



Promoting Sustainable Land Management through Trade:
Examining the Linkages between Trade, Livelihoods and Sustainable
Land Management in Degraded Areas

A Background Paper

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Acronyms

A4T	aid for trade
CBD	Convention on Biological Diversity
CDM	Clean Development Mechanism
CITES	Convention on International Trade in Endangered Species
CTESS	WTO Committee on Trade and Environment in Special Session
DDA	Doha Development Agenda
EGS	environmental goods and services
EPP	environmentally preferable product
EU	European Union
EUREPGAP	Euro-Retailer Produce Working Group's Protocol on Good Agricultural Practices
FAO	Food and Agriculture Organization of the United Nations
FSC	Forest Stewardship Council
GATS	WTO General Agreement on Trade in Services
GDP	gross domestic product
GEF	Global Environment Facility
GM	Global Mechanism of the UNCCD
ICRISAT	International Crops Research Institute for the Semi-Arid Tropics
ICTSD	International Centre for Trade and Sustainable Development
IF	integrated framework
IFAD	International Fund for Agricultural Development
IFOAM	International Federation of Organic Agriculture Movements
IMF	International Monetary Fund
IPCC	Intergovernmental Panel on Climate Change
ISEAL	International Social and Environmental Accreditation and Labelling Alliance
ITC	International Trade Centre
IUCN	World Conservation Union
JECFA	Joint FAO/WHO Expert Committee on Food Additives
JITAP	Joint Integrated Technical Assistance Programme
LDC	least-developed country
MDG	Millennium Development Goal
MEA	multilateral environmental agreement
NAP	National Action Programme
NFS	national financing strategy/strategies
NGO	non-governmental organization
ODA	official development assistance
OECD	Organisation for Economic Co-operation and Development
PGRFA	plant genetic resources for food and agriculture
PRSP	Poverty Reduction Strategy Paper
REED	rural energy enterprise development
SLM	sustainable land management
STO	specific trade obligation
SWAP	sector-wide approach
TRIPS	WTO Agreement on Trade-Related Aspects of

	Intellectual Property Rights
UNCCD	United Nations Convention to Combat Desertification
UNCTAD	United Nations Conference on Trade and Development
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
WEHAB	Water, Energy, Health, Agriculture and Biodiversity
WHO	World Health Organization
WRI	World Resources Institute
WTO	World Trade Organization

EXECUTIVE SUMMARY

Trade has the potential to affect the livelihoods of communities that depend on drylands and degraded areas. Drylands encompass all lands where the climate is classified as dry sub-humid, semi-arid, arid or hyper-arid. They cover 40 percent of the earth's land surface and are home to more than 2 billion people – a third of the human population in 2000 – most of whom suffer from the poorest economic conditions in the world. Although trade flows can act as an incentive to foster economic growth and sustainable land management (SLM), they can also lead to changes in landownership and use with systemic results on both the fertility of land and the populations who live on it. Dryland regions are among the world's most vulnerable ecosystems. Their vulnerability is exacerbated by human activities such as unsustainable land use.

Land degradation takes many forms, including depletion of soil nutrients, salinization, 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 potentially the most threatening ecosystem change directly affecting the livelihoods of people living in arid areas. Scenarios show that degradation of ecosystem services in drylands could threaten future improvements in human well-being and even reverse gains in some regions.

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 on to marginal lands, and the use of farm machinery and agronomic practices that are not suitable for local soil and water conditions. The growth of large-scale, export-oriented agriculture often pushes small farmers on to marginal lands (which are inherently incapable of sustaining food production) and forces them to adopt unsustainable farming practices, which in turn decrease soil fertility and exacerbate land degradation.

A range of agricultural products are produced under intensive production systems; it is important that governments explore opportunities for diversifying trade into products that would promote more sustainable use of natural resources, and look for ways of improving the environmental and social impact of the products that are currently traded in large quantities.

Traditionally, drylands have been viewed as having little potential for economic activity because they are prone to drought and land degradation. However, emerging markets for products based on natural resources are providing ways of enhancing the sustainable use and management of land and advancing rural development. This is the case of such natural products as aloe or gum arabic, the increasing market demand for which is creating many new opportunities. Taking advantage of these opportunities remains difficult, however, especially for marginal communities, because there is a lack of structure for this market. More attention to this type of issue is urged, in order to avoid a situation in which small groups establish structures that control resources but are detrimental to the environment and to the local people whose traditional knowledge contributed to defining the market use of the products. This requires the creation of a regulatory framework that provides the enabling environment for increasing investment in the sustainable use and management of land and natural resources.

Such an enabling environment relies on enhancing the interactions among trade and environment stakeholders and on creating adequate incentive mechanisms and tools to increase investment in SLM. Interactions might be facilitated by increased coherence between the trade strategies of the various multilateral environmental agreements (MEAs), which could draw on synergies based on common products or the ecosystems where they work (e.g., biodiversity in drylands). MEAs could thus increase their capacity to influence policy-making processes and negotiate trade regulations that have a more direct impact on effective implementation. Incentive mechanisms have to be created through adequate policies and interventions at the international, regional and national levels.

Reforming the current distortions in global agricultural trade is crucial to addressing the relationship between land degradation and trade. The billions of dollars of trade-distorting subsidies provided by developed countries –both as export subsidies and as domestic support – have clear, direct consequences for land degradation in dryland areas, especially in developing countries.

Certain types of agricultural subsidies, such as those linked directly to production, are believed to have a more harmful impact on sustainable development – including sustainable land use – than others. Agricultural subsidies can create incentives for overproduction. The intensification of farming methods in both developed and developing countries can lead to trade distortions and contribute to land degradation, water pollution and other negative impacts on natural resources. "Tariff escalation", which has long been identified as an obstacle to development, can discourage the adoption of value-added production in developing countries. Higher tariffs on finished products (such as peanut butter) than on raw materials (such as peanuts) prevent the development of processing industries, which are less land-intensive than agriculture and represent an alternative source of livelihood for rural communities.

The international trade regime, does, however, also offer a number of opportunities. The process of trade liberalization and rule making under the World Trade Organization (WTO) – including for special products, environmental goods and services (EGS), full duty-free and quota-free market access to least-developed countries (LDCs) and the reform of market distorting subsidies – could provide opportunities for promoting investment in SLM.

At the WTO, developing countries have argued that they should be given the flexibility to shield a limited number of "special products" from the full force of tariff cuts, on the basis that these products are important for food security, livelihood security and rural development objectives. The special products mechanism could have important implications for SLM by allowing developing countries to lower tariffs more gradually on products for which rapid liberalization could destabilize the livelihoods of small farmers, threaten the wider rural economy and undermine food security.

One of the most significant potential prizes for LDCs in the negotiations of the WTO's Doha Round is the prospect of obtaining "duty-free, quota-free access" for their products in developed country markets, without requiring reciprocal concessions. Many dryland countries are LDCs and could benefit from increased market access for their products – even though the links between increased trade and land degradation are complex and vary from product to product and country to country.

Reforms and opportunities within the international trade regimes are not the only solutions. It is crucial to bring global-level discussions to the country level, and to translate international-level policies and dialogue into country-based interventions. In the wake of changes to the financial architecture for official development assistance (ODA), the following analysis gives particular emphasis to the country level and to the need to enhance multi-stakeholder consultations and strengthen cross-sector policies.

As development assistance adopts more holistic integrated approaches driven by country priorities, it is fundamental that SLM is no longer seen as a technical concern of environmentalists, but rather as a means to contribute to sustainable development and poverty reduction. This entails making links to a number of thematic areas that touch on this topic, such as trade and markets, and coordinating the related institutions and development processes to create more coherent policies that prevent and minimize 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 limiting 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.

Increased awareness of opportunities for market diversification might help countries to develop diversification strategies that would lower dependence on a few export products – which encourages unsustainable agricultural practices – and foster reforms of the trade regime. The engagement of countries in the international debate would help to identify the needs of and constraints to creating an effective and clear policy framework at the global level. For dryland products, such opportunities already exist, are receiving increasing attention from the private sector and consumers in northern

markets, and are waiting for interventions at the policy level to create a regulatory framework for growing the industry, and thus a more conducive environment for increasing investment.

The market value of dryland resources is growing, and the peculiar features that they develop in the harsh environments where they grow, make them unique. Indeed, the comparative advantage of these natural resources is that they provide key environmental services to the ecosystem where they are found and to the livelihoods system of local populations. Increasing market demand for natural resources such as gum arabic, medicinal plants and biofuels from groundnuts is creating new market opportunities. Gains from these opportunities are very limited, however, because of the lack of basic infrastructure, investment capital, research and development and – last but not least – an adequate policy framework that regulates the markets at the national, regional and international levels. Building the enabling environment for growing these markets 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.

1 INTRODUCTION

The text of the United Nations Convention to Combat Desertification (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." The linkages among trade rules, the environment and sustainable development have not, however, been widely recognized to date. Building on the UNCCD's mandate provides an opportunity to explore the potential of market access and trade to increase investment in degraded areas and mobilize additional resources for SLM.

On-the-ground activities are providing increasing evidence of how trade and markets can contribute to the socio-economic development of drylands and degraded areas. Some international organizations have begun to use this evidence to reverse the negative image of drylands as hopeless extensions of arid and degraded land whose vulnerability to natural calamities represents a risk factor that is far too high to make them attractive for investment. With the realization that several products and services from drylands offer investment opportunities with positive returns, trade and markets are emerging as important potential factors for improving livelihoods and enhancing SLM in vulnerable ecosystems. Nonetheless, these cases are still ignored in policy-making, resource allocation and budgeting processes and excluded from broader development plans, thus leaving potential resources untapped.

Trade rules set parameters for the trade liberalization policies adopted by national governments, which in turn affect the trade flows that filter down to rural communities in drylands. Trade liberalization can open up new opportunities for rural communities, for example, by enabling them to adopt 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, however, when not well managed and supported by a conducive policy environment, such trade promotion initiatives can 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 in order to avoid generalizations, capture hidden opportunities and make clear exactly how trade can affect the environment on which some of the world's poorest people depend.

On 31 January and 1 February 2007, the Global Mechanism (GM) of the UNCCD and the International Centre for Trade and Sustainable Development (ICTSD) organized an exploratory dialogue on "Building an Enabling Environment for Increasing Investment in Sustainable Land Management through Market Access and Trade" to explore possible ways of promoting investment in SLM through market access and trade, in the context of the new financial architecture and resource allocation patterns for development and poverty reduction.

As part of this initiative, this background paper aims to: identify direct and indirect linkages between trade policies and rules, SLM and livelihoods in arid areas, focusing on agricultural trade; identify the potential of natural products by providing alternative livelihoods to enhance sustainable use of land and natural resources; and highlight relevant policy instruments, mechanisms and tools for enhancing SLM through trade.¹

The paper also seeks to: stimulate discussion among the trade and environment communities, to improve their understanding of each other's work; ensure that respective interests and concerns are taken into account in the different policy-making processes; identify the roles and responsibilities of different stakeholders and organizations, and the potential synergies; and identify entry points for promoting SLM objectives through trade.

Following the introduction, section 2 of the paper examines the approach to trade and environment adopted by selected multilateral environmental agreements (MEAs). The section explores linkages among MEAs and examines how enhancing such linkages could promote incentive-based approaches to meeting their objectives.

Section 3 provides general information on the characteristics of arid regions, and the geographical extent, direct causes and environmental and socio-economic consequences of land degradation.

After outlining the important role of agriculture (including livestock) in dryland countries, section 4 examines trade-related factors that influence the role of agriculture in land degradation. It also explores some possible trade-related measures for enhancing SLM in the agricultural sector.

Section 5 uses the example of natural products to show how alternative livelihoods can present a comparative advantage for local communities, and for the market in general by providing the basis for differentiation. Developing trade in such products as medicinal plants, gum arabic and biofuels from groundnuts could help countries with drylands to reverse land degradation and advance rural development. The section examines the environmental benefits and the economic and trade opportunities for these products. Finally, it highlights some risks arising from the development of trade in natural products typical of drylands.

Section 6 overviews changes in the international financial architecture and the new instruments and mechanisms for delivering official development assistance (ODA). It also pinpoints the trade-related processes that are being established to make trade more supportive of sustainable development through mainstreaming trade issues into Poverty Reduction Strategy Papers (PRSPs) and facilitating developing countries' integration into the global economy and the multilateral trading system. The section also looks at potential entry points for mainstreaming SLM into these processes.

Section 7 looks at policy instruments, mechanisms and tools that could enhance SLM through trade and market development. The section highlights the importance of a cross-sectoral and multi-stakeholder approach to create an enabling environment for the development of environmentally and socially sound business models and for the creation of new market opportunities through product differentiation and value chain development. The section also looks at opportunities offered by the World Trade Organization (WTO) and in the area of traditional knowledge and intellectual property rights.

¹ Because the link between trade and deforestation in semi-arid and dry sub-humid forests is weak, this paper does not address the issue of deforestation. Although international trade in timber products and illegal commercial logging are important causes of deforestation around the world, they stem mainly from humid tropical areas. In addition, most trade in fuelwoods is at the local or regional level.

1.1 The GM of the UNCCD

1.1.1 What is the GM?

The GM is a subsidiary body of the UNCCD mandated "to increase the effectiveness and efficiency of existing financial mechanisms ... [and] ... to promote actions leading to the mobilization and channelling of substantial financial resources to affected developing country Parties". The general broker and match-maker functions of the GM have evolved over its ten years of operation and in the wake of the changing international financial architecture, new modalities for resource allocation and the increasing importance of domestic budgeting processes in developing countries that arose from the Paris Declaration and the Monterrey Consensus. As a consequence, the GM specializes increasingly in providing financial advisory services to the country Parties to the UNCCD. It works in close cooperation with international finance institutions to tackle the issues related to natural resource degradation.

The GM is an innovative entity that supports country Parties to the UNCCD in mobilizing financial resources within financial resource allocation frameworks that address the nexus of land and natural resource degradation, rural development and poverty reduction. The GM's approach aims to be comprehensive: balancing poverty reduction and sustainable development with the sustainable use of natural resources. The GM promotes the positioning of the UNCCD in the broader context of development programming that includes policy processes and thematic areas influencing SLM and rural development.

The GM does not intend to simplify the complex and changing international financial architecture and domestic budget allocation processes, but rather to facilitate understanding of this new context, the opportunities it offers, and the ability of UNCCD focal point institutions to work with it to increase investments in rural livelihoods and safeguard natural resource availability for future generations. The GM therefore works to generate enabling conditions for UNCCD country Parties, and assists capacity building to ensure that rural communities living in drylands are adequately recognized in development programming processes.

1.1.2 Resource mobilization through market access and trade

In response to the changing international environment, and to optimize its resource mobilization capacity and sharpen its focus at the country level, the GM is developing the new concept of national financing strategies (NFS). NFS aim to pool and coordinate different financial sources, instruments and mechanisms to secure sustainable, timely and predictable investments for UNCCD implementation. NFS will provide country partners with tools to align UNCCD priorities with those of other sectors and to compete for resource allocations so that financial resources are raised systematically, coherently and predictably. This includes ensuring that UNCCD-related development policies are translated into resource allocations in public budgets and expenditure frameworks, broadening the scope of planning processes beyond specific sectors, and increasing interaction with sectors that have resource mobilization potential but have not traditionally been part of the UNCCD agenda, including market access and trade.

In order to draw on trade and market-related resources, the GM has established a Strategic Programme for Market Access and Trade, which is based on the conviction that stronger links between the UNCCD and trade and market-related issues will make it possible to engage new stakeholders in UNCCD implementation, leverage innovative sources for SLM financing, and establish links with overarching development plans and budgeting processes. The programme is a corporate tool to support the GM's regional programmes for integrating market access and trade into the development of NFS for SLM financing. This requires a coherent and integrated approach linking trade, markets and SLM, and the engagement of stakeholders from various communities, particularly trade and environment, to define and implement a common agenda for promoting SLM through market access and trade.

1.2 ICTSD

1.2.1 What is ICTSD?

ICTSD was established in Geneva in September 1996 to help improve understanding of development and environment concerns in the context of international trade. As an independent non-profit and non-governmental organization (NGO), ICTSD engages a broad range of actors in dialogue about trade and sustainable development. With a wide network of government, non-governmental and intergovernmental partners, ICTSD plays a unique systemic role as a provider of original, non-partisan reporting and facilitation services at the intersection of international trade and sustainable development.

ICTSD facilitates interaction between policy-makers and those outside the system to help make trade policy more supportive of sustainable development. By helping Parties to increase their capacity and their understanding of each other, ICTSD builds bridges between groups with seemingly disparate agendas. It seeks to enable these actors to discover the many places where their interests and priorities coincide, because sustainable development is ultimately their common objective. With its finger on the pulse of the trade and sustainable development interface, ICTSD is well placed to keep track of emerging issues and changing dynamics within international, bilateral and regional trade negotiations.

In recent years, ICTSD has brought to the table key trade and development issues such as special and differential treatment, dispute settlement, aid for trade, climate change and the evolving energy trade scenario. It has also raised the profile of development concerns related to intellectual property rights, and trade in services and agriculture. Through its research, dialogue and information programmes, ICTSD can boost these issues to foster constructive, solutions-focused debates.

