



Convention to Combat Desertification

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Promotion and strengthening of relationships with other relevant conventions and international organizations, institutions and agencies

Draft advocacy policy frameworks

Draft advocacy policy framework on food security

Note by the secretariat

Summary

This document presents the draft advocacy policy framework on food security. Because food security in drylands is at the nexus of the livelihoods of poor rural people and adverse ecosystems, it represents a central issue for the United Nations Convention to Combat Desertification to advocate on. The document first describes the internal factors and the worsening factors that trigger food insecurity in dryland areas. It then focuses on sustainable land management as an efficient technical solution for ensuring food security in drylands. It points out that even if technical solutions are well known, there is still a need for a proper enabling environment that allows these practices to be widely applied. Finally, the document presents recommendations at various institutional levels, as well as an action plan for implementation.

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I. Introduction

1. In 2010 the number of undernourished people in the world was 925 million, of which 98 per cent live in developing countries. Because of harsh conditions due to a complex interaction between climatic and human factors, many drylands in developing countries are internally food insecure. The drylands are fragile environments with vulnerable people who face many social, political, economic, cultural and environmental challenges that make it hard to achieve sustainable development and the Millennium Development Goals (MDGs).

2. This is not a hopeless situation, however. The productivity of drylands can be increased, as is illustrated by a growing number of success stories. Drylands can produce enough food to sustain livelihoods. Common challenges at regional and subregional levels may lead towards increased cooperation. But they can help address global challenges. One example is that the drylands have a considerable potential for carbon sequestration, which is largely untapped.

3. The current famine in the Horn of Africa demonstrates the need to develop more drought-resilient production systems that increase the capacity of farmers and herders to cope with prolonged drought. This current global economic crisis and developments on the world food market all add to a sense of urgency. In the near future, food aid may no longer be available at the scale needed to cope with famine.

4. The 2008 World Development Report on Agriculture¹ made clear that investments in agriculture have fallen dramatically during the past two decades, but it also shows that investments in agriculture can have a significant impact on poverty reduction. Moreover, during the past 30 years much progress has been made on developing a wide range of sustainable land management (SLM) practices in drylands. Some of these practices are now used at large scale and have led to “win-win” situations in the sense that they improve the environment, increase agricultural production and reduce rural poverty. The technologies for sustainably increasing food are available. The fact that they are not always scaled up implies that the nature of the constraints preventing scaling up is often more political and economic than technical.

5. Within the international agenda on food security, the United Nations Convention to Combat Desertification (UNCCD), with its 194 Parties working on soils and land issues, has a key role to play in urging Governments to develop national policies and to increase investments in SLM technologies and practices to restore the productivity of degraded land, reduce rural poverty and improve national food security.

6. This document analyses some of the major challenges Governments are facing in improving and ensuring food security in drylands. Its focus is on SLM practices as a way for ensuring food security in drylands. It also presents some recommendations concerning the various institutional levels to be considered by Parties.

¹ World development report 2008. Agriculture for development (op. 2007). Washington (D.C.): World Bank. <http://siteresources.worldbank.org/INTWDR2008/Resources/WDR_00_book.pdf>.

II. The need for an advocacy policy framework on food security for the United Nations Convention to Combat Desertification

7. UNCCD has been ratified by 194 Parties and prioritizes on soils and land issues, with a focus on the drylands. These Parties are clustered in various groups or annexes, as shown in table 1.

Table 1
UNCCD country Parties

	<i>Region</i>	<i>Annex</i>	<i>Number of countries</i>
	Africa	Annex I	53
	Asia	Annex II	57
	Latin America and Caribbean	Annex III	33
	Northern Mediterranean	Annex IV	12
	Central and Eastern Europe	Annex V	18
Other developed country Parties not affected not listed in Annexes			17
Other country Parties affected not listed in Annexes			3
Regional integration Parties			1
Total			194

8. In 2007, Parties to the Convention adopted the 10-year strategic plan and framework to enhance the implementation of the Convention (2008–2018) (The Strategy), which outlines the vision of forging a global partnership to reverse and prevent desertification/land degradation and to mitigate the effects of drought. The implementation of The Strategy guides all UNCCD stakeholders and partners in long-term strategic deliveries.

9. Considering UNCCD as the Convention that links environmental and development issues, the four main building blocks of The Strategy are people, soils, vegetation and water. As improving ecosystems (soils, vegetation and water) is a prerequisite to improving people's livelihoods. Political stability cannot be achieved if food security for all is not ensured.

10. Because of its mandate,² the Convention has a key role to play, within the international agenda on food security, in convincing Governments to mainstream SLM practices in national policies aimed at reversing land degradation, to build more drought resilient production systems and to improve food security.

11. Most affected country Parties have, with the assistance of the UNCCD and other partners, designed and put in place national action programmes (NAPs), one of the key instruments in the implementation of the Convention. They were developed using a participative approach involving local communities, and they spell out the practical steps and measures to be taken to combat desertification and land degradation.

² Article 10, paragraph 3 (c), of the Convention provides the mandate for addressing policies and measures on food security.

12. The fundamental goal of this advocacy policy framework on food security is to ensure that the policies of country Parties experiencing the effects of the degradation of drylands take into account the issue of food security through increased investments in restoring the productivity of degraded land.

13. The policies and practices proposed in this advocacy policy framework on food security recognize and strengthen the links between the three international environmental conventions: UNCCD, the United Nations Framework Convention on Climate Change (UNFCCC) and the Convention on Biological Diversity (CBD).

14. This document provides the UNCCD secretariat with a framework to urge national policymakers to develop and or update their relevant policies and legislation with the full participation of all interested and affected stakeholders. This should be done while taking into consideration the consistency between the emerging policies and the policies of other sectors.

15. To this end, the UNCCD advocacy policy framework on food security aims at designing and promoting enabling national policies that meet the challenges of increasing food production in the drylands through proven SLM practices. Parties are called upon to take decisions within the Convention, based on a bottom-up process of dialogue and consultation, to determine the extra steps that need to be taken to ensure food security in an increasingly challenging macro context of climate change, higher oil prices, a financial crisis and strong demographic growth.

III. Food security in the drylands: the challenges to face

16. According to the Food and Agriculture Organization of the United Nations (FAO), food security is achieved when “all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food which meets their dietary needs and food preferences for an active and healthy life”.³ Such conditions are not available for 1/6 of the world’s population⁴ the great majority of whom live in drylands regions. This situation is due to internal factors that characterize these areas, as well as worsening factors at various levels.

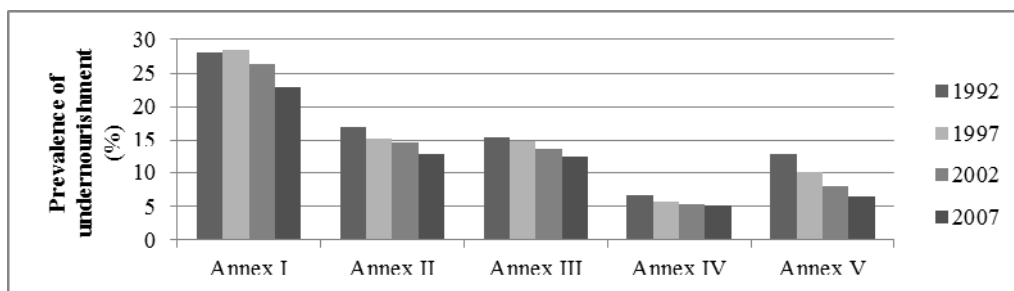
17. According to data currently available,⁵ in 2007 countries included in the UNCCD regional implementation annexes accounted for more than 93 per cent of the world’s undernourished people. Africa presented the highest prevalence rate, with almost 23 per cent of the population of that continent considered to be undernourished (figure 1). Asia had 2/3 of the overall undernourished population with 577 million undernourished people (figure 2).

³ Rome Declaration on World Food Security – World Food Summit – 13–17 November 1996. <http://www.fao.org/docrep/003/w3613e/w3613e00.htm>.

