases are released from habitat conversion, which promotes climate change that may further impact drylands in the future.

Agriculture's contribution to adverse environmental effects on drylands is well-documented in history. The decline of the Sumerian and Babylonian empires is attributed to improper drainage practices that led to salinisation of their irrigated agricultural lands. Salinisation, depleted water tables, soil exhaustion and drought in dryland farming systems are blamed for the collapse of numerous societies that formerly inhabited present-day southwestern United States (Diamond, 2005).

Approximately two billion people - 90 percent of whom live in developing countries - inhabit and derive income from dry deserts, grasslands and forests (Safriel *et al*, 2005). According to the Convention on Biological Diversity (CBD), drylands cover nearly 41 percent of the earth's surface (Sorensen, 2007). Approximately 65 percent of drylands are managed as rangelands, 25 percent are cultivated and the remaining 10 percent are urban developments, water bodies or of an unknown status (Safriel *et al*, 2005). The Millennium Ecosystem Assessment defines drylands as "characterised by scarcity of water, which constrains their two major interlinked services - primary production and nutrient cycling" (Safriel *et al*, 2005). Of course, not all drylands are the same. Some are places of great biological diversity. Others harbour high

population densities, intensified agriculture and industrial concentrations (Safriel *et al*, 2005).

Grazing on Drylands and Livestock Trade

Although crops are grown in many dryland ecosystems, livestock is the predominant use of dryland ecosystems globally. Half of the world's livestock are raised on drylands and over 69 percent of the drylands in developing countries are used as rangelands (Safriel *et al*, 2005). Animals raised on drylands include beef and dairy cattle, sheep and goats. Beef and sheep have the largest trade volumes of the four types of production animals. Leading exporters of beef from drylands are Australia (43 percent of total production and 13.8 percent of total world trade) and Brazil (14 percent of total production is exported - over half of the production from the drylands of the cerrado - accounting for 26.9 percent of total world trade)⁴. As with certain crops, some livestock is exported from one dryland country to another. For example 25 percent of all mutton and lamb is exported from Australia to other dryland countries.

Stocking rates vary across continents and within countries and depend upon breeds, management practices and environmental conditions. The Millennium Ecosystem Assessment provides general estimates of stocking rates for dryland sub-types (Safriel *et al*, 2005). Sub-humid, semi-arid and arid lands generally carry 32-35 animals per square kilometre, while hyper-arid lands support about 15 animals per square kilometre. These are only general estimates and will depend upon water access, historical stocking rates, vegetation resilience and other factors. Depending upon market prices, which are affected by trade, rangeland may be stocked above sustainable capacity to take advantage of momentarily high prices.

Grazing in drylands can have numerous environmental impacts. Steinfeld *et al* (2006)

identify erosion, desertification, carbon release, woody encroachment and soil compaction as some of the most prevalent environmental costs. In certain parts of Australia, drylands are irrigated to support livestock - as much as 35.6 percent of all irrigation withdrawals in Australia are intended for different types of pasture (Trewin, 2006). Not all of this water is put on dryland pasture. In instances where dryland pasture does receive irrigation water, the water might be better used to provide different, more efficient forms of food.

Transformation of landscapes to pasture causes a loss in biodiversity. Grazing intensity tends to decrease native biodiversity. The addition of nitrogen and phosphorous fertilisers can exponentially decrease the diversity of native vegetation in grazing systems (Dorrrough *et al*, 2007). Grazing can also transform local vegetation composition from grasses to woody species⁵.

In addition to the loss and alteration of biodiversity, above- and below-ground carbon stocks can be reduced through livestock management. Carbon emissions do not always occur in drylands as a result of grazing. By implementing certain management techniques (e.g. such as rotational grazing, and grazing pastures with deep-rooted vegetation), grazing can actually lead to increased carbon sequestration in rangelands. However, the projected levels of greenhouse gas emissions from livestock are collectively greater than those for the transport sector, so there is much opportunity for mitigation.

Intensified Crop Production and Trade

Regardless of trade, increased population pressure and urbanisation are leading to more demand for food from present agricultural systems. For example, a recent FAO report projects that global milk production will grow from 580 million tonnes in 1999/01 to 1.043 billion tonnes in 2050 and global meat output will more than double in that same period (Steinfeld *et al*, 2006). The advent of increased biofuel production will also add to the pressure

to put more land into agricultural production at the same time that climate change begins to increase strain on already-stressed water resources. This will be a challenge for existing dryland production systems, particularly those in which export-oriented agriculture has been blamed for some of the worst examples of unsustainable production practices.

There is no doubt that a global food economy has increased export-oriented agricultural production worldwide. Value chains are becoming longer as product sourcing is globalised and increased production requires increased inputs of fertiliser and water. Although currently only ten percent of all agricultural products are traded internationally, the influence of trade on domestic prices affects domestic production. The declining terms of trade place pressure on farmers to increase productivity, which can lead to degradation of natural resources. Drylands are particularly at risk.

A high proportion of several, predominantly dryland-grown crops are exported⁶. They include wheat exported from Australia, Canada and the United States, which accounts for 55 percent, 52 percent and 47 percent respectively of total production. Soybeans are exported from Argentina (26 percent of production) and Brazil (44 percent of production). Cotton is exported from Mali (68 percent of total production) and India (24 percent of total production). Pakistan exports 2.8 million tonnes of milled rice, which is 35 percent of the weight of its total paddy rice production. Crops grown in drylands are often destined for other nations whose landscapes are dominated by drylands. For instance over 36 percent, 12.3 percent and 43 percent of respective wheat exports from Australia, Canada and the US are sent to nations that have predominantly dryland ecosystems.

Yields for these crops, along with all other major crops, increased over the last half century but the rates of yield increase for some are now declining. Over the last thirty-five years, wheat yields in Australia, Canada and the US increased by 59 percent, 92 percent and 68 percent,

respectively. Soy production in Argentina and Brazil increased yields by 135 percent and 103 percent, respectively, in the same period since 1962. The amount of rice produced per hectare in Pakistan has increased 131 percent. These yield increases were due largely to improved genetics, agrochemical use and irrigation. Recently however, the rates of yield increases for these crops have slowed. Furthermore, many negative externalities from their production have been identified. These include over-use of water, salinisation and other soil changes, habitat conversion, biodiversity and carbon loss.

Many crops grown for export require large amounts of water. This problem has been identified in India, Pakistan and Australia. The Indus River Valley and the Murray-Darling River Basin, two ecosystems severely challenged because of agricultural activities, produce cotton and rice for export. Irrigation inefficiencies of approximately 50 percent mean that much of the water withdrawn from these systems does not even reach the crops. In parts of Pakistan and India the irrigation sources (both rivers and ground aquifers) may be over-allocated for future sustainable use. Irrigation can also cause salinisation and water-logging of the soil. It is estimated that annually, 1.5 million hectares of irrigated land are lost to salinisation (Khan *et al*, 2006). The wheat belt of West Australia and the Murray-Darling Basin both export a high proportion of the crops grown there and experience high rates of salinisation.

Soil salinisation is not the only form of soil degradation. Most forms of cropping can cause erosion. For instance wheat fields that are left in fallow without a cover crop can lose extensive amounts of topsoil. Although cover cropping is becoming a more common practice, there are still some cropped drylands that are left bare as a fallow.

Finally, habitat conversion and carbon loss in drylands can both be attributed to intensified agriculture. The soy boom in Brazil has occurred mainly in the cerrado, of which only 44.56 percent remains in its natural state, with 11.35

percent used as cropland (Klink and Machado, 2005). This has carbon loss consequences. Within a few decades of grassland and forest conversion to cropping, as much as 30 percent of soil carbon is emitted (Carlisle *et al*, 2006). The Intergovernmental Panel on Climate Change (IPCC) attributes as much as 20 percent of all greenhouse gas emissions to agriculture (Lokuptiya and Paustian, 2006). The production of agriculture commodities grown on newly cultivated land or with conventional tillage practices emits larger amounts of greenhouse gases than when produced on previously harvested agricultural land and with methods that implement conservation tillage or no-till technology.

Environmental Effects of Trade in Dryland Crops

If one were to look only at unsustainable production of dryland crops grown for export, one might conclude that international trade's environmental effects are all negative. But however unsustainable agricultural practices may be in some places, trade in agricultural products also has beneficial environmental effects. In essence, trade allows regions with environmental comparative advantages to produce food at a smaller environmental cost. The virtual water trade may be the most important example of such advantages. The water embedded in traded food can save water in drier regions by importing crops from areas with more water. It is estimated that such trade saves 112 cubic kilometres of irrigation water and 164 cubic kilometres of rain and irrigation water, annually (de Fraiture *et al*, 2004)⁷. These figures represent a saving of 11 percent and six percent respectively of total global agriculture water use.

Mitigating Negative Environmental Effects by Rewarding Sustainable Production Practices

Sustainable agriculture is becoming a priority in many dryland systems and certification of sustainable agricultural production practices is

one of a variety of measures that can provide important incentives for better management practices, particularly if the products receive added value in the marketplace. Certification and labelling have been recognised as ways for customers and value chains to identify products coming from sustainable agriculture.

However, there is lingering confusion about whether the trading system allows distinctions among products based on characteristics that are not apparent. Work in the Doha Development Agenda (DDA) in the WTO Committee on Trade and Environment includes discussion of labelling requirements for environmental purposes and is mandated to include the identification of any need to clarify relevant WTO rules. The WTO legal confusion surrounding these issues has not prevented the spread and widespread use by consumers and value chains of labels and certification schemes attesting to the environmental attributes of agricultural products.

Perhaps the most widespread of these is the organic label, whose use is now governed by numerous national systems as well as by international standards maintained by the International Federation of Organic Agriculture Movements and by the Codex Alimentarius Commission. Although organic systems do not make explicit environmental claims, organic production methods are generally recognised to promote management practices that are environmentally beneficial to soil, biodiversity and offer other environmental benefits.

Commodity-specific labels and certification processes to identify sustainable agricultural practices and products are also evolving. These include the Roundtable for Sustainable Palm Oil, the Roundtable for Responsible Soy and the Better Sugarcane Initiative. These

multi-stakeholder efforts aim to reduce the measurable environmental effects of production of each commodity, prevent conversion of natural habitats to unsustainable development and inform value chains about the management practices used to maintain or improve soil quality, reduce water use and effluents, improve air quality and reduce carbon loss. The development of generic certification schemes for agricultural production is also taking place, both in private sector organisations and standardising bodies.

Finally, the development of carbon offset schemes for agricultural production will require that standards be developed for carbon sequestration in both cropping and livestock systems. These standards will of necessity take into account sustainable practices relating to soil and water, as well as carbon.

Conclusion

Increased intensity of agricultural production systems for both crops and livestock will pose many environmental challenges for dryland systems, but these problems can be addressed in a variety of ways, including through increased use of mechanisms that recognise the value of sustainable production. Climate change, water stress and other long-term environmental conditions must be recognised and their potential damage evaluated in drylands globally, particularly those already experiencing intensified agricultural production. Clarification of international trade rules, particularly those governing labelling of environmental goods, would be beneficial in the short-term. Additionally, the growth of certification and labelling schemes that promote recognition of better management practices for agricultural production of crops and livestock should be encouraged.

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2. TRADE POLICIES AND PROCESSES FOR SUSTAINABLE LAND MANAGEMENT

2.1 Agricultural Trade Liberalisation, Poverty and Land Degradation in Rural Drylands

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Introduction⁸

The marginalisation of developing country farmers in the multilateral trading system is often described as a major driver of persistent rural poverty worldwide. The Doha Round of trade liberalisation, which was launched in 2001 under the auspices of the World Trade Organization (WTO), aims to support development and address the marginalisation of least-developed countries (LDCs) in international trade through trade liberalisation, notably in agriculture (WTO, 2001). Given the stakes for developing countries, the Doha Round has been described as a “development round” and as a major undertaking to alleviate poverty in the world. The World Summit on Sustainable Development (WSSD) also endorsed the Doha initiative, emphasising its potential for developing countries.

Generally speaking, the Doha Development Agenda (DDA) is presented as a major opportunity for developing countries to capture an increased share of world trade, thereby raising incomes and generating economic development. In particular, agricultural trade liberalisation is presented as the single most important undertaking to raise the income of farmers in developing countries and to generate rural development. While there is general consensus on the potential economic gains, there is more debate and uncertainty on their distribution and on the social and environmental impacts of agricultural trade liberalisation on rural livelihoods and land degradation worldwide.

Agricultural trade liberalisation generates new threats and opportunities to sustainable land management (SLM) through shifts in global production patterns, changes in the economic incentive-disincentive structures, policy

frameworks, technology environment, scale of production and land management practices. The effects of trade on SLM remain poorly understood and are generally treated as externalities in trade policy and economic assessments. This paper aims to map out general issues that link SLM to trade liberalisation and to identify areas for future research and policy interventions.

Agricultural Trade, Poverty and Land Degradation: Mapping out the Issues

There is a correlation among extreme poverty, land degradation and agricultural livelihoods in the world. This correlation is even more pronounced in rural drylands. Over 1.2 billion people of the world’s population live in extreme poverty, of which 900 million live in rural areas where their livelihoods depend on the consumption and sale of natural products (UNDP, 2003). About two-thirds of these rural poor live in ecologically vulnerable areas. Of these, a high proportion lives in dryland areas, 250 million of whom are directly affected by desertification (Vitalis, 2004).

There is a similar correlation among hunger, small-scale agriculture and environmental vulnerability. Globally, some 852 million people suffer from hunger; of these, a large number are rural farmers (UN Millennium Project, 2005). The highest prevalence of hunger is found in remote areas where food production is affected by economic, environmental or climatic shocks (UN Millennium Project, 2005). This includes dryland areas where an estimated 44 percent of the world’s malnourished children live (Sharma *et al.*, 1996). According to the Millennium Project’s task force on hunger, about half the undernourished people in the world are small farmers, 20 percent are landless rural dwellers, 10 percent are pastoralists and fishermen and

the remaining 20 percent are urban dwellers (UN Millennium Project, 2005).

The Food and Agriculture Organization of the United Nations (FAO) estimates that approximately 2.5 billion people worldwide depend on agriculture for their livelihoods (FAO, 2005), 96 percent of whom live in developing countries (Oxfam, 2002a). Trade in agriculture totalled USD 552 billion in 2001, which represents 45 percent of total agricultural production (WWF, 2004). According to some estimates, a one percent growth in agricultural exports in developing countries can increase annual per capita income by 12 percent in southern Asia, four percent in Latin America and eastern Asia and by up to 20 percent in sub-Saharan Africa (Oxfam, 2002b). According to another study, agricultural trade liberalisation could reduce the number of people living in absolute poverty by 130 million or 12 percent of the world total, with the greatest gains likely to be in sub-Saharan Africa (Vitalis, 2004).

Agricultural trade can affect land degradation through two main drivers. The first is through the intensification of production and the replacement of small-scale agriculture by intensive industrial monocultures. Large-scale agriculture, through intensive use of agro-chemicals, irrigation systems and mechanised farming techniques, can have major impacts on soil quality and dryland ecosystems. On the other hand, trade can bring new investments and technologies that can improve yields while maintaining the productive capacity of the land.

The second way in which agricultural trade may affect land degradation is through its impacts on rural livelihoods, especially those of small dryland farmers. Trade liberalisation can either create opportunities or further marginalise small farmers in the developing world, depending on the policies accompanying its implementation. Small farmers tend to respond to new opportunities or income shocks by expanding land under production or intensifying the use of the land; in turn, this leads to land degradation

when marginal lands are brought into production or overexploited, which is often the case in drylands.

Trade liberalisation therefore, holds the potential to magnify pressures on land, water and ecosystem resources in drylands. This may lead to an overuse of land resources and to further land degradation, especially in countries with fragile drylands (Harou, 2002). The magnitude of this degradation is difficult to assess given that local conditions as well as state interventions need to be factored in. Strutt estimated that trade liberalisation in Indonesia would lead to increased land degradation in certain crops, but that the loss would be equivalent to only 0.15 percent of the global welfare gains generated by trade liberalisation (Strutt, 1998). There is growing evidence, however, that trade can generate significant impacts on land degradation and be one of the key drivers in the desertification process.

While the transformation induced by trade liberalisation can produce negative environmental impacts, trade can also bring environmental benefits through improved infrastructure, the spread of new management techniques or improved access to new and adapted technologies. Trade can also open new market opportunities for certified products, thereby improving agricultural practices. However, such positive outcomes may not materialise if proper policies and regulations are not put in place. Capacity building and various forms of support to small farmers appear especially important in this regard.

Trade Liberalisation and Sustainable Land Management: The Policy Connections

Trade liberalisation holds the potential to improve land management practices or generate large scale land degradation in many areas of the world. The actual impacts of trade liberalisation will depend a great deal on flanking policies that accompany it. The introduction of appropriate policies will be key to minimise the adverse impacts of trade liberalisation and to maximise

positive impacts for SLM. Trade liberalisation in the absence of such policies is likely to lead to widespread land degradation at the same time as it generates new economic opportunities for dryland communities. Policies that support SLM are essential to avoid such a dilemma between economic opportunities and adverse environmental impacts.

The text of the United Nations Convention to Combat Desertification (UNCCD) considers the impacts of trade on land degradation. Its preamble refers to “the impact of trade and relevant aspects of international economic relations on the ability of affected countries to combat desertification adequately”. In addition, the Convention instructs Parties to “give due attention, within the relevant international and regional bodies, to the situation of affected developing country Parties with regard to international trade, marketing arrangements and debt with a view to establishing an enabling international economic environment conducive to the promotion of sustainable development” (United Nations, 1994)⁹.