1.2.2 Bridging the gaps between trade and SLM

International trade has the potential to affect the livelihoods of communities that depend on degraded land in arid regions. Although trade flows can act as an incentive to economic growth and SLM, they can also lead to changes in landownership and use, with systemic effects on both the fertility of land and the communities that live on it. In addition, drylands are among the ecosystems that are most vulnerable to such human activities as unsustainable land use.

ICTSD explores how international trade could provide a valuable avenue for fostering investment, improving livelihoods and promoting SLM in dryland regions. More specifically, it aims to undertake strategic actions that will:

- (a) examine how current international agricultural trade patterns and related production systems influence land degradation in dryland regions, and analyse the influence of current international trade policies and rules in that regard, including the market distortions and tariffs that affect traditional commodities from drylands, such as livestock, cotton and groundnuts;
- (b) identify trade opportunities and constraints for natural products in order to increase investments in SLM;
- (c) increase knowledge and promote understanding of relevant policies, institutions and mechanisms for mitigating the environmental impacts of current international agricultural trade patterns and associated production systems on land, and for turning trade opportunities into concrete sustainable development benefits;
- (d) identify risks that multilateral, regional and national trade liberalization might pose to the economies, ecosystems, societies and livelihoods of communities living in drylands and degraded areas, and suggest changes to rules to mitigate these impacts;
- (e) in ongoing WTO negotiations, identify options for products of interest to drylands that could contribute to SLM.

2 TRADE, LAND DEGRADATION AND ENVIRONMENTAL GOVERNANCE

MEAs have become an essential part of global environmental governance. A number of MEAs include trade-related provisions. Several WTO rules and agreements may have implications for MEAs in terms of the policy space available for countries to meet MEA objectives while abiding by their WTO commitments.

Paragraph 31(i) of the Doha Declaration provides a mandate for negotiating the relationship between existing WTO rules and specific trade obligations set out in MEAs. The declaration, however, limits such negotiations to existing WTO rules between Parties to the MEA in question. Moreover, negotiations must not prejudice the WTO rights of any WTO member that is not a Party to the MEA in question. In addition, paragraph 32 states that the outcome of negotiations must not add to or diminish members' rights and obligations under existing WTO agreements, nor alter the balance of these rights and obligations. Many see the mandate set in the Doha Declaration as being too narrow to enhance synergies between the WTO and MEAs (Charnovitz, 2003).

Discussion of paragraph 31(i) has focused on individual MEAs, delineating and classifying specific trade obligations (STOs) in those MEAs, and identifying the relevant WTO rules. Following members' submissions and discussions under the WTO Committee on Trade and Environment in Special Session (CTESS), there is consensus that STOs are present in six MEAs: the Cartagena Protocol, the Convention on Persistent Organic Pollutants, the Rotterdam Convention, the Montreal Protocol, the Convention on International Trade in Endangered Species (CITES) and the Basel Convention (Gray, 2004). However, trade linkages are also enshrined in other conventions, such as the UNCCD, which may not have received the same attention in the MEA trade debate.

Most MEAs have been developed to provide a regime for managing a specific environmental concern, such as biodiversity, climate change or desertification. Although MEAs have been drafted as sector- or issue-specific mechanisms, it is increasingly clear that most of the environmental problems they address are closely interlinked. For example, land degradation often results from a combination of natural and human influences such as drought, overgrazing and unsustainable agricultural practices. Land degradation's links to biodiversity, forests, and climate change and its various causes and consequences therefore suggest that responses should be multi-faceted.

The UNCCD has important linkages with the Convention on Biological Diversity (CBD). Drylands are home to extremely valuable ecosystems, flora and fauna. At the same time, biological resources in drylands are particularly vulnerable to both changing natural conditions, such as drought and desertification, and human-induced changes resulting from overuse and overexploitation of limited resources.

Scarcity of natural resources in drylands also means that many endangered species require particular attention, which implies improving the synergies between the UNCCD and the CITES.

There are also links between the UNCCD and the United Nations Framework Convention on Climate Change (UNFCCC). Scientific insights from the Intergovernmental Panel on Climate Change (IPCC) and similar assessments indicate that climate change has severe implications for drylands. The mechanisms of the UNFCCC and the Kyoto Protocol could provide new opportunities for addressing climate change in ways that support SLM. Mechanisms and instruments for both climate mitigation and adaptation are crucial for the dryland regions and can be harnessed through national and international policy initiatives. For example, initiatives promoting reforestation and the generation of energy from dryland resources could be integrated into incentive-based mechanisms such as the Clean Development Mechanism (CDM).

In addition to fostering synergies with other conventions, a number of MEAs employ positive measures, such as technical and financial assistance, to achieve their objectives. Positive measures include not only mechanisms to promote full participation and compliance of all Parties to an MEA, but also measures that could encourage a dynamic process of continuously improving environmental performance, which might go beyond the obligations in a MEA (Hoffmann, 2003). The Multilateral

Fund under the Montreal Protocol is an example of a successful positive measure to enhance compliance and achieve the objectives of an MEA.²

Similarly, the flexibility mechanisms embodied in the Kyoto Protocol to the UNFCCC – the CDM, Joint Implementation and Emissions Trading – have acted as incentives for greater government and industry engagement in efforts to achieve the objectives of the Convention and the Protocol.

Mechanisms for international payments for ecosystem services of global importance are emerging as tools to generate incentives for the conservation of environmental resources and ecosystems that would otherwise not receive adequate attention. Such approaches are considered valuable ways of supporting the objectives of the UNCCD.

The use of incentive-based mechanisms for implementing MEAs appears to be effective and is receiving increasing attention in the context of global environmental governance. With a view to increasing its mobilization of resources for UNCCD implementation through market access and trade, the GM would benefit from exploring ways of enhancing positive measures in the area of trade, drawing on experience and lessons learned in other multilateral processes.

Given the numerous interlinkages and areas of common interest, increased alignment and interaction of the UNCCD and other MEAs in the areas of market access and trade – including related incentive measures – may strengthen environmental governance by making implementation of these MEAs more coherent and by optimizing resource allocation through joint and synergistic implementation.

3 CHARACTERISTICS, CAUSES AND EXTENT OF LAND DEGRADATION

3.1 Characteristics of arid regions

Arid 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, semi-arid, arid or hyper-arid. 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.

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

In addition to being essential to the communities (e.g., of subsistence farmers and fishers) that live in these regions, arid biodiversity provides critical ecosystem services on which humanity relies for food, shelter and livelihoods. Many major food crops, such as wheat, barley, sorghum, millet and cotton, and animal species, such as horses, sheep, goats, cattle, camels and llamas, originated in drylands (Bie and Imevbore, 1994, cited in Dregne, 1997). Medicinal plants in these regions also supply essential products for human health. One-third of plant-based drugs in the United States are derived from drylands biodiversity (CBD website).

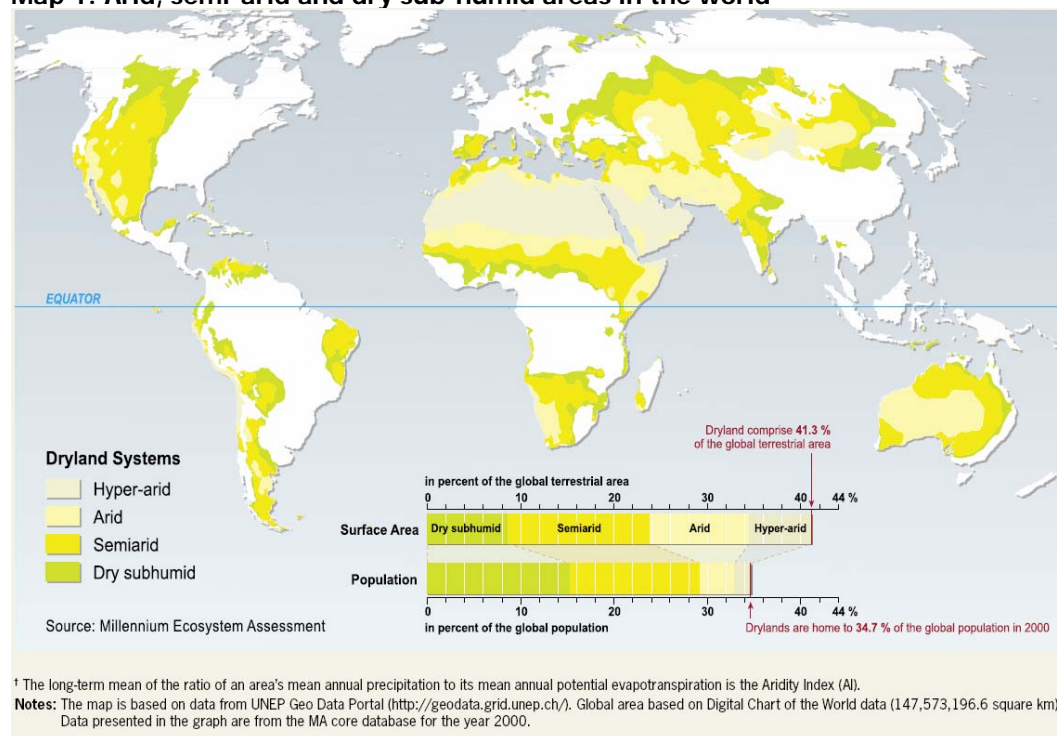
As highlighted by the Executive Secretary of the CBD, Ahmed Djoghlaif, on the International Day for Biological Diversity, 22 May 2006, biodiversity plays a critical role in maintaining the integrity of arid,

² The fund contributed more than USD1 billion to 120 developing countries, compared to the technical assistance trust funds of CITES and the Basel Convention for "all" developing countries, which have each contributed about USD1.5 million per annum. The Multilateral Fund represents an effective financial mechanism that not only covers many incremental costs of switching to technologies to phase out the production and consumption of ozone-depleting substances, but also funds policy-coordinating "ozone offices" in developing countries. With no financial mechanism of their own, and no access to Global Environment Facility (GEF) funding, CITES and the Basel Convention lack the necessary resources for technical assistance and capacity building (Hoffmann, 2003).

semi-arid and dry sub-humid areas. Preserving this natural capital is crucial for dryland populations. The disappearance of plants and animals from these regions limits development options and increases dryland inhabitants' vulnerability to drought.

3.1.1 Geographical extent and populations of arid regions

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



Source: Millennium Ecosystem Assessment, 2005.

Arid, semi-arid and dry sub-humid areas cover 40 percent of the earth's land surface and are home to more than 2 billion people – a third of the human population in 2000 (Millennium Ecosystem Assessment, 2005). Drylands are located in both rich and poor countries. The distribution patterns of dryland populations vary within each region and among the different aridity zones comprising arid lands. Although these regions contain many industrialized cities, such as Mexico City, Cape Town, Los Angeles and Teheran, on average most dryland populations lag far behind the rest of the world in terms of human well-being and development indicators. Rural communities in arid lands are generally highly dependent on ecosystem services – such as grazing land for livestock, fuelwood and medicinal plants – from the environment for their basic needs and livelihoods. Dryland populations suffer from the poorest economic conditions in the world (Millennium Ecosystem Assessment, 2005) and, conversely, poverty tends to be particularly associated with dry areas.

The extent of dry areas within each region ranges from approximately 1.3 to 18 million km². Asia (including the Russian Federation) and Africa contain the largest dryland regions, with 39 and 49 percent, respectively, of the world's total. Countries with large amounts of arid zones include Australia, which has more dryland than any other country in the world, the United States and three countries in Asia: the Russian Federation, China and Kazakhstan (each with more than 2 million km²). Nine additional countries – India, the Sudan, Canada, Argentina, the Islamic Republic of Iran, Mexico, Brazil, Mongolia and Mali – each have more than 1 million km² of dryland. Other countries, such as Botswana, Burkina Faso, Turkmenistan, Iraq, Moldova, Uzbekistan, Kazakhstan, Armenia, the Syrian Arab Republic, the Gambia, Senegal, Afghanistan, Tunisia, Kuwait, Morocco, Namibia and the Islamic Republic of Iran, are over 90 percent dryland (White and Nackoney, 2003).

Regionally, Asia has the largest population living in arid areas, both in numeric and percentage terms, with more than 1.4 billion people or 42 percent of the region's population. Africa has nearly the same percentage of people living in drylands – 41 percent – but the total number, at nearly 270 million, is smaller than that of Asia (White and Nackoney, 2003).

3.1.2 Land-use characteristics in arid regions³

3.1.2.1 Food production

In arid regions, most food is produced by smallhold and rainfed farming systems for local consumption and markets (often semi-subsistence), usually located close to water resources, such as rivers, wells and reservoirs. The crop species and varieties produced depend on climate and soil adaptability, availability of seeds and inputs, food customs and suitability for storage and processing.

The main constraints to food production in arid regions are limited topsoil with poor organic matter, variable structure (from hard clay to sandy) and often high salinity. These lands are usually exposed to wind erosion and runoff. Unless irrigation is provided, water availability is also poor and variable. Services and inputs, supply roads and other infrastructure are often poorly developed.

3.1.2.2 Cash crops

The production of cash crops is usually limited to irrigated areas and to species tolerant to high temperature, water stress and high salinity. These may include food crops for national and international markets, such as dates and tropical fruits, or industrial crops, such as 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 well-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 potential increases in salinity. The limited mechanization of most arid regions in developing countries is an additional constraint to cash crop production.

3.1.2.3 Pastoralism and range farming

Many different animals, such as sheep, goats, cattle and camels, are adapted to arid conditions. Extensive farming in drylands is characterized by the movement of livestock according to seasonal rains, water resources and pasture. Stock health and productivity vary according to season and nutrition.

Poor and variable edible vegetation cover, with low nutritional value in dry seasons and sensitivity to overgrazing, and poor and variable quantity and quality of water are constraints to livestock production. Local animal species and varieties are characterized by low productivity, but good adaptation to harsh conditions.

The mobility of pastoralists allows highly vulnerable ecosystems in arid rangelands to recover from drought. Pastoralists have learned to adjust to highly variable rainfall (in both time and space) by being flexible and mobile. The resulting low pressure facilitates recuperation of land, and grazing pressure is adjusted to the quantities of feed available.

³ This section is based on FAO, 1999.

3.1.2.4 Trees, woodlands and forests

Forest vegetation is usually poor in arid regions and characterized mainly by low densities of species tolerant to water stress and arid soil conditions. Composition and density of woodlands and forests depend on geophysical factors, the proximity of water resources (e.g., oases or rivers) and the variability and distribution of rainfall. Wood harvest for fuel and building materials is still very common in African drylands and remote areas where no alternative is available. Tree density often represents an indicator of demographic pressure and land degradation. Tree plantations are increasingly used for dune stabilization and fodder production around settled areas. In most arid regions, forest and tree resources are common property, and access and use are regulated according to custom.

3.1.2.5 Hunting and gathering

Arid ecosystems are home to a wide variety of plants and animals, which are hunted or gathered in the wild. These wild species represent the main and often only form of livelihoods for local communities, who use them as wild foods, fuels, housing inputs, fertilizer and medicinal plants, for example. In addition to being a safety net for the local population in times of food scarcity, wild plants and animals also offer a wide variety of ecosystem services of local importance. Wild species typical of drylands and arid ecosystems are also increasingly identified as a precious reservoir of genetic resources because of their resilience to harsh environments.

3.2 Land degradation in vulnerable ecosystems

Land degradation takes a number of forms, including depletion of soil nutrients, salinization, agrochemical pollution, soil erosion, vegetation degradation resulting from unsustainable agricultural practices, overgrazing and forest clearance. All of these types of degradation decrease the productive capacity of the land, reducing potential yields.

Land degradation is potentially the most threatening ecosystem change directly affecting the livelihoods of people living in arid areas. Scenarios show that degradation of ecosystem services in drylands could threaten future improvements in human well-being, and even reverse gains in some regions (Millennium Ecosystem Assessment, 2005).

Land degradation can be broadly defined as "... any form of deterioration of the natural potential of land that affects ecosystem integrity either in terms of reducing its sustainable ecological productivity or in terms of its native biological richness and maintenance of resilience" (GEF, 1999). With a focus on arid, semi-arid and dry sub-humid areas, Article 1(f) of the UNCCD 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".

3.2.1 Direct causes of land degradation

Land degradation damages soil structure and leads to the loss of soil nutrients through processes such as water or wind erosion, waterlogging, salinization and soil compaction. The direct causes of land degradation are inappropriate land use – mainly unsustainable agricultural practices – overgrazing and deforestation. These practices are most prevalent where land, water and other natural resources are underpriced. In addition, when farmers and herders do not have control or long-term security over the land they use, they have no incentive to follow environmentally sustainable practices. Instead, land users tend to focus on meeting their own short-term economic needs, to the detriment of the

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

3.2.1.1 Unsustainable agricultural practices

By shortening the fallow period of land under intensive cropping systems, farmers reduce the soil stability and fertility of rainfed agricultural lands, leading ultimately to land degradation, lower crop yields and reduced incomes. For irrigated cropland, the main cause of land degradation is poor water and irrigation management, leading to waterlogging and soil salinization. This loss of arable land leads to lower production and incomes (GEF, 2003).

The main causes of degradation on croplands include inappropriate land use, weak capacity for sustainable water and land-use planning and implementation, and inappropriate agricultural policies and incentives. Global trade regimes and related government policies, macroeconomic reforms and a focus on increasing agricultural production for exports can also affect, directly or indirectly, the resilience of dryland ecosystems. These factors lead to inefficient and wasteful use of land and water resources, inappropriate crop intensification, especially under monocropping systems, expansion of agriculture on to marginal lands, and use of farm machinery and agronomic practices that are not suitable for local soil and water conditions.

