

**Towards a land  
degradation  
neutral world**



Cover photo: © Marcin Bondarowicz

# Land and soil in the context of a green economy for sustainable development, food security and poverty eradication

The Submission of the UNCCD Secretariat to the Preparatory Process for the Rio+ 20 Conference  
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## The importance of productive land/fertile soil for sustainable development

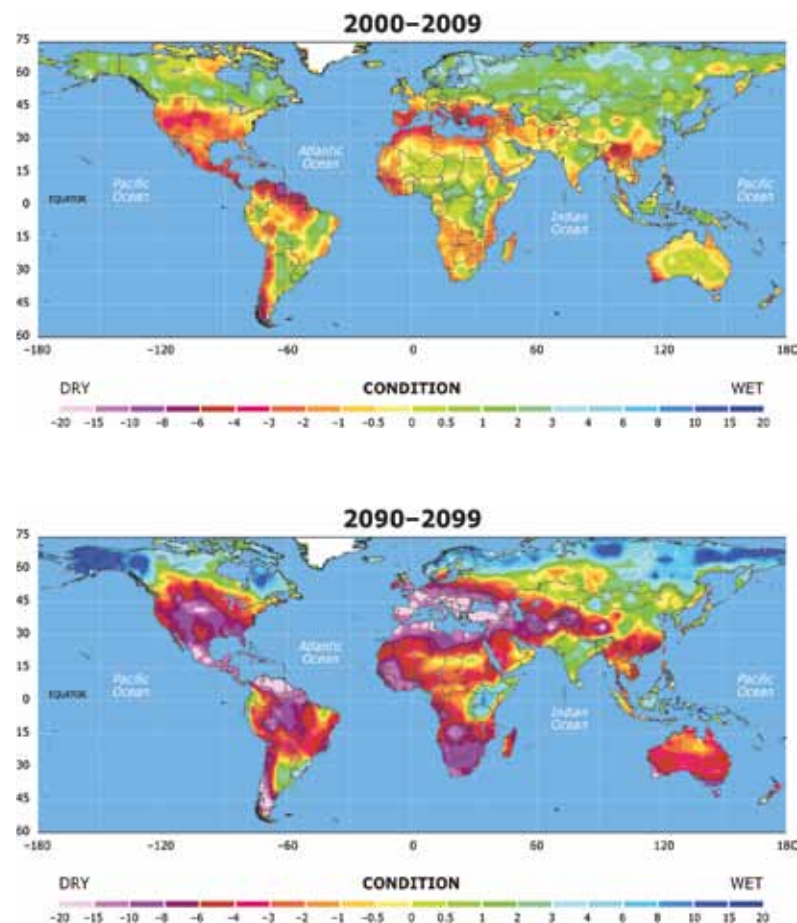
Land<sup>1</sup> is defined as a system engaged in generating biological productivity. It is the earth's infrastructure for life. The rate and quality of production generated from the land depends on its major components, soil and its fertility. Soil organic matter, derived from the vegetation supported by a particular soil, is the major component that controls soil fertility.

Land and soil not only support direct users but also indirect users, i.e. the consumers of land productivity, the entire human population derives benefits generated by soil such as vegetation cover, atmospheric oxygen, climate regulation and water filtration provisions. Soil functions and services acquire the status of a global common whose protection benefits all. It requires partnership and cooperation at the global scale to prevent land and soil degradation.

The degradation of land is a major threat to life on earth, including for humans. When occurring in drylands, where productivity is constrained by water, land degradation is termed desertification. Land degradation results from various factors including human activities and climatic variation induced disasters such as drought and floods. It is expressed by a persistent reduction of biological productivity, driven by overexploitation of land resources by users striving to increase economic productivity, which results in fertility loss and soil depletion.

Drivers of change such as population growth, increased consumption and inequity generate excessive demands on land productivity. This in turn leads to land degradation, whose repercussions, both biophysical and socio-economic, travel far. Repercussions can be local, trans-boundary and are often felt globally, impacting global climate and food security, causing significant health problems and fuelling political instability.

Map: Potential for future drought worldwide: The world faces growing threat of severe drought



Regions that are blue or green will likely be at lower risk of drought, while those in the yellow and violet spectrum could face more unusually-extreme drought conditions.

(Source: University Corporation for Atmospheric Research (UCAR) National Center for Atmospheric Research (NCAR) & National Science Foundation <http://www2.ucar.edu/news/2904/climate-change-drought-may-threaten-much-globe-within-decades>)

*“Upon this handful of soil our survival depends. Husband it and it will grow our food, our fuel, and our shelter and surround us with beauty. Abuse it and the soil will collapse and die, taking humanity with it”<sup>2</sup>*

## The scope of the challenge

Despite the crippling effects of land degradation or soil nutrient depletion, the world has continued building towards ‘a soil peak’ which will have far-worse consequences than the current ‘oil peak’. Despite the search for sustainability, the threats and far-reaching impacts of land degradation are ignored. The issue is still a blind spot for the international community.