The promotion of SLM through implementation of the UNCCD can play a role in addressing the socio-economic and environmental impacts of agricultural trade liberalisation in the context of the DDA by addressing the two trade-related drivers of land degradation: the expansion and intensification of export-oriented agriculture and the marginalisation of small farmers. It can do so by contributing to the improvement of land management and agricultural practices and by actively supporting small farmers, securing their resource base, building their capacity, improving their agricultural practices and facilitating access to farm inputs and financial resources.

This can be done through the development of targeted joint programmes involving economic, environment and agriculture departments designed to specifically address the impacts of trade liberalisation on rural livelihoods and land degradation. Such an approach would facilitate the mainstreaming of the UNCCD framework by focusing on concrete actions and by aligning

the UNCCD to high-profile economic and development processes. It would also be easier to finance and would provide results that are more easily measurable.

In this context, national SLM programmes could include concrete measures reflecting the challenges and opportunities generated by the national and international liberalisation of the agricultural sector. A first step could be to undertake national assessments of the potential impacts of trade liberalisation on desertification to identify areas in which intervention is most needed so as to avoid perverse impacts and maximise positive ones on rural livelihoods and on land management. Such assessments could lead to national roundtables where stakeholders - donors; economic, agriculture and environment departments; and others - would define and adopt strategic, targeted interventions.

At the multilateral level, the Committee for the Review of the Implementation of the Convention (CRIC) could hold a special session on the impacts of agricultural trade liberalisation on desertification. Such a session could help document national impacts and facilitate the exchange of expertise and best practices with a view to enhancing the effectiveness of the UNCCD in the context of the rapid macro-economic and land-use changes often associated with trade liberalisation. Overall, by clearly establishing and documenting the relationship between agricultural trade liberalisation, poverty and land degradation in drylands, the case for enhanced financial support for UNCCD implementation could be strengthened.

Lastly, private supply chains and procurement policies are key drivers in the world agricultural commodities market. Private procurement policies therefore, play a central role in conditioning demand and supply in world agricultural markets, even more so than trade rules themselves. By incorporating SLM requirements into their procurement policies, large agricultural multinational corporations could become drivers of SLM worldwide. The UNCCD could use its authority as a global

convener to create a roundtable of large agricultural corporations that would commit to a voluntary zero-land degradation or SLM standard that could significantly improve export-oriented agriculture worldwide. In addition to adhering to such a standard, this roundtable could create a new fund that would support small farmers' adoption of the new standard.

Conclusion

This paper has argued that agricultural trade liberalisation generates new threats as well as opportunities for SLM in rural drylands. The impacts of agricultural trade liberalisation are not neutral and depend to a large extent on the policy framework in place as trade is liberalised. In the absence of appropriate SLM policies, the extension and intensification of export-oriented agricultural production is likely to lead to a deterioration of drylands' resource base.

Moreover, in the absence of appropriate policies supporting small farmers and landless peasants, there is a risk that these populations will not benefit from trade liberalisation but rather be further marginalised in terms of their access to markets and resources and that eventually they will be forced to migrate or resort to unsustainable survival strategies.

Such outcomes are not inevitable, however, and the implementation of the UNCCD and SLM policies can prevent them. The stakes are high for agricultural trade liberalisation in the world's rural drylands. The development community needs to take on the challenge of dryland agricultural productivity and to support the equitable inclusion of dryland farmers into world trade. Under current conditions, the economic boom promised through trade liberalisation is likely to turn to dust for millions of rural dwellers.

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2.2 International Trade Rules, Agricultural Production and Trade Patterns: An Overview of Some Tools and Instruments for Promoting Sustainable Land Management

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Introduction

Land degradation - especially in dryland regions - is one of the most significant environmental challenges facing the world today. Whether trade helps or hinders the struggle against this process is a controversial question. Arguably, it is also one which has no easy answer. The impact of trade on the sustainable management of land depends on a whole host of factors: the nature of the product being traded; the volume of production and trade; the structure of the producing country's economy and the degree to which this is integrated with the global economy as a whole; and the nature of the regulatory environment at national, regional and international levels.

Despite its prevalence worldwide, and its intimate relationship with poverty and deprivation in both rich and poor countries, land degradation to date has lacked the attention required to propel it up the international political agenda. It is similarly conspicuous by its absence in the Doha Round of talks at the World Trade Organisation (WTO) - not to mention in other regional or bilateral trade deals. This is despite the fact that WTO negotiations on a broad sweep of issues - from trade in goods, to services, to rules on intellectual property or agriculture - could have wide-spread implications for the future sustainable management of land around the globe. This paper focuses on some opportunities for promoting sustainable land management (SLM) in agricultural trade within the international trade regime.

Agricultural Subsidies

Global trade in agricultural products is characterised by massive, systemic distortions which have emerged primarily since the Second World War. These trade distortions can be directly linked to incentives for over-

production, the intensification of farming methods in both developed and developing countries and, in many cases, the consequent degradation of land, water pollution and negative impacts on other natural resources. Like many other national policy instruments, subsidies in themselves can potentially have both positive and negative impacts on land degradation, related environmental conditions and on poverty. However, the current structure and distribution of agricultural support tends to have an overall negative impact for reasons that will be explored below.

Broadly speaking, developed countries tend to heavily subsidise agricultural production, protecting their domestic markets from foreign competition through the use of tariff barriers, and dumping surplus production on world markets at artificially low prices. Developing countries, in contrast, tend to tax agriculture (either directly or indirectly) in order to support the growth of industry. The total value of agricultural subsidies in OECD (Organisation for Economic Co-operation and Development) countries has remained roughly constant (with some fluctuations resulting mainly from price changes on world markets) at around USD 300 billion for recent years (De Gorter *et al*, 2003)¹⁰. This figure is approximately four times the value of official Overseas Development Assistance (ODA)¹¹ or half of the value of developed countries' defence spending (Oxfam International, 2005).

Some subsidies are believed to have a more harmful impact on sustainable development - including negative environmental impacts such as land degradation - than others. Those subsidies which are directly linked to production are believed, in general, to have the most damaging effects, while other subsidies which governments have tried to "decouple" from production may have a less significant effect. Since the mid-1980s many governments have attempted to

reform the structure of agricultural support away from the most trade-distorting forms, partly in response to environmental concerns but also because of the budgetary implications of the existing subsidy regime, growing evidence of the impacts of these payments on developing countries and pressure from other trading partners in the context of multilateral trade negotiations at the WTO.

Export subsidies and other forms of export competition

The need to remove surplus production from domestic markets has led developed country governments to make increasing use of export subsidies, which have served to “dump” low-cost products in developing country markets at less than the price normally charged at home¹². When products are dumped in this way, small farmers in developing countries can find that the prices they would otherwise charge for their products on local markets are substantially undercut by subsidised foreign imports. Subsidies can therefore push small farmers either to abandon farming altogether or to adopt ever more unsustainable agricultural practices (such as exploitation of marginal land, deforestation, overgrazing, the reduction or elimination of fallow periods, mono-cropping in place of mixed crop production and crop rotation, and the intensive use of artificial inputs such as fertilisers) simply in order to remain competitive.

In the Doha Round of negotiations at the WTO, governments have conditionally agreed to eliminate all export subsidies by 2013 (WTO, 2005). While the EU makes the greatest use of export subsidies, the US makes extensive use of similar forms of export competition that also have a significant impact on developing country farmers. In particular, the US provides large quantities of “food aid”, which is systematically sold on developing country markets at subsidised prices. The EU has argued that, whilst genuine food aid should continue to be available to people in humanitarian emergencies, the “aid” provided by the US is in effect a disguised export subsidy,

and in fact harms poor farmers and damages the environment in the same way as export subsidies. Governments therefore have also undertaken to establish parallel disciplines on “all export measures with equivalent effect”, by the same deadline, and have made considerable progress on disciplines for measures such as export credits and food aid. The slow progress in these areas could nonetheless be foregone entirely if governments continue to fail to reach agreement on core negotiating issues.

Domestic support

In addition to export subsidies, governments also provide high levels of “domestic support” - subsidies that are provided to farmers at a national level, either through direct payments, price support or other mechanisms. When these subsidies are linked to farmers’ production levels, for example by linking the size of payments to the amount of crops produced or to herd sizes, they also stimulate over-production and serve to lower world market prices for these products. Trade-distorting subsidies of this sort can encourage developed country farmers to adopt more intensive production techniques - such as increasing the use of chemical inputs, stocking herd numbers which are incompatible with the land’s carrying capacity and destroying habitats rich in biodiversity such as woodlands and hedgerows.

In developed countries with major dryland regions such as the United States, Canada or Australia, such production techniques may have direct impacts for the long-term productivity of the land, and may lead to land degradation. However, intensive agricultural production in developed countries may also have significant impacts in developing countries, including those in arid areas, where land degradation can be a direct consequence of increased poverty amongst small farmers or where it can be a direct consequence of competing for exports with subsidised developed country production.

A significant reason for this is that the current structure of the subsidy regimes in the US and

the EU overwhelmingly favours large farms at the expense of smaller ones. In 1998, the largest 5.1 percent of US farms obtained over 48 percent of their income from government payments, but the smallest 39 percent obtained only 8.9 percent of their income from the government (De Gorter *et al.*, 2003). In the EU, the largest 25 percent of farms have average gross farm receipts of over € 180,000 (equivalent to about USD 230,000) and average farm net worth of almost € 500,000 (equivalent to about USD 646,000): these farms produce 73 percent of farm output and receive 70 percent of support (Ash, 2006). The result of this subsidy structure is that the largest farms, which produce the greatest quantities of production surplus, using the most intensive production techniques, tend to be those that are most favoured by government support.

The relationship between developed country cotton subsidies and land degradation in dry developing countries illustrates this point well. In 2003, the US provided cotton subsidies worth USD 2.4 billion to its 28,000 producers, an amount which is more than the entire GDP (gross domestic product) of Burkina Faso, a country in a dryland zone where more than two million people depend on cotton production to make a living (Stuart and Fanjul, 2005). In 2004, US cotton exports were worth USD 4,251,216, while those from Burkina Faso were worth USD 178,741 (FAO Statistics Division). In a harsh economic environment of this sort, farmers living in areas with fragile soils in West Africa are having to compete with heavily subsidised and highly-mechanised production methods in the US. Inevitably, under these conditions, the larger producers are pushed to adopt ever more intensive farming approaches. Thousands of the smallest farmers are also forced to leave the land every year or to adopt ever more increasingly unsustainable land management patterns simply in order to survive.

In the Doha Round, the group of developing countries led by Brazil and India and known as the G-20¹³ has pushed for developed countries to undertake “substantial reductions in trade-distorting support”, as mandated by the WTO

Doha Ministerial Declaration of 2001 (WTO, 2001). In this, they have been supported by the more long-established coalition of countries known as the Cairns Group¹⁴, which re-groups together both developed and developing countries in favour of agricultural trade reform. Both groups include numerous countries with large areas of arid land and also, in some cases, degraded land - although to date, arguments based around economic and social issues, rather than environmental concerns, have tended to figure most prominently in these groups’ proposals. However, while negotiations are likely to cap the maximum level of trade-distorting subsidies at much lower levels than the current limits, they are not likely to oblige WTO Members to undertake real cuts in applied subsidy levels. In this sense, negotiations are more likely to consolidate existing trade reforms and prevent future backsliding, rather than lead to any direct change in support.

Market Access

Developing country interests on market access issues - unlike on domestic support - bear marked differences which reflect the substantial variation in economic structure between countries, even though important similarities also remain. Significantly, countries such as Argentina and Brazil are far more likely to reap immediate benefits from agricultural market opening in the developed world than are countries such as Chad or Namibia - although all four of these countries have significant dryland regions, including areas of degraded land. The former have well-established, export-oriented agricultural producers, who, in a competitive market environment, would be well-placed to take advantage of new export opportunities; in contrast, in many of the poorer countries in Africa, export-oriented agriculture may be virtually non-existent, or heavily dependent on one or two commodity crops such as cotton or groundnuts.

The land use practices of export-oriented agriculture in developing countries tend to have either a positive or a negative impact on

the environment depending on the nature of the product being produced, the country in which production is taking place, the nature of the regulatory environment and the extent to which the producers (or their trading partners) are responsive to government regulation and to consumer pressure for sustainable environmental management. Opening up market access therefore, cannot should not be seen as an automatic route to social and environmental progress, but rather needs to be viewed as a potential tool which is likely to be significant if an appropriate regulatory environment is in place at the national level.

It is currently difficult to assess the extent to which tariff cuts in the Doha Round will actually lead to enhanced market access opportunities for developed and developing countries. Negotiators have yet to near consensus on a range of issues, in addition to the overall tariff cut formula, thus complicating the task of making any meaningful estimates of the likely impact of the negotiations on trade flows and sustainable land management. While efficient exporting countries in the Cairns Group, as well as the US, are pushing hard for market opening around the world, the EU and G-10 have resisted making major concessions in this area. At the same time, the G-33 group of developing countries has argued for special flexibilities to enable them its Members to protect their small and vulnerable farmers; a group of recently-acceded Members, including China, has also sought to be accorded more flexible treatment.

While developed countries have struggled hard to defend a small number of heavily-protected and highly-subsidised products from tariff cuts, developing countries have resisted opening their own markets to these same products on the grounds that they would face unfair competition from rich countries if current subsidy levels are maintained. As in the subsidy negotiations, reductions may often affect developed countries' maximum WTO-permitted "bound" tariffs, but not necessarily the lower "applied" duties which they actually levy in practice. In developing countries, the picture is mixed, with some

countries having very low tariffs after unilateral liberalisation during the 1980s and 1990s (often under the auspices of the World Bank and International Monetary Fund auspices), or after onerous accession negotiations, while others have much higher tariff "ceilings", where the majority of maximum tariff rates are around 100 or 150 percent. Negotiations have nonetheless focused particularly on the small number of products, such as poultry, milk or sugar, which in many developed countries are often protected in developed countries by high tariff peaks, such as poultry, milk or sugar: these are often the very same products which are characterised by high levels of subsidies, and are important to poor farmers in developing countries.

Sensitive products

The number and treatment of permitted «sensitive products» is an area that remains contentious at the WTO. This category would allow both developed and developing countries to earmark certain products for lower tariff cuts, for whatever reason they choose, in exchange for expanded access through quotas. The EU and the G-10 group of countries, with highly-protected agriculture markets, are likely to use this mechanism to protect products, such as sugar or beef, which can often be produced more cheaply in developing countries. Land degradation associated with intensive agricultural production techniques is a problem with both of these products, but the precise impact of greater trade liberalisation in this area remains unclear.

For example, sugar production has been associated with land degradation due to habitat clearance, overuse of water, the intensive use of chemical inputs, the discharge of mill effluents and pre-harvest cane burning. However, it should be noted that many of these problems are associated both with the sugar beet industry in developed countries and the sugar cane industry in developing countries (WWF, 2004). In the context of high subsidy levels, northern tariff barriers can be expected to maintain over-production, with consequent negative

environmental and developmental impacts. Nonetheless, national regulatory frameworks remain a critical factor in determining the impact of sugar production on land degradation.

Special products

Developing countries at the WTO have argued that they should be given the flexibility they need to shield a limited number of “special products” from the full force of tariff cuts, on the basis of the importance of these products for food security, livelihood security and rural development objectives. Although these countries have tended to emphasise economic and social arguments, rather than environmental ones, there are indications that this particular trade policy tool could potentially have important implications for sustainable land management.

The special products mechanism could allow developing countries to lower tariffs more gradually on products where they believe that rapid liberalisation could destabilise the livelihoods of small farmers, threaten the wider rural economy and undermine food security. Governments would be allowed to “self-designate” these products, based on the particular situation prevailing in their country. Preliminary findings from a series of case studies conducted by the International Centre for Trade and Sustainable Development (ICTSD) suggest that common dryland products such as wheat, sugar, chicken, beef, tomatoes, and milk and dairy products were amongst those commonly identified as meeting the selection criteria (ICTSD, 2005). Where small farmers are producing these goods using traditional and sustainable land management approaches and where alternative trade scenarios would lead to significant hardship across whole economic sub-sectors or geographical regions, the special products mechanism may provide governments with an important tool to promote and defend sustainable agriculture. Although adjustment processes and the development of alternative sources of livelihoods may often be necessary in the long-term, this mechanism would allow governments sufficient time to set in place the

necessary regulations and economic incentives for a planned and orderly transition.

Looking Forward: Towards an Agricultural Trade Policy Framework that Supports Sustainable Land Management

In order for trade in agricultural goods to support, rather than undermine, sustainable land management principles, it is necessary to set in place a coherent public policy framework at the global, regional, national and local levels. Such a framework needs to take into account the immense distortions in agricultural trade which prevail at the global level, and the economic, social and ecological repercussions of these distortions at both the macro and micro scale. The problem of land degradation in dryland areas needs to be accorded a political priority which is proportional to the damage it causes to rural and urban communities in both developed and developing countries; political leaders are also ultimately responsible for ensuring that sustainable land management is an integrated dimension of public policy-making within international and regional organisations, across competent national ministries, and within sub-national and local level administrative bodies.

Crucial to the development of such a framework is the involvement of a wide range of stakeholders. Truly sustainable solutions to the problem of land degradation can only be developed through the active and sustained involvement of a diverse set of interest groups. Indeed, the significant distortions which currently characterise the global agricultural trading system arguably result in large part from the disproportionate influence of a narrow set of stakeholders. Groups that would receive only diffuse gains from policy reform now need to be included as part of a wider dialogue on a trade, which should focus on win-win solutions for both developed and developing countries rather than the narrow pursuit of short-term gains in particular sub-sectors or geographic regions. In order for this to be effective, there is a need for increased co-operation and dialogue between a number of intergovernmental organisations,

between different government ministries at the national level, and with a range of civil society stakeholders.