⁴ Personal communication. David Nabarro, United Nations Special Representative on Food Security and Nutrition.

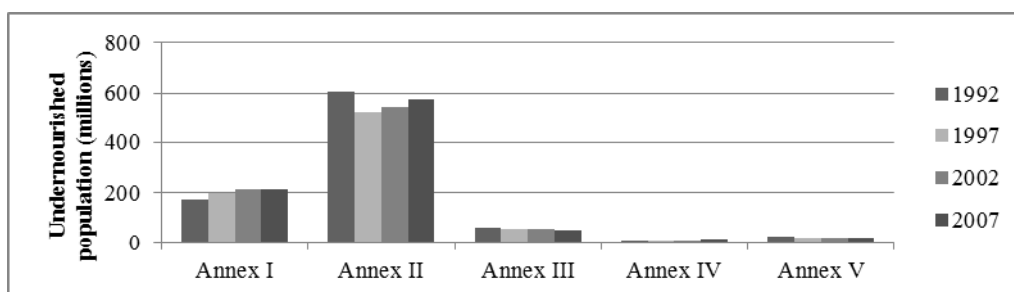
⁵ WorldDataBank (<<http://data.worldbank.org/>>), accessed August 2011.

Figure 1
Prevalence of undernourished population by UNCCD annex



Source: UNCCD; Data: WorldDataBank (<<http://data.worldbank.org/>>), accessed August 2011.

Figure 2
Undernourished population by UNCCD annex



Source: UNCCD; Data: WorldDataBank (<<http://data.worldbank.org/>>), accessed August 2011.

18. The proportion of undernourished people was declining until 2007. However, latest global figures from FAO show a peak for both the proportion of undernourished and their numbers for the years 2008 and 2009 as a consequence of the 2008 sudden rise of commodity prices. Because of their internal vulnerability, dryland populations are the most exposed to such a crisis.

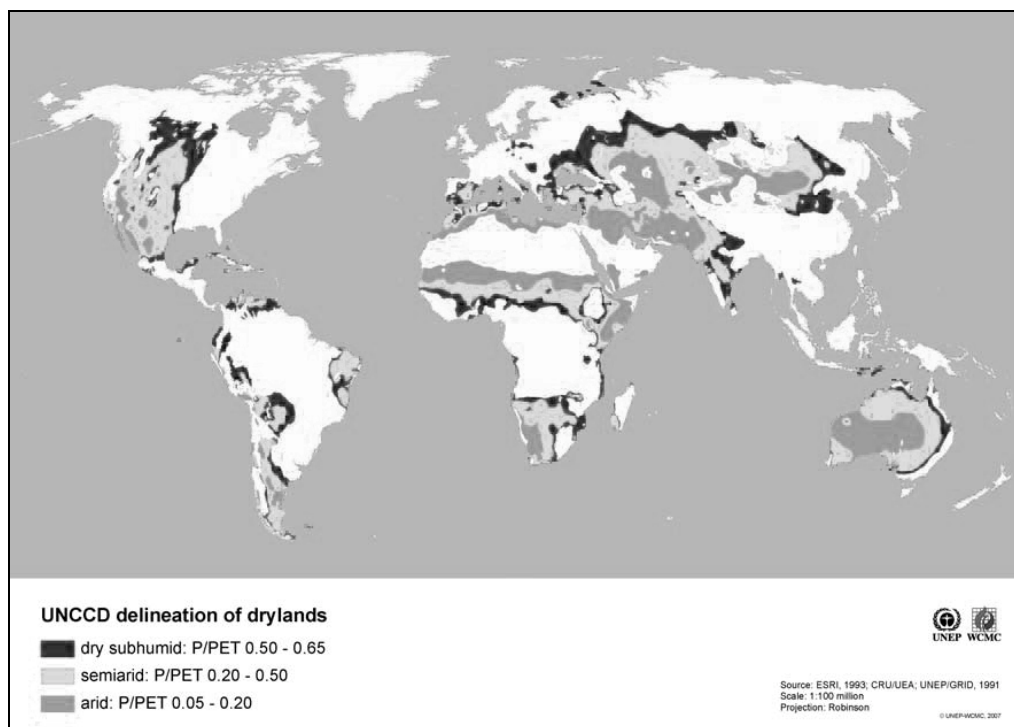
A. Internal challenges

19. The term ‘drylands’ encompasses arid, semi-arid and dry sub-humid areas where the aridity index, defined as the ratio of annual precipitation to potential evapotranspiration is within the range 0.05 to 0.65.⁶ Such drylands cover more than 40 per cent of the earth’s surface⁷ (figure 3).

⁶ Article 1 (g) of the Convention.

⁷ Safriel U and Z Adeel, Ecosystems and human well-being. Chapter 22 - Dryland systems (2005). Washington, DC: Island Press. <<http://www.maweb.org/documents/document.291.aspx.pdf>>.

Figure 3
UNCCD delineation of drylands



Source: ESRI, 1993; CRU/UEA; UNEP/GRID, 1991

1. Inherent poor soils

20. For various ecological reasons, such as high temperature, wind erosion, and low land cover, drylands generally have poor quality soils. Their structure is very compact due to very low levels of organic matter (0.3–1 per cent in the top 20 cm), and hence their porosity is very weak and does not allow water infiltration. Nutrients in these soils are often leached beyond the first 20 cm. Therefore, when tilling the first 8 to 10 cm, farmers are using the part of the soil with the lowest fertility.⁸

2. Water scarcity

21. Average annual rainfall in the world's drylands is less than 650 mm. This rainfall shows extreme spatial and temporal variability, which is expected to continue due to climate change impacts, exposing hundreds of millions of people to more extreme weather events (droughts and floods).⁹ The effects of desertification, land degradation and drought may expose almost two-thirds of the world's population to increased water stress by 2020. These adverse climatic conditions create dire circumstances for poor populations. About 16 per cent of the population lives in chronic poverty, particularly in marginalized rain-fed

⁸ Raunet M and K Naudin. 2006. Lutte contre la désertification : l'apport d'une agriculture en semis direct sur couverture végétale permanente (SCV). Les dossiers thématiques du CSFD. N°4. Septembre 2006. CSFD/Agropolis, Montpellier, France. 40p.

⁹ Global Impact. Columbia News. <<http://news.columbia.edu/drylands>>.

areas.¹⁰ Some 70 per cent of the freshwater available globally is held in the soil and is accessible to plants, and only 11 per cent is accessible as stream flow and groundwater,¹¹. Therefore, the ability of soil to store water has a considerable impact on crop production

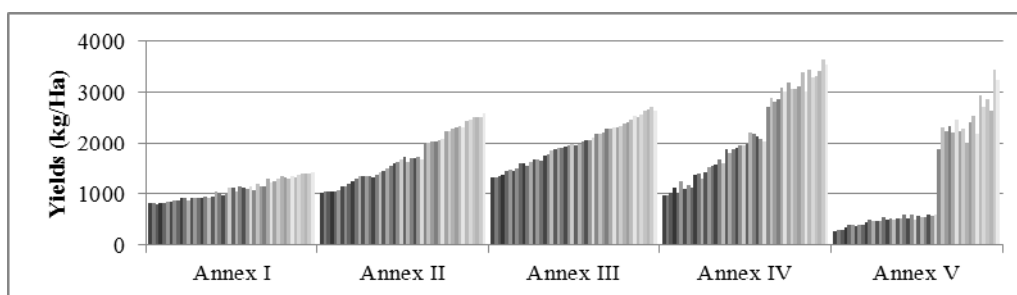
3. Land degradation

22. A recent study indicates that the area of land becoming degraded in developing countries increased by an average of 1 per cent per year between 1981 and 2003.¹² Such degradation of already very poor soils is a serious challenge for people living in drylands, where 41 per cent of the global population live and depend on agriculture as the major source of their livelihood. But this figure is an average and is much higher in specific countries, for instance 81 per cent for Ethiopia, 77 per cent for Eritrea, 70 per cent for Somalia, and 66 per cent for Afghanistan.¹³

4. Low growth rate on agricultural yields

Figure 4

Cereal yields (kg/ha) by UNCCD annex between 1962 and 2009



Source: UNCCD; Data: WorldDataBank (<<http://data.worldbank.org/>>), accessed August 2011.