The growth of large-scale export-oriented agriculture often pushes small farmers on to marginal lands, which are inherently incapable of sustaining food production. This can exacerbate land degradation. Trade liberalization can stimulate structural economic transformation towards cash crop production, but although this sometimes raises incomes and improves 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 marginalize small farmers, forcing them to adopt unsustainable farming practices in order to survive. The overuse of marginal land is often also associated with deforestation, loss of biodiversity and increased wind and water erosion, leading to decreased soil fertility and land degradation.

Large-scale monocropping agriculture through intensive use of agrochemicals, irrigation systems and mechanized farming techniques can have major impacts on soil quality and dryland ecosystems. Intensive cultivation of cotton in Chad and groundnuts in the Niger, for example, led first to a rapid decline in yields and fertility and then to land degradation. The restructuring of the corn sector in Mexico following the North American Free Trade Agreement has also contributed to "accelerating soil erosion trends both through specialization and monoculture, coupled with increased use of fertilizers (as is observed in the case of the more competitive producers), and because of a more intensive use of soils, including through the extension of the agricultural frontier to marginal lands, by traditional producers" (Nadal, 2000, cited in Mayrand, Paquin and Dionne, 2005: 18).

3.2.1.2 Overgrazing

Livestock farming is one of the main activities responsible for land degradation around the world. When large herds are kept on small areas of land for long periods, overgrazing damages soil structure and causes soil erosion. Overgrazing is a particular problem on slopes, where soils are more easily eroded and grasses are crushed by 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 micro-organisms. Although compaction is considered unavoidable in livestock production, its severity varies with the type of soil. Land degradation puts livestock growth and survival at risk, and reduces both the incomes and the food of local populations.

The main root causes of rangeland or pasture degradation in arid and semi-arid zones are breakdown of traditional land management systems that regulate grazing; shrinking rangeland accompanied by

rapidly growing human and livestock populations; increased demand for other land uses, such as agriculture, industry and infrastructure development; development of settlements for pastoralists, with associated unplanned land and water development; and limitations on the movements of nomadic pastoralists along traditional corridors across national boundaries (GEF, 2003).

Underlying causes of the growing imbalance between livestock and the environment have little to do with livestock *per se*. They include rising demand for livestock products, brought about by rapid human population growth, increased per capita income and urbanization; weak policy and institutional capacity to manage rangeland sustainably, because of ignorance about ecosystems and their links with livestock; and ill-defined, unenforced or changing property rights, which deny access to essential resources (such as surface water) in many grazing systems or impede pastoralists' customary land-use practices.

3.2.1.3 Deforestation and forest degradation

Deforestation leads to land degradation. The depletion of trees results in increased water erosion, which has adverse effects on water resource development, local aridification, soil fertility and biodiversity. The loss of biodiversity has a direct impact on the availability of useful crop varieties for agriculture and genetic material for medicinal products. Deforestation also increases the severity of flooding, runoff, droughts, sedimentation in rivers and reservoirs and groundwater depletion, with negative repercussions for agricultural production and local populations.

The causes of woodland degradation in dry areas include overharvesting of fuelwood for energy, conversion of woodland for large-scale crop or livestock production, and uncontrolled forest fires, often to clear land or facilitate wildlife hunting.

The main trade-related causes of forest degradation in drylands are agricultural subsidies that encourage the conversion of forest for large-scale cropland or pasture, imbalance between fuelwood supply and demand, and weak institutions that are unable to conserve and sustainably manage forest resources (GEF, 2003).

3.2.2 Environmental and socio-economic consequences of land degradation

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. Unique ecosystems are therefore undermined. The soil's physical structure and biochemical composition can be blown away by the wind or washed away by rainstorms. If inadequate drainage and poor irrigation practices cause the water table to rise, 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 the loss of biodiversity.

Land degradation in drylands also has strong adverse impacts on non-drylands, including on areas that are thousands of kilometres away from the desertified regions. Biophysical impacts include dust storms, downstream flooding, reduced water quality, sedimentation in rivers and lakes, impairment of global carbon sequestration capacity, and regional and global climate change. Impacts on humans include reduced visibility, mental stress and health problems, such as eye infections, respiratory illnesses and allergies. For example, visibility in Beijing is often adversely affected by dust storms originating in the Gobi Desert in springtime. Large dust storms emanating from China affect the Korean peninsula and Japan, and are even observed to have an impact on air quality in North America.

Land degradation contributes to poverty by undermining the food production of people living in rural drylands. Malnutrition, undernutrition and, ultimately, famine may result. The relationship between soil degradation and crop yields is complex, however, and depends on many factors, such as the weather, disease and pests, farming methods, external markets and other economic forces.

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 a population's ability to use ecosystem services sustainably. Migration may exacerbate urban sprawl and, through competition for scarce natural resources, bring about internal and cross-boundary social, ethnic and political instability.

Land degradation reduces economic opportunities. Globally, the United Nations Environment Programme (UNEP) estimates that economic losses from desertification total more than USD42 billion. The costs of land degradation and desertification are generally measured in terms of productivity, for example, reduced crop yields or grazing intensities. Secondary costs include loss of ecosystem services, and the indirect costs are associated with mitigating desertification.

4 AGRICULTURAL PRODUCTION, TRADE AND SUSTAINABLE LAND MANAGEMENT

This section analyses the linkages between agricultural trade and land degradation. Trade in agricultural products often provides substantial export earnings for dryland countries, but may also encourage agricultural production patterns that are detrimental to the land and to people's livelihoods in degraded areas. Owing to an inadequate public policy framework at the national and international levels, the extensive use in developed countries of subsidies that are linked to production, and the disproportionate political influence of a small number of groups that benefit from the current system, these challenges are persistent and deep-rooted. It is of vital importance that governments, civil society and other stakeholders in both developed and developing countries continue to seek reform of the current system, because of the negative social and environmental effects to which it gives rise. It is equally important that increased attention is given to the negative economic impacts resulting from the unsustainable use of land and natural resources and to the positive implications that more equal access to benefit sharing might have on sustainable development. It is therefore crucial to develop new instruments and mechanisms and/or to strengthen existing ones that foster the engagement of trade institutions in creating a coherent policy framework at the national and international levels that is conducive to the effective implementation of the different MEAs, including the UNCCD.

Coping mechanisms for reducing the negative impact of agricultural trade on land resources can be found at the national, regional and international levels. The following section pinpoints a number of policy instruments, tools and mechanisms under the multilateral trade regime - the potential of which could be explored in terms of its contribution to the sustainable use of land and natural resources

4.1 Importance of agriculture and livestock for dryland countries: their relationships with trade and land degradation

Many of the top 20 exporters of agricultural such products as sesame seeds, millet, cotton, barley, cattle and sheep are countries with large areas of arid, semi-arid and dry sub-humid areas (see Table 1). Table 1 also indicates that trade in these products is important for least-developed countries (LDCs), such as Mali, Chad and Burkina Faso.

Table 1: Selected agricultural products and country exporters

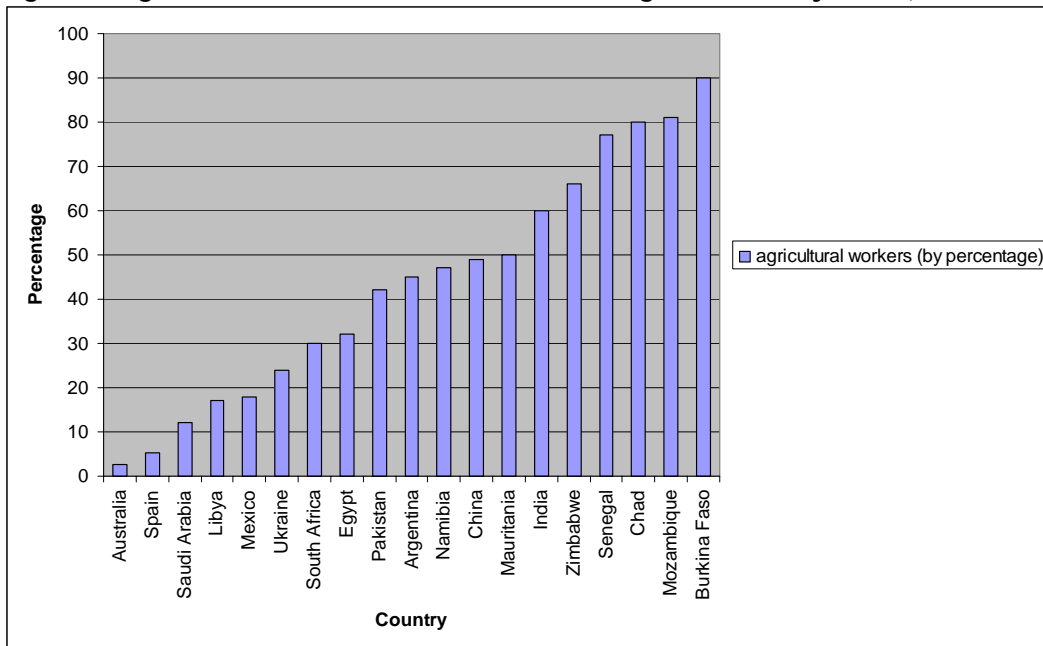
Agricultural product of dryland regions	Sesame seeds	Sates	Sorghum	Millet	Tomatoes	Cotton	Barley
Countries with large areas of drylands that are among the top 20 exporters of these products (by value)	India, Ethiopia, China, Mexico, Venezuela, Nigeria, Mozambique, Pakistan, Turkey, Egypt	Iran, Israel, Saudi Arabia, Pakistan, Algeria, Oman, Jordan, South Africa, Egypt, Spain	Argentina, Australia, India, Ukraine, Spain, South Africa	India, China, Ukraine, Australia, Bulgaria, Russian Federation, Burkina Faso, Argentina, Iran	Spain, Mexico, Turkey, Jordan, Morocco, Israel, Syrian Arab Republic, Uzbekistan, Kazakhstan, China	Australia, Uzbekistan, Egypt, Greece, Burkina Faso, Zimbabwe, Mali, Syrian Arab Republic, Kazakhstan, Spain, Turkey	Australia, Ukraine, Russian Federation, Bulgaria, Argentina, Kazakhstan, Syrian Arab Republic

Agricultural product of dryland regions		Groundnuts in shell	Maize	Cattle	Beef	Sheep	Goats
Countries with large areas of drylands that are among the top 20 exporters of these products (by value)		China, India, Israel, Egypt, South Africa, Australia, Senegal, Spain	Argentina, China, Ukraine, India, South Africa, Spain, Lebanon	Mexico, Australia, Spain, Mali, Chad	Spain, Ukraine, Australia, India	Syrian Arab Republic, Australia, Sudan, Spain, Namibia, Mali, Jordan, Mauritania	Syrian Arab Republic, Oman, Niger, Chad, Mali, Mauritania, India, Australia, Iran, Sudan

Source: Data from the FAO Statistics Division, 2004, and WRI.

Agriculture is the main employer in many dryland developing countries (see Figure 1); for example, it provides up to 90 percent of employment in Burkina Faso. This implies a large number of small-scale subsistence farmers, who have very limited alternative employment opportunities in these countries. Figure 1 also shows that some important players in agricultural trade have low percentages of agricultural workers. This is generally the case of industrialized countries, such as Australia and Spain.

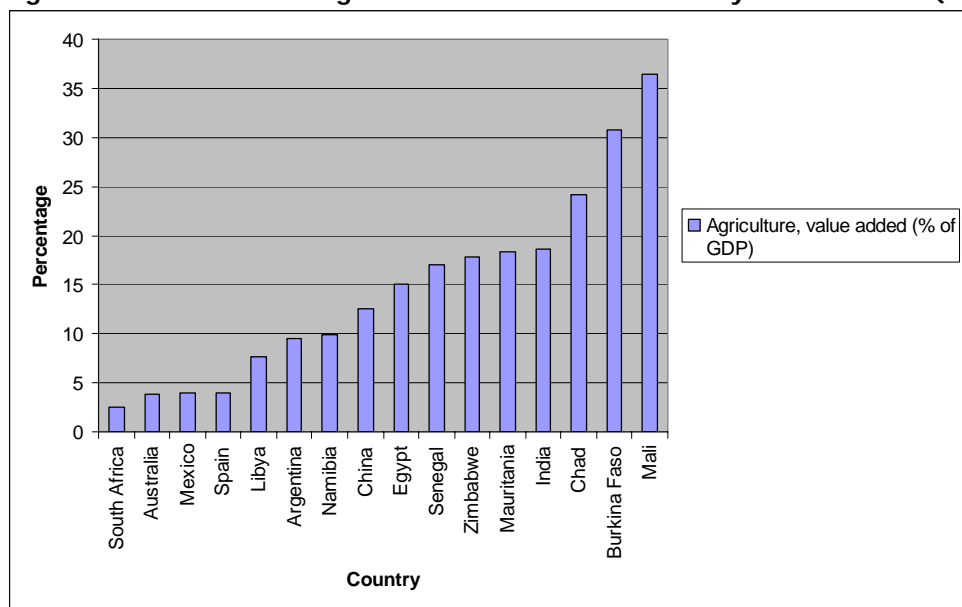
Figure 1: Agricultural workers in countries with large areas of drylands (1990–2004)



Source: Based on data from CIA and WRI.

As shown in Figure 2, agriculture accounts for a large share of the gross domestic product (GDP) of dryland developing countries, and constitutes the dominant economic sector in rural areas.

Figure 2: Contribution of agriculture to GDP in selected dryland countries (2004)

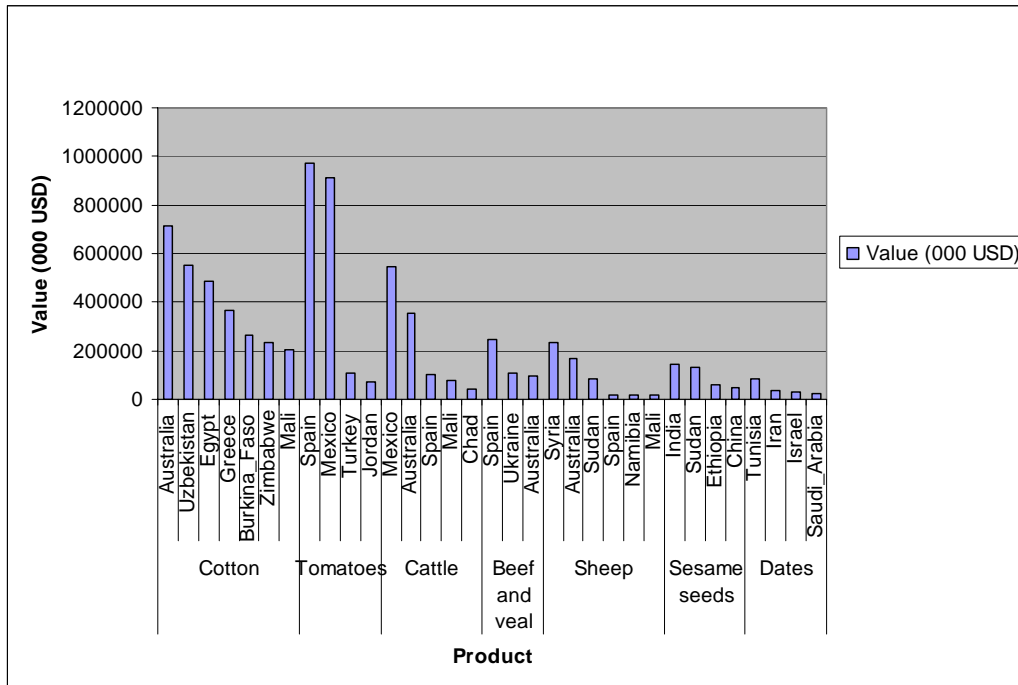


Source: Based on data from the World Bank, OECD and WRI.

The world's livestock sector is growing at an unprecedented rate, but only 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 also provide non-food functions. For many smallholder farmers, livestock provide draught power and nutrient recycling through manure, compensating for lack of access to modern inputs such as tractors and fertilizers. Livestock also provide employment, generate cash incomes for rural and urban populations, provide fuel and transport, and produce value-added goods that can have multiplier effects by creating a need for additional services. Livestock often constitute the main capital reserve of farming households, serving to reduce risk and add stability to the overall farming system.

Although internationally traded commodities such as cotton, tomatoes and livestock represent substantial export earnings for dryland countries (see Figure 3), their production can also cause negative impacts on the land. Trade in agricultural commodities may lead, directly or indirectly, to land degradation from increased production for export. Although the interactions among trade, agriculture and land degradation are complex and depend on many factors, trade – through increasing the demand for agriculture products – can encourage farmers to use unsustainable agricultural practices, such as crop intensification under monocropping, the expansion of agriculture on 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.

Figure 3: Value of dryland product exports, by country



Source: Based on export data from the FAO Statistics Division, 2004.