However, agricultural trade policy is a highly politicised issue, and progress on a public policy framework that effectively addresses trade and sustainable land management objectives cannot succeed without political commitment at the highest level. Trade negotiations are periodically held hostage to controversy over agriculture subsidies and market access in advance of national elections. Indeed, in his 2006 message on the International Day for Biological Diversity, the then UN Secretary-General Kofi Annan emphasised the importance of the preservation of dryland biodiversity for the achievement of the Millennium Development Goals - targets which have been agreed to at the head of state level, and which will only be reached if a commensurate level of priority is

accorded to implementation and follow-up activities.

The links between poverty, trade and land degradation also need to be central to any effort to address current structures and trends. As the UN Secretary-General Mr. Annan also noted in his message, the consequences of dryland land degradation are borne disproportionately by the world's poorest and most vulnerable people. Eight of the 10 ten least- developed countries in the world are in dryland areas, and developing nations are home to the vast majority of the 2two billion people who depend on dryland ecosystems. The scale of the challenge, and its importance to poverty eradication, cannot therefore be underestimated. Only a concerted effort to tackle the systemic causes of agricultural trade-related land degradation can result in sustainable solutions to poverty and environmental destruction in dryland areas.

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2.3 Opportunities and Constraints for Promoting Sustainable Land Management through Regional Trade Agreements in the Americas

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The opinions and views expressed in this paper are exclusively for informational purposes and do not reflect the opinions or official positions of the Organization of American States or its member States.

Introduction

Core development issues including those related to agriculture and land have significantly influenced the pace of global trade negotiations. Even though development is having such an influence on the trade agenda, the political vision of trade as a lever for development still persists and has been the strongest driver of regional trade talks. In the past decade the number of regional trade agreements (RTAs) has continued to rise, together with expectations about their contribution to sustainable development.

This paper is driven by two hypotheses. The first one is that it appears to be widely recognised that increased trade can promote increased productive activity and hence exert additional pressures on natural resources, which can lead to land degradation. The second one is that it would seem that these pressures can be mitigated, or in fact translated into positive outcomes, in particular with regards to sustainable land management (SLM), if certain positions are taken at the policy level. Therefore, through the negotiations agenda and the objectives of individual countries seated at the table, the role of RTAs is crucial in enhancing opportunities or constraints for SLM. Sustainable land management seeks to harmonise the often conflicting objectives of intensified economic and social development, while maintaining and enhancing the ecological and global life support functions of land resources (World Bank, 2006). For the purposes of this paper, SLM is defined as:

“a knowledge-based integrated approach to natural resources management comprising environmentally sound policies and techniques that reduce and or prevent long term land degradation, to meet rising food and fiber demands while sustaining ecosystem services and livelihoods, alleviating poverty and

promoting sustainable development” (IBRD/The World Bank, 2006).

Impacts of Trade on Sustainable Land Management

Land has been a source of conflict for decades in the developing world (Springer, 2006). Human activities that increase or accelerate land degradation are strongly related to trade. In fact, these elements are at the centre of the definition for land degradation adopted in the context of the United Nations Convention to Combat Desertification (UNCCD):

Article 1. UNCCD of 1994: “A reduction or loss, in arid, semi-arid and dry sub-humid areas, of the biological or economic productivity and complexity of rainfed cropland, irrigated cropland, or range, pasture, forest and woodlands resulting from land uses or from a process or combination of processes, including processes arising from human activities and habitation patterns, such as: soil erosion caused by wind and/or water; deterioration of the physical, chemical and biological or economic properties of soil; and long-term loss of natural vegetation”.

While there are several factors that contribute to land degradation, including those related to trade in services, this paper focuses on agriculture, given the relevance of this sector. According to the World Trade Organization (WTO), agriculture accounts for over one-third of export earnings for almost 50 developing countries, and for about 40 of them this sector accounts for over half of export earnings. At the same time, scientific consensus indicates that the structure and functioning of global ecosystems have changed more dramatically during the second half of the 20th century than

in any other period in history because of demand for food, water and fuel. In effect, more land was converted to agricultural uses in the 30 years after 1950 than in the 150 years between 1700 and 1850. Cultivated systems now cover one quarter of the earth's terrestrial surface (Millennium Ecosystem Assessment, 2005). These structural changes in ecosystems and the services they provide become more relevant to the issue of trade and SLM. They are also relevant to the current climate change debate as scientific evidence shows that 14 percent of emissions come from agriculture and 18 percent from land use (Stern, 2007).

In the Americas, the need for a shift towards the SLM approach in the context of RTAs can be illustrated as follows:

- 28.9 percent of Central and South America's exports are agricultural products;
- Approximately 70 percent of GDP (gross domestic product) in Central America is from agriculture;
- The region has one of the highest percentages of biodiversity hotspots in the world;
- Most economies are based on natural resources: agriculture and forest resources have been the pillars of development strategies because of their contribution to employment and income generation.

Considering the above factors, an important question that arises is what to expect with a projected increase in population, consumption and trade.

The Millennium Ecosystem Assessment, a state of the art scientific evaluation of the condition and trends in the world's ecosystems and their services, forecasts an increased demand for ecosystem services and in particular:

- An increase of 70-85 percent in estimated tonnes of agricultural food production by 2050;
- An increase of 20-85 percent in global water use.

The OAS' department of sustainable development identified similar trade-related concerns when conducting environmental assessments of trade in 12 countries of the region. The findings within this process illustrate the extent of land degradation processes in the Americas linked to agricultural and forest production, which further establishes the potential for enhancing the SLM approach, including through trade.

- Argentina: Sectors and products which have the potential for increased production through trade include foods, seeds, commodities - including soy - fuel and its derivatives. These will have significant environmental impacts upon implementation of a free trade regime. Policies and decisions that currently promote these goods remain in effect (OAS, 2003).
- Paraguay: Demand and price are the greatest factors in promoting soy production. Soy is the product which has the highest income and growth expectation for the next 10 years, reaching up to 2.5 million cultivated hectares. Approximately one tonne of soil is lost per cultivated hectare per year in soy production. Additionally, to produce one kilogramme of grain between 1,000 and 2,000 litres of water are required. Policies and decisions that promote these goods remain currently in effect (OAS, 2006).
- Peru: Exports in forest products have increased tenfold in the past ten years from USD 16 million in 1995 to USD 168 million in 2005. Sixty-six percent of total exports are destined to the US and with the US-Peru Trade Promotion Agreement

there is a projected increase in production of 2.42 percent and in exports of 3.31 percent. Such an increase in forest harvesting is expected to lead to land use changes and to have significant impacts on soil erosion. Illegal logging, slash and burn practices and migratory agriculture all play a role in this situation. There are also projected medium-term impacts in soil composition. Improvements in enforcement of laws and regulations could contribute towards addressing these issues (OAS, 2007).

How can Policies Related to Trade Promote Sustainable Land Management?

There are factors in the context of trade negotiations that developing countries should be cognisant of, regardless of their ability to completely change them. For instance, the existing asymmetries among trading partners must be addressed. These asymmetries, widely discussed in the context of the Dominican Republic-Central America Free Trade Agreement (DR-CAFTA) negotiations, could significantly impact the number and capacity of negotiators, the availability and reliability of information and even on competitiveness.

In this regard, developing countries should improve their analytical capacity to assess *ex-ante* the impacts of RTAs on natural resources and develop integrated policy responses. While these countries face capacity gaps in areas such as methodology, indicators and baseline data, developed countries such as the US under the US Trade Promotion Authority Act, and regions, such as the EU, under EU directives, have a legal requirement to conduct assessments of the impacts a given trade negotiation will have on the environment and on sustainability. In many cases, access to the information provided by these assessments may determine the success of an agreement.

Increased capacity in these areas can prevent the use of unsustainable practices that in the long run affect productivity, livelihoods and human well-

being. With adequate capacity countries would be able to identify the potential impacts of growth or change in a given sector and consequently, promote sustainability in this context.

Regional trade agreements known as “new generation trade agreements” have formally included provisions related to the environment including public participation and co-operation. These provisions are a positive contribution and represent opportunities for SLM by focusing on:

- Effective enforcement of environmental laws;
- Strengthening environmental institutions;
- Dispute settlement mechanisms;
- Not lowering standards to attract foreign direct investment (FDI);
- Supremacy of environmental protection over investors’ rights;
- Access to justice;
- Environmental co-operation including in priority areas such as environmental management systems, information and environmental impact assessments of trade.

However, several challenges for developing countries remain:

- Core trade provisions in RTAs in areas such as intellectual property, market access and investment, among others, have effects on the environment and require a comprehensive and integrated sustainable development approach.
- Developing countries should negotiate better conditions for market access of environmentally preferable goods and services in RTAs. For instance, in the recent DR-CAFTA agreement, trade-related quotas were granted to organic

sugar from Costa Rica and organic beef from Nicaragua. However, efforts such as these have not been pursued by other countries in subsequent agreements.

- Tariff incentives for exports by developing countries focus on raw materials, hampering opportunities for value-added goods and promoting virtual trade of ecosystem services, such as water and soil, clearly contributing to land degradation (OAS, 2006).
- Incentives should be pursued for value-added goods which also have a lower impact on the environment.
- The issue of subsidies that are harmful to the environment, in particular in the area of agriculture where there is a structural impact in production patterns, land use change and use of agrochemicals, should be addressed and the findings of the Millennium Ecosystem Assessment should be taken into account.
- Positive steps have been taken in the area of traditional knowledge and conservation of biodiversity in the context of recent RTAs, thus they could be enhanced to address SLM.
- Coherence in areas such as environmental law between RTAs and Multilateral Environmental Agreements (MEAs) such as the UNCCD, is necessary given, among other issues, the different legal systems of trading partners and the potential

contribution of effective environmental laws to SLM.

Conclusion

The issues of trade and sustainable land management are both very complex and are also linked to other complex and controversial policy issues, such as agriculture which has been considered one of the toughest and most controversial topics of the trade agenda since achievement of the first multilateral agreement dedicated to this sector during the Uruguay round. In pursuit of a fairer and more sustainable approach, it is important to bear in mind that a complementary agenda focused on co-operation is fundamental. On the one hand capacity needs to be strengthened in developing countries. While on the other, national strategies need to be coherent, maximise market opportunities, avoid failure, and have equity and risk mitigation at their centre.

Negotiations require compromises and in order to obtain positive impacts for the sustainable management of natural resources and in particular for SLM, a comprehensive approach in addressing the above-mentioned challenges is required. Effective and sound policies that support the necessary regulatory and administrative frameworks are a must.

Sustainable land management seeks to harmonise the often conflicting objectives of economic and social development. Adopting this kind of approach will contribute to global sustainable development by preserving the natural resource base that is fundamental for trade and human well-being.

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3. INCENTIVES FOR ENHANCING SUSTAINABLE USE AND MANAGEMENT OF LAND AND NATURAL RESOURCES THROUGH TRADE

3.1 Policies and Institutions for Promoting Sustainable Land Management in Drylands through Trade

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Introduction

Experiences in drylands have shown that appropriate trade policies and institutions are needed so as to encourage communities and countries to invest in sustainable land management. Dryland livelihoods in Africa are dominated by agriculture, pastoralism and agropastoralism. Despite the limited policy and institutional support that dryland livelihoods have received in the past, they are ecologically and economically viable if properly managed (Hatfield and Davies, 2006). Dryland trade must however, be done within the context of sustainable development.

Some of the key pressures on sustainable land management in the drylands include rapid population growth, deforestation and soil erosion. These result in loss of agricultural productivity and consequently adversely affect pastoralists and agropastoralists. In some cases, there is also an increased incidence of poverty and conflicts over the use of scarce natural resources.

Given the vulnerability of dryland areas to the above stresses, actions need to be taken in order to sustain the resources needed for trade. Sustainable land management should be guided by sound scientific information, better knowledge management, capacity building on sustainable land management and trade and policy advocacy. Ultimately, these actions should open up opportunities for trade. Good economic, environmental and social governance arrangements are also important for trade and sustainable land management.

Challenges for Promoting Sustainable Land Management through Market Access and Trade in Drylands

The key challenges to improving market access and trade in drylands include:

- Lack of accessible markets and industries;
- Little or no private sector investment;
- Limited or no public sector investment in infrastructure;
- Limited capacities and business skills among local communities;
- Weak local and national institutions;
- Policies that are not responsive to trade and sustainable land management needs.

These challenges have led to a situation where many dryland areas have remained poor despite having commercially viable products. Governments and the private sector have not invested fully in these areas due to a perception that they provide low returns on investment. In general, the prevailing policy environment has created a situation where markets function poorly, or not at all, for otherwise valuable goods and services.

A combination of biophysical, socio-economic and institutional constraints has slowed down economic development in drylands. Prevailing trading conditions have, in most cases, been unfavourable to dryland populations. Under these circumstances, the exchange of goods and

services at the local, regional and international levels has not been fully exploited.

To help dryland communities fight poverty through trade-generated income and also promote sustainable land management, it is important to address the challenges that limit trade. National, regional and international institutions are increasingly committing resources to address these concerns. The United Nations Development Programme (UNDP), for example, has included in its global priorities commitments to make markets work for the poor. The hunger task force of the Millennium Project identified the lack of income and opportunities and the prevalence of market failure as a priority area for action (United Nations Millennium Project, 2005). The UN Commission on the Private Sector and Development has emphasised the importance of addressing market imperfections, unleashing entrepreneurship and making business work for the poor. These interventions seek to create a better environment for trade. Strategic partnerships to deal with trade and sustainable land management issues effectively should involve development agencies, national governments, regional economic bodies such as the East African Community, Southern African Development Community (SADC) and the Common Market for Eastern and Southern Africa (COMESA), NGOs, the private sector and local communities.

Other policy challenges

To promote sustainable land management in the dryland areas of the world, trade policies must address existing policy challenges.

Population growth is expected to continue at relatively high rates in many of the dryland areas for the foreseeable future. Unsustainable land use practices by an increasing population in these areas will lead to greater land degradation unless appropriate trade and land management policies are pursued.

Increasing population pressure and poverty levels in the high and medium potential areas of sub-Saharan Africa, for example, are likely to

continue driving more people to dryland areas. Many of these immigrants bring unsustainable farming practices to the drylands and these ultimately lead to further land degradation.

Despite the high value of the resources at their disposal, many dryland communities have limited clout in the economic, political and social spheres within their own countries and regions. Even in cases where dryland areas produce high value natural resources such as minerals and high value plants, the land degradation dimension is often treated as an externality unless there are strong national policies and laws that force compliance.

Some dryland areas have comparative advantages as sources of livestock, specialty crops (e.g. medicinal plants and tree crops for biodiesel) and as tourist destinations on account of their abundant wildlife and beautiful scenery (International Institute of Rural Reconstruction, 2002). Appropriate trade and land management policies can help tap this potential for local, national and international benefits.

There is a need to develop effective regimes to protect the intellectual property rights of indigenous communities, for example, in the development of tradable medicinal products. Appropriate policies, laws, regulations and guidelines are required, as well as strong institutions to enforce them.

Integrating Trade Policies into National, Regional and International Sustainable Land Management Strategies

National governments should adopt policies that create a favourable trading environment for dryland commodities. Research has shown that some traditional land use options like pastoralism do yield fairly high returns on investment compared to other alternatives. Besides, they are also sustainable if properly managed.

Land tenure has a bearing on sustainable use of drylands and the sustainability of trading

opportunities in these areas. Improved land management is sometimes hampered by lack of modern farming skills and better support in the provision of extension services, inputs and markets is necessary.

The lack of harmonisation of sectoral policies at national, regional and international levels can be a challenge to the development of trading opportunities in drylands. Export-driven land use in the drylands, for example, could lead to the degradation of wetlands which are also important as dry season grazing areas for pastoralists and also as wildlife areas. This set up generates conflicts and the situation is such that optimal benefits from the potential land use options may not be realised.

At the regional level, the harmonisation of trade policies is critical. This can potentially open up more markets and at the same time encourage wider adoption of higher standards of land management and trade. Partnerships with local, regional and international organisations that help open up new markets are also helpful. For the African nations that qualify, the AGOA (African Growth and Opportunity Act) treaty for example, can be used as a tool for both trade and sustainable land management in the drylands. Support for trade capacity building - including trade facilitation, participation in the World Trade Organization (WTO) negotiation process, trade and financial sector reforms and infrastructure development - is very important in this regard (Oxfam America, 2005).

Community private sector partnerships in trade must be equitable and beneficial to all parties. National governments have a key role in creating an enabling environment. They must also lead by example especially in cases where they have to share trade benefits with dryland communities that are the producers or custodians of the resources in question.

It is important for governments to adopt and implement policies that promote alternative renewable sources of energy in the drylands. A

lot of the deforestation that occurs in dryland areas is due to energy needs both within these areas and beyond.

There are opportunities to improve trade infrastructure and to strengthen the capacities of local traders and the institutions that support them (UNDP Drylands Development Centre, 2006; United Nations Economic Commission for Africa, 2005; Macqueen, 2005). National, regional and international partnerships are important in this area.

Trade policies that promote sustainable land management in drylands must:

- Target the key sectors on which the dryland populations depend;
- Target the productive assets that dryland communities possess (e.g. land and labour);
- Take gender disparities into account;
- Take into account national and regional differences;
- Provide an environment that makes market information available to both producers and buyers;
- Create an environment that empowers communities to participate in advocacy;
- Enhance access to financial resources for production, value addition and marketing;
- Enable communities to organise themselves as producer associations and to enter into contracts with the private sector;
- Refine issues of access to natural resources and benefit sharing - e.g. challenges in the sharing of benefits from tourism;

- Provide incentives for private sector participation;
- Address issues of lack of insurance against risks in dryland trade (e.g. drought, insecurity);
- Facilitate dialogue between communities, government, the private sector and development partners;
- Require financial institutions to take into account the impacts of their policies on the poor in drylands and the adverse impacts on land management;
- Promote national and regional trade policies that open access to markets for dryland commodities;
- Encourage developed countries to open up their markets for poor countries - i.e. removal of tariff and non-tariff barriers.