23. Global cereal yields rose between 1962 and 2009 (see figure 4). However, these trends hide large discrepancies. According to the World Bank,¹⁴ the yields in sub-Saharan African countries remained roughly stable over this period. Soil quality directly affects yields, especially in developing countries where poor farmers cannot afford mineral fertilizers. Many studies estimate that nutrient balances in Africa have been negative during the past few decades.¹⁵ As the population has increased, traditional soil fertility management techniques, such as letting land lie fallow, can no longer be applied. Marginal

¹⁰ Thomas RJ, E De Pauw, M Qadir, A Amri, M Pala, A Yahyaoui, M El-Bouhssini, M Baum, L Iñiguez and K Shideed, *Increasing the Resilience of Dryland Agro-ecosystems to Climate Change*, SAT eJournal, December 2007, Volume 4, Issue 1, International Crops Research Institute for the Semi-Arid Tropics. <<http://www.icrisat.org/journal/SpecialProject/sp5.pdf>>.

¹¹ Global Environment Outlook GEO 4. Environment for development (2007). Nairobi: United Nations Environment Programme. <http://www.unep.org/geo/GEO4/report/GEO-4_Report_Full_en.pdf>.

¹² Bai ZG, DL Dent, L Olsson and ME Schaeppman. 2008. Global assessment of land degradation and improvement. 1. Identification by remote sensing. Report 2008/01, ISRIC – World Soil Information, Wageningen.

¹³ <<http://www.earth-policy.org/>>.

¹⁴ World development report 2008. Agriculture for development (op. 2007). Washington (D.C.): World Bank. <http://siteresources.worldbank.org/INTWDR2008/Resources/WDR_00_book.pdf>.

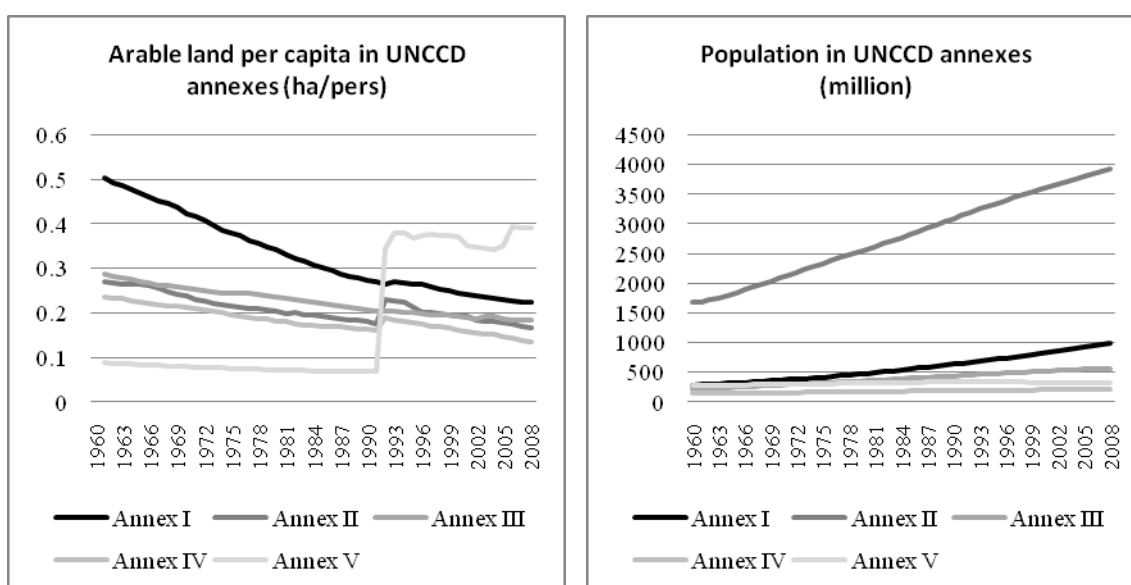
¹⁵ Haggblade S and P Hazell (2010) mention the pioneering work by Smaling and colleagues. Smaling, EMA, JJ Stoorvogel and PN Windmeijer. 1993. Calculating soil nutrient balances in Africa at different scales. SSSA Special Publication no.51. Madison, Wisconsin, USA. Soil Science Society of America.

lands have to be used continuously, accelerating the vicious circle of land degradation. The yearly loss of income due to the various forms of land degradation in the drylands has been estimated at USD 42 billion worldwide.¹⁶

5. Population growth

24. As shown in figure 5, the world population rose from 2.6 billion in 1960 to 6 billion in 2008, an increase of 134 per cent. As a consequence, during the same period, arable land available per capita for countries in the UNCCD annexes decreased by 35 per cent; in Africa the decrease was 55 per cent. Even though the overall annual population growth rate in these countries has declined from 2.2 to 1.2 per cent, it is still high in Africa, at 2.4 per cent in 2008. At that rate, the population of Africa will double in 30 years.¹⁷

Figure 5
Evolution of population and arable land by UNCCD annex



Source: UNCCD; Data: WorldDataBank (<<http://data.worldbank.org/>>), accessed August 2011.

6. Poverty

25. About 90 per cent of the people living in the drylands are poor.¹⁸ Poverty factors have been identified as the major triggers for food insecurity in the developing world.¹⁹ The current record high food prices are also creating a situation in which the urban and rural

¹⁶ Dregne HE, and N-T Chou. 1992. Global desertification dimensions and costs. In Degradation and restoration of arid lands. Lubbock: Texas Tech. University.
¹⁷ The figure of 2.4 per cent is the overall figure for Africa. In some countries the figure is much higher; in both Niger and Mali it is 3.6 per cent, which would lead to a doubling of the population in slightly less than 20 years.
¹⁸ Safriel U and Z Adeel, Ecosystems and human well-being. Chapter 22 - Dryland systems (2005). Washington, DC: Island Press. <<http://www.maweb.org/documents/document.291.aspx.pdf>>.
¹⁹ Sen A. 1981. Poverty and Famines: An Essay on Entitlement and Deprivation, Clarendon Press, Oxford.

poor face increasing difficulties to access food, which leads to political tensions and even instability.

7. Gender

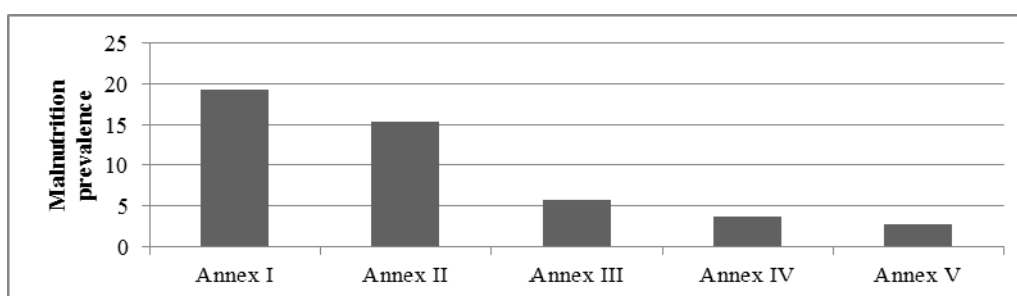
26. Women play a key role in agriculture and in ensuring food security at household level. Women make up 43 per cent, on average, of the agricultural labour force in developing countries, ranging from 20 per cent in Latin America to 50 per cent in Eastern Asia and sub-Saharan Africa.²⁰ They are usually in charge of the production of staple foods and the collection of water for family needs, and they have considerable traditional knowledge of local vegetation. However, women in rural areas around the world have one thing in common: they have less access than men to productive resources and to credit. This gender gap imposes costs not only on the agriculture sector, but also on the broader economy and society, and on women themselves.