For instance, cotton production's impact on land include soil and water pollution from agrochemicals, soil erosion and degradation, and habitat conversion and the associated loss of biodiversity. Under conventional agriculture, cotton production requires large quantities of fertilizers and pesticides. Globally, it is estimated that conventional cotton production covers 2.4 percent of total arable land, but accounts for 11 percent of all annual pesticide use (Clay, 2004). This has resulted in soil depletion and degradation (i.e., reduced soil quality and fertility), leading to the movement of cotton production to new areas. Soil salinization from irrigated cotton production also causes the degradation and eventual abandonment of productive land. Large areas of Uzbekistan and Pakistan have lost productivity owing to this phenomenon.

Another example of agricultural production leading to land degradation is that of beef. As described earlier, livestock farming is one of the main activities responsible for land degradation around the world. Overgrazing leads to loss of the vegetative cover of rangeland or pasture and to soil compaction because of trampling. Pasture covers the largest area of any land use within the agriculture sector. More pasture is used for cattle than for all other domesticated animals and crops combined. Cattle also eat an increasing proportion of the grain produced from agriculture and are one of the most significant contributors to water pollution and greenhouse gas emissions (Clay, 2004).

Expanding markets could provide mobile pastoralists with enhanced livelihood options and incentives for investing in SLM. Rapid urbanization in developing and emerging countries, many of which have pastoralists, increases the demand for meat and dairy products worldwide. Growth in domestic markets could provide significant opportunities to pastoralists, even where the international trade regime restricts their access to export markets. Improved access to niche markets, such as through organic and fair trade schemes, could also provide opportunities for pastoralists producing dairy, meat and specialty fibre (cashmere, merino etc.). Promoting investment in local value-added production therefore has potential. Governments should work with pastoralist groups to ensure that market and trade interventions benefit them (Rietbergen, 2007).

4.2 Trade-related factors that influence the impact of agriculture and livestock on land degradation

The interactions between agricultural trade and land degradation are complex and vary significantly depending on the structure of the country's economy, its degree of integration into the global economy, economic and social relationships at the national and sub-national levels between the different climatic zones, and the nature and volume of goods produced and traded. Given this complexity, it is hard to reach general conclusions about the interactions between agricultural trade and land degradation. Nonetheless, a number of observations can be made.

4.2.1 Agricultural subsidies

Global trade in agricultural products is characterized by massive, systemic distortions, which have emerged primarily since the Second World War. These trade distortions can be directly linked to overproduction, the intensification of farming methods in both developed and developing countries, and the consequent degradation of land, water pollution and negative impacts on other natural resources. Like many other national policy instruments, subsidies in themselves can have both positive and negative impacts on land degradation, environmental conditions and poverty. However, the current structure and distribution of agricultural support tends to have an overall negative impact for reasons that are explored in this section.

Broadly speaking, developed countries tend to subsidize agricultural production heavily, 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, directly or indirectly, in order to support the growth of industry. The total value of agricultural subsidies in Organisation for Economic Co-operation and Development (OECD) countries has remained roughly constant (with some fluctuations resulting mainly from price changes on world markets) at about USD300 billion in recent years (De Gorter, Ingco and Ingacio, 2003).⁴ This figure is approximately four times the value of ODA,⁵ and half the value of developed countries' defence spending (Oxfam, 2005).

Some subsidies are believed to have a more harmful impact on sustainable development – including negative environmental impacts such as land degradation – than others. Subsidies that are directly linked to production are believed, in general, to have the most damaging effects, while subsidies that governments have decoupled from production may have less significant effects. Since the mid-1980s, many governments have attempted to reform the structure of agricultural support and abandon the most trade-distorting forms. This is partly in response to environmental concerns, but also because of the budgetary implications of existing subsidy regimes, the growing evidence of the impacts of these payments on developing countries, and pressure from trading partners in the context of multilateral trade negotiations at the WTO.

4.2.1.1 Export subsidies

The need to remove surplus production from domestic markets has led developed country governments to make increasing use of export subsidies, which have served for "dumping" low-cost products in developing country markets at less than the price normally charged in the producing country.⁶ Such forms of dumping can force small farmers in developing countries to reduce substantially the prices of their products in local markets, in order to compete with subsidized foreign imports. Subsidies can therefore push small farmers either to abandon farming altogether or to adopt increasingly unsustainable agricultural practices – such as exploitation of marginal land, deforestation, overgrazing, reduction or elimination of fallow periods, monocropping instead of mixed crop

⁴ The average total support in OECD countries is estimated at USD315 billion for 2000–02.

⁵ OECD aid in 2004 rose to USD79.5 billion (www.oecd.org/dataoecd/0/41/35842562.pdf).

⁶ This is according to the 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).

production and crop rotation, and the intensive use of artificial inputs such as fertilizers – simply to remain competitive.

In the Doha Round of negotiations at the WTO, governments have conditionally agreed to eliminate all export subsidies by 2013 (WTO, 2005a). Although the European Union (EU) makes the greatest use of export subsidies, the United States makes extensive use of other forms of export competition that have similarly significant impacts on developing country farmers. In particular, the United States provides large quantities of “food aid”, which is systematically sold on developing country markets at subsidized prices. The EU has argued that although genuine food aid should continue to be available during humanitarian emergencies, the “aid” provided by the United States 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 have therefore undertaken to establish parallel disciplines on “all export measures with equivalent effect”, by the same deadline, and have made considerable progress in disciplines for measures such as export credits and food aid. The July 2006 suspension of the WTO Doha Round negotiations means that progress in these areas has been interrupted, however, and could be foregone entirely if governments continue to fail to agree on core negotiating issues.

4.2.1.2 Domestic support

In addition to export subsidies, governments also provide high levels of domestic support, subsidizing farmers at the national level 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 quantities of crops produced or to herd sizes, they stimulate overproduction and lower world market prices for the 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 that 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. 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 among small farmers or of competition for exports with subsidized developed country producers.

A significant reason for this situation is that the current structure of the subsidy regime in the United States and the EU overwhelmingly favours large farms at the expense of smaller ones. In 1998, the largest 5.1 percent of United States farms obtained more than 48 percent of their incomes from government payments, while the smallest 39 percent obtained only 8.9 percent of their incomes from the government (De Gorter, Ingco and Ignacio, 2003). In the EU, the largest 25 percent of farms have average gross farm receipts of more than €180,000 (equivalent to about USD230,000) and average farm net worth of almost €500,000 (about USD646,000): these farms produce 73 percent of farm outputs and receive 70 percent of support (Ash, 2006). The result of this subsidy structure is that the largest farms, which produce the greatest production surpluses and use the most intensive production techniques, tend to be those 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 United States provided cotton subsidies worth USD2.4 billion to its 28,000 producers. This sum is more than the entire GDP of Burkina Faso, a country in a dryland zone where more than 2 million people depend on cotton production to make a living (Stuart and Fanjul, 2005). In 2004, United States cotton exports were worth USD4,251,216, while those from Burkina Faso were worth USD178,741 (FAO Statistics Division). In a harsh economic environment of this sort, farmers living in areas with fragile soils in West Africa have to compete with heavily subsidized and highly-mechanized production methods in the United States. Under these conditions, the larger producers are inevitably pushed to adopt ever more intensive farming approaches. Every year, thousands of the smallest farmers are forced to leave the land or adopt increasingly unsustainable land management practices in order to survive.

In the Doha Round, a group of developing countries led by Brazil and India and known as the G-20⁷ 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, these countries are supported by a longer-established coalition of countries known as the Cairns Group,⁸ which brings together both developed and developing countries in favour of agricultural trade reform. Both groups include many countries with large areas of arid and, in some cases, degraded land – although to date, arguments based on economic and social issues rather than environmental concerns have tended to figure most prominently in the groups’ proposals.

4.2.1.3 Green Box subsidies

As in the previous Uruguay Round, WTO members negotiating the Doha Round have agreed to reduce the most trade-distorting subsidies by the greatest amounts. These subsidies are classified at the WTO as “Amber Box” subsidies. Cuts will also be made to those subsidies in the WTO “Blue Box” – those that have been partially decoupled from production but still have some trade-distorting effect. At the moment, no cuts or overall cap are foreseen for “Green Box” subsidies, which cover those payments that are meant to have no, or only minimal, trade-distorting effects or effects on production.⁹ Countries continue to disagree over the depth and extent of cuts to trade-distorting support.

Green Box subsidies include payments provided under government environmental and social programmes, as well as those for research, infrastructure and the building of public food stocks. During the Doha Round, controversy arose over whether or not these subsidies do affect production, and hence environmental and development conditions in developing countries. As developed countries have come under pressure to reduce Amber Box and Blue Box subsidies further, it has been claimed that trade-distorting subsidies are simply being shifted into the Green Box with no major reform to the design of the subsidy programmes themselves. WTO members have agreed to a “review and clarification” of Green Box criteria (WTO, 2004: paragraph 16), and have also specified that this process should ensure that developing country programmes are effectively covered (WTO, 2005a: paragraph 5).

Although most developing countries lack the financial resources to provide substantial subsidies under the Green Box, some already make some payments in this category to achieve various goals. For example, China makes Green Box payments for purposes of food security, infrastructure and, increasingly, protection of the natural environment (Zhao, Wang and Linxuegui, 2003). China contains extensive dryland areas, a large population (25 percent of the world’s total) and limited land and water resources (7 percent of the world’s arable land). In the late 1960s, Chinese agriculture went through an expansion phase aimed at increasing productivity and food security by increasing chemical input use and expanding agricultural exploitation into areas of marginal land. Consequent land degradation has led to recent increases in ecological spending, and in 1998 the government spent RMB18.4 billion (equivalent to about USD2,174,400,000) on environmental protection – 26 times more than what it spent in 1981.

China’s environmental protection efforts cover five main areas: water and soil conservation, grassland improvement and protection, forestation subsidies and protection, detection and protection of water resources, and surveying of natural resources. In order to tackle soil erosion and depletion, as well as desertification, the government has launched six major forestation projects. A central feature of these is the transformation of grain plots into forestry areas; associated complexities include the readjustment of future agricultural development, the regulation of property rights (including landownership) and the management of farmer migration into ecologically fragile areas (Zhao, Wang

⁷ G-20 members are Argentina, Bolivia, Brazil, Chile, China, Cuba, Egypt, Guatemala, India, Indonesia, Mexico, Nigeria, Pakistan, Paraguay, the Philippines, South Africa, the United Republic of Tanzania, Thailand, Uruguay, Venezuela and Zimbabwe.

⁸ Cairns Group members are Argentina, Australia, Bolivia, Brazil, Canada, Chile, Colombia, Costa Rica, Guatemala, Indonesia, Malaysia, New Zealand, Pakistan, Paraguay, the Philippines, South Africa, Thailand and Uruguay.

⁹ The requirements for Green Box subsidies are set out in Annex 2 of the WTO Agreement on Agriculture.

and Linxuegui, 2003). Although taxes on agriculture mean that total overall support to the sector is negative, this example demonstrates that developing countries are able to use Green Box agricultural subsidies to tackle land degradation in arid areas.

4.2.2 Market access

In the WTO agriculture negotiations, links between the areas of market access and land degradation can be found, although once again they are often complex and depend on a variety of different factors. While the effects of developed country agricultural subsidies on land degradation are often relatively clear-cut, the relationship between increased market access and land degradation is frequently less obvious.

4.2.2.1 Structure of agricultural production in developing countries

On the issue of market access, although there are marked differences among developing countries, which reflect their diverse economic structures, there are also some commonalities. Significantly, countries such as Argentina and Brazil are far more likely to reap immediate benefits from the opening up of agricultural markets in the developed world than are countries such as Chad or Namibia – although all four countries have significant dryland and degraded regions. The former have well-established export-oriented agricultural producers, who would be well placed to take advantage of new export opportunities in a competitive market environment. 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 have a positive or 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 producers (or their trading partners) respond to government regulation and consumer pressure for sustainable environmental management. Opening up market access cannot therefore be seen as an automatic route to social and environmental progress, but rather needs to be viewed as a potential tool that is likely to be significant when an appropriate regulatory environment is in place at the national level.

Export-oriented agriculture may provide an opportunity for small landless farmers to escape low wages and debt, decades-old structures of social and economic subservience and the poverty that often leads to unsustainable land-use practices, especially in the context of weak land tenure. For these people, the export sector may provide employment in a formalized environment, where management responds to government regulation on labour standards, pay, and health and safety conditions, and to consumer pressure for goods that have been produced in an ethical and environmentally sustainable manner. In other contexts, however, employment in the export sector may be the only option for labourers forced off their land or with no other economic alternative. In cases where a labourer previously owned the land, this may represent a step backwards from traditional sustainable land-use practices. In addition, wages and conditions may be exploitive, and national law may not favour, or may even hinder, respect for international standards on labour rights and environmental protection. Consumers may be ignorant of production conditions, or production may be for an industry with low consumer visibility, such as rapeseed for the production of synthetic lubricants, varnishes and plastics. Under these conditions, the use of fertilizers and other chemical inputs may exceed the carrying capacity of the land, and intensive monocropping, overgrazing and deforestation may replace crop rotation, sustainable livestock management practices and the maintenance of biodiverse habitats.

4.2.2.2 Sensitive products

The number and treatment of permitted "sensitive products" is a contentious area 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. 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 – that 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 liberalization in this area remains unclear.

For example, sugar production has been associated with land degradation due to habitat clearance, overuse of water, intensive use of chemical inputs, discharge of mill effluents, and pre-harvest cane burning. It should be noted however that many of these problems are associated with both 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 overproduction, with consequent negative environmental and development impacts. National regulatory frameworks remain a critical factor in determining the impact of sugar production on land degradation.

4.2.2.3 Special products

Developing countries at the WTO have argued that they should be given flexibility to shield a limited number of "special products" from the full force of tariff cuts, because these products are important for food security, livelihood security and rural development objectives. Although these countries have tended to emphasize economic and social arguments, rather than environmental ones, there are indications that this particular trade policy tool could have important implications for SLM.

The special products mechanism would allow developing countries to lower tariffs more gradually on products for which rapid liberalization could destabilize 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 situation prevailing in the country. Preliminary findings from a series of case studies conducted by ICTSD¹⁰ suggest that common dryland products such as wheat, sugar, chicken, beef, tomatoes, and milk and dairy products were frequently identified as meeting the selection criteria. Where small farmers produce these goods using traditional and SLM approaches and where alternative trade scenarios would lead to significant hardship across whole economic subsectors or geographical regions, the special products mechanism could 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.

4.2.2.4 Duty-free, quota-free market access for LDCs

One of the most significant potential prizes for LDCs in the negotiations of the Doha Round is the prospect of obtaining "duty-free, quota-free access" for their products in developed country markets, without any expectation of reciprocal concessions. Many dryland countries are LDCs, and could benefit from increased market access for their products, even though the links between increased trade and land degradation are complex and vary between products and countries.

In 2004, WTO members agreed that "least-developed countries ... are not required to undertake reduction commitments" (WTO, 2004: paragraph 45). In 2005, at the WTO Ministerial Conference in

¹⁰ The case studies are available at: www.agtradepolicy.org/index.htm

Hong Kong, members also agreed to the Decision on Measures in Favour of Least-Developed Countries (WTO, 2005a: Annex F). This decision requires developed countries to provide duty-free and quota-free market access to LDC products by 2008 “or no later than the start of the implementation period”; developing countries “in a position to do so” were also to provide the concession.

In addition to enhancing trade in agricultural products that do not cause significant land degradation, the agreement would enable LDCs to develop other economic sectors that do not rely on the intensive land use that characterizes much export-oriented agriculture. For example, LDCs might be able to expand exports from the textile and clothing industry – a sector in which many have a comparative advantage.

4.2.2.5 Tariff escalation

The problem of tariff escalation has long been identified as an obstacle to development. Developed countries often impose higher tariffs on finished products, such as peanut butter, than on raw materials, such as peanuts, which discourage the development of value-added production in developing countries. WTO members decided to address tariff escalation “through a formula to be agreed” (WTO, 2004: paragraph 36).

Tariff escalation often provides an opportunity for developing countries to reduce land-degrading activities by diversifying into other economic activities. Although processed products may have other environmental effects, they are often less land-intensive than agriculture and provide an alternative source of livelihood for people with few other options. Insofar as poverty is linked to land degradation – by forcing people to adopt more unsustainable land-use patterns – the development of industries focusing on processed products may help prevent land degradation. In the long term, it can also lead to the development of industrial capacity in other areas, and hence to greater economic diversification away from land-intensive production.

4.2.2.6 Long-term decline in terms of trade for agricultural commodities

The terms of trade for many agricultural commodities – such as sugar, coffee, cotton and bananas – have been in long-term decline for several decades. Developing country governments and intergovernmental organizations, such as the United Nations Conference on Trade and Development (UNCTAD), have identified this problem as a major challenge for developing countries’ economic development and a significant factor in exacerbating poverty levels in these countries. Declining prices for commodity products can lead farmers to expand production to compensate for the loss of product value. They often do this by adopting unsustainable land management approaches, such as inappropriate use of chemical inputs, reduction of fallow periods, expansion on to marginal lands and destruction of habitats rich in biodiversity.

The World Bank and the International Monetary Fund (IMF) may have contributed to this long-term decline by systematically making cash crop expansion a condition of loan agreements. Growth in the total land area devoted to commodities has led to increased supply and greater competition, without any corresponding increase in demand: decreasing prices have arguably been a result of this approach.