Although the nations of eastern and southern Africa, for example, have come up with national action plans to implement the sustainable land management principles envisaged by the United Nations Convention to Combat Desertification (UNCCD), lack of resources as well as a failure to incorporate these plans into national budgetary and planning frameworks have led to a situation

where implementation has not been undertaken. Trade and environment issues have in the process received inadequate attention (United Nations Development Programme Drylands Development Centre, 2006). The above considerations are important in the development of trade regimes that support sustainable land management in the drylands.

Conclusion

Drylands are productive and if properly managed can produce a wide range of tradable goods and services. They can produce surpluses for local, regional and international trade and hence contribute significantly to food security and improved livelihoods. In general, dryland communities are successful and resilient in otherwise harsh environments. Improved trade in dryland commodities can promote a proactive and integrated approach to development in chronically drought-affected areas.

Sustainable socio-economic development and environmental management policies are necessary in promoting dryland productivity and trade. Equitable trade policies at local, regional and international levels are also necessary. It is important for governments, development partners, the private sector and local communities to work together to realise these goals.

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3.2 Mobilising Resources for UNCCD Implementation Through Trade and Market Development

Eleonora Canigiani, the Global Mechanism of the UNCCD

Introduction¹⁵

The text of the UNCCD explicitly acknowledges the relevance of trade in pursuing the Convention's objectives. Under the "General obligations"- Art. 4 Par. 2(b) - the Parties are required to "give due attention, within the relevant international and regional bodies, to the situation of affected developing country Parties with regard to international trade, marketing arrangements and debt with a view to establishing an enabling international economic environment conducive to the promotion of sustainable development." Building on this explicit mandate, there is a real opportunity to explore the potential of market access and trade to increase investment in degraded areas and mobilise additional resources for SLM.

On-the-ground activities are providing increasing evidence of how trade and markets can play a determining role in the socio-economic development of drylands and degraded areas. Research has also supported these arguments to reverse the negative image of drylands as hopeless extensions of arid and degraded lands whose vulnerability to natural calamities represents a risk factor that is far too high to make them attractive for investments. The realisation that several products and services from drylands offer investment opportunities with positive returns, has led to a recognition that trade and markets are crucial factors for improving livelihoods and enhancing SLM in vulnerable ecosystems. Nonetheless, these cases still remain isolated from policy-making, resource allocation and budgeting processes and therefore, from broader development plans, thus leaving potential resources untapped. With the aim to draw on these resources, the Global Mechanism (GM) of the UNCCD has established a strategic programme for market access and trade in the conviction that by forging stronger links between the Convention and trade and market-related issues, new stakeholders can be engaged

in the UNCCD implementation, innovative sources for SLM financing leveraged - both within the public and the private sectors - and links established with overarching development plans and budgeting processes.

Agricultural Production, Trade and Sustainable Land Management

International trade regimes and related government policies, macro-economic reforms and pressure on raising agricultural production for exports can affect, directly or indirectly, the sustainable management of land, water and natural resources and hence the resilience of degraded ecosystems and the livelihoods of local communities. The growth of large-scale, export-oriented agriculture may lead to inappropriate crop intensification - especially under mono-cropping systems - expansion of agriculture onto marginal lands, and to the use of farm machinery and agronomic practices that are not suitable for local soil and water conditions. At the same time it often pushes small farmers onto marginal lands and forces them to adopt unsustainable farming practices, which in turn decrease soil fertility and exacerbate land degradation.

It is important that governments explore opportunities for diversifying trade into products that promote more sustainable use of natural resources and look for ways to improve the environmental and social impacts of the products that are currently traded in large quantities. A "conflict of interest" exists considering that the greater implications for the environment and for land degradation are those induced by heavily traded commodities such as cotton. While trade in these commodities represents substantial export earnings for dryland countries, their production can cause environmental impacts on the land by encouraging unsustainable agricultural practices. Trade in these commodities is often subsidised in developed countries and characterised by economic and political interests. Despite

the continuous efforts of developing country governments and civil society groups, the ability to influence these markets and to make this trade more sustainable, is still very limited.

A systematic examination of the impact of the international trade regime on agricultural production patterns and on its implications for SLM is necessary to avoid generalisations, capture hidden opportunities and determine exactly how trade can affect the environment upon which some of the world's poorest people depend. Constraints and opportunities for enhancing SLM and sustainable use of natural resources could be found through a more thorough analysis of the multilateral trade regime and its related tools and instruments such as special products and environmental goods and services, among others. Increased attention should also be given to "aid for trade" related processes and to regional and bilateral trade agreements. These trade processes often fail to address environmental concerns thus undermining the capacity of trade to effectively contribute to sustainable development.

The international trade regime is not the only solution. It is also crucial that global level discussions be brought to the country level, translating international level policies and dialogue into country-based interventions. Increased awareness of opportunities for market differentiation might help countries to develop diversification strategies which would help to lower dependence on a few export products that encourage unsustainable agricultural practices and would foster reforms of the trade regime. Countries' engagement in the international debate would improve identification of the needs and constraints to creating an effective and clear policy framework that also allows emerging markets that have a comparative advantage to improve environmental management and livelihoods in vulnerable ecosystems.

Enhancing Sustainable Land Management through Trade and Markets: Challenges and Opportunities

Some of the challenges for promoting SLM through trade and market development are the same as those encountered in the area of rural development in general. These include: lack of basic infrastructure, such as rural roads; absence of market facilities and services, such as wholesale markets and market information systems; limited access to credit and financial services, such as micro-credit schemes; inadequate regulation and limited access to land use and land tenure rights. In drylands and degraded areas, these challenges are exacerbated by the perceived high risk and low returns that have discouraged all types of investment. Although this perception is slowly changing, it is crucial to increase understanding and clarify the linkages among trade, markets, livelihoods and SLM, in order to build an enabling environment for increasing investment in these areas. Increasing investment also depends on policy commitment and greater awareness of SLM's broader links to sustainable development and poverty reduction. A major challenge for promoting SLM through market access is to properly address the immense distortions in agricultural trade at the global level, and the economic, social and ecological repercussions of these distortions at both the macro and micro scales.

If we shift attention from the political and legal frameworks regulating international trade and commercial transactions to look at the market dynamics in terms of supply and demand, new opportunities emerge for using trade as an instrument for promoting sustainable use of land and natural resources. Dry, arid and sub-humid ecosystems are complex and rich in natural products, some of which are unique because of the peculiar environment in which they grow. Indeed, the comparative advantage of these natural resources is that they provide key environmental services (such as conserving land and water resources) to the ecosystem in which they are found and to the livelihoods of local populations. They are also endowed with natural properties which provide valuable substitutes for

chemical components and processes in a number of industries, such as the pharmaceutical and cosmetic industries. Finally, they are often the only natural resources available in degraded areas and therefore play a crucial role in the livelihoods of local communities. Socio-economic assessments also demonstrate that vulnerable groups, such as women, are often major stakeholders in these markets.

Increasing market demand for natural resources such as gum arabic, medicinal plants and biofuels from groundnuts is creating new market opportunities. Sustainable value chains and innovative business models are also being developed to support the sustainable development of these markets. However, gains from these opportunities are very limited, especially for local communities. The natural products market still lacks a solid structure and a supportive policy framework to allow market access for novel foods and equal sharing of benefits for local communities whose traditional knowledge represents a key factor for market innovation and diversification. More attention needs to be given to such issues in order to avoid situations in which small groups establish power structures that control the resources while neglecting the environment and local people.

Natural products are only one example of how alternative livelihoods can play a crucial role in the socio-economic development of vulnerable ecosystems by providing market differentiators and/or reducing the pressure on land such as in the case of ecotourism and handicraft production. These are sometimes overlooked as, compared with agricultural production, they are quantitatively less important in terms of trade flows. However, in terms of value added and capacity to improve the livelihoods of disadvantaged communities in marginal areas, such as dryland areas, they may have a comparative advantage which deserves to be further explored. Moreover, as the market for these products is less structured, there might be more space for influencing policy-making processes and for creating appropriate regulations and building supportive institutions. Likewise, there might also be more room for engaging the

private sector in the development of sustainable value chains, integrating grassroots communities and ensuring more equitable sharing of benefits. Therefore, it is important that the impact of trade on land management be assessed not only for its implications on agricultural production patterns but also for those regarding the development of alternative markets which could benefit livelihoods and SLM.

Building Incentives and Policy Frameworks to Facilitate Resource Mobilisation

Resource allocation patterns in the international development community have evolved towards country leadership and country-driven identification of development priorities through, *inter alia*, Poverty Reduction Strategy Papers (PRSPs). As a result, resource allocation is increasingly subject to national-level negotiations within the government as well as between the government and the international community. Since donors are increasingly aligning their priorities with those of the recipient countries, the importance of domestic public budget allocations increases considerably through new approaches and aid delivery mechanisms such as basket funding, general budget support (GBS), sector budget support (SBS) and pooling fund arrangements under the sector-wide approach (SWAp). The appearance of such mechanisms was a reaction to overcome the weaknesses of the existing aid modalities, typically “stand-alone” projects and structural adjustment operations.

As development assistance adopts more integrated approaches driven by country priorities, it is fundamental that SLM no longer be seen as a technical concern of environmentalists, but rather as a means to contribute to sustainable development and poverty reduction. This entails making links with a number of thematic areas that touch on this topic, such as trade and markets. It also signifies coordinating with the relevant institutions and development processes to mainstream SLM in the broader development agenda and to create more coherent policies that prevent and minimise the potential risks

associated with overexploitation of natural resources, negative impacts on traditional knowledge and the exclusion of local populations and vulnerable groups from benefit sharing. Although environmental concerns are still seen as a barrier to trade development, increased attention should be given to the negative repercussions that neglecting environmental and social impacts would ultimately have on business and the general economy.

It is also important that these changes in the architecture of overseas development aid (ODA) be reflected in the elaboration of incentive frameworks to promote sustainable use of natural resources. Such comprehensive and integrated packages of incentives should include economic, legal, institutional and market-based measures necessary for creating an enabling environment for increased investment. Some MEAs have been exploring incentive measures, including positive, negative and indirect incentives, able to enhance sustainable natural resource use. The design, development and effective implementation of trade and market-related incentives will depend considerably on a stronger interaction between environment stakeholders, including UNCCD and other MEAs, and trade stakeholders. National trade and environment ministries and institutions are still working in isolation. Increased collaboration will not only help them to take advantage of their respective technical expertise but also contribute to harmonise processes for defining sustainable development priorities and increase coherence in resource allocations and budgeting processes at the national level.

In order to sharpen the impact of incentive measures, in addition to multi-stakeholder consultations and cross-sectoral policies, it is crucial to contextualise the incentives, for example by identifying “sub-sectors” within the agricultural sector as well as alternative livelihoods that could drive investment in SLM and sustainable use of natural resources. A sector-based approach would help to make the design of incentive frameworks more systematic. On the one hand, it would look at the general trade environment and, in particular, at the impact that the trade regime has on the

specific sector as well as at the constraints and opportunities to use existing instruments and tools to promote the sector. On the other, it would allow competitive market analysis and maximise opportunities by leveraging the comparative advantage of specific sectors/products. Finally, it could facilitate the identification of needs and constraints for supporting the growth of the specific sector in terms of cross-sectoral policies (i.e. fiscal policies and subsidies), institutional capacities and infrastructure and thus contribute to foster coordinated actions among different stakeholders.

Conclusions and Recommendations

The time has come to define a clear agenda for trade and markets, livelihoods and sustainable land management in the context of the UNCCD. Given the cross-cutting nature of SLM, the development of such an agenda requires coordination among a community of actors and stakeholders, including governments, international organisations, environmental conventions, the private sector, producers’ and consumer groups, aid agencies and civil society at large.

In order to engage this diverse range of actors, agreed frameworks will have to be built including through decisions by the UNCCD Conference of the Parties (COP), which is the ultimate consensus framework, on the means and measures to combat desertification and land degradation. Examples can be drawn from other conventions such as the CBD on how to integrate trade, markets and incentive-related issues in the COP discussions and in policy-making processes addressing trade and environment issues.

Stronger linkages between the UNCCD and international trade policies and institutions would contribute to raise awareness on the impacts of trade on land degradation and livelihoods in vulnerable ecosystems and facilitate the mainstreaming of SLM into trade-related resource allocation processes such as aid for trade. Parallel efforts are needed at the national level to integrate initiatives across different ministries and government departments. Opportunities might also be considered to leverage

synergies with other environmental conventions and draw on their efforts to mainstream sustainable use of natural resources into trade policy. Coordination among MEAs and the development of common strategies on trade, markets and incentive measures would give them a stronger capacity to influence decision-making processes.

Enhanced availability of quantitative data and sector studies would also be very useful to develop a better empirical understanding of the scale of the problems and challenges related to the impact of trade on SLM. Information on production, sales, exports, incomes and so on will provide guidance for strategic planning and financial support for SLM. This will also help to define sector strategies on trade and SLM for both traditional commodities and new products. For traditional commodities, attention will probably have to focus on governance structures, trade rules and policies, in particular issues related to tariffs and market distortions; while for new products, there is a need to raise awareness about the potential of these products and to provide governments with better guidance on creating supporting regulations, incentives and on addressing issues related to non-tariff barriers and measures for market access.

The engagement of the GM in the new strategic area of market access and trade has led, in a very short period, to the identification of a number of opportunities for promoting SLM and to the establishment of innovative initiatives and collaboration with a wide range of partners. By fostering multi-stakeholder processes for dialogue, information exchange and mutual learning, synergies could be built and gaps in capacity, needs and resource availability could be better understood.

The Global Mechanism emphasises the importance of more holistic, multi-sectoral and integrated approaches that adopt a landscape perspective to create an enabling environment for enhanced investment in SLM. By engaging various sectors, and thus different stakeholders, a landscape approach ensures that decisions at the site level are integrated into strategies at the policy level, and contributes to a better understanding of the key factors that determine land degradation. Through increased participation, this approach also facilitates the negotiation of trade-offs among different stakeholder groups, resulting in more sustainable solutions for the use and management of land and natural resources.

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3.3 Trade in Dryland Products as an Incentive for the Sustainable Use of Biodiversity: The Work under the Convention on Biological Diversity

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Introduction

Biological diversity - or biodiversity - is the term given to the variety of life on earth and the natural patterns it forms. This diversity is often understood in terms of the wide variety of species of plants, animals and microorganisms, but it also includes genetic differences within each species, for example, between varieties of crops and breeds of livestock, as well as the variety of ecosystems such as those that occur in deserts, forests, wetlands, mountains, lakes, rivers and agricultural landscapes.

Dry and sub-humid lands contain important biodiversity¹⁷. For instance, the Serengeti grasslands support an annual migration of approximately 1.3 million blue wildebeest, 200,000 plains zebra and 400,000 Thomson's gazelles. The Mediterranean basin contains 22,500 plant species of which more than half are endemic. The Succulent Karoo region of South Africa and Namibia, with more than 1,700 leaf-succulents, contains the richest succulent flora on earth.

Yet, biodiversity is under serious threat. Species have been disappearing at 50-100 times the natural rate and this figure is predicted to rise dramatically. Furthermore, the vast array of domesticated plants and animals important for food is shrinking as modern commercial agriculture focuses on relatively few crop varieties and ecosystems are increasingly fragmented, degraded, or completely destroyed. Between six and 12 million square kilometres of dry and sub-humid lands are affected by desertification.

The loss of biodiversity often reduces the productivity of ecosystems, thereby affecting critical ecosystem services on which human well-being depends. According to the Millennium Ecosystem Assessment (MEA, 2005), ecosystem services include *supporting services* (such as habitat provision, nutrient and water cycling,

and soil formation); *regulating services* (such as pollination; pest, disease and pollution control; ecosystem resilience to the potential shocks associated with, for instance, climate change or droughts); *provisioning services* (such as food, fibre, fuel, medicine, fresh water and genetic resources);¹⁸ and *cultural services* (such as the provision of education and inspiration, as well as of recreational and aesthetic values). The Millennium Ecosystem Assessment found that 15 out of 24 ecosystem services examined are in decline, including those associated with dry and sub-humid lands, which are facing increasing negative impacts from climate change, invasive species and pollution (MEA, 2005, pp. 33-37).

There is also an important development dimension associated with dry- and sub-humid lands and their biodiversity. Indeed, eight of the world's ten poorest countries are located in drylands. Ninety percent of the people living in drylands are located in developing countries. The livelihoods of an estimated one billion people are under threat as a result of the degradation of drylands - for instance, dryland biodiversity provides more than 50 percent of rural household income in Senegal.

In order to face these challenges, the Convention on Biological Diversity (CBD) was signed by 150 government leaders at the United Nations Conference on Environment and Development, held in Rio de Janeiro in 1992, together with its two sister Conventions, the United Nations Framework Convention on Climate Change (UNFCCC) and the United Nations Convention to Combat Desertification (UNCCD). It currently has 190 Contracting Parties. Its three interrelated goals are: the conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of benefits arising from the utilisation of genetic resources.

The Conference of the Parties to the Convention developed a number of programmes of work and

voluntary guidelines in order to implement the Convention and to provide guidance to Parties, other governments, international organisations as well as other relevant actors and stakeholders on how to implement its various provisions. Recognising the importance of biodiversity in dry and sub-humid lands, the Conference of the Parties adopted in 2000 a programme of work for this theme, covering arid/semi-arid lands, grasslands, savannahs as well as Mediterranean landscapes¹⁹. The Conference of the Parties also endorsed a joint work programme with the UNCCD in 2004.