8 Malnutrition

27. Malnutrition refers to deficiency or excess of one or more nutrients; undernourishment refers to a shortage of food intake, which makes it impossible to meet daily energy requirements. Malnutrition occurs when the diet is not well balanced between the various kinds of food (proteins, vegetables, fruits). This is quite frequent in drylands where adverse agroecological conditions constrain the cultivation of fruits or vegetables. Diets are mainly based on cereals, occasionally supplemented by some meat. Countries under UNCCD annexes I and II are showing high rates (figure 6). This leads to high levels of malnutrition, especially among children. Malnutrition at an early age leads to reduced physical and mental development during childhood. Stunting, for example, affects more than 147 million pre-school children in developing countries. Iodine deficiency is the world's greatest single cause of mental retardation and brain damage.²¹

Figure 6

Prevalence of malnutrition by UNCCD annex (percentage of children under 5 years old showing insufficient weight for age, average from 2004 to 2009)



Source: UNCCD; Data: WorldDataBank (<<http://data.worldbank.org/>>), accessed August 2011.

²⁰ The state of food and agriculture. Women in agriculture : closing the gender gap for development (2011). Rome: FAO. <<http://www.fao.org/docrep/013/i2050e/i2050e.pdf>>.

²¹ 5th report of the United Nations Standing Committee on the World Nutrition Situation, 2004, <<http://www.unscn.org/layout/modules/resources/files/rwns5.pdf>>.

B. Worsening factors: many challenges are emerging simultaneously

1. High prices on commodity market

28. In 2009, global cereal production reached 367 kg²² per person, or 1 kg per person per day, which could be considered as 75 per cent more than the basic nutritional needs.²³ Moreover, statistics show that, between 1992 and 2009 global food production grew at an average annual rate of 2.8 per cent while annual population growth rate averaged 1.4 per cent.²⁴ But this cereal availability does not ensure food security, partly because in 2010/2011, 54 per cent of global cereal production was used for purposes other than food (animal feed and agrofuel production mainly). Between 2008/2009 and 2010/2011, the amount going for non-food uses rose by 5.8 per cent while cereal production for food purposes increased by only 2.5 per cent.²⁵

29. The strong growth of the urban middle class population in emerging countries leads to a higher demand for meat. Cereals stocks are reallocated to meat production, where 7 to 10 kg of cereals are needed to produce 1 kg of meat. Currently, annual grain consumption per person varies from 180 kg, as in India, to 725 kg, as in the United States of America where consumption of meat and dairy products is high.

30. Also a number of developments on the food supply side contribute to pushing food prices up:

- The upward trend of energy prices is increasing cereal production costs, especially for the top producer countries whose agriculture is based on high energy inputs;
- Shocks affecting major cereal producers, such as droughts in Ukraine in 2005 and in Australia in 2009, and fires in Russia in 2010, have increased the volatility of commodity prices;
- Agrofuel production is increasing prices by drawing land away from food production.

31. Between March 2007 and March 2008, global food prices increased by an average of 43 per cent. This triggered food riots in some countries as the urban poor and even the urban middle class could no longer buy the food they needed, or were forced to spend most of their income on food. In January 2011 the world food prices were only 3 per cent below their 2008 peak.²⁶

32. This price volatility induces speculation. As an illustration, financial trades on commodity markets rose from EUR 13 billion in 2002 to EUR 205 billion in 2010. Although there still is no study showing clearly the extent to which speculation impacts on prices, it is admitted that stronger regulation schemes have to be put into force.²⁷

²² Source: UNCCD; Data: WorldDataBank (<<http://data.worldbank.org/>>), accessed August 2011.

²³ 350 kcal for 100g of cereal-equivalent; 2000 kcal per day as basic need.

²⁴ Source: UNCCD; Data: WorldDataBank (<<http://data.worldbank.org/>>), accessed August 2011.

²⁵ FAO, Food Outlook, Global market analysis, November 2010 and June 2011. <<http://www.fao.org/giews/english/fo/index.htm>>.

²⁶ World Bank Food Price Watch February 2011. <http://www.worldbank.org/foodcrisis/food_price_watch_report_feb2011.html>.

²⁷ G20 (2011): Action Plan On Food Price Volatility And Agriculture. Meeting of G20 Agriculture Ministers Paris, 22 and 23 June 2011. Ministerial Declaration. <http://agriculture.gouv.fr/IMG/pdf/2011-06-23_-_Action_Plan_-_VFinale.pdf>.

2. Lack of investment

33. Structural adjustment plans enforced by donors in the 1980s and 1990s imposed drastic institutional changes too quickly for Governments to be prepared for switching from a state-based system to a market-based system. The share of overseas development assistance dedicated to agriculture has dropped from 19 per cent in 1980 to 5 per cent in 2010. Agriculture has been neglected for years despite the fact that 70 per cent of the population lives in rural areas in many developing countries. The provisioning of public goods can no longer be guaranteed. The lack of proper storage, the degraded roads, and technical training increase the transaction costs of local markets.

3. Governance issues and land grabbing

34. The governance issue is critical in many States. Even though the need for public and private investment in agriculture is obvious, corruption, legal weaknesses, lack of reliable credit and insurance systems all discourage private sector investments in agriculture. After the food riots in 2008, the hoped-for increase in private investments suddenly emerged in the form of land grabbing through purchases or rentals.²⁸ A World Bank report confirms that in 2009 some 45 million hectares of land were sold in developing countries, 10 times more than in the previous decade. Every year an area of land greater than the arable area of France is the object of negotiations that could lead to sale to investors attracted by the potential profits resulting from the upward trend of agricultural commodities, or to foreign Governments that rely mainly on imports to feed their people, that aim at ensuring their own food security or that want to preserve for human consumption the 1600 litres of water required to produce 1 kg of wheat.²⁹ In any case, this land grab is aiming at agricultural production for export purposes (see annex I).

35. The lack of negotiation capacities of Governments facing investors has turned opportunities for investment into a threat of land grabbing, causing serious disadvantages for the host country and its population in the form of loss of land for its own food production, removal of the supply for local markets and hence increased prices, landless farmers adding pressure on the remaining land, migration patterns, etc.

4. Lack of regional cooperation

36. These institutional weaknesses at national level affect the capacities for integration opportunities at subregional and regional level. The Sahel and Western Africa Club of the Organisation for Economic Co-operation and Development (OECD) analysed several subregional cross-border trades of crops yet to be better controlled and improved. These studies revealed both the potential for integrated policies in favour of food security and the limits of the involved States to implement them.³⁰

5. Conflicts

37. Securing access to natural resources in a context of environmental and demographic pressure, social pluralism and inequities, as is the case in many developing countries, leads

²⁸ Michel Clavé (2010): Les cessions d'actifs agricoles à des investisseurs étrangers dans les pays en développement. Éléments de diagnostic et pistes de recommandations. With assistance of Blandine Barreau Patrick Brouchet Dominique Auverlot. Paris. <<http://www.strategie.gouv.fr/content/rapport-les-cessions-d%E2%80%99actifs-agricoles-des-investisseurs-etrangeurs-dans-les-pays-en-devel-0>>.