Recently, the WTO African Group put forward a proposal addressing a number of issues associated with declining commodity prices. This proposal recommended that WTO members agree on a legal instrument that would allow them to take joint action to stabilize and improve conditions in world commodity markets. Specifically, this instrument would enable producer countries, or producer and consumer countries, to establish international commodity agreements, and would authorize members to apply export restrictions and taxes in order to manage supply and stabilize prices. The proposal also put forward recommendations on tariff escalation and technical assistance, but other WTO members have not responded to these to date.

4.2.2.7 Supply-side capacity and trade-related infrastructure

Where developing country producers are using SLM techniques to produce agricultural goods, a variety of constraints may prevent them from taking advantage of market access opportunities. These constraints include high physical costs of market access, lack of rural infrastructure (roads and other transport links, communication facilities, etc.), lack of understanding of how markets operate, limited access to information, lack of relevant skills, and lack of access to inputs, credit and technology.

At the WTO, developing countries have pushed for action to overcome some of these constraints. In 2005, their efforts led to agreement on a mandate for “aid for trade” (A4T) in the WTO’s Hong Kong Ministerial Declaration (WTO, 2005a: paragraph 57):

Aid for Trade should aim to help developing countries, particularly LDCs, to build the supply-side capacity and trade-related infrastructure that they need to assist them to implement and benefit from WTO Agreements and more broadly to expand their trade.

While aid that responds effectively to this mandate could help developing countries that face supply-side constraints, it remains unclear to what extent such aid would be additional to existing aid budgets or pledges and to what extent it would be accompanied by burdensome economic policy conditions imposed by donors. As noted, policy conditionality associated with aid has arguably been responsible for decisions that have contributed to land degradation in developing countries.

5 ALTERNATIVE LIVELIHOODS

Traditionally, drylands have been regarded as hopeless areas of arid and degraded land where vulnerability to drought and natural calamities represent a risk factor that is far too high to make these areas attractive for investments. However, when attention is shifted from the political and legal framework regulating international trade and commercial transactions (analysed in section 4) to look at the market dynamics in terms of supply and demand, new opportunities emerge for using trade to promote sustainable use of land and natural resources in dryland and degraded areas, through alternative livelihoods. In recent years, for example, demand for “natural products” has been growing constantly in northern markets, particularly those of the EU, the United States and Japan. This new trend is increasingly seen as an opportunity to foster market differentiation in sectors such as food, cosmetics, and pharmaceuticals, among others. Despite the favourable momentum, however, “natural products” are still relegated to niche markets. The reason for this is often not so much supply constraints but rather a lack of market structure. Trade-related policies and institutions, as well as country governments, need to explore and support these opportunities for diversifying trade into products that may benefit livelihoods and allow more sustainable use of natural resources in poor rural areas.

This section provides examples of natural products with a comparative advantage for the communities living in degraded areas, and highlights economic opportunities that may arise from the development of these markets. The section also points out the potential risks of increasing trade in natural products and the importance of creating an enabling environment for the sustainable development of this sector. Incentives for increasing investment flows should be accompanied by adequate measures to foster the sustainable use of land and natural resources, build infrastructure and institutional capacity, and strengthen support policies.

5.1 Fostering market diversification: the comparative advantage of natural products

A key challenge facing the socio-economic structure of many dryland countries is a vicious cycle of low-input, low-risk and low-output production strategies. An important part of the solution depends on achieving significant structural transformation, both internally and externally. In particular, the creation of opportunities that rely on market linkages requires adjustments to global competition,

supportive trade rules, and financing strategies that are viable in a climate of low returns. In a context of competing priorities for public spending, arid and semi-arid countries often attract very little public and private investment because of perceived low returns on investment. Such a perception contrasts with reality, however, which indicates that the economic benefits of investing in drylands can be high. A study of returns on investment in selected African dryland regions found economic rates of return of 30 percent in the Mali Office du Niger large-scale irrigation programme, 20 percent in the Niger Illela soil and water conservation programme, more than 20 percent in Tigray forestry and 12 percent in United Republic of Tanzania forestry (Reij and Steeds, 2003).

As well as in traditional sectors, opportunities are also increasingly emerging for natural products that are typical of drylands. Some of these products are unique because of their geographic location and the peculiar harsh environment in which they grow. For example, some products develop features that enable them to provide environmental services that are valuable for the conservation of land, water and biodiversity, and therefore touch simultaneously on the interests of several MEAs. Some products are endowed with natural properties that provide valuable substitutes for chemical components and processes in various sectors, such as pharmaceuticals, and this gives them a natural comparative advantage. These products are also often the only natural resources available in their areas, and therefore play a crucial role in the livelihoods of local communities. Socio-economic assessments demonstrate that vulnerable groups, such as women, are often major stakeholders in these markets.

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 through ecotourism and handicraft production. These products are sometimes overlooked because they are quantitatively less important than agricultural commodities in terms of trade flows. In terms of value added and the targeting of poor rural communities in marginal areas, including drylands, however, these alternatives may have a much greater impact on enhancing livelihoods and reducing poverty. Moreover, as the market for these products is less structured, there may be more space for influencing policy-making processes, creating regulations and building institutions able to enhance sustainable use through trade development. There might also be more room for engaging the private sector in the development of sustainable value chains that integrate grassroots communities and ensure more equitable sharing of benefits. It is therefore 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 that could benefit livelihoods and SLM.

The present lack of institutions to enhance research and development and help producers to comply with international standards and regulations, and/or to create their own, is severely limiting market access for these products. A number of companies interested in purchasing some of these products, and even in investing in production and value chain development according to social and environmental sustainability criteria, are prevented from doing so by regulations in the destination markets – such as the novel food regulations in the EU – that do not allow the use of such natural components. In addition, infrastructure must be made available in the areas where natural products are found, which are often isolated or remote from the main markets. In other words, in order to take full advantage of the market potential of natural products, much work still needs to be done on creating the enabling policy environment and incentive frameworks to increase the products' competitiveness with traditional agricultural commodities. This could result in market diversification and shifts from unsustainable agricultural production patterns to activities that capture higher margins for local communities and lower the pressure on land.

5.2 Novel products for SLM: assessing trade opportunities

5.2.1 Medicinal plants

Developing markets for medicinal plants¹¹ represent an opportunity for countries with drylands to reverse land degradation and advance rural development (Lambert, Rydén and Esikuri, 2005). In addition to their medicinal values, it has been suggested that medicinal plants can have a significant impact on improving food security, income generation and land rehabilitation through enhancing soil stabilization, biodiversity, soil water retention and nitrogen fixation.

5.2.1.1 Cultivated medicinal plants for enhancing SLM

The cultivation of medicinal plants in dryland areas can promote SLM by both decreasing environmental stress on wild plants and contributing to the stabilization and enrichment of soils in degraded areas. Planting fields of medicinal plants, such as trees, shrubs and herbs, can help check runoff and erosion, control flooding, purify water and protect against the wind. In addition, the plants can help to regulate microclimates and protect against the effects of desertification. Cultivated medicinal plants can also prevent environmental problems in moderately degraded lands and can play a role in reclaiming more severely degraded drylands. In sub-Saharan Africa, for example, 38 endemic medicinal plants have been identified as having positive environmental impacts, such as the capacity to establish and stabilize dunes and increase soil fertility (Lambert, Rydén and Esikuri, 2005).

5.2.1.2 Economic and trade opportunities for dryland medicinal plants

The World Health Organization (WHO) estimates that 80 percent of the population in developing countries rely largely on plant-based drugs for their health care needs, and in a few decades an even larger proportion of the world's population may be relying on plant-based medicines. Even in modern pharmacopoeia, at least 25 percent of drugs are derived from plants.

Demand for medicinal plants is increasing in both developing and developed countries. The global market for herbal medicines, including processed products and raw materials, was estimated at USD65 billion in 2004.¹² As suggested by Lambert, Rydén and Esikuri (2005), if the African drylands were to supply only a small proportion of this value, for example 1.0 percent, the plants' contribution would amount to USD650 million, providing an excellent opportunity for improving quality of life and rehabilitating degraded lands.

The growing demand for medicinal plants in many countries is mainly due to consumers' interest in products that are based on natural materials and produced without harmful chemicals or pesticides. Consumers in developed countries are becoming more conscious of the values of natural products and are demanding more information on the ingredients and additives found in their food, drink and health products (FAO, 2004).

As a result of growing interest in medicinal plants, international trade in medicinal plants is increasing and new income-generating opportunities are opening up for populations in dryland rural areas. The majority of the material traded, internationally and domestically, derives from wild harvesting. At the global level, the area cultivated remains relatively small because cultivated material involves higher production costs and requires secure landownership or access, as well as sophisticated and expensive management practices.

¹¹ Medicinal plants are defined as plants that are commonly used in treating and preventing specific ailments and diseases, and that are generally considered to play a beneficial role in health care (Lambert *et al.*, 1997 cited in Lambert, Rydén and Esikuri, 2005).

¹² This figure is based on a WHO 2001 estimate of USD45 billion, with an annual growth rate of 5 to 15 percent.

The development of markets for medicinal plants can provide employment opportunities for women and men, and allow rural people to trade their products in urban markets. Local populations are knowledgeable about the ecological requirements of medicinal plants and can play an important role in species selection. They can also help to establish nurseries to produce seeds and seedlings.

*5.2.1.3 Market overview*¹³

Globally, both exports and imports of medicinal plants have been increasing in terms of volume, but the total value has been declining, which suggests decreasing average unit prices. In absolute terms, developed and developing countries import similar values of medicinal plants. Developing countries, however, are the main exporters.

In general, medicinal plants are exported as raw material, and only to a lesser extent as finished products. This is mainly because markets for herbal medicines in developed countries, such as Europe and the United States, are highly regulated. Developed country pharmaceutical manufacturers require that plant materials be subjected to rigorous tests before mass production. For example, 80 percent of Indian medicinal plants are exported as raw materials, such as dried plants, extracts and isolated ingredients. The remaining 20 percent are finished medical products, generally homoeopathic and ayurvedic medicines.

The world's largest markets for medicinal plants are China and India. Major exporting countries include developing countries such as China, the Republic of Korea, Chile, India, Brazil and Thailand. The main importing countries, by value, are China, Hong Kong Special Administrative Region, the United States, Japan and Germany.

Medicinal plants do not appear to be affected by high tariffs in OECD countries. Tariff rates applied by most developed countries, such as the EU, the United States and Japan, are low or nil. On the other hand, rates applied in developing countries for a number of products are higher because of interest in protecting the local industry. For example, China applies rates of 22 percent *ad valorem* on some of its imports, India 15 percent (with some exemptions), Turkey 35 percent, and Bangladesh 22.5 percent. Such tariff levels make exporting to these markets difficult.

*5.2.1.4 Constraints to the development of trade in medicinal plants*¹⁴

Although medicinal plants represent an important trade opportunity for dryland developing countries, these countries can be constrained by the export requirements set by developed country markets. Medicinal plants and materials for use in medicines and other health products have to meet the regulatory requirements of different markets, which ensure that supplies are carefully selected and harvested, and sensitively handled and stored throughout post-harvest and transport operations. Under wild harvesting conditions and where smallholders and untrained employees are involved, such requirements are often difficult to meet.

Generally, all developing countries encounter similar constraints when they want to move from trading unprocessed medicinal plants to processing the plants. De Silva (1997, cited in FAO, 2004) notes a series of limitations affecting all aspects of the medicinal plant industry, which must be addressed:

- poor harvesting and post-harvest treatment practices;
- lack of research on developing high-yielding varieties, domestication, etc.;
- inefficient processing techniques leading to low yields and low-quality products;
- poor quality control procedures;
- lack of research and development on products and processes;
- marketing difficulties;
- lack of local markets for primary processed products;

¹³ This section is based on FAO, 2004.

¹⁴ This section is based on FAO, 2004.

- lack of access to latest technological and market information.

5.2.2 Biofuels from groundnuts

Growing groundnuts for biofuels provides another niche opportunity for countries with large areas of drylands to reverse land degradation and enhance rural development. This crop grows well in semi-arid regions and is produced mainly by smallholder farmers, particularly in Sahelian countries, such as Mali, the Niger, Mauritania, Chad, the Central African Republic and the Sudan. It requires limited fertilizer and water inputs, and fixes nitrogen in the soil, thereby improving soil fertility. The nuts themselves can produce oil that is suitable for biodiesel production, and groundnut residues, such as shells, can be compressed into briquettes to be used as fuel for rural populations, thereby reducing pressure on woodlands.

5.2.2.1 Characteristics of groundnuts¹⁵

The groundnut or peanut (*Arachis hypogaea* L.) is the thirteenth most important food crop in the world, the fourth most important source of edible oil and the third most important source of vegetable protein. Groundnut seeds contain high-quality oil (50 percent), easily digestible protein (25 percent) and carbohydrates (20 percent).

Groundnuts are cultivated in more than 100 developing countries. Developing countries account for 96 percent of the global groundnut cultivation area and 92 percent of global production. Major groundnut producers are China, India, Nigeria, the United States, Indonesia and the Sudan.

In 2005, soya accounted for the largest proportion of the global production of oilseeds, followed by cotton, rapeseed and groundnut.

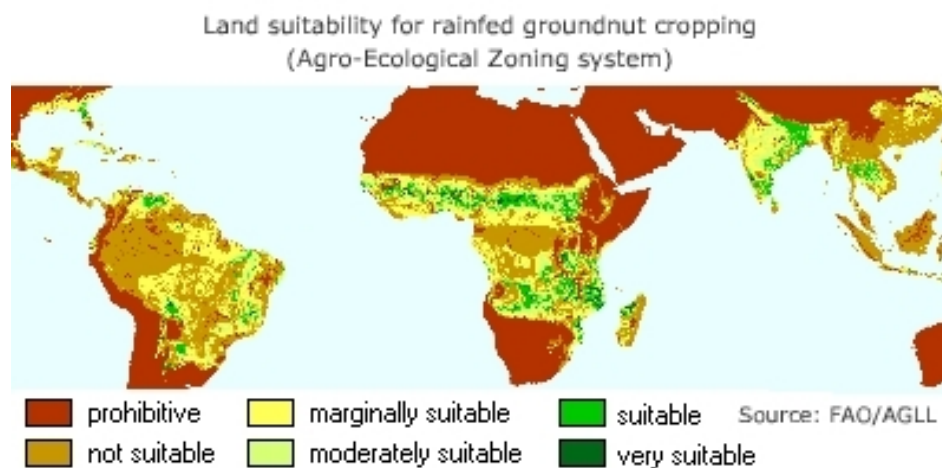
5.2.2.2 Groundnuts as energy crops from arid regions¹⁶

Sub-Saharan Africa is the largest region suitable for rainfed cultivation of groundnuts. The main zones where groundnuts flourish are the Sahel region, the Central African sub-Congo basin's "groundnut belt" and southeastern Africa. This corresponds to a total of about 200 million ha of land for cultivating groundnuts in the Sahel, approximately 80 million ha in the sub-Congo basin belt and 100 million ha in East Africa.

¹⁵ The data contained in this section come from the website of the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT): www.icrisat.org/groundnut/groundnut.htm.

¹⁶ This section is based on the ICRISAT website and Biopact, 2006.

Figure 5: Land suitability for rainfed groundnut cropping



Source: FAO/AGLL, cited in Biopact, 2006.

All parts of the crop can be turned into feedstock for energy. The nuts themselves contain a high proportion of oil, with 1 ha of groundnuts yielding about 1,000 litres of oil. The characteristics of groundnut oil – relatively low melting point, medium iodine value and high flash-point – are ideal for biodiesel production.

The groundnut has a residue-to-product ratio of around 0.5-1.2 for pods and 2.2-2.9 for straw; this means that for every ton of nuts produced, 500 to 1,200 kg of shells become available and 2.2 to 2.9 tons of straw residue are harvested; in total groundnut yields between 3.7 and 5.1 tons of biomass per hectare. (Biopact, 2006).

Groundnut residues provide a solid biofuel that has a high energy content equivalent to 16Mj/kg for shells and 18Mj/kg for straw. Advanced bioconversion technologies, such as cellulosic ethanol or dry pyrolysis, can transform this “waste” biomass into liquid fuels and bioproducts. The biomass can also be compacted and used to co-fire power plants.

Groundnut shells can be compressed into briquettes to serve as fuel, thus reducing pressure on woodlands for domestic fuelwood. In the 1980s, concerned by the increasing reduction in forest resources, the Government of the Gambia undertook research on the possibilities of producing such briquettes in the country. The results were quite encouraging: it was estimated that all the groundnut shells produced in the country, if processed for use in the Gambia, would correspond to an annual wood consumption of more than 100,000 m³, saving more than half of the 200,000 m³ of wood consumed annually (African Groundnut Council, website).

5.2.2.3 Controversial questions

A number of questions regarding the production of biofuels remain controversial. For example, fears have been expressed concerning the environmental impacts of large-scale biofuel production. Critics argue that it could reduce biological diversity and soil fertility, and fertilizers and pesticides could contaminate water and land. Others contend that the demand for land for cultivating bio-energy crops could lead to deforestation, as well as reducing the availability of land for food production, thereby leading to rising food prices in developing countries.

5.2.3 Gum arabic

Acacia trees can play a key role in combating land degradation and enhancing the livelihoods of communities living in arid zones of sub-Saharan Africa (GM website). Their roots are highly effective in

reducing soil erosion and enriching the soil by improving its water and nutrient levels, through the fixation of nitrogen. These trees can also be used to re-vegetate degraded and denuded landscapes and are useful for sand dune stabilization/fixation and controlling wind erosion (Rahim, van Ierland and Weikard, 2005). At the same time, acacia trees are an important source of income for local populations in the African drylands.