In 2002, the Conference of the Parties committed to achieve by 2010 a significant reduction of the current rate of biodiversity loss at the global, regional and national levels as a contribution to poverty alleviation and to the benefit of all life on earth²⁰. This so-called “2010 biodiversity target” was subsequently endorsed by the World Summit on Sustainable Development in Johannesburg, in 2004.

Sustainable Use of Biodiversity Components as an Incentive for Biodiversity Conservation

With its second and third objectives, the CBD recognises that biodiversity is about more than plants, animals, microorganisms and ecosystems: it is about people and our need for food security, medicines, fresh air and water, shelter, and a clean and healthy environment in which to live. Accordingly, Article 10 of the Convention, on sustainable use, calls upon Contracting Parties to, *inter alia*, adopt measures relating to the use of biological resources to avoid or minimise adverse impacts on biological diversity, and to protect and encourage customary use of biological resources in accordance with traditional cultural practices that are compatible with conservation or sustainable use. Recognising the importance of local populations as stewards of biodiversity, Parties shall also support them to develop and implement remedial action in degraded areas where biological diversity has been reduced.

The Addis Ababa Principles and Guidelines for the Sustainable Use of Biodiversity²¹ point to a key linkage between sustainable use and the

maintenance of biodiversity:

*In circumstances where the risk of converting natural landscapes to other purposes is high, encouraging sustainable use can provide incentives to maintain habitats and ecosystems, the species within them, and the genetic variability of the species.*²²

As noted above, the fragmentation, degradation and loss of ecosystems are important elements of biodiversity loss, and land use change is a major contributing factor. Promoting the sustainable use of biodiversity components in the given land use setting will, by generating income for local populations, increase the opportunity cost of converting landscapes to other purposes, thus creating incentives for biodiversity maintenance “at the margin”, that is, for those landscapes that are close to the “tipping point” for conversion.

Accordingly, the promotion of sustainable use through the development of markets for biodiversity-based products is included as an important activity in a number of programmes of work under the Convention. With regard to dryland products, activity 9 of the programme of work on the biodiversity of dry and sub-humid lands calls for the support of sustainable livelihoods through, *inter alia*:

- (a) Diversifying sources of income to reduce the negative pressures on the biological diversity of dry and sub-humid lands;
- (b) Promoting sustainable harvesting including of wildlife, as well as ranching, including game-ranching;
- (c) Exploring innovative sustainable uses of the biological diversity of dry and sub-humid lands for local income generation and promoting their wider application;
- (d) Developing markets for products derived from the sustainable use of biological diversity in dry and sub-humid lands, adding value to harvested produce; and

- (e) Establishing mechanisms and frameworks for promoting fair and equitable sharing of the benefits arising out of the utilisation of the genetic resources of dry and sub-humid lands, including bio-prospecting.

With regard to market development, the Conference of the Parties at its seventh meeting, in 2004, identified the World Trade Organization (WTO) as a key actor in implementing this activity, thus pointing to its important international trade dimension.

In 2006, the Conference of the Parties noted the importance of, *inter alia*, activity 9 and requested Parties, other governments and relevant organisations to give particular attention to supporting the scaled-up implementation of this activity.

Similar provisions are reflected in a number of other programmes of work that are also relevant for dry and sub-humid lands:

- The programme of work on mountain biodiversity calls for the “*sustainable use of economically valuable wild plants and animals as an income-generating activity for the local inhabitants*”;²³
- The programme of work on protected areas seeks to “*identify and foster economic opportunities and markets at local, national and international levels for goods and services produced by protected areas and/or reliant on the ecosystem services that protected areas provide, consistent with protected areas objectives and promote the equitable sharing of the benefits.*”²⁴

The Conference of the Parties at its eighth meeting also adopted a framework for a cross-cutting initiative on biodiversity for food and nutrition, with the overall aim to promote and improve the sustainable use of biodiversity in programmes contributing to food security and human nutrition, as a contribution to the achievement of Millennium Development Goal 1, Goal 7 and related goals and targets and,

thereby, to raise awareness of the importance of biodiversity, its conservation and sustainable use²⁵. The framework notes that promoting the broader use of biodiversity promises to contribute to improved human health and nutrition, while also providing opportunities for livelihood diversification and income generation, and calls for, *inter alia*:

- identification and promotion of species currently under-utilised or of potential value to human food and nutrition, including those important in times of crisis, and their conservation and sustainable use (activity 3.2);
- promotion of genetically diverse and species-rich home gardens, agroforestry and other production systems that contribute to the *in situ* conservation of genetic resources and food security (activity 3.3);
- protection and promotion of biodiversity-friendly markets by addressing regulatory issues (activity 3.9);
- support to the study and development of production and commercialisation of non-conventional biodiversity-based products, including processing of non conventional biodiversity-based food (activity 3.13).

Relevant work is also carried out under Article 11 of the Convention, on incentive measures, and the associated programme of work. Article 11 calls upon contracting Parties to adopt, as far as possible and as appropriate, economically and socially sound measures that act as incentives for the conservation and sustainable use of biodiversity components. The development or promotion of markets for biodiversity-based goods is recognised as one important incentive measure for conservation and sustainable use of biodiversity, and the programme of work, adopted by the Conference of the Parties in 2000, points to an important mechanism for such market promotion, by calling for the development of methods to promote information on biodiversity in consumer decisions, for instance through eco-labelling²⁶.

Implementation

Article 26 of the Convention commits each Contracting Party to report on measures taken for the implementation of its provisions and the effectiveness of these measures in meeting its objectives. At the beginning of 2007, the CBD Secretariat undertook an analysis of the information provided on incentive measures in the 102 third national reports that had been submitted by Parties by November 2006²⁷.

Less than one quarter of reporting countries responded that they have established mechanisms or approaches to ensure adequate incorporation of both market and non-market values of biodiversity (22 Parties), while more than three quarters indicated that such mechanisms were under development (39 Parties) or had not been developed (31 Parties). Twenty-six Parties reported on the promotion of biodiversity-based goods and services, possibly in the context of participatory rural development projects or community-based natural resource management. Several Parties made explicit reference to the sector in which these activities were undertaken - tourism (including ecotourism) was the most prominent sector mentioned, with nine Parties reporting to undertake activities in this sector, followed by activities related to agriculture, fisheries, forest products, wildlife and medicinal plants. Five Parties mentioned labelling and certification as a means to promote the marketing of such products.

Parties identified the lack of economic incentives as the highest challenge in implementing Article 10 on sustainable use, closely followed by the lack of financial, human and technical resources. The lack of economic incentives ranks as the second-highest challenge, after the lack of financial, human and technical resources, to the implementation of many other articles of the Convention.

An analysis of the second and third national reports was also undertaken for the in-depth review of the programme of work on the biodiversity of dry and sub-humid lands by the eighth meeting of the Conference of the Parties. With regards to activity 9 of the programme of work, the analysis of the

national reports available at the time of the review revealed that twenty-two countries reported on implementation at the national level²⁸. Only one activity, 9 (d) on promoting sustainable harvesting, was reported on by ten or more countries. Parties also identified a number of key contributing factors to the success of activity 9, including: (i) awareness raising to enlist support of stakeholders; (ii) capacity building to facilitate stakeholder participation; (iii) the provision of incentives; (iv) access to technical assistance.

According to the national reports as well as other information, limited attention and resources have been dedicated to supporting sustainable livelihoods. Most components have been initiated to varying degrees but have failed to result in the integration of guidelines into relevant policies. For example, activities 9 (a) and 9 (c), on income diversification and innovations for local income generation, have been widely implemented at local project scales but have not been reported at the national level.

On the international level, the CBD Secretariat is co-operating closely with the BioTrade Initiative of the United Nations Conference on Trade and Development (UNCTAD), with a view to assist Parties in the implementation of the various provisions on market development and promotion for biodiversity-based products. The usefulness of UNCTAD's work was repeatedly recognised by the Conference of the Parties²⁹.

Co-operation on the issue is also reflected in the memorandum of co-operation between the Secretariats of the CBD and the UNCCD. On activity 9, the joint work plan annexed to the memorandum foresees the facilitation of national or local action, and in particular the facilitation of consultation, coordination and information sharing within countries, the promotion of regional and international networks, and the encouragement and support of the development of adequate policies that, *inter alia*, promote the diversification of production in support of local livelihoods.

Achievements, Obstacles and Way Forward

The idea that market development of, and trade in, biodiversity-based products (including relevant dryland products) can act as an incentive for sustainable use of relevant components of biodiversity, is firmly established in the CBD guidance and programmes of work. Priority is given to the promotion of sustainable use by local communities for local income-generation.

As regards implementation of this concept, while some progress could be achieved, considerable more work needs to be undertaken. Parties perceive the absence of economic incentives - including the development and promotion of markets for biodiversity-based products - as the primary challenge in implementing the second objective of the Convention: the sustainable use of components of biodiversity.

Feeding information on national experiences back into international deliberations and decision-making is critical for the identification of good/best practices as well as of major obstacles and capacity needs, and of the associated priority activities for further implementation of the Convention. In the present inter-sessional period, up to the ninth meeting of the Conference of the Parties, which will take place in May 2008 in Bonn, Germany, two processes provide important entry points for the provision and analysis of pertinent information.

First, by decision VIII/2, the Conference of the Parties requested the Executive Secretary to, *inter alia*, prepare a document for its review and to invite the Conference of the Parties to the UNCCD to do likewise, which identifies (i) priority activities to promote the achievement of the 2010 biodiversity target with respect to dry and sub-humid lands; (ii) capacity needs and

opportunities to satisfy these needs; and (iii) major obstacles and ways to overcome those³⁰.

Second, the work on incentive measures under the Convention is scheduled for in-depth review by the ninth meeting of the Conference of the Parties which decided at its eighth meeting³¹ to initiate a structured, transparent and inclusive preparatory process for this review, with a view to identify the further outcomes that would be required from a revised programme of work on incentive mechanisms to meet obligations under the Convention and the requirements of Parties, and possible options for a future programme of work. Based on documentation prepared by the CBD Secretariat, Parties, other governments, international organisations and stakeholders are invited to communicate their experiences in the implementation of the programme of work on incentive measures and provide their views *inter alia* on priorities for a future programme of work including requirements for effective national implementation, including financial and institutional support and capacity building. The Conference of the Parties at its ninth meeting will consider a compilation of these views and experiences, including a summary of the options provided by Parties.

Both processes offer important avenues for the UNCCD Conference of the Parties, for individual Contracting Parties to the UNCCD, as well as for relevant international organisations and stakeholders, to provide their views on how the development and promotion of trade in dryland products can be further enhanced to act both as a mechanism for combating desertification and as an incentive for the maintenance of biodiversity in dry and sub-humid lands. They also provide an important opportunity to enhance the coordination and co-operation between the two Conventions as they strive towards their common objective of achieving sustainable development.

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3.4 BioTrade and its Implications for Sustainable Land Management

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Introduction

The BioTrade Initiative was launched in 1996 by the United Nations Conference on Trade and Development (UNCTAD). It was originally created to respond to the three objectives of the Convention on Biological Diversity (CBD), namely: the conservation of biodiversity, the sustainable use of its components and the fair and equitable sharing of benefits. However, in view of the impact of trade on the conservation effort, it later became evident that particular consideration also needed to be given to species listed under the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). In response, a series of special interventions regarding CITES-listed species were implemented. More recently, UNCTAD BioTrade has also turned its attention to the United Nations Convention to Combat Desertification (UNCCD) and, in particular, the potential contribution of BioTrade to sustainable land management in dryland areas. BioTrade can be seen as a strategy for creating (private sector) investment into sustainable land management (SLM) practices and generating income for local communities in dryland areas. UNCTAD BioTrade's interest in SLM springs from co-operation between UNCTAD and the Market Access and Trade Programme of the Global Mechanism (GM) which began in 2006.

BioTrade

The UNCTAD BioTrade Initiative seeks to promote trade and investment in biological resources in

support of sustainable development. Through the establishment of partnerships with national, regional and international programmes, its activities aim to strengthen the capacity of developing countries to enhance the production of value-added products and services derived from biodiversity for both domestic and international markets. In order to turn trade into a positive incentive measure for biodiversity conservation, UNCTAD BioTrade, together with partners and beneficiary countries, is intervening at different levels, focusing on improving the policy environment, strengthening capacity and opening up market access.

BioTrade refers to those activities of collection, production, transformation and commercialisation of goods and services derived from native biodiversity in an environmentally, socially and economically sustainable manner. In order to provide practical assistance to the implementation of the BioTrade concept, the UNCTAD BioTrade Initiative, together with BioTrade national programmes in the Andean region, developed a set of principles and criteria that offer guidance to the various public and private actors involved in BioTrade activities (UNCTAD, 2007). These principles form the core tenets of the conceptual framework that supports all of BioTrade's activities. They were elaborated using the ecosystem approach³³, bearing in mind the principles' applicability to different ecosystems, such as wetlands, drylands, rainforests and agricultural areas.

Box 1. BioTrade Principles and Criteria

The UNCTAD BioTrade Initiative and the BioTrade Facilitation Programme have adopted a set of BioTrade principles regarding products and services:

- Principle 1: Conservation of biodiversity;
- Principle 2: Sustainable use of biodiversity;
- Principle 3: Equitable sharing of benefits derived from the use of biodiversity;
- Principle 4: Socio-economic development (productive, financial and market management);
- Principle 5: Compliance with national and international regulations;
- Principle 6: Respect for the rights of actors involved in BioTrade activities;
- Principle 7: Clarity about land tenure, use and access to natural resources and knowledge.

Note: For a full list of the criteria and indicators supporting the seven principles of BioTrade, please visit: <http://www.biotrade.org>.

National and international markets for products that have intangible social and ecological values are, indeed, evolving rapidly. BioTrade believes that pro-poor, biodiversity-friendly trade can become an important element in the development policies of many biodiversity-rich countries. With other contributions having already addressed the issues surrounding the market for these products and their potential for establishing SLM, this article will look at the implications of BioTrade on SLM and the measures that are being taken to promote contributions it could make to SLM.

The Potential for BioTrade's Contribution to Sustainable Land Management

The objective of the UNCCD is to combat desertification and mitigate the effects of drought in countries experiencing serious drought and/or desertification, particularly in Africa, with a view to contributing to the achievement of sustainable development in affected areas. The Global Mechanism is a subsidiary body of UNCCD that supports Parties in mobilising financial resources to implement the Convention. Its strategic programme on Market Access and Trade (MAT) aims to support its regional and national programmes in taking advantage of trade opportunities that can contribute to SLM in dryland areas and sustainable development, seeking to involve the private sector in such processes.

In 2006, the UNCTAD BioTrade Initiative began co-operation with GM MAT. BioTrade can be seen as a strategy to encourage (private sector) investment in SLM practices and income generation for local communities in dryland areas, thus contributing to the programme's objectives. A more detailed analysis of the BioTrade concept helps to demonstrate why.

First, BioTrade focuses on native species, that is, species that naturally inhabit an area. These species are well adapted to their environment and are able to resist the specific challenges that dryland ecosystems can pose. Native species therefore, require lower agricultural inputs (such as water, fertilisers or pesticides), meaning that negative impacts on soil quality are normally lower.

Second, BioTrade seeks to promote long-term integration of local communities into natural product supply chains by generating income for these communities and increasing their standard of living. In turn, incentives to safeguard their livelihoods are provided and investments channelled towards sustainability practices³⁴. In this context, emphasis is placed upon equitable benefit sharing.

Third, BioTrade seeks to ensure that the trade in natural products contributes to biodiversity conservation and sustainable use. The BioTrade principles and criteria (see box 1) guide actors involved in a particular supply chain towards these objectives. A closer analysis of the BioTrade verification framework, used to

evaluate BioTrade practices against the BioTrade principles and criteria, reveals that a number of principles, criteria and indicators are particularly relevant to sustainable land management.

Under Principle 1 – conservation of biodiversity – threats to ecosystems, such as land-degradation and/or desertification processes need to be identified. Subsequently, practices to encourage biodiversity conservation and/or the restoration of ecosystems should be promoted by the organisations involved in BioTrade. Such practices should also be in line with national or local management plans for natural habitats.

Principle 2 – the sustainable use of biodiversity – requires that there be a clear definition of collection and/or cultivation practices, and that workers and

suppliers be suitably trained to carry out their tasks. These practices take into account the impact on ecosystems. In order to monitor this change and make appropriate adjustments to practices, a monitoring system is to be implemented, emphasising adaptive management. Concerning the negative impacts that productive processes have on soil quality, the organisation responsible is requested to identify these and provide information on the measures taken to mitigate them (see box 2 for an abstract of relevant criteria and indicators of the BioTrade verification framework).

BioTrade has developed manuals that assist enterprises and community suppliers in their implementation of the BioTrade principles and criteria. Such tools can be applied to all types of ecosystems, including drylands³⁵.

Box 2. Examples of relevant criteria and indicators from the BioTrade verification framework:

Principle 1: Conservation of biodiversity

Criteria 1.1. Characteristics of ecosystems and natural habitats of managed species shall be maintained. There are two indicators of particular importance for SLM:

1.1.2: Threatening conditions or risks to the ecosystem and the habitats in which the species are being managed have been identified and measures taken to address them.

1.1.3: Practices that promote biodiversity conservation and/or restoration of ecosystems or habitats of endangered species (as defined by local authorities and complemented by international non-governmental organisations), in which productive species are being managed, are promoted and/or implemented by the organisation.

Criteria 1.3. Activities shall be developed taking into account national or local authority management plans for natural habitats, if they exist.

Principle 2: Sustainable use of biodiversity

Criteria 2.1. The use of natural resources shall be supported by management documents addressing, *inter alia*, harvest rates, monitoring systems, productivity indexes and regeneration rates.