²⁹ Mekonnen MM and AY Hoekstra. 2010. The green, blue and grey water footprint of farm animals and animal products, Value of Water Research Report Series No. 48, UNESCO-IHE, Delft, Netherlands

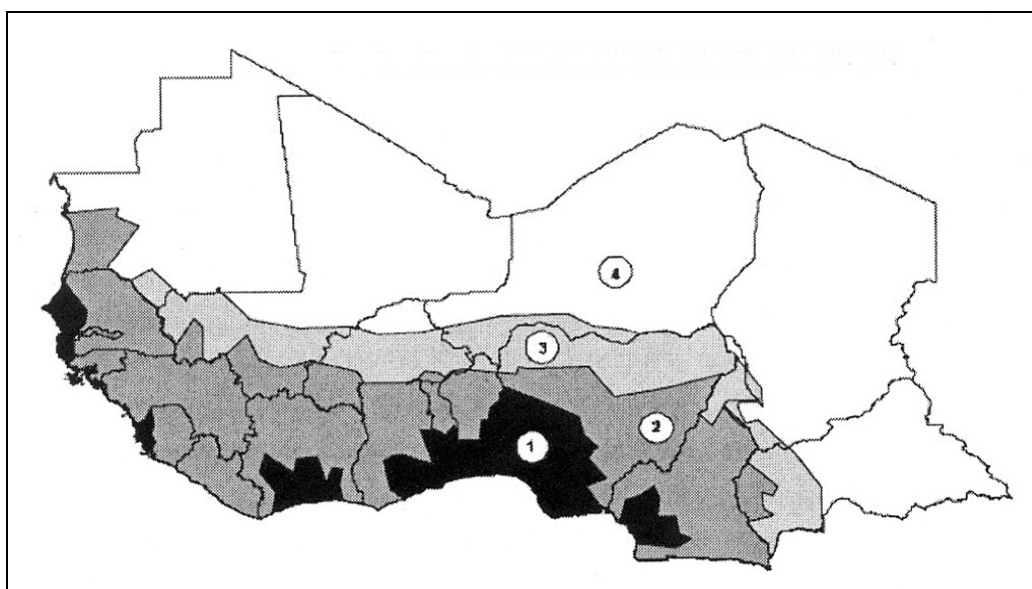
³⁰ <http://www.oecd.org/document/1/0,3746,fr_38233741_38246823_38441793_1_1_1_1,00.html>.

inevitably to conflicts, from local disagreements between farmers and pastoralists, to civil wars. Political instability is a cause and a consequence of the adverse conditions existing in the drylands. It is a cause, because land tenure is not secured, which prevents local farmers from investing; such a situation draws people into deep poverty as they try to survive by exploiting their natural resources. It is a consequence, because as water and land become scarce, access to them means power.

6. Migration

38. Food production in the drylands is further challenged by migration. Many young and productive men have migrated to the bright lights of the cities, and also to other countries or even to other continents. According to Cour (2001-cited in Requier-Desjardin and Bied-Charreton, 2009), even with a population growth rate of 2 to 3 per cent, geographical areas identified in figure 7 as 3 and 4 (more affected by desertification) will lose population to areas 1 and 2. The estimated repartition of population is supposed to evolve from 60 per cent for areas 1 and 2 and 40 per cent for areas 3 and 4 in 1930, to 72 per cent for areas 1 and 2 and 28 per cent for areas 3 and 4 in 2020.³¹

Figure 7
The four main West African demographic zones



Source: Requier-Desjardin and Bied-Charreton, 2009 based on Cour J-P, 2001. "The Sahel in West Africa : countries in transition to a full market economy", *Global Environmental Change*, 11: 31-47.

39. Harsh labour conditions and lack of investment lead to lack of perspectives in the rural areas, where food production has then to be ensured mainly by older people, women and children. Labour migration is an economic strategy for diversifying incomes and

³¹ Cour J-P, 2001. "The Sahel in West Africa : countries in transition to a full market economy", *Global Environmental Change*, 11: 31-47, cited in Requier-Desjardin and Bied-Charreton, 2009, "Evaluation des coûts économiques et sociaux de la dégradation des terres et de la désertification en Afrique", Contrat AFD / UVSQ n° 210 du 07/12/2004.

lowering agricultural risks. However, because remittances are exclusively financial resources, the impact on the diversification of income depends on the “capability” to access the market. Because of the current economic crisis, in many cases the loss of labour, which directly affects food production, is not compensated by the remittances sent by migrants. The evidence of the impact of remittances on poverty reduction is far from obvious and is often linked to the nature of the migration and the initial assets of the household in production factors.³²

7. Climate change

40. Climate change has a disproportionate effect on dryland areas. The perception of farmers and herders is that rainfall has become less predictable and more extreme. The number of prolonged drought periods (14 days and more) within the rainy season has increased, which has had a negative impact on crop yields. Drought in 2011 in the Horn of Africa is said to be the worst this region has experienced in 60 years.³³ The frequency of extreme climatic events, such as droughts and floods, is predicted to increase by 20 per cent in some areas over the next century.³⁴ Another study concluded that by 2080 average temperatures will increase by 4.4°C and average precipitation by 2.9 per cent. Global agricultural output potential is likely to decrease by about 6 per cent, or by 16 per cent without carbon fertilization. The literature suggests a decline in agricultural production of up to 60 per cent for several African countries.³⁵

41. The following table sums up the main triggers, in the context of the drylands, affecting the four aspects of food security.

³² Wouterse F and J Taylor. 2008. Migration and Income Diversification: Evidence from Burkina Faso. *World Development* 36 (4), 625–640.

³³ Somalis displaced by drought hit by Mogadishu rains, BBC, 16 July 2011.

³⁴ <<http://www2.ucar.edu/news/2904/climate-change-drought-may-threaten-much-globe-within-decades>>.

³⁵ Cline WR. 2007. Global warming and agriculture: Impact estimates by country. Washington, D.C.: Center for Global Development and Peterson Institute for International Economics.

Table 2
Factors affecting food security in the drylands

<i>Food security aspects</i>	<i>Level of impact</i>		
	<i>Global</i>	<i>Regional/national</i>	<i>Local</i>
Availability	Climate change	Underinvestment in agriculture Institutional weaknesses Land grabbing	Land degradation Water scarcity Migration Lack of investment
Accessibility	Price volatility Shift in consumption schemes	Population growth Conflicts	High prices on local markets Conflicts Poverty Gender
Utilization			Malnutrition
Stability	Climate change Price volatility	Institutional weaknesses	

IV. Sustainable land management as a solution for food security in the drylands

42. This advocacy policy framework carries the vision that food security of the rural poor of dryland areas can be improved through scaling-up proven SLM practices. Among the numerous benefits, the following paragraphs will show how this can address the various aspects of food security by maintaining soils and land ecosystem services.

A. Improving food production and availability

1. Land restoration

43. By definition SLM practices reduce soil and land degradation whether it is caused by physical (winds, runoffs, soil sealing, etc.) or chemical (nutrient leaching, loss of organic matter, etc.) factors. If sustainably managed, the soil will ensure the provisioning of land ecosystem services.³⁶

44. In agroforestry systems, trees reduce wind speed and as a result young crops are protected against sand blast or being covered by sand. Farmers who 20 years ago had to plant three or four times before the crop could be established, now usually plant only once, which lengthens the growing season for the crops.

45. Fertility is increased through natural nitrogen fixation, organic matter recycling and carbon sequestration. Depending on its age, a good stand of *Faidherbia albida* fixes 80 to 90 kg of nitrogen per hectare. In Zambia, maize grown close to *F. albida*, a nitrogen fixing species, reached an average yield of 4.1 t/ha; the same maize grown few metres away from the trees produced an average yield of only 1.3 t/ha.³⁷ Leaf litter adds organic matter to the soil and attracts soil fauna, which improves the structure of the soil and makes nutrients more easily available to plant roots. The young agroforestry parklands of southern Niger sequester 4–5 tonnes of carbon per hectare. When this parkland matures it will sequester much more carbon.³⁸ The old *F. albida* parklands of the peanut basin in Senegal sequester up to 30 tonnes of carbon per hectare.

46. These chemical and physical soil improvements have significant effects on food production. A study comparing 286 projects of sustainable development in poor countries shows an average increase of crop harvest of 79 per cent.³⁹ In Africa, yield increases of up to 128 per cent were achieved.⁴⁰ In Niger, these practices have led to an estimated additional production of about 500,000 tonnes of cereals per year, which is enough to feed 2.5 million people. Because they have been underinvested over years, dryland areas are showing a high potential of yield increases that make them particularly responsive to SLM practices.

³⁶ Provisioning, regulating and cultural services. See “Benefits of Sustainable Land Management”, WOCAT, UNCCD, 2009.