Our most significant non-renewable geo-resource is productive land/fertile soil. Nevertheless each year, an estimated 24 billion tons of fertile soil are lost. Arable land loss is estimated at 30 to 35 times the historical rate. Land degradation directly affects 1.5 billion people globally. Worldwide, when poverty is assessed in terms of infant mortality rate, 74% of the poor (42% of the very and 32% of the moderately poor) are directly affected by land degradation. Desertification Land Degradation and Drought have a disproportionate impact on woman and children. They bear the burdens of land degradation and are the last to leave their land.

Land is a finite resource. Land degradation depletes the resource base for our common food security. In the drylands, due to drought and desertification, 12 million hectares of land are transformed into new man-made deserts each year. That is an area with the potential to produce 20 million tons of grain every year.

Desertification and land degradation are now pervasive in all ecosystems and corrode the three pillars of sustainable development.<sup>3</sup> Most certainly land degradation is a global phenomenon, with 78% of currently degrading land found in non-dryland areas. Degrading the buffer zone of the drylands also increases dryland vulnerability to degradation. The demand for productive land is high and competition over land use is intense. Recent food crises did not happen accidentally and are not over. In an increasingly interdependent world, land-related crises are ever more likely to mutate into new global crises.

Africa is the region most vulnerable to the phenomenon of desertification. Over 45 per cent of Africa is affected by desertification. 55 per cent of this area is at high or very high risk of further degradation. 2/3rds of Africa’s arable land could be lost by 2025 if this trend continues.

As for drought, the percentage of the Earth’s land area stricken by serious drought more than doubled between the 1970s and the early 2000s. The world is facing the possibility of widespread drought in the coming decades. This fact has yet to be fully recognized by the international community. Unfortunately, drought, in our time, still implies famine and claims lives. The tragic situation happening in the Horn of Africa is a stark reminder that we still have a long way to go.

In the last two decades, significant land recovery and improvement have occurred in the drylands. In many cases, drylands populations have been leading these innovations and progresses. For instance, farmer-managed natural regeneration and agroforestry techniques, such as planting of “fertilizer trees” on farmlands and grazing lands, have already been adopted in many regions. Such techniques have contributed to improving over six million hectares across Africa. A major scaling-up of these systems should be pursued everywhere by improving public policies and institutions and harnessing the potential of civil society and the private sector.

At the same time, more than 2 billion hectares<sup>4</sup> of land worldwide is suitable for rehabilitation through forest and landscape restoration. 1.5 billion hectares would be best-suited to mosaic restoration, in which forests and trees are combined with other land uses, including agroforestry, smallholder agriculture. This offers “a vast opportunity to reduce poverty, improve food security, reduce climate change, and conserve biodiversity”.

## The Global Policy Response from the “Earth Summit in Rio” and its Agenda 21

The UNFCCC, the CBD and the UNCCD (the Rio Conventions) are the offspring of the Earth Summit held in Rio de Janeiro in 1992. While UNFCCC and CBD address the atmosphere and the diversity of life on earth respectively, the UNCCD addresses the degradation of the earth’s infrastructure for life - land. UNCCD has a specific mandate for the arid, semi-arid and dry sub-humid areas (collectively known as the drylands) where productivity is constrained by water.

While the awareness of the global community to climate change and biodiversity loss has dramatically increased since the Rio Summit, the significance of land and soil to humanity remain obscure to many. As a result, the risk to livelihoods emanating from land and soil degradation does not receive the attention it deserves. This may be attributed, in part, to the limited textual mandate of the UNCCD and its limited geographical focus. This has resulted in increasing persistent degradation and poverty, especially in drylands.

The UNCCD’s main objective is to address Desertification and Land Degradation and mitigate the effects of Drought (DLDD). More specific targets, provided for by its ten-year strategic plan 2008-2018, are to promote the functioning of the dryland ecosystem, improve the well-being of the users of these ecosystems, generate global benefits through promoting dryland ecosystem functions and mobilize resources for achieving the Convention’s objectives.

## Addressing DLDD in the context of a green economy for sustainable development and poverty eradication: the need for action at the UNCSD or Rio + 20

Poverty and hunger, food insecurity and vulnerability to climatic shocks are likely to remain the major global challenges for sustainable development in the next decades. For the large majority of the poor and the most vulnerable and the ecosystems they depend on, adaptation and resilience will be better ensured through addressing DLDD issues.

Trilemma of addressing DLDD (rates per minute)<sup>5</sup>

- Causes
  - ▶ Population increase: 150 people
  - ▶ CO<sub>2</sub> carbon increase: 6150 ton
  - ▶ Tropical deforestation (total dryland and non-dryland): 25 ha
  - ▶ Desertification: 23 ha<sup>6</sup>
  - ▶ Urban encroachment: 5.5 ha
- Effects
  - ▶ Soil degradation: 10 ha
  - ▶ Deaths from hunger: 16 people (incl. 12 children)
- Consequences
  - ▶ Political instability
  - ▶ Civil strife

If we do not take bold action to protect, restore and manage land and soils sustainably, we will miss climate change adaptation and mitigation, biodiversity, forest and MDG targets; we will not alleviate rural poverty and hunger, ensure long-term food security or build resilience to drought and water stress. This will lead to severe consequences including more political conflict over scarce resources and continued forced migration.