2.1.5. Collection and/or cultivation practices have been defined and put in place based on existing information on the species and the potential impact of productive activities on the species' biology and their ecosystems: this has been done using a precautionary approach.

2.1.6. A monitoring system is in place that allows the continual adjustment of good production practices (harvest rates, collection techniques, agricultural practices) with the aim of guaranteeing adaptive management of the resource. This includes an annual review of operating plans with a clear statement of any changes occurring in the collection area.

2.1.10. Negative impacts of productive practices on soil quality are identified and mechanisms to prevent or mitigate these are in place.

2.2. Workers and suppliers shall be trained in the implementation of good collection, cultivation and quality assurance practices.

Making BioTrade Work for Sustainable Land Management

Based on the above, one can conclude that BioTrade can, indeed, be instrumental in advancing the objectives of the UNCCD and the GM Market Access and Trade Programme. However, additional work is required to realise BioTrade's full potential in contributing to SLM.

Special attention should be taken to include UNCCD-related issues into BioTrade programmes. A wide range of products from BioTrade partners are already derived from drylands. For example, PhytoTrade Africa and the BioTrade national programmes of Ecuador and Uganda are working with dryland products and support practices that contribute to sustainable land management in these areas. However, this is not the result of systematic efforts to implement UNCCD objectives, but rather the development of sustainable conservation practices tailored to CBD and CITES objectives. In the context of the co-operation between UNCTAD and the GM, a number of priority areas have therefore been identified.

First, BioTrade partners could consider including UNCCD focal points in their governance structures. This is particularly relevant to BioTrade national programmes. Many countries have different focal points for the various biodiversity-related conventions; currently only CITES and CBD focal points are represented in BioTrade national programmes. This would increase national coherence, promote synergies and put the issue of UNCCD on the agenda of national programmes. This, of course, holds also true for other programmes with objectives similar to those of BioTrade.

Second, BioTrade partners could consider including UNCCD priority areas, designated by national governments, in their own priority areas, provided there are products in these areas with sufficient trade and sustainable development potential.

Third, many BioTrade partners have adopted a value-chain approach to strengthen different

product groups. At present, the selection criteria for these groups do not include issues specific to UNCCD, but rather focus on market potential for BioTrade products, the possibilities of local communities benefiting from such trade and other biodiversity-related issues. Inclusion of UNCCD-specific criteria would increase the chance of relevant product groups being included (measured in terms of the impact the species, its geographical distribution and the harvesting or collection methods employed, have on drylands).

Fourth, research could be conducted into whether or not BioTrade initiatives require additional training materials and guidance on good practices for UNCCD priority areas like drylands. The particular characteristics of dryland ecosystems and species may warrant special land management approaches or focused efforts to take into account traditional, local knowledge on SLM.

Given all of the above, UNCTAD BioTrade should revise its guidelines for governments and partners interested in developing programmes with a UNCCD-focused element. These would include guidelines on the creation of national programmes (priority areas, governance, etc.) and methodologies for the selection of BioTrade value chains. UNCTAD BioTrade could also work with partners to develop standard training materials and good practices to accompany its principles and criteria.

In 2007, UNCTAD and the GM launched projects in Uganda and Ecuador to address some of these issues. As a result, an attempt will be made to streamline UNCCD/SLM issues into BioTrade activities in these and hopefully other countries. A special toolkit will also be made available to the relevant actors in the value chain.

Integrating BioTrade into a National Policy Framework related to Sustainable Land Management and the United Nations Convention to Combat Desertification

While UNCTAD BioTrade and national partners in

Ecuador and Uganda are exploring possibilities to include SLM in their practices, national governments could start to integrate BioTrade into their national UNCCD-related strategies. Similar efforts have already been made in the context of the CBD in the Andean and Amazon regions of Latin America, as well as in countries like Uganda. There, some of the national or regional programmes have integrated BioTrade into their biodiversity strategies, export strategies, development plans and strategies, and poverty eradication strategies.

Following the general provisions under Article 4 of the UNCCD, which requests countries to adopt an integrated approach regarding desertification including socio-economic aspects, BioTrade could be a tool to integrate strategies for poverty eradication into efforts to combat desertification. To this end, national governments could:

- Incorporate BioTrade activities in long-term strategies to combat desertification and mitigate the effects of drought, emphasising the implementation of national policies for sustainable development (in line with UNCCD Article 10(a));
- Use BioTrade as a tool for alternative livelihood projects that could provide incomes in drought-prone areas (in line with Article 10 (d));
- Promote investments to increase the knowledge of species derived from drylands that have potential to generate benefits at local level and contribute to the conservation of natural ecosystems, achieving improved productivity and the sustainable use and management of resources (in line Article 17(a));
- Develop new methodologies and adapt existing ones in order to ensure the sustainable management of resources, the participation of local communities and effective access to markets (in line with Article 17);
- Develop appropriate measures to create domestic market conditions involving the BioTrade principles and criteria that ensure adequate and effective protection of intellectual property rights and the use and validation of traditional knowledge (in line with Article 18 (e)).

At the same time, governments of countries that represent potential markets for these products should pay increased attention to the creation of an enabling economic environment that is conducive to the promotion of sustainable management, as stipulated in Article 4 (b) of the UNCCD. Market access for some BioTrade product groups, like ingredients for the cosmetics and food industries, is becoming increasingly difficult because of stricter regulatory requirements. Support should also be given to overcome these regulatory hurdles by investing in compliance (e.g. investigation and registration of products derived from BioTrade species). It is only through concerted efforts to build the supply and demand of biodiversity-based products and services that BioTrade will be able to live up to its promises of income generation and contribute to the implementation of biodiversity-related conventions like the UNCCD.

A recent study estimates that, today, nine African wild-collected species (used in the cosmetics and food industries) generate sales of USD 12 million, providing jobs for over nine million people on the continent. It has, however, been estimated that these nine plants have a market potential of around USD 3 billion and could create jobs and additional income for more than 14 million people in Africa (Bennett, 2006). An important reason why this potential has not yet been realised is the tight regulation in potential export markets regarding food ingredients. As these nine species are predominantly derived from drylands, it is easy to imagine the significant contribution that their trade could make to SLM and the UNCCD objectives at large once these regulatory hurdles have been overcome.

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3.5 New Markets and Emerging Opportunities: The Case of Environmentally Sustainable Natural Products from the Perspective of PhytoTrade Africa

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Introduction

Thirty percent of the southern African population earns less than USD 100 per year and lives in the most marginalised dryland areas. In addition, the region is facing its largest environmental problem: the loss of biodiversity as land is converted to agricultural production, ranchland, fuelwood production and construction. On the thin, infertile soils characteristic of this region, the current pace of forest cover loss spells environmental disaster. However, 56 percent of the landmass is still forest and woodland containing 30,000 species, of which only 50 have been subjected to any form of commercialisation. The sustainable utilisation of these biodiversity resources is one way of tackling the problems of poverty and biodiversity loss.

Context

Efforts to address the twin goals of environmental sustainability and economic development in southern Africa have been made through community-based natural resource management (CBNRM). These approaches were regarded as pragmatic responses to natural resource management problems in dryland areas. Examples of these programmes are numerous and include the LIFE programme in Namibia, ADMAD and LIRDP in Zambia and CAMPFIRE in Zimbabwe (Steiner and Rihoy, 1995). Community-based natural resource management projects provide economic incentives to rural communities, with the hope to reduce pressure on natural resources and therefore deliver more desirable sustainable development outcomes. However, some of these programmes have met with more success than others. Drawing on lessons learnt from these initiatives, practitioners have looked to opportunities offered by the sustainable commercialisation of indigenous plant species and development of the natural products industry in the region.

The Natural Products Industry

The global natural products industry, which includes the key sub-sectors of food and beverages, cosmetics, herbal medicines and pharmaceuticals, is currently valued at USD 65 billion per annum and is booming with a 15-20 percent growth rate in the last few years (Key Note, 2005). Current natural product trade in the southern African region is estimated at USD 12 million per annum and regional economists estimate that within the next decade it could grow to USD 3.5 billion per annum. The benefit of using this industry to bring about community development is that the organic, natural and fair trade values that are increasingly important for the natural products industry are also embedded in sustainable development policy and practice.

PhytoTrade Africa's Approach

Disillusioned with attempts to deliver meaningful livelihood benefits through earlier CBNRM initiatives, a group of like-minded development and natural resource management practitioners analysed the bottlenecks faced by the natural products commercialisation in southern Africa and designed a trade association that could proactively overcome them. Since its inception in 2001, PhytoTrade Africa has maintained its commitment to its over-arching objective of improving rural livelihoods by developing a sustainable natural products sector in southern Africa. Working with over 50 members, who in turn work with tens of thousands of producers in eight countries (Botswana, Malawi, Mozambique, Namibia, South Africa, Swaziland, Zambia and Zimbabwe) in the region, PhytoTrade Africa has developed sustainable and ethical supply chains for natural cosmetic and food ingredients from southern Africa that are sustainably harvested in the wild from indigenous plant species by low-income rural producers. PhytoTrade is committed to supplying the international natural products

industry with high quality natural products from Africa from “fair trade” and environmentally sustainable sources. In order to do this, the association develops commercial opportunities on behalf of its members in the region based on partnerships with companies in key natural products markets.

PhytoTrade Africa’s Commercialisation Strategy

The association was founded to accelerate the industry’s growth and was structured in such a way that poor rural producers, and the biodiversity they depend upon, would emerge as long-term winners in the process, achieving the all important “triple bottom line” (environmental, social and financial sustainability). The selection criteria for PhytoTrade Africa’s focal species are that they should be indigenous, renewable and located in three or more member countries. The association’s activities focus on: supply chain development, trade services, biodiversity product research and development, and market development (PhytoTrade Africa, 2006).

Supply chain development

PhytoTrade Africa is not itself part of the supply chain. It does not buy from its members and it does not sell to its “buyers” (who, in reality, are the members’ buyers). In a perfect world a product is developed, a market for that product is established and then a consistent supply of raw materials is supplied to the industry. In this instance, the association would simply identify buyers, identify those members best able to supply those buyers, link the two up and then let them establish the business relationship. However, the association often plays a much more active role in facilitating production and sale, and ensuring that a reliable supply chain is in place. PhytoTrade Africa therefore, devotes its resources to those areas in the supply chain where bottlenecks exist:

- Production and processing technologies and quality standards,
- Volumes of production (this can include sharing the risk with members),
- Communications,
- Certification, including BioTrade verification,
- Logistics and paperwork.

It is important to note, however, that neither the association’s role nor its capabilities, extend to working directly with primary producers. PhytoTrade policy is to work with local non-governmental organisations (NGOs) that have long-term working relationships established with this constituency. By including them amongst its members, PhytoTrade Africa is able to build up their capacity to provide this type of grassroots support.

Trade services

Businesses developed in rural Africa have often developed in isolation and with a focus on the local and national markets. There is a need for direct business advice with a focus on the relevant market whether it be local, regional or export. However, the degree of advice needed is variable, therefore, the association provides advice to members tailored to their current needs. Grants are also available to members to implement such advice on a range of topics that include:

- Business planning,
- Pricing strategies,
- Re-branding,
- Appropriate packaging,
- Export facilitation,
- Finished product development.

Biodiversity product research and development

Inasmuch as possible, PhytoTrade Africa’s strategy with regard to the development of new products, is to pass the responsibility (and costs) onto commercial partners. In most cases, the commercial partner is the company that will then buy the product from PhytoTrade Africa members once it has been launched. This has three benefits:

1. It maximises the impact of the association's own research and development funding;
2. By linking with the eventual buyers of a product at the product development stage, it ensures that products are developed with the market in mind;
3. It ensures that there is continual innovation, essential for keeping a competitive advantage.

The association undertakes a certain amount of ground work prior to engaging in any commercial partnership. This is done collectively on behalf of all the membership. It includes determining:

- What commercially valuable properties the product has;
- How much of the product is available;
- What are the specifications to which the product would be supplied by PhytoTrade Africa members;
- Which technologies are most appropriate for the production and processing of the product.

Market development

PhytoTrade Africa's market development activities are closely interlinked with its research and development activities. The association does not wait for approaches from prospective market partners or make contact with large numbers of potential buyers in the hope that one or two will result in sales. Instead, the association's approach is to proactively identify a very small number of potential market partners and then develop close relationships with these partners. This is usually done at the research and development stage, as already described. The reason behind this strategy is that in order for the product to maintain and indeed increase its market share, innovation needs to be an integral part of all phases, starting with development. With limited

resources available, the most efficient method of achieving this is through partnerships.

The advantage of developing partnerships is that the costs and time associated with developing the market are reduced both for members and for the association; the in-house sales capacity of each buyer is leveraged in relation to market contacts, time, samples, technical advice etc. This approach is very efficient and provides PhytoTrade Africa members with an international reach for their products. PhytoTrade's market development activities can then focus on supporting partners in their promotion of PhytoTrade Africa member products as and when required. This could mean supporting partners in their sales effort by providing input at important meetings or, more commonly, to support partners in their trade show activities.

Despite the gains, these partnerships represent intense working relationships that require significant time and monetary investment by each party. Such partnerships are therefore, respected within a legal commercial partnership agreement. This agreement details the mechanics of the partnership, including the products that it relates to and the degree of exclusivity associated with each product. There is usually a positive correlation between levels of exclusivity and the amount of research and development invested in each product until such time that the costs have been recouped.

Keys to Success: Long-term Investment and Regulatory Negotiation

The potential for growth of the natural products industry in southern Africa is vast. An analysis of the PhytoTrade focal species, within the ten SADC (Southern African Development Community) countries revealed that current trade totalled USD 12 million per annum involving nine million households (Bennet, 2006). The potential for sustainable commercialisation could therefore be as much as USD 3.6 billion per year, potentially involving 14.5 million households. To date, investment by PhytoTrade Africa through donor support has totalled USD

3 million over five years. The successes seen by PhytoTrade Africa are largely due to a systematic and coordinated approach to commercialisation across the southern African region (*op cit*).

However, the scale of investment required in this industry must match the task at hand. Increased long-term investment is undoubtedly required as the example of the Australian macadamia industry illustrates (World Horticultural Trade and U.S. Export Opportunities, 2004). Macadamia is indigenous to Australia and, similarly to PhytoTrade Africa focal species, is a high value nut that produces edible oil. Development of this species in Australia began in the 1940s and by 1970 about 250,000 trees had been planted over 350 acres (Fouras, 1973). Tax incentives were awarded to individuals, coupled with considerable capital investment. Rapid growth followed and the market boomed from 70 tonnes per year in the 1970s to 44,000 tonnes in 2004 (Quinlan, 2004). Australia became established as the world leader for macadamia production, exports, market development, research, culture, processing and associated technology. In 2005-6 the investment for the macadamia industry alone totalled USD 4 million, with USD 1.1 million spent on research and development and USD 2.9 million set aside solely for marketing (Hardner et al, 2004). The key to the success of the macadamia industry has been the coordinated and systematic investment in research and development and marketing over a 30-year period (Quinlan, 2004).

Regulatory mechanisms present another hurdle for the successful commercialisation of natural products (UEBT, 2007; Bennet, 2006). In Europe, the natural products industry is more developed, but African biodiversity products are new to this market. PhytoTrade is involved in developing the industry in many ways including improving the regulatory environment. An example is the European Union (EU) regulation on novel foods. Introduced in 1997 with a focus on controlling the introduction of genetically-modified ingredients into the EU food chain, this regulation broadly includes all new food ingredients introduced to the EU where there is no evidence of consumption prior to 1997. Most

of the African ingredients brought to the EU food market by PhytoTrade Africa would fall under this regulation by default.

PhytoTrade Africa and UNCTAD's BioTrade facilitation unit have argued that traditional foods have often been consumed for centuries within their countries of origin and on this basis they should not be classified as "novel". This argument has been supported by a thorough literature search and scientific tests. The first African food ingredient that was submitted to the Advisory Committee on Novel Foods and Processes is baobab fruit pulp from the African tree *Adansonia digitata*. The UK Food Standards Agency (FSA) has accepted baobab pulp as a non-novel ingredient pending consultation with all 26 EU member states (Food Standards Agency, 2007).

It would not have been an efficient use of resources for each of PhytoTrade's members to have gone through this process independently as they do not have sufficient capacity or financial resources. The novel foods regulation would therefore have become a barrier to their access to the EU market. There are numerous other similar regulations which pose an unnecessary barrier to the development of the natural products industry. A concerted effort is required to lobby regulators and to make them aware of the implications of such legislation.

Conclusion

There are bottlenecks in the development of the southern African natural products industry which PhytoTrade Africa tackles in a proactive manner. These are supply chain development, biodiversity product research and development, trade services and market development. However, there are two specific areas which require broader mobilisation of support to ensure an increased flow of benefits to rural producers and thus enhanced livelihood security in the southern African region. These are: systematic long-term investment in the southern African natural products industry that matches the task at hand and further negotiation to ensure that regulatory hurdles do not become barriers to trade.

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4. COUNTRY PERSPECTIVES ON TRADE AND SUSTAINABLE LAND MANAGEMENT

4.1 Combating Desertification in Lebanon: Promoting Trade and Innovative Market Approaches for Rural Dryland Development

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Introduction

Lebanon is situated on the eastern shores of the Mediterranean with a total area of 10,452 km². It is bordered by Syria to the north and east and by Israel to the south while its western border is the Mediterranean coast. In spite of its small size, Lebanon exhibits several climates. A transect of 50 kilometres shows variations between a coastal sub-tropical climate, followed by a typically Mediterranean climate in the lower mountain range, a cold climate in the higher areas that are covered with snow for most of the year and the semi-arid Bekaa plane which is 1000 metres above sea level. The country is rich in biodiversity and water resources but these resources are suffering from serious mis-management. The diversity of flora was estimated in 1973 at 2,600 plant species, of which 311 are endemic (Ministry of agriculture, 1996). Total forest cover is estimated at 70,000 ha or seven percent of the total area. While snowfall is not properly measured, the average annual rainfall in Lebanon is estimated at about 840 mm/year. Desertification is becoming an increasingly serious problem in Lebanon, mainly because of lack of land use planning, poverty, bad agricultural and irrigation practices, overgrazing, soil erosion, deforestation, floods caused by surface runoff water, insufficient awareness and poor policies (Ministry of agriculture, 2003).