<http://www.unccd.int/knowledge/docs/CSD_Benefits_of_Sustainable_Land_Management%20.pdf>.

³⁷ Aagard, 2009, Conservation Farming Unit. Lusaka, Zambia. Personal communication in Garrity DP, FK Akinnifesi, OC Ajayi, SG Weldesemayat JG MowoA Kalinganire 2010.: Evergreen Agriculture: a robust approach to sustainable food security in Africa. *Food Sec* 2 (3), 197–214.

³⁸ Personal communication. Gray Tappan (US Geological Survey Data Center for EROS, South Dakota).

³⁹ Pretty J, AD Noble, D Bossio, J Dixon, RE Hine, FWT Penning de Vries and JIL Morison, 2006. “Resource-conserving agriculture increases yields in developing countries,” *Environmental Science and Technology*, 40:4, 1114–1119. in Olivier de Schutter (2010): Report submitted by the Special Rapporteur on the right to food. Agroecology. UN General Assembly.

<http://www.srfood.org/images/stories/pdf/officialreports/20110308_a-hrc-16-49_agroecology_en.pdf>.

⁴⁰ UNEP-UNCTAD Capacity Building Task Force on Trade, Environment and Development (CBTF), Organic Agriculture and Food Security in Africa, New York/Geneva, United Nations, 2008, p. 16. in Olivier de Schutter (2010): Report submitted by the Special Rapporteur on the right to food. Agroecology. UN General Assembly.

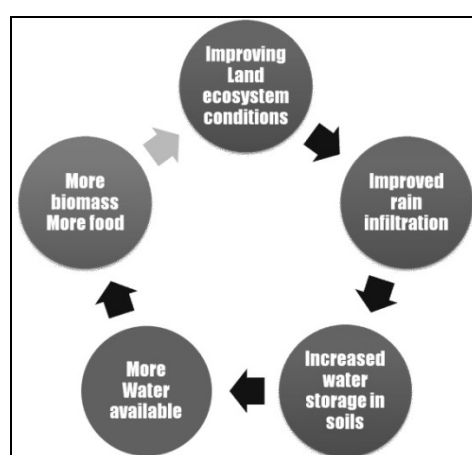
<http://www.srfood.org/images/stories/pdf/officialreports/20110308_a-hrc-16-49_agroecology_en.pdf>.

2. Water availability

47. SLM practices are based on natural cycles of water, nutrients, minerals and organic matter, by managing various plant species in a complementary manner. The combination of trees in farming systems with principles of conservation farming, the so-called “evergreen agriculture”,⁴¹ helps maintain the best possible land use cover, reduces rainfall runoff, induces more water to infiltrate, limits exposure to the sun and evaporation, and increases the capacity of soil to store moisture. This is the virtuous circle of sustainable land and water resources management (see figure 8).⁴²

Figure 8

Virtuous circle of sustainable land and water resources management



Source: UNCCD thematic fact sheet n°2.

48. Water-harvesting techniques that force rainfall and runoff to infiltrate the soil potentially contribute to recharging local groundwater tables and could have major effects on water levels in wells. For instance, in the villages of Rissiam and Ranawa, in the northern part of the Central Plateau of Burkina Faso, all wells used to dry up as soon as the rainy season stopped. Since the introduction of water-harvesting techniques in these villages in the early 1980s all water points in these villages have water during the entire year. Despite the fact that the population of Ranawa has more than doubled since 1985, more water is available for crops, people and livestock.

49. Many drylands populations have developed water-harvesting techniques that continue to be used. They are called *meskats* in Tunisia, *khadins* in Rajasthan (India) and *khuskaba* systems in Baluchistan (Pakistan). The growing unpredictability of rainfall in many drylands increases the importance of modern and traditional water-harvesting techniques. To that end, farmers’ innovation plays a key role. By adding organic matter (manure, compost, tree litter, ash) to water harvesting pits, the combination of water management and soil fertility improving techniques allowed farmers to cultivate crops

⁴¹ Garrity DP, FK Akinnifesi, OC Ajayi, SG Weldesemayat JG MowoA Kalinganire 2010.: Evergreen Agriculture: a robust approach to sustainable food security in Africa. *Food Sec 2* (3), 197–214.

⁴² UNCCD Thematic factsheet N°2 – Water scarcity and desertification.
<<http://www.unccd.int/documents/Desertificationandwater.pdf>>.

where before nothing could be grown. This technique has been used in Burkina Faso to rehabilitate tens of thousands of hectares of strongly degraded land.⁴³

50. By reducing soil erosion, SLM practices can also, at a wider scale, prevent the sedimentation of dams, and thus ensure long-term downstream water provision. The sedimentation of dams measured in North Africa in 2002 could reach 80 per cent of the dam initial water storage capacity.⁴⁴ The global cost of such a phenomenon has been estimated at about USD 18.5 billion.⁴⁵

3. Economic potential for rural areas

51. The success achieved by these techniques may have surprising consequences and could lead to the emergence of a land market. Farmers, but also local traders and women, began buying and selling strongly degraded land in order to rehabilitate these lands with the improved planting pits. A survey in 1998 in Niger showed that 40 per cent of the farmers interviewed had bought plots of degraded land.⁴⁶

52. In the middle of the 1990s gullies on the China's loess plateau were leased in local public auctions to the highest bidders, who subsequently were supposed to make these gullies productive again. Those who won the auctions quickly began to level part of the gullies to conserve the soil, and to plant trees. As gullies always harvest runoff the growing conditions are favourable, and by the end of the 1990s farm forests were emerging in gullies.

53. Definitive migration for income diversification becomes less relevant as rural areas could generate employment and incomes. However, temporary migration, such as nomadism or circular migration, can still be important as it reduces the pressure on land at certain periods of time.

B. Improving access to food

1. Provision of local markets

54. Sustainable agriculture results in the production of more food and hence in more food available on local markets. More secure local supply of food helps to reduce price fluctuations as well as to limit supply from urban cities with high transaction costs.

2. Limited inputs

55. Lack of investment in agriculture over the years (poor infrastructures (roads, warehouses, etc), weak credit systems and inadequate research and development support) has prevented farmers from accessing conventional ways to improve their yields. Because SLM practices are based on agroecology principles, complementary benefits of species

⁴³ Kaboré D and C Reij. 2004. The emergence and spreading of an improved traditional soil and water conservation practice in Burkina Faso. IFPRI, Washington. EPTD Discussion paper no. 114. 28 pp.

⁴⁴ Remini, La sédimentation dans les barrages de l'Afrique du Nord. Larhyss Journal, ISSN 1112-3680, n° 02, Juin 2003, pp. 45–54

⁴⁵ Nkonya E, N Gerber, P Baumgartner, J von Braun, A De Pinto, V Graw, E Kato, J Kloos and T Walter, The Economics of Desertification, Land Degradation, and Drought Toward an Integrated Global Assessment, ZEF- Discussion Papers on Development Policy No. 150, Center for Development Research, Bonn, May 2011, 184 pp.

⁴⁶ Hassane A, P Martin and C Reij. 2000. Water harvesting, land rehabilitation and household food security in Niger: IFAD's soil and water conservation project in Illéla District. IFAD/VU University Amsterdam. 49 pp.

(trees and crops) and systems (farming and livestock keeping), they limit the use of mineral fertilizers, of irrigation or mechanization, reducing the dependency on energy and expensive inputs. As an example, developing irrigation systems can cost about USD 10,000 per hectare. Developing water-harvesting systems can cost as little as USD 200–1,000 per hectare and all these costs concern investment of human labour.