Improving the quality of gum arabic, which comes from the acacia tree, and increasing gum arabic trade would have a positive impact on the livelihoods of dryland populations and create incentives for them to invest in sustainable use and management of the land and natural resources on which they depend.

5.2.3.1 Characteristics of gum arabic

Gum arabic is an ancient product that has been obtained from the African drylands for millennia. It is a water-soluble resin exuded by the barks of two species of acacia trees found in sub-Saharan Africa: *Acacia Senegal*, which produces hard gum, and *Acacia seyal*, which produces friable gum. *Acacia senegal* is the source of most commercial exports because it produces the best quality gum. Gum from *Acacia seyal* has inferior emulsifying properties and can form dark solutions in water because of the presence of tannins and other impurities (Rahim, van Ierland and Weikard, 2005; International Trade Forum, 2000). The friable gum is not approved for food-related use in Europe and the United States, and hence is principally used in the production of non-food products (Jama and Zeila, 2005).

The main uses of gum arabic are based on its properties of emulsification, adhesiveness, thickening, binding and stabilization. In general, gum arabic has no or few uses in producing countries, and is exported to industrialized countries mainly for the pharmaceutical industry (for manufacturing capsules and vitamins), the cosmetic industry (for lotions, mascara and other cosmetics) and the food industry (as a food additive in pastries, candy, wine, low-calorie foods and soft drinks). It is also used as a glue or stabilizer for a variety of industrial uses ranging from stamps to printing, painting and ceramics.

5.2.3.2 Importance of gum arabic for livelihoods in sub-Saharan Africa

Gum arabic trade is of vital importance to the economies of sub-Saharan Africa. Gum exports represent a source of foreign exchange earning, and gum harvest is an additional income source for poor farming populations in the region.

For example, farmers in the Sudan are reported to earn about Ksh 4 billion (USD50 million) a year from the export of gum arabic. According to the Bank of Sudan, 30,000 tonnes of gum arabic were exported in 1999 (Jama and Zeila, 2005). Estimates indicate that about 5 million Sudanese people – 17 percent of the population – are involved in the production, marketing and processing of gum arabic. Gum tapping and collection is an important off-farm activity for populations living in the gum arabic belt, which constitutes most of the low-rainfall woodland savannah zone extending from the western to the eastern boundaries of the Sudan. All family members are employed in this activity for about four months of the dry season. Seasonal labourers from other parts of the country also migrate to work in the gum sector. An estimated 19 percent of total household income generated in this region derives from activities related to gum arabic (Hamid, 2006).

5.2.3.3 Global trade

Gum arabic accounts for about 10 percent of the approximately 500,000 tonnes of hydrocolloid trade on the international market (Dondain, 2001, cited in Chikamai and Tchatat, 2004). World trade in this product reached about USD90 million in 2000. A handful of countries dominate this trade, with 95 percent of world exports in 1998 coming from three countries: the Sudan, 56 percent; Chad, 29 percent; and Nigeria, 10 percent. These countries are implementing production and post-harvest

activities to improve the quality and value of the traded commodity (Chikamai and Tchatat, 2004). In 1998, imports of gum arabic were mainly to France (46 percent), which is the largest importer and re-exporter, the United States (21 percent) and the United Kingdom (12 percent) (International Trade Forum, 2000).

Nearly all exports of gum arabic originate from three production zones: the Nile River basin – the Sudan and Ethiopia; the Lake Chad region – Chad, Nigeria, Cameroon, the Niger and the Central African Republic; and the Senegal River basin – Senegal, Mali and Mauritania (Rahim, van Ierland and Weikard, 2005). Historically, the Sudan dominated world production and trade of gum arabic. From 1925 to 1985, Sudanese exports accounted for about 80 percent of the world total (Macrae and Miller, 2002, cited in Rahim, van Ierland and Weikard, 2005). The Sudan's important role in gum arabic trade was a result of excellent soil conditions for *Acacia senegal* in a large area of the country and the long experience of many Sudanese people in collecting and sorting the gum to yield the consistent quality grades demanded by manufacturers (Cecil, 2005). The Sudan has lost a significant proportion of its exports in recent years, however, with the Sahel drought of the 1970s and 1980s leading to inconsistent and low supplies of gum and subsequent increases in price, triggering a drop in demand.

In recent years, researchers have developed a technique to decolourize the naturally dark friable gum without damaging its attractive natural properties (ISC, undated, cited in Rahim, van Ierland and Weikard, 2005). This has created new market opportunities for friable gum in the food and pharmaceutical industries, which require colourless solutions. Market studies have concluded that the demand for friable gum arabic has grown in recent years, and is expected to increase further following the specification of gum arabic by the Joint FAO/WHO Expert Committee on Food Additives (JECFA), which confirms the position of gum from *Acacia seyal* as a food additive (FAO, 1996, ITC 2000, and Macrae and Miller, 2002, all cited in Rahim, van Ierland and Weikard, 2005). The demand for friable gum will allow other African countries that specialize in this gum to increase their exports.

After several years of decline, world imports of gum arabic increased by 25 percent between 1996 and 2000 (International Trade Forum, 2000), and trade in sub-Saharan countries is expected to grow. Production is stable, demand for natural food products is growing rapidly – particularly in industrialized countries – and no products can replace gum arabic for quality or cost. With improved production, post-harvest handling and marketing, the traded volume is expected to increase from an estimated 55,000–60,000 tonnes in 2004 to 100,000 tonnes by 2010 (Chikamai and Tchatat, 2004).

5.3 Risks of developing trade for natural products typical of drylands

5.3.1 Overexploitation of natural resources resulting in increasing degradation

Increasing trade in natural products typical of drylands, such as gum arabic or aloe, can have a positive impact on the livelihoods of dryland populations and create incentives for them to invest in the sustainable use and management of the land and natural resources on which they depend. However, there is a risk that the development of trade in these natural products could lead to their overexploitation. It is important to keep in mind that practices that overexploit land resources without returning basic nutrients to the soil contribute to declines in soil fertility, and thus to land degradation. Methods, approaches and new technologies that enhance soil fertility management and promote community participation in sustainable natural resource management are essential if natural products are to be exploited without degrading the land.

5.3.2 Exploitation of traditional knowledge and exclusion of local populations and vulnerable groups from benefit sharing

Indigenous people and local communities generally have a vested interest in the conservation and sustainable use of biodiversity on their land. They can provide technical knowledge about the uses of individual dryland species, such as aloe or medicinal plants, which can become commercially viable products in the agriculture, medicine, industry, cosmetics and other sectors.

The exploitation of traditional knowledge in developing new commercial products has a long history and is important in the modern world economy. For example, in the twentieth century, the biotechnology industry used traditional knowledge of biodiversity to identify potentially useful genetic materials. Many commercial products in agriculture, medicine, industry and cosmetics are based on traditional knowledge and use of biodiversity.

The problem is that traditional knowledge is often exploited without the consent of indigenous people or local populations. Indigenous people and local communities rarely receive a share of any benefits derived from the commercial exploitation of their knowledge. Intellectual property right regimes focus exclusively on the protection of individual rights over knowledge; traditional or indigenous knowledge, which is fundamentally collective in nature, should also be protected in this way. Indigenous people have expressed concerns as to whether their knowledge should be shared at all, because knowledge of biodiversity is part of their culture and should not be bought and sold like any other commodity.

Article 8(j) of the CBD specifically refers to the conservation of biodiversity, sustainable use of and access to genetic resources, and to benefit sharing. It recognizes the need to establish access and benefit sharing arrangements to ensure that developing countries and knowledge holders receive equitable shares of any benefit arising from the commercial exploitation of genetic resources based on traditional knowledge. The UNCCD also refers explicitly to the protection of traditional knowledge and the need to ensure equal sharing among its owners of all the benefits derived from any commercial utilization or technological development derived from it.¹⁷ The WTO's Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS), the Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore of the World Intellectual Property Organization, and FAO's International Treaty on Plant Genetic Resources for Food and Agriculture are also relevant to the protection of traditional knowledge and benefit sharing (see section 7.5 for further details).

6 BUILDING INCENTIVE FRAMEWORKS FOR SLM FINANCING THROUGH MARKET ACCESS AND TRADE

After analysing the trade policy and regulatory frameworks and the market dynamics, including emerging market opportunities, the challenges for promoting SLM through market access and trade are to be addressed at the national level. Governments in developing countries are responsible for identifying constraints and opportunities, setting priorities and creating the enabling conditions and policies for increasing investment in sustainable land and natural resource management. These investments can be mobilized from the private and public sectors, provided that adequate incentive measures have been created, policy- and decision-making processes are harmonized with ongoing developments in the architecture of ODA, and related processes for resource allocation have been established.

This section overviews changes in the international financial architecture and new instruments and mechanisms for delivering ODA. It also pinpoints trade-related processes that are being established to make trade more supportive of sustainable development by mainstreaming trade issues into PRSPs and facilitating the integration of developing countries into the global economy and the multilateral trading system. Incentives for SLM financing through market access and trade will have to build on these processes to support the growth of key sectors that promote investment in SLM and bridge the gaps between trade policy-making and measures to enhance the environmental and social sustainability of trade.

6.1 Changes in the international financial architecture

Resource allocation patterns in the international development community have evolved towards country leadership and the country-driven identification of development priorities through PRSPs and

¹⁷ UNCCD Art. 16 (g) and Art. 17 par. 1.(c). Related references, Art. 18 pars 1.(b) and 1.(e), Art.18, pars 2.(a) and 2.(b).

other instruments.¹⁸ As a result, resource allocation is increasingly based on national-level negotiations within the government and between it and the international community. In addition, there is broad commitment to enhancing coherence among donors. As donors increasingly align their priorities with those of recipient countries, the importance of domestic public budget allocations is also increasing, through new approaches and aid delivery mechanisms such as basket funding, general budget support, sector budget support and pooling fund arrangements under the sector-wide approach (SWAP). As a consequence, the level of financing for UNCCD implementation will depend increasingly on the political will of governments to identify SLM as a national priority. Given that national development frameworks such as PRSPs often emphasize sectors such as education, public health and infrastructure, the UNCCD faces strong competition with these other development priorities at the country level.

It is therefore important for the UNCCD to establish links with sectors such as trade in order to become part of the broader development agenda and to compete for resource allocation. Trade is a potential instrument for mainstreaming SLM into national development plans and budget allocation processes, but the interactions between the UNCCD and trade-related processes need to be strengthened. In this context, the UNCCD could take advantage of the experience of other conventions, such as the CBD, which uses trade to create incentives for biodiversity conservation. Given the numerous areas of common interest, there is wide scope for collaboration among MEAs in establishing links with trade policies and resource allocation processes to create an enabling environment for enhancing investment in the sustainable use of natural resources.

6.2 New financing tools, instruments and mechanisms

During the 1990s, new approaches emerged in reaction to the weaknesses of existing aid modalities, which were typically "stand-alone" projects and structural adjustment operations. So far, SWAPs are the main instruments for channelling investments to trade development, such as the trade SWAP in Cambodia.¹⁹

A SWAP is a process in which sector funding supports a single sector policy and expenditure programme, led by the government and adopting common approaches across the sector. A SWAP is generally accompanied by efforts to strengthen government procedures for disbursement and accountability. It should involve broad stakeholder consultations in the design of a coherent sector programme at the micro, meso and macro levels, and strong coordination among donors and between donors and governments. A SWAP is not a landing instrument, but rather a process that is:

- nationally owned and executed, to achieve poverty reduction objectives;
- focused on investment and policy dialogue relevant to sectoral objectives;
- partnership-based, with a strategic vision that is shared by the government and its development partners.

6.3 Building NFS for SLM financing

In response to the changing environment, and with a view to optimizing its resource mobilization capacity and sharpening its focus at the country level, the GM is developing the new concept of national financing strategies (NFS) to support the UNCCD process. An NFS coordinates the arrangement and interventions of different financial sources, instruments and mechanisms to secure sustainable, timely and predictable investments for UNCCD implementation. NFS provide country partners with tools to align UNCCD priorities with those of other sectors and to compete for resource allocation to raise financial resources systematically, coherently and predictably.

¹⁸ See Paris Declaration on Aid Effectiveness and Monterrey Consensus on Financing for Development.

¹⁹ See: http://tcbdb.wto.org/trta_project.asp?ctry=134&prjcd=CMB/A1/01A.

A financing strategy leverages the public and private financial sources involved by recognizing and defining their distinct and complementary roles, articulating/coordinating the synergies and partnerships among them, and providing the necessary enabling environment. Financing instruments can directly generate or influence the flows of funds by attracting or redirecting them, such as through financial or policy incentives and disincentives. A financing mechanism is broadly defined as a system of mutually adapted elements working together to fund SLM (e.g., GEF, debt-for-nature swaps, etc.).²⁰ NFS are therefore:

1. systematic approaches for financing at the national level, which:
 - leverage financing for the UNCCD from different sources – public, private, domestic and international – by identifying the complementary roles of and combining different financing instruments and mechanisms;
 - organize information in a way that facilitates strategic decision-making;
2. tools to align UNCCD priorities with those of other sectors, in order to compete for resource allocation.

6.4 Trade processes as tools for sustainable development and poverty reduction

6.4.1 The integrated framework

The Integrated Framework for Trade-Related Technical Assistance to Least-Developed Countries (IF) is a multi-agency, multi-donor programme involving IMF, the International Trade Centre (ITC), UNCTAD, the United Nations Development Programme (UNDP), the World Bank and the WTO. The framework was established to help LDCs expand their participation in the global economy, thereby enhancing their economic growth and poverty reduction strategies. The IF has two objectives:

- mainstreaming trade into LDCs' national development plans, such as PRSPs;
- the coordinated delivery of trade-related technical assistance in response to needs identified by LDCs; the IF is built on the principles of country ownership and partnership.

Key elements of the revamped IF are:

- an improved governance structure, through establishment of the IF Steering Committee and the expanded IF Working Group, with better coordination among donors, beneficiary LDCs and agencies;
- establishment of the IF Trust Fund to finance mainstreaming work, led by the World Bank with follow-up activities from studies;
- improved coordination of trade-related technical assistance from bilateral and multilateral donors, within a coherent policy framework.

The IF process includes a comprehensive diagnostic tool to identify the trade-related priorities and sectors with the greatest potential to contribute to national growth. No attention is paid to trade's impact on the environment, however, and this may undermine its sustainability and effective contribution to growth and sustainable development. It may also result in the exclusion of productive sectors with strong comparative advantages and added value for the environment and the livelihoods of communities living in vulnerable ecosystems.

6.4.2 The Joint Integrated Technical Assistance Programme

The Joint Integrated Technical Assistance Programme (JITAP) mobilizes the expertise and support of the WTO, UNCTAD and ITC to help African country partners to benefit from the multilateral trading system. JITAP aims to enhance the development opportunities of African country partners, through

²⁰ Adapted from PROFOR, 2000, *National financing strategies in the new phase of PROFOR*. Discussion paper for the PROFOR transition process.

enhancing their participation in the multilateral trading system. Its activities are designed to meet the most pressing needs of the countries concerned, as expressed at the Tunis ministerial meeting. JITAP's three main objectives are to:

- build national understanding of the evolving multilateral trading system and its implications for external trade;
- adapt the national trading system to the obligations and disciplines of the multilateral trading system;
- seek maximum advantage from the multilateral trading system by supporting exporters.

Many of the countries participating in JITAP have extended areas of drylands: Benin, Burkina Faso, Côte d'Ivoire, Ghana, Kenya, Mali, Mauritania, Tunisia, Uganda and the United Republic of Tanzania.

To facilitate implementation, JITAP is divided into five modules. The products and services sector strategies module aims to build the capacity to benefit from the multilateral trading system through improved export readiness. It assists country entrepreneurs and policy-makers in formulating strategies for specific sectors (goods and services) that have high export potential. Implementation of these strategies is expected to increase trading opportunities by opening economies to new export opportunities and enhancing the competitiveness of export-oriented enterprises. The broad impact expected from this module is increased incomes and employment through sustainable export-led growth, leading to reduced poverty and a greater role for trade in social and economic development.

The module focuses on livelihoods improvement, and no specific attention is given to the impact of new export opportunities on the environment. The scope of the module could be expanded to examine the implications on SLM and the environment of exporting agricultural products and natural resources. This could include assessing the impacts on SLM of trade in traditional dryland commodities, such as cotton and livestock, and in alternative products with export potential, such as natural products and medicinal plants. This would enhance African countries' capacity to diversify their baskets of export products, open new market opportunities and increase their competitiveness.

6.4.3 Aid for trade

Aid for trade (A4T) has the specific objective of helping developing countries, particularly LDCs, to play active roles in the international trading system, using trade as an instrument for poverty alleviation.

The Doha Round of WTO negotiations emphasized the importance of trade-for-development policy in accelerating growth and helping developing countries to achieve their development objectives, such as the Millennium Development Goals (MDGs) initiated by the United Nations.

Market access on its own is not sufficient to bring the benefits of trade to developing countries or to reverse these countries' marginalization in the world trade system. Many constraints prevent developing countries from taking advantage of market access opportunities, thus barring them from the benefits of trade liberalization. WTO members recognized the need for complementary measures to reduce internal barriers to trade and address adjustment costs.