Trade and Lebanon's Economy

The Lebanese economy was devastated during the civil war (1975-1991). The government's economic strategy after the war focused on regaining Lebanon's comparative advantage as a leading business centre in the region. Besides privatisation and modernisation of legislative and regulatory frameworks, the strategy

focuses on trade liberalisation and opening up the economy (ministries of economy and trade websites). In Lebanon, there are no restrictions on foreign exchange, capital movement or foreign investment. Because of its substantial imports, the country has a large deficit but that is countered to a certain degree by foreign income earnings and earnings from services such as tourism, banking and insurance.

In 2002, trade contributed around 22 percent to GDP (gross domestic product), agriculture contributed around six percent and services reached 33 percent of GDP. The European Union (EU) is Lebanon's principal trading partner (43 percent of Lebanese imports and 11 percent of its exports). The Arab countries have traditionally been Lebanon's largest export market, representing 53 percent of exports and 14 percent of imports (ministries of economy and trade websites).

Regional and International Trade Agreements

Lebanon has bilateral trade and economic agreements with more than 35 countries. Of these, four are free-trade zone agreements with Egypt, Iran, Syria and the UAE. Lebanon is a party to the Euro-Mediterranean partnership since June 2002 when it signed the association agreement with the EU. An interim agreement on trade and trade-related provisions between Lebanon and the EU was also signed in July 2002 (ministries of economy and trade websites).

Under the "European neighbourhood policy" that was initiated in 2004, Lebanon has signed seven action plans and five more - including the EU-Lebanon action plan - are still under negotiation. Lebanon joined the Greater Arab Free Trade

Area (GAFTA) in 1997 when it was established. The World Trade Organization (WTO) accepted Lebanon as an observer in 1999. Since then the government is working on accession by amending its laws to conform to WTO regulations as well as ratifying new laws that would set the standards for trade practices (UNDP/ministry of agriculture, 2006).

The agreement between Lebanon and the European Free Trade Association (EFTA) states (Iceland, Norway, Switzerland and Liechtenstein) was signed in June 2004 and entered into force in January 2007. The agreement covers trade in industrial goods including fish and other marine products as well as processed agricultural products (ministries of economy and trade websites; UNDP/ministry of agriculture, 2006).

Implementation of the United Nations Convention to Combat Desertification in Lebanon

The government of Lebanon through the ministry of agriculture signed the United Nations Convention to Combat Desertification (UNCCD) in October 1994 and ratified it in December 1995. Lebanon developed its National Action Programme (NAP) in 2003 for the UNCCD through a participatory process that included all relevant and active stakeholders representing all sectors - public, private, civil society and academia (ministries of economy and trade websites; CoDel website). This process was supported by the German Technical Cooperation (GTZ) and the United Nations Development Programme (UNDP). The NAP identified regions in Lebanon that are subject to low, medium and high risks of desertification based on a set of data related to soil, climate, vegetation, land use and demographic indices.

The NAP was finalised and endorsed by the ministry of agriculture in June 2003. Political developments in the country have delayed its adoption by the council of ministers and hence its transfer into government policy. Nevertheless, the ministry of agriculture has pursued an implementation and mainstreaming process with

the various sectors and has achieved several targets and objectives in that respect.

In 2006, the NAP was translated into practical interventions at local levels. Local focal points from the ministry of agriculture were trained to enhance their ability to develop and follow up local action plans to mitigate the impact of land degradation and alleviate poverty within their respective regions. In this regard, four local action plans were prepared by the assigned focal points for Akkar, Tyre Caza, Merjeyoun and Deir El-Ahmar in the Bekaa. The local action plans addressed the specific needs of the four regions and identified several areas for interventions to combat desertification. Efforts are now concentrated on generating a set of project proposals and on allocation of financial resources needed for their implementation (ministries of economy and trade websites; CoDel website).

Development of the National Resource Mobilisation Strategy

In 2006, the development of a resource mobilisation strategy for UNCCD/NAP implementation was prompted by the Global Mechanism (GM) and was carried out in partnership with the Lebanese ministry of agriculture and UNDP, in coordination with GTZ and the UNDP Drylands Development Centre (DDC). The strategy aims at mobilising financial resources for sustainable land management (SLM). It is a comprehensive framework for overcoming the financial constraint on NAP implementation by identifying available financial resources that Lebanon can mobilise as well as providing mechanisms for access to future external sources of funding. In 2007, consultations were held with stakeholders including relevant public authorities as well as technical, financial, legal and administrative experts from the relevant institutions to obtain technical input and fine-tune the strategy. A multi-stakeholder consultation forum was scheduled for June 2007 but had to be postponed until the end of the year because of the political situation in the country.

Trade-related Initiatives for Rural Development in Lebanon

Marketing agricultural products is one of the key problems facing farmers in Lebanon. Although the country has joined several regional and international trade agreements, the role of trade in SLM is still not considered in all government trade policies and agreements. This is also because SLM itself is unfortunately not receiving the proper attention it deserves by the government.

A major government initiative created through the Investment Development Authority of Lebanon (IDAL) called the “Export Plus” programme aimed at boosting the agricultural sector through marketing and trade was launched in August 2001. The main objectives of the programme are:

- To increase the amount of Lebanese agricultural exports to traditional markets;
- To create new export markets for Lebanese produce in non-Arab countries;
- To control the quality of Lebanese agricultural products set for export and ensure compliance with international standards;
- To transfer know-how and knowledge to farmers and exporters.

However, the programme deals essentially with export of fruits and vegetables and not with other agricultural products such as those produced by rural dryland communities.

On the other hand, several initiatives aimed at assisting rural families, cooperatives or women’s associations in marketing and product quality improvement are being implemented by non-profit organisations such as local and foreign NGOs (non-governmental organisations), private universities and individual volunteers. Some of these are:

- Souk el-Tayeb - a local farmers market of fresh, seasonal, traditional, natural and organic food products. It includes some, but is not restricted to, farmers from drylands.
- ACIDI/VOCA’s Action for Sustainable Agro-Industry in Lebanon (ASAIL) project - a two-year programme funded by USAID (United States Agency for International Development), is using a value chain approach to develop two main sub-sectors in Lebanon: niche Lebanese foodstuffs and small ruminant (goat and sheep) dairy products. By increasing the efficiency of input, production, processing and marketing and, by strengthening the linkages among each in three targeted “growth poles” of the country, ACIDI/VOCA is raising the income and profitability of small and medium enterprises (SMEs) within these two selected agro food value chains.
- The Young Men’s Christian Association (YMCA) is helping rural communities and women associations market their food products, as well as supporting their efforts to build water canals, develop ecotourism, promote reforestation and improve training.
- The “Healthy Basket” is a community-supported agriculture project to support Lebanese organic farmers and to market organic products, launched by the Faculty of Agricultural and Food Sciences at the American University of Beirut. Its main objective is to help local farmers derive a sustainable income while protecting the environment, securing a market for their product and providing good quality produce to consumers.
- Fair Trade Lebanon is an NGO that was launched in 2004 by a group of volunteers to help farmers in selected villages obtain fair prices for their agricultural products. They are working in close

collaboration with the French fair trade organisation ARTISANAT SEL.

Rural Dryland Development through Promotion of Trade and Innovative Market Approaches

As part of their efforts to combat desertification and land degradation in Lebanon through poverty alleviation and provision of alternative livelihoods to rural drylands, the DDC, UNDP and the ministry of agriculture launched in July 2006 a special project which aims to create a fair trade partnership between Lebanese dryland producers and Finnish markets (UNDP/ministry of agriculture, 2006).

Project objectives and partners: The project aims to contribute to the objective of poverty alleviation identified by the national action programme to combat desertification, prepared by the ministry of agriculture in June 2003. It focuses on rural development in drylands under moderate or high threat of desertification through the introduction of alternative livelihoods namely: providing access to Finnish and EU markets for selected agricultural products, introducing and promoting fair trade and linking it to ecotourism initiatives in Lebanon. The project works closely with the Finnish Rural Women Advisory Organisation (RWAO) which is facilitating the process of market access and fair trade into Finland in addition to the provision of training to selected producers in matters related to product development and improvement of quality standards (UNDP/ministry of agriculture, 2006).

Making free trade fair: In an effort to help Lebanese producers in rural drylands find markets for their products in Finland, and in consultation with a newly established multi-stakeholder working group, 22 agricultural dryland products were identified. The working group includes several non-profit organisations that are very active in the area of rural development and marketing of agricultural products produced by farmers and/or small producers. The work done in Finland by RWAO on market assessments,

organoleptic evaluation and microbiological analysis, led to the identification of a few products that have a good potential for marketing in Finland; these are: carob molasses, carob/tahini spread, raisins and almonds, burghol, rose water, oregano (*zaatar*) and sumac.

Based on this selection, several dryland producers were identified in Lebanon. Information about the producers and products were sent to Finland, including stories about the products, recipes, uses, nutritional values, origins, history, production capacity, storage as well as information about the producers, their dreams and expectations. The information will be used as a means to add value to the products and improve their marketing chances. Training will also be provided in Finland for selected Lebanese producers in matters related to quality control and EU standards.

Fair trade explored: Fair trade certification will be explored for selected products and awareness workshops will be held to show the importance of fair trade certification as an entry point for dryland products into regional and international markets.

Linking trade to ecotourism: The project will collaborate with existing ecotourism activities so as to link these with dryland producers, rural women associations and dryland communities. In addition, the project will co-operate with the "Wild North" ecotourism organisation in Finland to build local capacity, train Lebanese partners and organise workshops to enhance dryland ecotourism.

Conclusions

Lebanon is facing serious land degradation threats in several areas, particularly in the north, south and Bekaa; the main causes being human practices and mis-management of natural resources. An open economy combined with a free trade regime could present opportunities for using trade as a means to reduce poverty and improve sustainable land management. There is a great deal of awareness and participation

of local NGOs in projects and activities related to combating desertification, thanks also to the support provided by international institutions and Lebanon is an active member of the UNCCD. It was the first country to develop a national resource mobilisation strategy with the support of the GM, UNDP and the ministry of agriculture's desertification team. The strategy was based on the themes identified by the NAP which was developed in 2003 by the ministry of

agriculture with technical and financial support from GTZ. Financial support is needed to fund and implement several interventions proposed by the NAP and the local action programmes that were developed. The endorsement of the NAP and integration of SLM into government policies and programmes is a must and should be lobbied for once the political situation is normalised in the country.

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4.2 Engaging Local and National Stakeholders in Sustainable Trade of Natural Products: Case Study of Ecuador³⁶

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Introduction

Migration from rural to urban areas, as well as to Europe and the US, has become widespread in Ecuador and can be largely attributed to soil deterioration and decreased crop productivity. In most cases, land degradation has been a result of non-sustainable practices, such as intensive production processes and excessive use of agrochemicals. Repercussions on rural family incomes have been significant, forcing them to search for new income-earning activities, mainly in urban areas.

However, one rural activity which appears to have a promising future is the trade in natural products. While the cultivation of native species could be seen as unprofitable and as negatively impacting the conservation of natural resources and the sustainable livelihoods of local communities, because of a shift in market trends and consumer preferences, this is not the case. In the last decade, consumer preferences have been shifting from intensive production processes with external inputs such as hormones and agrochemicals, towards more environmentally-friendly practices. For instance, disasters such as mad cow disease and bird flu are warning signals for consumers to watch what they are eating. A study prepared by Datamonitor-Analysis 2004 has revealed that consumer preferences are increasingly shaped by values such as environmental protection, health issues, chemical use as well as scandals, among others. Moreover, consumers are willing to pay a premium price for products that respect some of these positive values.

The sustainable production of biodiversity-derived products is therefore, an opportunity for rural communities as well as an important development option for biodiversity-rich countries like Ecuador. Commercialisation of and trade in such value-added and differentiated

products could become a mechanism to foster sustainable development.

Competition is increasing in this niche market. Hence, differentiation tools are being developed to fulfil consumers' preferences while guaranteeing cost-effective production. Examples of such tools include voluntary certification schemes such as the Rainforest Alliance, Forest Stewardship Council (FSC), Fair Trade and also ISO (International Organization for Standardization), Hazard Analysis and Critical Control Points (HACCP), among others. Other mechanisms being developed at the international level are sanitary and phytosanitary measures.

Initiatives such as the one presented below (named Jambi Kiwa) are proof that sustainably-managed productive activities can be economically, environmentally and socially feasible for rural communities.

Case Study: Jambi Kiwa Medicinal Plants Producers Association³⁷

The positive impact of this new market trend in the sustainable management of natural resources is experienced by the community-run small and medium enterprise (SME) Jambi Kiwa.

This SME involves more than 632 families in 62 communities of the Chimborazo province (located in the middle of the Ecuadorian Andean region) which is one of the three provinces with severe problems of degraded soils and dry lands. It covers a geographical altitude from 400 to 4000 metres above sea level. Eighty percent of its members are women between the ages of 20 and 50 years with high levels of illiteracy and an average of five children each. Another important characteristic of this SME is its rich cultural value, as 75 percent of its members are indigenous Puruhá.

Jambi Kiwa started in 1998 as a pilot project of 20 women that transformed medicinal and aromatic plants then commercialised them at the local/national market. By 2001, the project evolved into a community-run SME named Jambi Kiwa, with the following objectives:

- To improve the quality of life of its members by increasing their income through better production of traditional crops;
- To revalue their traditional knowledge on natural medicine and avoid the destruction of their environment.

Jambi Kiwa counts 480 active members that commercialise their value-added products to industrial clients. It uses more than 64 plants - some of them from degraded ecosystems - to produce two categories of products:

- Raw materials used for national agro-industries including dried, cut or powdered plants;
- Finished products, including 44 plants and value-added products such as:
 - Eight formulae (infusions): used as diuretics, for dieting, as expectorants, to help cure the liver, to calm nerves, among others.
 - Shampoo, essential oils, extracts and creams for different purposes (e.g. skin blemishes).

Benefits from the Commercialisation and Trade of Products Derived from Sustainable Practices

For Jambi Kiwa, the impacts of selling their products at local and national markets, as well as trading internationally, have been positive. Hence, they have been able to fulfil the dual objectives to contribute to poverty alleviation and sustainably manage their natural and cultural resources. As a result of access to the

niche market of sustainably-derived products, Jambi Kiwa and its members have obtained the following benefits:

- Healthier products and plantations:
 - Low pollution concentration in the soil by avoiding the use of pesticides, fertilisers and chemicals;
 - Land and crops under sustainable management (agroforestry systems), which is profitable both in economic and environmental terms;
 - Revaluation of their traditional practices that aim to foster the sustainable use of resources (e.g. soil recovery and crop rotation);
 - Reforestation in order to protect water sources.
- Socio-economic benefits:
 - Increased family income by 25 percent through complementary economic activities;
 - Revalued ancestral knowledge that is being passed on to new generations;
 - Increased consumption of healthier products by rural communities;
 - Revalued role of women and indigenous communities;
 - An interesting commercial offer and product quality due to the association of almost 500 producers.

This example has not only benefited from the promising market trends for its environmentally-friendly and socially-responsible products, but also from the community approach, re-grouping different producers under Jambi Kiwa. The success of this initiative stems from the positive signals given by the market, whereby buyers

are willing to recognise the effort carried out by small producers as well as the importance of natural and chemical-free products for their health and well-being, by paying a premium price for such products. This willingness to pay extra, particularly from consumers in Europe and the US, has made these activities economically, socially and environmentally viable, particularly for rural areas with degraded land.

National Scenarios that Foster the Sustainable Use of Natural Resources

In order to develop biodiversity-related activities, efforts should focus on promoting an integrated value chain that includes sustainable practices at all steps. The value chain operates horizontally (e.g. among producers) but also vertically (e.g. producer - agro-industry - trader) and should also be combined with other strategies such as cooperatives and/or the establishment of associative clusters. Moreover, the analysis must be broad, including all actors involved in the production and commercialisation of a particular product. Indirect actors such as the government - whose role is to provide norms and policies that guide the SMEs' activities - non-governmental organization (NGOs), academia, bilateral and multilateral co-operation agencies, among others, should also be included in the analysis. Therefore, all actors, direct and indirect, need to work together towards one common objective.

Local and national authorities in countries like Ecuador, have recognised the importance of sustainably-produced goods in helping them become more competitive in a globalised world. Some legislation in the area of poverty alleviation, sustainable use and conservation of natural resources, have included these approaches that emphasise social, economic and environmental benefits at the local and national levels. Particularly, cooperatives have been included in local development strategies and programmes in order to create local jobs, reduce poverty, decrease migration and generally improve the population's quality of life.

It is important to mention that local development programmes and strategies, particularly those linked to production in degraded areas, should foster activities that are sustainable. Some of the environmental practices include for instance the development of specific management plans per species, in order to guarantee that it is not over-exploited and that its harvesting does not destroy the ecosystem. Such planning tools are important, particularly in sensitive ecosystems such as drylands. Environmental authorities have been addressing the issue in an effort to halt the extinction of species.

However, despite all these efforts, there is still a major need for control and monitoring systems to ensure the implementation of such legislation. An interesting approach is to strengthen local capacities, both public and private, in order to allow for communities to better understand and apply legislation. This would help create partnerships between local government and communities to co-manage the areas in question.