3. Income generation

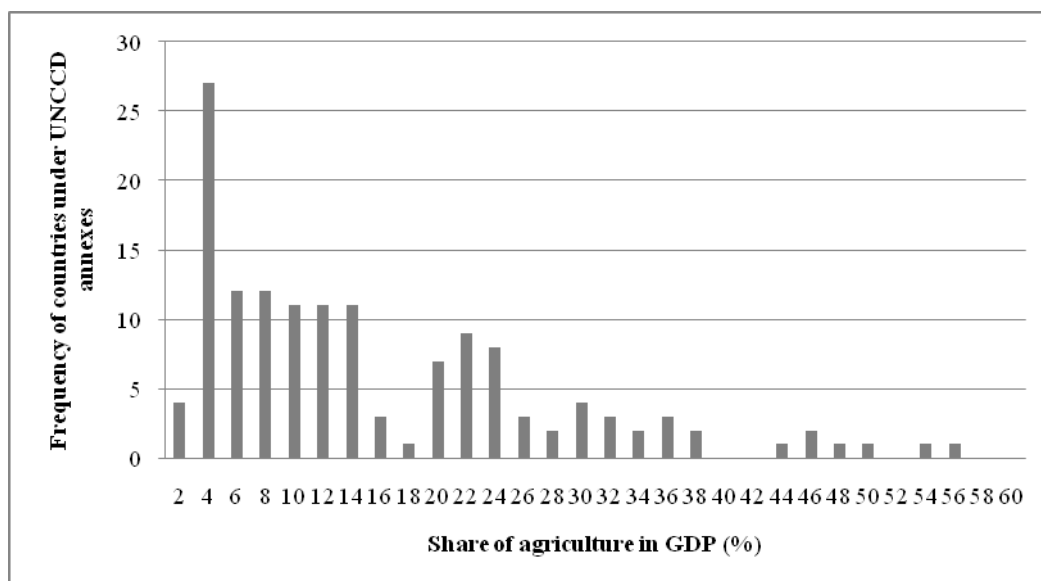
56. Agrosystems under SLM are diversified and provide various outputs. In addition to edible fruits and leaves that can be marketed locally, farmers can supplement their incomes from the sale of firewood and poles. During the famine years of 2005 and 2010, there was little drought-related infant mortality in villages with on-farm re-greening. Life was harsh, but in drought years the rural poor literally survive on trees.

57. Furthermore, as SLM practices create jobs within the agrosystem (more labour required) and outside the agrosystem (tools makers, middle-men, retailers, etc), they have a potential for economic development of the whole rural area, and to limit rural–urban migration.

58. It is recognized that a 10 per cent increase in farm yields leads to a 7 per cent decrease in poverty in Africa and a 5 per cent decrease in Asia.⁴⁷ When considered with the figures presented in paragraph 47, this represents a great potential for drylands and countries affected by land degradation, because agriculture still contributes at least 10 per cent to the gross domestic product of 54 per cent of UNCCD country Parties (see figure 9).

⁴⁷ Towards a green economy. Pathways to sustainable development and poverty eradication (2011). [S. I.]; United Nations Environment Programme.
<http://www.unep.org/GreenEconomy/Portals/93/documents/Full_GER_screen.pdf>.

Figure 9
Distribution of countries under UNCCD annexes according to the share of agriculture in their GDP



Source: UNCCD; Data: WorldDataBank (<<http://data.worldbank.org/>>), accessed August 2011.

59. National policymakers should know that investments in SLM are economically rational. In Niger, investments in improved traditional planting pits produced an internal rate of return (IRR) of 82 per cent for farmers who already owned the land they were rehabilitating, and 39 per cent even if the land still had to be bought.⁴⁸

4. Mutual benefits

60. Sustainable agriculture is based on complementarity between plant species and between agriculture systems. It brings together farmers and pastoralists in a win-win situation: agroforestry practices greatly increase the land cover and the availability of fodder for animal feed, and animal dung is used to fertilize fields. Because the benefits are shared along the various users of the resource, this led to a reduction in usage conflicts by 80 per cent.⁴⁹

5. Gender mainstreaming

61. Closing the gender gap in agriculture would generate large gains for the agricultural sector and for society as a whole. Studies have shown that 20 years ago women spent an average of 2.5 hours a day collecting firewood, as the natural vegetation was far away and scarce. Under agroforestry systems, women spend an average 0.5 hours a day on this task, as they can prune trees on the family fields.⁵⁰ These two hours saved can be dedicated to

⁴⁸ Abdoulaye T and G Ibro. 2006. Analyse des impacts socio-économiques des investissements dans la gestion des ressources naturelles : étude de cas dans les régions de Maradi, Tahoua et Tillabéry au Niger. Etude Sahélienne. CRESA, Niamey.

⁴⁹ Dr. Chris Reij, Personal communication, UNCCD Land Day 2, 2010. <<http://www.unccd.int/publicinfo/landday/2010/event.php>>.

⁵⁰ Dr. Chris Reij, Personal communication, UNCCD Land Day 2, 2010. <<http://www.unccd.int/publicinfo/landday/2010/event.php>>.

productive tasks, bearing in mind that if women had the same access to productive resources as men, they could increase yields on their farms by 20–30 per cent. This could raise total agricultural output in developing countries by 2.5–4 per cent, which could in turn reduce the number of hungry people in the world by 12–17 per cent.⁵¹

C. Improving food utilization; diversified products

62. SLM practices are based on species complementarity, involving various crops, trees and animals. As such, they provide diversified products in terms of nutritional quality: legumes, proteins, carbohydrates. In addition, the resilience of such agrosystems within the dry season is increased, allowing people to access, consume or sell wood, fruits and other forest products. Also, by allowing livestock to get fodder throughout a longer period, SLM practices improve meat and dairy production. Ensuring such balance in the diet is even more important for healthy development of children.

D. Improving stability over time

63. Various forms of SLM applied to agricultural production (agroecology, agroforestry, crops under cover, etc) can provide an adequate technical solution to improving food security at local level. But it requires a minimum of good governance as well as political and social stability. The drivers of an enabling environment allowing SLM to be implemented and scaled up are mainly institutional at both national and regional/subregional levels.

1. Strongest institutions at national level

64. Special and different treatment for developing countries is an acknowledged principle in the Doha agricultural negotiations. It is accepted that developing countries can have this special treatment especially on the grounds of food security, farmers' livelihoods and rural development. Suitable actions are now considered necessary at national level to benefit from these provisions and spread sustainable agriculture. Incentive tools based on payment for environmental services or public–private partnership have to be further considered.

65. To do so, better institutions are needed. Public goods are to be better provided to support agricultural potential. Roads and communications facilities decrease transaction costs and hence market prices. National networks of grain warehouses help to avoid postharvest losses, which are currently estimated between 20 and 50 per cent.⁵² Public agricultural research and development can further improve the various forms of sustainable agriculture and enhance their performances. Better governance will attract private investors and partners, and also ensure real negotiation capacities. Then, public investment will become a catalyst for private investment.

66. This change has to be progressive from the local level to the national level and based on a strong involvement of the population. In this context, experiences on territorial governance could have a crucial added value. Several countries in West Africa are involved

⁵¹ The state of food and agriculture. Women in agriculture : closing the gender gap for development (2011). Rome: FAO. <<http://www.fao.org/docrep/013/i2050e/i2050e.pdf>>.

⁵² Grethe H, A Dembélé and N Duman. "How to feed the world's growing billions", 2011, WWF Germany. <http://www.wwf.de/fileadmin/fm-wwf/pdf_neu/WWF%20BOELL%20How%20to%20feed.pdf>.

in a decentralization process, involving natural resources management for many of them. Land governance modalities at local level are institutionalized through a real “bottom-up” process.

2. More integration initiatives at regional and subregional level

67. Drivers of food security, be they environment-related or human-related, are generally region-specific. Food security in Sahel countries, for example, involves more or less formal cross-border trade in grain. Various studies have demonstrated the intimate links and interdependencies between Niger and Nigeria; between Mali, Côte d’Ivoire and Burkina Faso; and between Mali and Mauritania.⁵³ The potential for integrated policies and regulations at subregional level is enormous, but it is yet to be fully implemented.