A4T can help create effective market access for developing countries by enabling them to increase and improve their supply-side capacity by (CUTS International, 2007):

- tackling the lack of trade surplus;
- expanding and diversifying exports of goods and services;
- enhancing competitiveness;
- improving trade-related infrastructure;
- creating an adequate environment for business and development.

A4T can also improve developing countries' integration into the multilateral trading system by increasing their capacity to participate in trade negotiations and by reducing the costs of implementing WTO agreements.

WTO was formally mandated to deliberate on A4T at the Hong Kong Ministerial Meeting in December 2005. Paragraph 57 made A4T official: "Aid for Trade should aim to help developing countries, particularly LDCs, to build the supply-side capacity and trade-related infrastructure that they need to assist them to implement and benefit from WTO Agreements and more broadly to expand their trade."

As advised at the Hong Kong meeting, Director-General P. Lamy put together a A4T task force to recommend "how to operationalize Aid for Trade" and "how Aid for Trade might contribute most effectively to the development dimension of the DDA [Doha Development Agenda]".²¹ The task force's recommendations were formally approved by the WTO General Council in October 2006, when pledges from a number of traditional and non-traditional donor countries were also secured. Although the question of additional funds remains open, an ad-hoc committee was put together to prepare for the implementation phase. This committee met for the first time on 19 March 2007.

The task force recommends that "Aid for Trade should be rendered in a coherent manner taking full account, *inter alia*, [...] of the overall goal of sustainable development". This implies that the impacts of trade on the environment, particularly on land, should be taken into account when A4T helps dryland countries to build their supply-side capacity and trade-related infrastructure and expand their trade. Through this reference to sustainable development, the goal of SLM is indirectly embedded in the guiding principles of the A4T initiative, as approved by WTO members. This might open new opportunities for mobilizing innovative resources for SLM through A4T-related processes.

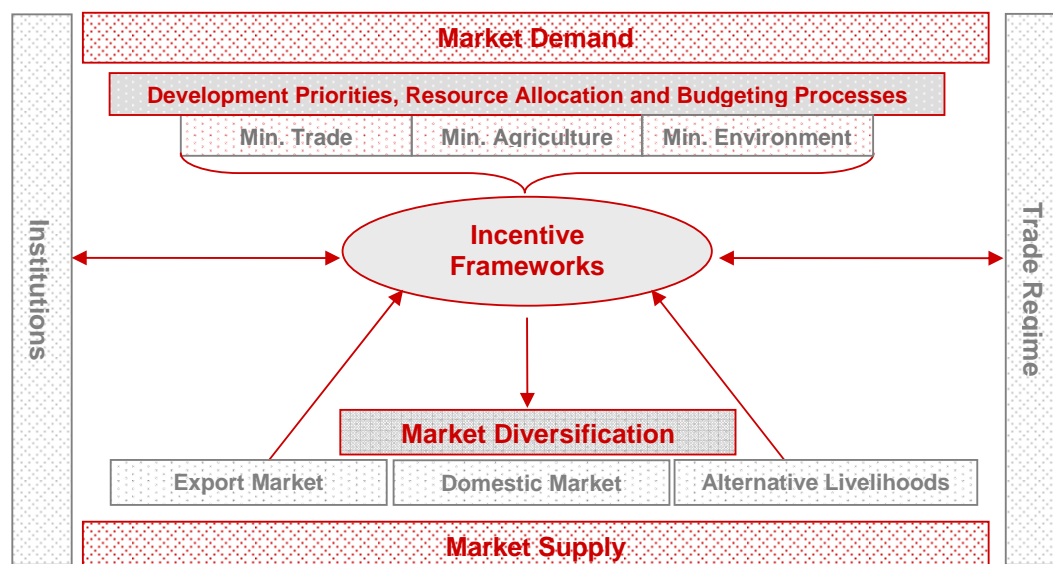
6.5 Building incentive frameworks

It is also important that changes in the architecture of ODA are reflected in the design of incentive frameworks for the sustainable use of land and natural resources. Such frameworks are comprehensive and integrated packages of incentives – including economic, legal, institutional and market-based measures – necessary for creating an enabling environment for increased investment. Some MEAs have been exploring the use of positive, negative and indirect incentives to enhance sustainable use. The effective design, development and implementation of trade and market-related incentive frameworks depends on strengthening the interactions among environment stakeholders, including the UNCCD, other MEAs and trade. National trade and environment ministries and institutions still work in too much isolation; increased collaboration will not only help them to take advantage of their respective technical expertise, but will also contribute to harmonizing processes for defining sustainable development priorities and to increasing coherence in resource allocations and budgeting processes at the national level.

In order to increase the impact of incentive measures, both the regulatory and policy framework and the market dynamics should be taken into consideration when setting targets. One possibility would be to identify product groups or sub-sectors within the agriculture sector and 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. Such an approach would consider the general trade environment, particularly the trade regime's impact on different sectors, and the constraints and opportunities for using existing instruments and tools to promote the sectors. A sector-based approach would also allow competitive market analysis and would maximize the opportunities for benefiting from market differentiation through leveraging the comparative advantages of specific sectors/products. Finally, it would facilitate the identification of needs and constraints for the growth of specific sectors through cross-sectoral policies (e.g., fiscal policies), institutional capacities and infrastructure, thus fostering coordinated actions among stakeholders and with trade-related development processes such as the IF.

²¹ Aid for Trade Task Force Recommendations (WT/AFT/1).

Figure 6: Building an enabling environment for promoting SLM through market access and trade



Source: The GM.

7 POLICY INSTRUMENTS, MECHANISMS AND TOOLS FOR TRADE AND SUSTAINABLE LAND MANAGEMENT

Some of the challenges for promoting SLM through market access and trade 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; and 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 and markets, livelihoods and SLM, in order to create 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 and trade is the absence of a coherent policy framework that takes into account 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.

This section identifies potential policy instruments, mechanisms and tools that could be used to enhance SLM at the international, regional and national levels. It also looks at some of the institutions that could influence decision-making processes, and – through a landscape perspective – at the stakeholders that should be involved in these processes to ensure that they are conducive to the sustainable use and management of land and natural resources.

7.1 Multi-stakeholder participation

Given the cross-cutting nature of SLM, a broad range of stakeholders must be engaged in the crucial issue of developing a coherent policy framework that links trade to the sustainable use of land and natural resources. Many of the distortions that characterize the current global agricultural trading system may result from the disproportionate influence of a narrow set of interest groups. Groups that would receive only diffuse gains from policy reform must be included in a wider dialogue on trade, which should focus on win-win solutions for both developed and developing countries, rather than on

the narrow pursuit of short-term gains in particular subsectors or geographic regions. Cooperation and increased dialogue are therefore crucial at all levels and across different sectors.

At the international level, it is fundamental that the UNCCD and other environmental conventions strengthen their collaboration with the major trade institutions such as UNCTAD, ITC and the WTO. Trade and environment organizations have been too isolated from each other, and there is a strong need for both sides to understand each other better and enhance their capacity to work together. While this integration should be pursued at the country level, engagement at the global level is also necessary to ensure coherent country interventions and to bring the main country-level issues to the attention of global negotiations.

Increased interaction between the UNCCD and other MEAs is also crucial. For example, harmonization of the trade and markets-related strategies of different environmental conventions might help to increase their political leverage and negotiation capacities, while contributing to more effective allocation and management of resources. This is especially important for the UNCCD and the CBD, given the number of synergies between these two conventions. The United Nations Secretary-General, Kofi Annan, in his 2006 message on the International Day for Biological Diversity, emphasized the importance of preserving dryland biodiversity for the achievement of MDG targets.

As the United Nations Secretary-General also noted in his message, the consequences of land degradation in drylands are borne disproportionately by the world's poorest and most vulnerable people. Eight of the world's ten least developed countries are in dryland areas, and developing nations are home to the vast majority of the 2 billion people who depend on dryland ecosystems. The scale of the challenge and its importance to poverty eradication must not be underestimated. Given the linkages among SLM, sustainable development and poverty reduction, and the process for harmonizing delivering mechanisms for ODA described in the previous section, it is crucial to identify entry points for the mainstreaming of SLM into processes for identifying and financing trade-related priorities. So far, these processes have tended to overlook the environmental impacts, thus undermining the overall sustainability of the trade they promote. In this regard, increased interaction with UNDP, the World Bank and IMF would be helpful.

Parallel efforts are needed at the national level to integrate initiatives across different ministries and government departments. All too often, trade negotiators put forward proposals at the WTO that are at odds with the recommendations of their colleagues in the environment, development or agriculture ministries, or that contradict commitments undertaken with the World Bank and IMF. It is crucial to engage a diverse set of actors in these initiatives, including the private sector, civil society groups and local communities.

In its Consolidated Strategy and Enhanced Approach, the GM emphasizes the importance of more holistic, multi-sectoral and integrated approaches that adopt a landscape perspective to create the enabling environment for enhanced SLM. By engaging various sectors, and thus different stakeholders, a landscape approach allows decisions at the site-level to contribute to more integrated strategies at the policy level, and contributes to a better understanding of the key factors that determine land degradation. Through increased participation, the landscape 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.

7.2 Trade policy instruments and approaches: enhancing opportunities under the WTO

7.2.1 Opportunities from environmental goods and services negotiations

In the first negotiating mandate on trade and environment within the WTO, Paragraph 31 (iii) of the Doha Ministerial Declaration calls for "the reduction or, as appropriate, elimination of tariff and non-tariff barriers to environmental goods and services". The mandate does not define environmental goods and services (EGS), nor does it indicate the pace, depth or sequencing of their liberalization. EGS can include: products whose main purpose is to prevent or remedy environmental problems; and environmentally preferable products (EPPs), whose purpose is non-environmental but whose

production, use or disposal generate environmental benefits, such as reduced pollution, at various stages.

The OECD and Eurostat definition of the environment industry includes “activities which produce goods and services to measure, prevent, limit, minimize or correct environmental damage to water, air and soil, as well as problems related to waste, noise and ecosystems” (OECD/Eurostat, 1999). OECD categorizes these goods and services under three broad headings: pollution management, cleaner technologies and products, and resource management. The OECD resource management category includes inputs into sustainable forestry, agriculture and fisheries. EGS relevant to desertification under this category include organic fertilizers, drip irrigation and water conservation equipment (OECD, 2001).

The OECD/Eurostat classification of environmental services includes the category of ecosystem and landscape protection services, which could also be applied to drylands (OECD, 2001). Commercial afforestation services could also be the subject of market access negotiations under the WTO General Agreement on Trade and Services. The list of 480 products that WTO members have submitted so far under the soil conservation category of environmental goods negotiations includes products proposed by the EU, the United States, New Zealand and Canada, such as plastic geomembranes, biodegradable erosion-control matting and vegetable plaiting materials, including bamboo, which could also be used to regenerate tropical forests (WTO, 2005b).

During WTO negotiations, proposals have been made to include outputs from sustainable agriculture, such as organic agricultural products, in fast-track liberalization as EGS. Most WTO members are reluctant to include organic agricultural products, however, because their national criteria for these goods are based on process and production methods, which cannot be physically ascertained by customs at the border. Nevertheless, there are clear opportunities for products of export interest to developing countries. The EU has proposed the inclusion of shea butter, which is extracted from the fruit of the wild shea tree in Sahelian Africa. According to the list of environmental goods, these trees do not need irrigation, fertilizers or pesticides and are not grown in plantations (WTO, 2005b).

Organic agricultural products may have to be promoted through initiatives such as labelling, rather than through EGS negotiations. Biofuel crops and crops specific to dryland regions could be liberalized under negotiations on agriculture.

7.2.2 Opportunities under special products and full duty-free and quota-free market access to LDCs

The relationship between access to agricultural markets and land degradation is complex and heavily dependent on the presence of an appropriate regulatory environment at the national level. However, steps can be taken to reduce the risk of increased market access, in developed or developing countries, having negative implications for SLM. WTO members from both developed and developing countries should consider proposals from the G-33 group of developing countries regarding greater flexibility for special products, and the special safeguard mechanism. Flexible designation and treatment of special products could help countries to promote their food security, livelihood security and rural development concerns – which are often key to safeguarding traditional SLM practices and protecting against the influx of cheap, frequently subsidized imports.

Developed countries should also avoid opting out of the agreement to provide full duty-free and quota-free market access to LDCs, and should honour the commitment they have made to providing full access: this could help the world’s poorest countries to expand their exports of sustainably produced agricultural goods and other products, such as textiles, which may provide farmers with alternatives to intensive industrialized agricultural production. Developing countries’ proposals for the liberalization of tropical products should be considered, and developing country governments may also be able to promote better SLM by supporting investment in agricultural goods whose production does not exacerbate land degradation.

7.2.3 Opportunities from the reform of market-distorting subsidies

Reform of current distortions in global agricultural trade must be central to any initiative to address the relationship between land degradation and trade. The billions of dollars of trade-distorting subsidies provided by developed countries – as both export subsidies and domestic support – have direct consequences for land degradation in dryland areas, especially in developing countries.

7.3 Fostering environmentally and socially sound business models

Land productivity, through either agriculture or livestock, is an essential factor driving economic activities in dryland regions. It is now well known that even with major technological changes, there are limits to land productivity, and thus limits to the possible economic activities derived from it. Accordingly, investment that can contribute to SLM needs to involve a twin-track approach: enhancing productivity on the one hand, and providing economic diversification into alternative livelihoods on the other. On both accounts, it is necessary to foster new and additional investments from the private sector and local communities. While private sector engagement is fundamental to developing infrastructure, support services and value addition for land and natural resources in dryland areas, sustainable resource use also depends on the participation and investment of local communities, as the ultimate users of the resources. When defining the institutional setting and framework policies for supporting SLM, success therefore depends on decision-makers' ability to create incentives and mechanisms that mobilize private sector and local community investments in conservation and rehabilitation activities, and on the adoption of sustainable production and harvesting practices. Private sector engagement is particularly relevant in fostering entrepreneurship among local people.

Box 1: Strategic partnership between the GM and the GEF's Small Grants Programme

This partnership aims to increase the role of community-based organizations and NGOs as a resource for, and constituency of, SLM in order to facilitate information exchange at the community level and build local capacity through "learning by doing".

The partners will document best practices, constraints to community investment, and incentive mechanisms that could increase public and private investments in SLM.

Initially, the partnership will explore the potential of trade-related incentive mechanisms – such as improved access to local and regional markets, increased trade in EGS and compensation for ecosystems services – to generate eco-compatible sustainable investment at the community level.

The partnership also offers scope for the partners to explore this potential from other angles, such as the GM's strategic initiatives in forestry and education, as part of a holistic landscape approach, which highlights the synergies in a given environment, the potential for replication elsewhere, and the links between local and global benefits.

Ultimately, the knowledge generated will be used at the policy level to convince decision-makers about the importance of fostering enabling environments for local communities and to advocate for appropriate incentive mechanisms to encourage investment at the community level.

A number of sustainable business models have already been developed and used to enhance the environmental and social sustainability of private ventures. Some of these models, such as fair trade, focus on increasing social benefits by exploiting market niches. Others, such as UNCTAD's BioTrade Initiative (see Box 2), have developed methodologies to integrate sustainable use of natural resources and equal sharing of benefits into value chains. A number of programmes and institutions, including civil society groups, aim to strengthen the integration of grassroots communities into market chains. Financing institutions, such as the International Finance Corporation of the World Bank, are providing increasing support to environmentally and socially sound business development opportunities. Private companies are also seeking their own solutions to enhance sustainability through corporate social responsibility.

Despite these efforts, however, the private sector is slow to participate in development programmes, especially when long-term collaboration is involved. Development partners should clarify their expectations from private companies in terms of respective roles and responsibilities. For example, private companies see the potential benefits of using technical knowledge and expertise in sustainable development issues to increase their business opportunities in developing countries, but the political implications of working with development partners are not emphasized. In other words, the added value of working with development partners should be made clear to business; for example, SLM and sustainable use of natural resources should be translated into economic and financial benefits for businesses. Value-added can be generated through the knowledge and expertise of environment experts, but development partners' promotion of policy dialogue and creation of an enabling environment for private stakeholders to increase their investments and receive positive returns is even more useful.

Box 2: Collaboration between the GM and the UNCTAD BioTrade Initiative

UNCTAD's BioTrade Initiative is a pioneer in promoting trade in biodiversity-based environmentally sustainable products.

Working with various MEAs, BioTrade has developed the capacity to provide guidance on using trade to safeguard biodiversity and use it sustainably in various ecosystems.

The GM sees BioTrade's approach as a way of promoting SLM through trade and investment. The GM and UNCTAD's initiative have agreed to explore the possibilities for integrating arid land issues into BioTrade's national programmes. The partnership will also address UNCCD issues that are not already systematically addressed in BioTrade's programmes.

Practical application of this work will be piloted in Uganda, where BioTrade has recently established a national programme. Uganda will also be used as a case study for developing guidelines for other BioTrade national and future programmes. Through this joint initiative, the GM expects to generate valuable knowledge on how trade can support investment in the sustainable use of natural resources in the UNCCD context.

Working with UNCTAD's BioTrade Initiative will also improve the UNCCD's position in the trade and environment debate. Some MEAs, such as the CBD and CITES, are already advocating for trade rules that are more supportive of environmental objectives. These MEAs could increase their capacity to influence policies by harmonizing their trade strategies and harnessing other synergies based on common resources and/or the ecosystems on which they focus (i.e., biodiversity and endangered species in drylands).