Other Constraints Faced by Small and Medium Enterprises when Accessing Markets for Sustainably-derived Products

Even though SMEs like Jambi Kiwa have been participating in different niche markets, some national and international constraints need to be addressed in order for them to fully benefit from commercialisation and trade.

For instance, the main constraints faced by this SME, as well as others in Ecuador and other developing countries, can be summarised as follows:

- Limiting policies and legislation at national and international levels (e.g. the EU's "Novel Foods" regulation) that tend to promote the production of traditional products under intensive cultivation practices;

- Limited scientific and technical knowledge of native species which are very costly yet necessary when entering international markets;
- Access to accurate, reliable and current market information. Usually, this is costly and hence not accessible to small initiatives;
- Limited management and negotiation skills that would help to optimise the operations of such associations as Jambi Kiwa;
- Limited commercial and marketing skills that would help to take full advantage of fair trade opportunities, certification schemes, etc;
- Product quality, value-addition and economies of scale that would help to be more competitive;
- Limited financial resources, such as credit, that would help to expand the cooperative's operations.

Conclusions

In general, sustainable activities help to protect soil and water resources, but they need to be accompanied by relevant policy measures as well as business-orientated strategies such as a value chain approach, cooperatives and/or clusters. This would create competitive initiatives that respect environmental, social and economic values, as shown by the case study reviewed.

4.3 Trade and Sustainable Land Management: The Case of Uganda

Susan Bingi and Henry Kisu-Kisira, Uganda Export Promotion Board/National BioTrade Programme

Introduction

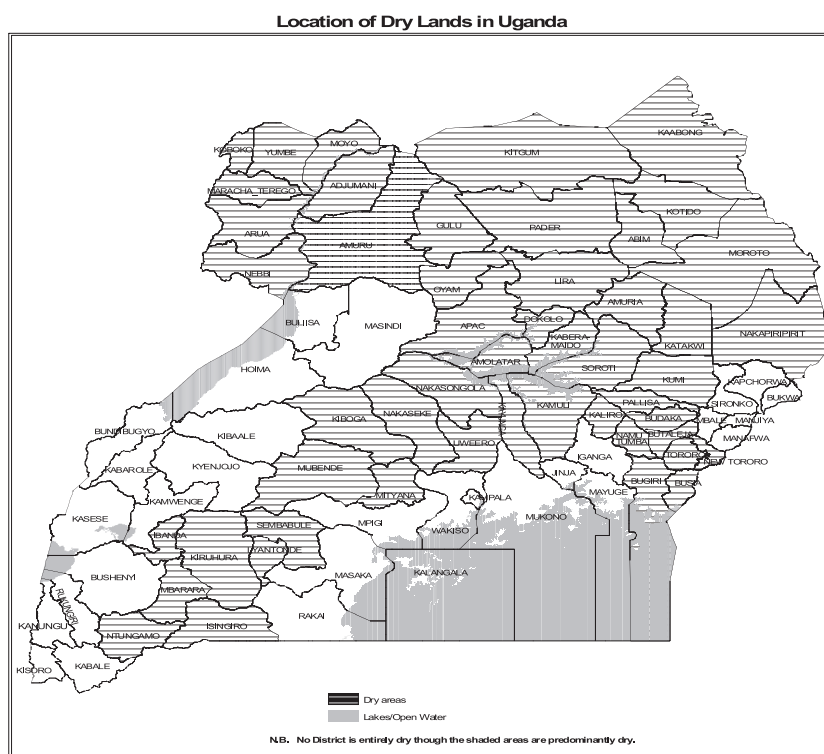
Uganda is one of the poorest countries in the world, with a per capita income of USD 302 and 32.74 percent of Ugandans living below the national poverty line (WDI, 2005). In addition, most of these people depend to a large extent on the natural resource base, with over 80 percent of the population living in rural areas and engaged in agro-pastoralism for food and income (NEMA, 2005). With an estimated population of about 28.8 million people, growing at a rate of 3.5 percent per annum (WDI, 2005), natural resources will continue to be central to the majority of people's livelihoods in Uganda in the foreseeable future. Despite a large area of arable land, soil and environmental degradation continue to be a substantial problem (Oslon and Berry, 2002), making the country's drylands one of the most fragile ecosystems, second to the highlands (Kakuru *et al*, 2004). Continued dryland degradation has been directly linked to prevailing poverty and therefore calls for appropriate and sustainable development strategies to reduce the trend while alleviating poverty.

Uganda's Drylands in Context

Uganda's drylands occupy an area which covers over 50 percent of the country's total land area (UBTP, 2007) [see map³⁸ below] and more

areas increasingly experience dry conditions. These areas receive low and unreliable rainfall (450-1000 mm)³⁹ and drought is a common phenomenon, thus the vegetation is sparse. The predominant land use is cattle grazing, cattle ranches, fuelwood collection, construction poles, hunting, agriculture and collection of medicinal plants, wild fruits and vegetables. The environmental conditions in these areas have been described as deplorable, with some areas overgrazed and bare land patches exposed as a result of wind and soil erosion. Social conflicts between cultivators and pastoralists are recurrent due to scarcity of water and pastures, with consequent increased pressure on resources. Cases of migration to other areas (encroachment on government protected areas, wetlands and private lands), have also culminated into land tenure conflicts, loss of biodiversity (fauna) and overall environmental degradation.

Fragile and less productive regions offer limited livelihood options, thereby forcing inhabitants to continue to use unsustainable land use practices and so continue degrading their environment. The degraded environment becomes a liability to the population as these have limited coping abilities and are therefore, more vulnerable to droughts and other environmental disasters attributed to climate change. Such is the double tragedy faced by people living in dryland areas.



Source: National Forestry Authority mapping section, Uganda.

Land degradation in Uganda's drylands is caused by many factors. Some of these include inappropriate land use (mainly poor agricultural practices, overgrazing, bush burning, land fragmentation, reduced fallow periods, deforestation and inappropriate farming systems) and policies,

land tenure system (mostly communal), increasing human and livestock populations, immigration by agricultural settlers and pastoralists, etc.

Interventions for Uganda's Drylands

Increasingly, desertification issues in Uganda are being brought onto the conservation and development agendas. A number of legislative developments have been registered in the recent past. Key among these are the following:

- The signing and ratification of the United Nations Convention to Combat Desertification (UNCCD) and implementation of national obligations therein such as: definition of the implementation framework (National

Steering Committee and designated focal point - ministry of agriculture, animal industry and fisheries); formulation of Uganda's National Action Plan (NAP); establishment of the Uganda National Fund to Combat Desertification; initiation of the Integrated Drylands Development Programme with guidelines for the integration of dryland issues in district level activities; implementation of projects initiated under the NAP in different districts, implemented by non-governmental organisations (NGOs) and community-based organisations (e.g. "promoting of farmer innovations" programme);

- Formulation of the organic agriculture policy by the ministry of agriculture, animal industry and fisheries which supports sustainable land management (SLM) practices;
- The presidential initiative on Karamoja to develop gum arabic, aloe production and ranching in the Karamoja region;

- Community initiatives such as development of by-laws to protect and conserve selected species (shea nut trees and gum arabic) and charcoal burning in selected districts. This is made possible by the local government act that empowers districts to plan and protect natural resources within their jurisdiction;
- The disaster management and preparedness policy;
- Attempts at enforcing relevant laws, such as the “prohibition on burning grass” act - whereby burning grass is only allowed if authorised by the district agricultural, veterinary, forest or wildlife officer; and the cattle grazing act which controls and regulates cattle grazing to prevent overstocking and overgrazing.
- Providing technical assistance to biodiversity-based enterprises and their suppliers;
- Promoting national and international trade of biodiversity-based products and services;
- Integrating sustainability issues in productive processes.

The programme is market-oriented, with export companies providing an entry point to the biodiversity-based goods to be supported and promoted. The supply chain introduced by the company becomes the key entry point for support and also ensures market viability for the product to be developed. This approach has attracted products from biodiversity rich regions and marginalised dryland products as revealed in the UNCTAD/Global Mechanism (GM) study on products from Uganda’s drylands (UBTP, 2007).

Objective and Mechanism of the BioTrade Programme and Potential for Promoting Sustainable Land Management

The Biotrade programme is an initiative of the Uganda export promotion board of the ministry of tourism, trade and industry. The programme was introduced as an export initiative to diversify Uganda’s exportable products through the introduction of high value biodiversity based goods onto the international markets. The programme is based on the United Nations Conference on Trade and Development’s (UNCTAD’s) BioTrade Initiative. It addresses poverty alleviation for supplier communities and promotes the sustainable use of the natural resource base from which the products are sourced.

The programme has five major components:

- Creating an enabling environment for “biotrade” in Uganda;
- Disseminating information on issues related to biotrade, facilitating decision-making processes and generating awareness;
- Harmonising SLM and BioTrade principles and action programmes such as guidelines for integrating dryland issues;
- Aligning BioTrade with the priorities of Uganda’s NAP programme;
- BioTrade to consider value chains already being supported under the NAP programme and to complement these to maximise benefits;

Even where dryland products, such as shea nuts, have been identified among the tradable bio-products, the programme has not specifically focused on SLM issues. Other commercial opportunities are highlighted in the national pre-assessment study report for dryland plant and animal resources undertaken in 2004 by the BioTrade Programme (UBTP, 2004).

The UNCTAD/GM report mentioned above indicates potential areas for the integration of dryland issues in the BioTrade programme and for maximising the market opportunities therein to provide economic incentives for smallholder farmers in dryland areas. Below is a brief summary of these:

- Harmonisation of methodologies for sustainable use;
- Information sharing and exchange;
- Joint activities especially awareness-raising to lobby government and development partners for the desertification fund based on the demonstrated market linkages of the BioTrade Programme.

The BioTrade Programme is already working with a number of partners to implement the above activities and also to support the promotion and marketing of dryland products. It is however, worthwhile mentioning some of the tradable products in the savannah/rangeland ecosystem that could offer economic opportunities for people living in Uganda's drylands:

- Natural ingredients for food, cosmetic and pharmaceutical use including shea butter, gum arabic, tamarind, etc;
- Regulated trade in wild species such as reptiles and insects produced under breeding programmes;
- Ecotourism;
- Game-ranching and trophy-hunting;
- Forest plantations for dryland species such as acacia;
- Biofuel production on marginal lands using hardy species such as *Jatropha curcas*;
- Growth of shade tolerant species such as red eye birds chillies in forested areas
- Natural dyes and tannins;
- Honey production and by-products such as beeswax and propolis.

Challenges

Challenges can be categorised under policy and capacity issues, sustainable use methodologies,

information and awareness, market access and promotion issues.

Policy issues

There is weak enforcement of environmental laws and policies related to drylands, such as prohibition of grass burning and cattle grazing and a lack of policy harmonisation structures, especially between land use, environment and trade, to identify and strengthen synergies between poverty alleviation and sustainable land use. The prevailing land tenure systems, such as customary land tenure, creates restrictions on certain land use options. Policies to regulate exploitation of dryland natural resources - evident in deforestation for charcoal burning - are absent.

Capacity issues

The capacity of BioTrade staff on dryland issues remains limited, with the result that there is weak implementation at lower levels (facilitation, skills, manpower, etc). At the level of production, skills remain poor and mainly rely on traditional practices.

Sustainable use methodologies

There is a need to harmonise sustainable use methodologies to integrate SLM in BioTrade methodologies.

Information and awareness

There is limited public information on economic opportunities in dryland regions. The relationship between the legislative and policy frameworks and the local context remains poorly understood, leading to capacity limitations in areas of integration of SLM practices.

Market access and product promotion issues

Major barriers to market access include limited harmonisation of production and marketing structures, inadequate marketing structures to promote sustainably produced goods and the

absence of standards for production based on sustainable criteria.

Conclusion and Recommendations

The issue of SLM has attracted minimal attention among policy-makers in Uganda; it is only in the past three years that developments are beginning to appear through donor support. Donors are increasingly supporting SLM issues, which provides an opportunity to implement existing and supportive trade and environment policies.

It is however, critical that all activities be harmonised at national and district levels. The participation of civil society organisations and the private sector must be maximised and this can only be achieved through the creation of an enabling policy environment. While

Uganda's legislative system is supportive of SLM, there is a marked absence of both policies to operationalise these laws and funding to support implementing agencies.

A proposed immediate next step is to convene all actors in SLM, with particular attention to the trade and environment sectors and selected development partners. This shall provide an opportunity to not only identify the actors, but also enhance interaction and information sharing. The BioTrade programme's market-oriented focus can help do this while at the same time promoting sustainable use of biodiversity. The programme however, relies on national partners to support the production processes and in this case, the focal point for the UNCCD in Uganda is best placed to cultivate and strengthen co-operation with the BioTrade Programme.

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ENDNOTES

- 1 This section is based on GM and ICTSD, 2007.
- 2 This section is based on FAO, 1999 and Ekaya, 2007
- 3 For further information, including details of how to join WISP, visit the website at www.iucn.org/wisp
- 4 Data is from FAOSTAT trade data provided in part by OD Consulting, Brazil.
- 5 This has occurred in the southwest US as a result of land use management that removed fire as an ecosystem process on grazing lands.
- 6 The trade statistics are from FAO TRADESTAT 2007, data pertains to 2005.
- 7 Only one percent of total cereal production was traded from water rich to water scarce regions.
- 8 This paper is adapted from Mayrand and Paquin, 2006; Mayrand, 2006 and Mayrand *et al*, 2005.
- 9 UNCCD, Article 4.2 (b).
- 10 The total support estimated in OECD countries averaged USD315 billion in 2000-02.
- 11 OECD aid in 2004 rose to USD79.5billion (<http://www.oecd.org/dataoecd/0/41/35842562.pdf>)
- 12 WTO definition of dumping. In contrast, Oxfam defines dumping as “exporting goods at a price lower than it costs to produce them” (Stuart and Fanjul, 2005).
- 13 G-20 members include: Argentina, Bolivia, Brazil, Chile, China, Cuba, Egypt, Guatemala, India, Indonesia, Mexico, Nigeria, Pakistan, Paraguay, Philippines, South Africa, Tanzania, Thailand, Uruguay, Venezuela and Zimbabwe.
- 14 Cairns Group members include: Argentina, Australia, Bolivia, Brazil, Canada, Chile, Colombia, Costa Rica, Guatemala, Indonesia, Malaysia, New Zealand, Pakistan, Paraguay, Philippines, South Africa, Thailand and Uruguay.
- 15 This paper is adapted from: GM and ICTSD, 2007a; GM and ICTSD, 2007b and GM and ICTSD, 2007c. It also results from discussions between the Global Mechanism of the UNCCD and the International Centre for Trade and Sustainable Development during the preparation of the Exploratory Dialogue on “Building an Enabling Environment for Increasing Investment in Sustainable Land Management through Market Access and Trade” on 31 January and 1 February 2007.
- 16 I wish to acknowledge the valuable input and review of my colleague Ms. Jaime Webbe, programme officer, biodiversity of dry and sub-humid lands. Great care has been taken to accurately reflect the state-of-affairs under the Convention. Any remaining omissions and/or errors fall under my own responsibility and should not be attributed to the Secretariat of the Convention on Biological Diversity.
- 17 For more detailed information see the CBD fact sheets on the biodiversity of drylands, available

under www.cbd.int/programmes/outreach/awareness/factsheets.shtml.

- 18 According to the classification introduced by the assessment, biodiversity-based products would fall under this category of “provisioning services”.
- 19 Decision V/23, Annex. All decisions of the Conference of the Parties are available online under www.cbd.int.
- 20 Decision VI/26, Annex.
- 21 Decision VII/12, Annex.
- 22 Addis Ababa Principles and Guidelines for the Sustainable Use of Biodiversity , paragraph 8 (c).
- 23 Decision VII/27, Annex, activity 1.3.8.
- 24 Decision VII/28, Annex, activity 3.1.9.
- 25 Decision VII/23, section A, Annex.
- 26 Decision V/15, paragraph 2 (b).
- 27 Available at www.cbd.int/incentives/review.shtml .
- 28 See document UNEP/CBD/SBSTTA/11/INF/7, available under www.cbd.int.
- 29 See, with regard to the latest meeting, decisions VIII/26, paragraph 9; and VIII/17, preamble.
- 30 Decision VIII/2.
- 31 Decision VIII/26.
- 32 The author would like to thank Maria Teresa Becerra, Andean Community of Nations (CAN) and Alastair Green, BioTrade Facilitation Programme, UNCTAD, for their valuable comments and inputs.
- 33 The ecosystem approach is based on a holistic vision that integrates ecological and social issues, as well as the interactions and processes that are involved in a productive system. In practice, the planning of productive processes related to BioTrade initiatives is undertaken according to the ecosystem approach. This guarantees that the initiatives will be environmentally and socially responsible with regard to their impact on species, habitats, ecosystems and local communities.
- 34 For example, the BioTrade verification framework stipulates (3.2.4) that prices should cover the cost of production (including the aspects of conservation, sustainable use, and benefit-sharing), cost of investment and include a profit margin that provides a positive incentive for suppliers to continue production.
- 35 For example, “Guidelines for the Development and Implementation of Management Plans for Wild-collected Plant Species used by Organizations Working with Natural Ingredients” (UNCTAD, 2007).

- 36 For more information, please visit: www.biocomercioecuador.org or email to: biocomercio@corpei.org.ec.
- 37 For more information, please visit: www.jambikiwa.org and www.ecuadorianherbs.com
- 38 This map does not exclude those areas with swamps and lakes.
- 39 Threshold put at 1000mm of rainfall per year and areas whose natural vegetation is predominantly savannah grasslands or semi-deciduous woodlands.

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