V. Debunking some myths about drylands

68. There are general myths about drylands. The first five are listed herewith: *Little or no success has been achieved in agriculture and SLM in drylands*. Many success stories have been recorded and can be found in the literature (see annex II).

69. *Investments in soil and water conservation take a long time to produce results*. Experience with simple water-harvesting techniques for plant production is that they produce an impact on crop yields from the first year. If soil fertility is improved, the impacts on crop yields will be sustained and are likely to increase.

70. *It takes a generation before trees will produce benefits*. Trees have to be pruned from year 1 or 2 to develop a trunk and a canopy. This pruning already produces leaves that can be used as fodder or as mulch and twigs that can be used as a source of household energy.

71. *Rural people in drylands are poor, and without resources or options, and utterly dependent on Government assistance or foreign aid*. Experience from many countries has demonstrated that dryland farmers are innovative and resourceful, and when barriers to changing behaviour have been reduced, they can mobilize their labour, especially during the dry season, to invest in land restoration and a range of improved natural resource management practices. SLM practices can provide rural populations with a direct and significant return on their investments of labour.

72. *Well funded projects are the most effective way to scale up successes in agricultural development and to achieve food security*. Experience has shown that landscapes can be transformed in ways that generate multiple benefits over large areas when policy and institutional frameworks as well as other conditions are favourable; there is a role for externally funded assistance, but sustainable impacts follow the investment of significant local resources, and that requires changes in behaviour in response to a reduction of barriers to the adoption of SLM practices.

VI. Recommendations and plan of action

73. In accordance with The Strategy, this advocacy policy framework on food security aims at up-scaling the sustainable management of natural resources in drylands and at

⁵³ Cf. reports of the West Africa and Sahel Club – OECD at http://www.oecd.org/document/1/0,3746,fr_38233741_38246823_38441793_1_1_1_1,00.html.

improving the livelihood conditions of populations vulnerable to food insecurity, hunger and famine with a broad set of policy elements at national, regional and local levels.

74. This set of broad policies aims at being further developed, precise and tailored through a consultative process⁵⁴ described as the plan of action below.

A. At national level

75. Recommendation 1. Considering the constraints identified and the potential that SLM offers, Parties may wish to decide to reform and develop the institutional environment to favour the adoption of SLM practices applied to food production.

76. Such a process must concern the development of agricultural services and facilities and the reduction of transaction costs (road improvement, information market systems, drought early warning systems, etc.).

77. Poor households, small-scale farmers and women must be the primary targets of such a process. Then, legislation should be formulated in such a way that it recognizes the exclusive rights of resource users to manage their on-farm trees, which are the farmers' capital assets. This may require reform of land tenure arrangements as well as new institutional arrangements for allocation of land to individuals.

78. Periodic vulnerability assessments, including the reporting against UNCCD impact indicators, must be performed, including strategies and measures for mitigating such vulnerability.

79. Policies and measures for effective decentralization of decision-making are required. A growing number of countries have already gained some experience with this, and this experience could be shared between countries. Local-level governance of resources also implies the building of governance institutions at village and inter-village level for joint management of new productive assets.

80. To that end, Parties are invited to carefully consider the process of aligning national action programmes (NAPs) with The Strategy as an opportunity to refine national policy tools for mainstreaming, inter alia, the food security issue and up-scaling SLM, within other relevant national policies, especially those relating to risk management, recovery systems, response measures and financial strategies.

81. With regard to NAP implementation, Parties are encouraged to strengthen or develop new partnerships and initiatives with all appropriate stakeholders in SLM and sustainable agriculture. These stakeholders include the business sector, agricultural research institutions, non-governmental organizations and producer organizations (farmers and pastoralists).

82. A pilot exercise involving Parties on a voluntary basis could be carefully considered.

B. At regional and subregional level

83. Recommendation 2. Considering the common challenges faced by countries within a given region and subregion, Parties may wish to decide to strengthen or further develop regional or subregional cooperation and initiatives on food security in drylands.

⁵⁴ As expressly requested by decision 8/COP.9, paragraph 7.

84. Sharing experiences between countries in a region is a desirable way to mutually learn from those experiences and insights. Selected regional organizations can catalyse such regional learning processes.

85. Knowledge on food security at regional level needs to be further increased and effectively shared, especially by addressing knowledge gaps on food security.

86. Specific regional studies on food security must be implemented, including for the collection and assessment of information on risks, threats, systems and methods, with a focus on knowledge sharing and uptake of SLM practices as part of the UNCCD Scientific Knowledge Brokering System.

87. Existing regional, subregional or international agreements must be reviewed to ensure that cooperation on food security is a priority within them, including for the development of national response programmes in coordination with the NAPs and subregional actions programmes. The alignment process with The Strategy must to be considered as an opportunity for such development.

88. Regional and subregional cross-border initiatives will allow the development of specific food security policy tools tailored for each regional implementation annex according to its own circumstances.

C. At global level

89. Recommendation 3. Parties may wish to decide to strengthen advocacy for SLM practices applied for food production to be considered as the most efficient approach to improve food security in the drylands.

90. The Convention is the specialized organization on drylands and desertification. As such, it must be part of all international panels on food security to advocate for and raise awareness on drylands. The implementation of the advocacy policy framework on food security must tap into several strategic partnerships directly and indirectly relating to food security and drylands, with the UNCCD taking the lead; the Joint Liaison Group of the Rio conventions would be the first such partnership.

91. To that end, a specific advocacy initiative on food security within the drylands must be further considered as a strategic approach from now until the end of The Strategy.

92. Table 3 sums up the recommendations and the proposed plan of action.

Table 3
Recommendations and plan of action

	<i>Level of intervention</i>		
	<i>National</i>	<i>Regional</i>	<i>Global</i>
General recommendations	To reform and develop the institutional environment to favour the adoption of sustainable land management practices applied to food production	To strengthen or further develop regional or subregional cooperation and initiatives on food security in drylands	To strengthen advocacy for sustainable land management applied for food production to be considered as the most efficient approach to improving food security in the drylands
<i>Plan of action</i>			
Short term 1–2 years	To ensure that food security is taken into account within the process of aligning national action programmes with The Strategy	To implement regional diagnosis studies on food security and ways for scaling up sustainable land management practices in all five regional implementation annexes	To launch a dryland initiative on food security To develop a synergy framework on food security with the other two Rio conventions
Medium term 2–5 years	To kick-start a “policy-pilot-project” on food security with one country in each regional implementation annex	To develop annex-tailored policy tools To foster knowledge management targeting identified knowledge gaps on food security improvement	For UNCCD to be part of strategic panels on food security as the recognized partner for drylands and desertification issues
Long term 5–7 years		To review experiences with sustainable land management in dryland agriculture and tailor guidelines for each region	

VII. Conclusion

93. Food insecurity in the drylands is intimately linked to soil and land degradation and triggered by environmental and human factors. As such, the food security issue within the drylands is at the core of the UNCCD mission.

94. Solutions exist, and SLM practices applied to agriculture have been proved technically efficient, economically rational and particularly adapted for conditions in poor drylands areas.

95. Therefore, UNCCD Parties may wish to enable, at national, regional and global levels, the scaling-up of SLM practices applied to agriculture to ensure food security in the drylands.

96. To do so, UNCCD Parties may wish to consider:

(a) At national level, encourage reforming and building an enabling environment to favour the adoption of SLM practices applied to food production;

(b) At subregional and regional levels, strengthening or further developing regional or subregional cooperation and initiatives on food security in drylands;

(c) At global level, strengthening advocacy for SLM practices applied for food production to be considered as the most efficient approach to improving food security in the drylands.

97. UNCCD Parties may also wish to entrust the secretariat with implementing the proposed plan of action to support the implementation of these recommendations.

Annex I

[English only]

Where investment in land is coming from and where it's going

Figure 1
Countries of origin of investors looking for land to buy or lease



Source: UNCCD, 2010

Figure 2
Countries targeted by investors to buy or lease land



Source: UNCCD, 2010

Some references about successes in agriculture and sustainable land and water management

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