By seeking to streamline its trade strategy with those of other relevant MEAs and by enhancing collaboration and coordination on strategic market access and trade issues, the GM will contribute to development of the BioTrade Initiative. For its part, BioTrade will benefit from the alignment of MEAs' trade strategies through developing a more comprehensive approach to using trade and investment to enhance sustainable natural resource management.

7.4 Enhancing opportunities through product differentiation and value chain development

Diversification is another way of attracting private investment, not only through diversifying agricultural products and alternative livelihoods (discussed in section 5), but also through using and/or creating tools and mechanisms that differentiate products by leveraging their special and unique features, including through labelling and certification schemes. Marketing channels and supply chain development can also be means of diversification. These instruments are useful in enhancing the knowledge and understanding of all value chain stakeholders – from producers to consumers – regarding best practices and business opportunities that enhance the sustainable use and management of land and natural resources. In particular, some of these tools are crucial in creating responsible consumer purchase behaviour, by helping consumers to recognize the value of SLM for the environment and themselves. In the global economy, consumers should all feel part of the same environment: the planet.

For example, not everybody knows that the healing properties of aloe vera come from the resilience that the species has developed from growing in a dry environment. Not everybody is aware of the beneficial effects that organic production has on SLM; according to the International Federation of Organic Agriculture Movements (IFOAM), "organically managed soils are more resilient both to water stress and nutrient loss, and thus have the potential to counter soil degradation. Organic farmers feed their fields with organic matter that improves degraded soils. Microorganisms help to create a stable soil structure, and water and nutrient retention capacity increases due to a high level of organic matter and permanent soil cover, allowing a substantial reduction in the amount of water needed for irrigation." IFOAM adds, "in organic agriculture, permanent soil cover is an intrinsic part of the system, which helps return fertility to degraded lands. Locally adapted leguminous crops quickly restore degraded soils, suppress weeds, fix nitrogen and prevent erosion, while allowing primary cash crops to flourish" (IFOAM, 2006).²²

7.4.1 Certification schemes

Market and consumer preference for goods that are produced in environmentally and socially sustainable ways is leading to growth in certification and labelling schemes.

Labels identify a product and convey information about it. They can also convey information about the social and environmental impact of producing, processing, transporting or using a product – in terms of energy and resource consumption, soil, water and land-use practices, for example. Labels are needed because the simple display of the products does not make such characteristics obvious to consumers. *Certification* enables producers, suppliers and companies to demonstrate that they comply with the requirements of a standard.

There is a trend towards increased numbers and complexity of labels and certification schemes. The share of environment-related notifications in the WTO Agreement on Technical Barriers to Trade increased from 10 percent (40 notifications) in 1990 to 18 percent (114 notifications) in 2002 (WTO, 2002). ITC estimates that at least 4,000 of the 5,000 internationally traded goods reflected in trade statistics are subject to mandatory environmental or health regulatory requirements.

Labels are fundamental to conveying messages to consumers and attracting their interest. They are also powerful marketing tools that allow companies to diversify their products and position their brands. In recent years, political movements, such as those related to fair trade and organic agriculture, have contributed to the proliferation of labels. This has helped to create more conscious and "sensitive" consumers, but has also started to create confusion. A label cannot provide consumers with exhaustive explanations, and the presence of many labels on the same package reduces clarity. Multinationals and large companies have also started to use labels that convey "environmentally friendly messages", which uninformed consumers could confuse with the labels of certified organic or fair trade products.

Certification as a tool for product differentiation could benefit many dryland products that are characterized by low chemical inputs, manual processing and environmentally benign production and processing methods. Before such opportunities can be fully exploited, however, a number of challenges need to be addressed. First, there is concern over the complexity and increasing number of certification requirements, especially regarding the market influence of privately developed standards. Challenges arising from private standards relate to their limited or lack of multilateral discipline, for example regarding notification and consultations with potentially affected trading partners. In addition, there are complex combinations of voluntary and mandatory requirements, such as the Euro-Retailer Produce Working Group's Protocol on Good Agricultural Practices (EUREPGAP), which combines mandatory requirements on food safety with voluntary requirements on food quality.

The second challenge facing certification is its associated costs, including those for organic agriculture. More than 80 percent of certified organic agricultural products from developing countries are exported

²² For the World Day to Combat Desertification on 19 June 2006, IFOAM encouraged farmers worldwide to adopt organic agriculture methods and governments to integrate investment and support for organic agriculture into their UNCCD National Action Programmes (NAPs).

to markets in North America, Europe and Japan, which means that producers and exporters have to invest in certification schemes that meet the requirements of these markets. For example, the certification fees charged by different national and international certification bodies operating in Costa Rica vary from USD130 to USD425 per day for field inspection, and from USD250 to USD500 per year for follow-up and documentation (Chaves, 2004, in UNCTAD, 2006).

Given that many dryland countries are in poor regions of the world, the following considerations need attention:

- developing national legal and technical capacity to formulate, assess and implement standards and promote equivalent certification schemes, such as the ChileGAP scheme for fresh fruits and vegetables, recognized by EUREPGAP as equivalent;
- enhancing regional cooperation in standardization and certification in order to promote technical equivalence;
- improving participation in international public processes, such as the WTO's Committees on Trade and Environment and on Technical Barriers to Trade, and international private processes, such as the International Social and Environmental Accreditation and Labelling Alliance (ISEAL) and the Forest Stewardship Council (FSC);
- developing innovative certification schemes for natural products, which contribute to product differentiation and inform consumers without requiring complicated labelling on products.

7.4.2 Development of value chains and market linkages

Although certification and labels can be essential tools for market differentiation, they depend on market entry. Increasingly, access to overseas markets requires integration into global production and supply chains. This represents a major challenge for many producers in arid regions, who tend to be isolated from global production and distribution networks. It is essential that efficient producers are able to integrate themselves into such networks. International initiatives run by both governments and private institutions, such as NGOs, are increasing their efforts to help these producers to position themselves along the entire value chain. The value chain approach is increasingly used to achieve this objective through enhancing market linkages and adding value to the products of the most disadvantaged producers. Such initiatives have resulted in the integration of a range of products – from fair trade to biodiversity – and are helping to bring producers from isolated regions into large distribution channels. They should be encouraged further, particularly through institutionalization of their processes.

Box 3: PhytoTrade Africa

PhytoTrade Africa is a partner of the UNCTAD BioTrade Initiative. It is a non-profit trade association based in Harare, Zimbabwe, which promotes sustainable production and fair trade of natural products. The association covers eight Southern African countries: Botswana, Malawi, Mozambique, Namibia, South Africa, Swaziland, Zambia and Zimbabwe.

PhytoTrade aims to develop the natural product industry in Southern Africa for the benefit of the region's people and biodiversity. In order to achieve the "triple bottom line" goal of promoting environmental, social and sustainable development, the association has developed a systematic approach based on:

- industry development;
- product development;
- market development;
- supply chain development.

Although in many respects PhytoTrade operates in the same way as other trade associations, it is unique for two reasons:

- It operates in an industry that is almost entirely new in the geographic region. Much of its work is therefore oriented towards growing the industry, rather than servicing an established group of producers. PhytoTrade is therefore resourced to engage in activities that are not usually undertaken by trade associations, such as research and development, and market development.
- It has a clear development goal of creating economic opportunities for poor rural people, calling less on

development aid than on the private sector as the driver of economic growth. Even though PhytoTrade has received substantial support from development organizations, its aim is to be financially self-sustaining through its members and its consulting and research activities.

It is also worth noting the unusual structure of PhytoTrade. In addition to its head office in Harare, the association has two marketing offices – one in Europe and one in South Africa – the Europe office in London being its driving marketing force. This structure gives PhytoTrade a presence in its main market and makes it visible through participation at major fairs and events, as well as through direct contacts with major players in the European market.

Exports are certainly a driver for economic growth, but small-scale producers generally depend more on local and domestic markets as their main source of income, so it is important to develop these markets. A strong domestic market is also a building block for export markets. Developing domestic and regional markets requires strong institutional capacity and the implementation of relevant policies, including interventions to remove or reduce barriers to market access and to establish more equitable market relations between producers and market intermediaries. Governments could, for example, provide basic infrastructure in the most isolated areas, as well as aggregation points and communication and information systems on market prices. Local institutions for fostering local entrepreneurship would also be useful, as would financing institutions and schemes that are easily accessible for small producers. Governments could also indirectly benefit smallholders by creating incentives for private enterprises to invest in degraded areas. They could promote dialogue among stakeholders to generate the policy, institutional and legal contexts required for enhanced market linkages (Gamba, 2005).

7.5 Safeguarding traditional knowledge of dryland commodities

Trade in agricultural products that draw on the traditional knowledge of people in dryland areas may be a potential tool for tackling land degradation in the future. The UNCCD makes explicit reference to the issue of traditional knowledge. For example, with article 16(g) the Parties agree, “subject to their respective national legislation and/or policies, [to] exchange information on local and traditional knowledge, ensuring adequate protection for it and providing appropriate return from the benefits derived from it, on an equitable basis and on mutually agreed terms, to the local populations concerned”. In article 17(c) they agree to support research activities that “protect, integrate, enhance and validate traditional and local knowledge, know-how and practices, ensuring, subject to their respective national legislation and/or policies, that the owners of that knowledge will directly benefit on an equitable basis and on mutually agreed terms from any commercial utilization of it or from any technological development derived from that knowledge”. Article 18.2 on transfer, acquisition, adaptation and development of technology is also relevant in this regard:

The Parties shall, according to their respective capabilities, and subject to their respective national legislation and/or policies, protect, promote and use in particular relevant traditional and local technology, knowledge, know-how and practices and, to that end, they undertake to:

- (a) make inventories of such technology, knowledge, know-how and practices and their potential uses with the participation of local populations, and disseminate such information, where appropriate, in cooperation with relevant intergovernmental and non-governmental organizations;*
- (b) ensure that such technology, knowledge, know-how and practices are adequately protected and that local populations benefit directly, on an equitable basis and as mutually agreed, from any commercial utilization of them or from any technological development derived there from;*
- (c) encourage and actively support the improvement and dissemination of such technology, knowledge, know-how and practices or of the development of new technology based on them; and*
- (d) facilitate, as appropriate, the adaptation of such technology, knowledge, know-how and practices to wide use and integrate them with modern technology, as appropriate.*

Also relevant are four provisions of the CBD: article 15 on access to genetic resources, article 16 on access to and transfer of technology, article 19 on the handling of biotechnology and distribution of its benefits, and article 8(j) and related provisions concerning traditional knowledge, innovations and practices. Article 8(j) of the CBD specifically states that contracting Parties should “respect, preserve and maintain knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity and promote their wider application with the approval and involvement of the holders of such knowledge, innovations and practices and encourage the fair and equitable sharing of the benefits arising from the utilization of such knowledge, innovations and practices”.

FAO's International Treaty on Plant Genetic Resources for Food and Agriculture – for example, its article 12.3(d)²³ – is also relevant because it establishes a multilateral system for facilitating access to plant genetic resources for food and agriculture (PGRFA) and sharing the benefits derived from them in a fair and equitable way. Annex II of FAO Resolution 5/89 of 1989 recognizes and establishes international farmers' rights arising from farmers' past, present and future contributions to the conservation and maintenance of PGRFA, explicitly recognizing the value and importance of farmers' knowledge, innovations and practices related to PGRFA. Both the CBD and FAO treaties have been very controversial at the WTO, where governments have disagreed over the relationship between these two instruments and the WTO's TRIPS.

Developing countries have criticized the TRIPS agreement for its role in increasing the protection of intellectual property and for the negative developmental impacts that this could have on poor people's access to medicine, seeds and knowledge more generally. They have also argued that the international framework established by TRIPS is not coherent with the CBD's provisions on traditional knowledge, including those on access and benefit sharing, nor is it coherent with the framework established by FAO's international treaty, which provides for agricultural biodiversity to be shared freely between Parties. WTO members have not, to date, addressed the implications of articles 16(g), 17(c), 18.2 and all the other relevant articles of the UNCCD.

8 CONCLUSIONS AND RECOMMENDATIONS

Measures and approaches that act as incentives for participation in and implementation of MEAs have become an important feature of the environmental governance regimes adopted under many MEAs. When stringent enforcement mechanisms are not in place, as is the case under most MEAs, environment and sustainable development objectives can often be met through creating incentives within a regulatory regime. In the context of land degradation, the findings of this paper indicate that trade can be a positive tool for enhancing sustainable modes of production, for certain categories of products and commodities and where trade rules and policies remove distortions and create opportunities for environmentally and socially sustainable and economically viable products from dryland regions. In order to build the enabling environment for trade to work as a positive incentive for SLM, the paper also points out the need to engage a wide range of stakeholders in decision-making processes and to strengthen institutional capacity to make trade and environment mutually supportive.

It has also been documented that trade can be a cause or driver of land degradation in certain situations. International trade regimes and related government policies can directly or indirectly affect the resilience of dryland ecosystems, by increasing agricultural production for exports. Regimes and policies can lead to inefficient and wasteful use of land and water resources, inappropriate crop intensification – especially under monocropping systems – expansion of agriculture on to marginal lands, and use of farm machinery and agronomic practices that are not suitable for local soil and water conditions. Such impacts can also result from production methods for particular commodities, such as cotton, groundnuts and others of key importance in drylands.

23 “Such access shall be provided in accordance with the conditions below: (...) Recipients shall not claim any intellectual property or other rights that limit the facilitated access to the plant genetic resources for food and agriculture, or their genetic parts or components, in the form received from the Multilateral System”.

Many of these problems can be prevented or mitigated through encouraging sustainable methods of production for principal trade commodities. In addition, diversification of production has proved to be a promising way of enabling new opportunities for sustainable production and trade to emerge. A range of products, including gum arabic and medicinal plants, have proved to have valuable potential both for domestic production serving local markets and for export to regional and international markets. Fostering new market opportunities in these areas can contribute to the creation of incentives for additional investment in SLM and to the development of productive capacities, entrepreneurship and income generation, which can enhance livelihoods in rural areas.

Some opportunities already exist, and only need more structured markets before advantage can be taken of them. This is the case of natural products described in section 5. The advantage in these cases is that criteria of sustainable land and natural resource use could be embedded from the outset into a policy framework to regulate the markets so as to maximize benefits for the environment and local communities. A number of ongoing initiatives aim to unleash the potential of these new markets. Many have addressed problems on the supply side regarding physical infrastructure and production management. Others have focused on developing innovative and more sustainable business models that are environmentally and socially sound. It appears from studies undertaken by various programmes, however, that issues related to quality management, certification and standardization, and links to distribution channels in export markets, remain a challenge. Similarly, although mechanisms for market access and exemptions from full liberalization could benefit products from dryland regions, insufficient attention has been given to the opportunities and constraints of trade rules.

Many of the opportunities for generating further investment for SLM and rural development depend on reforming persistent distortions and opening new market access opportunities in the international trade regime. The reform of production and trade-distorting subsidies, and tariff escalation will be of particular importance to products from drylands. Agricultural subsidies can create incentives for overproduction and intensified farming methods – in both developed and developing countries – lead to trade distortions and, in many cases, contribute to land degradation, water pollution and negative impacts on other natural resources. Reforming the current distortions in global agricultural trade must be central to any initiative addressing the relationship between land degradation and trade. Tariff escalation prevents the development of industries based on processed products, which are often less land-intensive than agriculture and represent an alternative source of livelihood for rural communities.

On the other hand, opportunities abound within the international trade regime, and these could provide a new dynamic for the export of products of interest to dryland regions. Such opportunities could be enhanced under the ongoing Doha negotiations in the areas of special products, sensitive products, the liberalization of EGS, and assistance in developing supply capacity, in order for many poor countries to benefit effectively from market access opportunities such as duty- and quota-free access for LDCs.

It is essential that WTO members give priority to achieving progress in these negotiations. The sustainable development implications, including those particularly related to enhancing SLM, need to be highlighted. In addition, the issue of SLM in dryland regions needs to be brought upfront in the broader context of the relationship between the WTO and MEAs. Much of the action needed to advance these objectives will depend on the willingness of WTO members to engage in this issue.

The international trade regimes are not the only source of solutions. 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 diversification might help countries to develop diversification strategies. These would help to lower dependence on a few export products, which encourages 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 for creating an effective and clear policy framework at the global level.

In the wake of changes in the financial architecture for ODA, this paper gives particular emphasis to the country level, and to the need to enhance multi-stakeholder consultations and strengthen cross-sectoral policies. In a context where development aid is moving towards more holistic integrated

approaches driven by country priorities, it is fundamental that SLM is no longer 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, and coordinating with related institutions and development processes to create more coherent policies to prevent and minimize the risks that may be associated with the overexploitation of natural resources, the negative impacts on traditional knowledge and the exclusion of local populations and vulnerable groups from benefit sharing. Environmental concerns are still seen as limitations on trade development; increased attention should be given to the negative repercussions on business and the economy in general that neglecting environmental and social impacts would ultimately have.

Advancing the objectives of such a vast agenda requires a community of actors and stakeholders, including governments, producers' and consumer groups, the private sector, international institutions, aid agencies and civil society at large. A number of initiatives are already being implemented under these various constituencies. 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.

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