“The strategy is to grow more produce from less land, more crop per drop of water, more yield per unit input of fertilizers and pesticides, more food per unit of energy, and more biomass per unit C and environmental foot-print.”<sup>7</sup>

The Green Economy is well suited to take advantage of opportunities provided for by Sustainable Land Management (SLM). SLM can be used to prevent land degradation and restore already degraded land, providing that the available institutional framework is suitably engaged. Schemes that support payment for ecosystem services or that create market mechanisms for land-derived ecosystem services would help offset the short-term economic costs to land users practicing conservation and ecological agriculture. In the long run, SLM would generate sustainable income and confer not only local but also regional and even global benefit.

Therefore land-use in agriculture, energy and forestry should be one of the cornerstones of the green economy for sustainable development, food security and poverty eradication.

At the High-Level Meeting convened by the UN-GA, many leaders “stressed that if the international community was serious in its commitment about reversing land degradation and desertification, the time had come to commit for building a land degradation neutral world, to set measurable sustainable development targets towards zero net land degradation as a commitment to build a land degradation neutral world.”<sup>8</sup>

The actions that are required on the ground to achieve a zero net rate of global land degradation are in line with the Sustainable Land Management (SLM) approach. The approach could be effectively streamlined into the Green Economy initiative and become a tool for attaining sustainable development in rural areas worldwide.

Both SLM and the Green Economy internalize the Millennium Ecosystem Assessment approach of addressing agriculture as cultivated ecosystems, which provide a bundle of services. These services include biological productivity and products of commercial value but also other services essential for human well-being. These other services provide local as well as global climate regulation, and provide habitats for biodiversity which, in turn, are involved in service provision.

## Means for implementation

The current state of DLDD, and its gloomy outlook, calls for a new and bold set of actions to be endorsed by the Rio+20 Conference. First, to set an ambitious but attainable target such as a global Zero Net Rate of Land Degradation. Achieving this target will require action for prevention coupled with action for rehabilitation and restoration of already degraded lands. Among the means of implementation are:

Firstly, action to rally political support for strengthening the current weak and fragmented international regime for land and soil is needed. Initiatives to set a legally-binding instrument for soil and land failed. None of the existing environmental instruments is open to focusing on land on top of its current mandate. The UNCCD is the only legally-binding instrument dedicated to land. It would require some minor updates, through appropriate means, to function as the required land-dedicated platform or framework.

At the High-Level Meeting convened by the UN-GA many leaders also emphasized that at a time when there is evidence of accelerating trends in land degradation in all ecosystems, the planet could ill afford, for world leaders, to limit their efforts to tackle these phenomenon only in the drylands. It was pointed out that if we wait until other ecosystems are degraded and desertified before taking action, other interrelated challenges, such as food security, poverty, forced migration, adverse impacts of climate change, deforestation, loss of biodiversity, political instability and conflict, would be exacerbated and sustainable development and the MDG targets could not be effectively realized.

There was a call to “enhance and foster the implementation of the United Nations Convention to Combat Desertification (UNCCD) as a global policy and monitoring framework to address the issues of soils and land degradation”<sup>9</sup>. Without necessarily amending the UNCCD, several mechanisms could be explored for achieving that purpose including through attaching a protocol on global land and soil degradation.

Secondly, monitoring the pace of approaching the target require means of assessing land degradation and modes of land management that prevent degradation and promote restoration. Knowledge is available but much of it is fragmented and non-consensual. More specifically a consensual and authoritative assessment of land degradation and monitoring of its trends does not yet exist.

Almost 25 years ago, the Bruntland report titled “Our Common Future” warned us that if human needs are to be met, the Earth’s natural resources must be conserved and more specifically that land use in agriculture and forestry must be based on a scientific assessment of both land capacity and the annual depletion of topsoil.

Effectively addressing the global land and soil agenda requires a scientifically credible, transparent and independent assessment of existing, policy-relevant but not policy-prescriptive knowledge. This assessment should be provided by a globally recognized, strong and effective science-policy interface, similar to those established for climate and biodiversity (IPCC and IPBES respectively). Assessments that are proposed and urgently needed might be issues of drought under a climate change regime, detection of land degradation rates, food security under reduced availability of land and increased demand and the use of agricultural land for the production of energy from biomass and biodiesel.

Finally, a comprehensive assessment of the “Economics of Land Degradation” is needed in order to increase public awareness of the costs and benefits of individual and collective decisions affecting land and land-based ecosystems; raise land stewardship or sustainable land management to a higher level of priority on global and national agendas and to translate economic, social and ecological knowledge into tools to support improved policy-making and practices in land management at various levels.

## Conclusion

Soils are the most significant non-renewable geo-resource that we have for ensuring water, energy and food security for present and future generations while adapting and building resilience to climatic shocks. But soil’s caring capacity is often forgotten, is often the missing link in our policy and framework for sustainable development.

“We therefore stress that the time has come for the international community to commit itself to a land degradation neutral world by setting sustainable development goals on land use, with targets towards achieving zero net land degradation.”<sup>10</sup>

## References

- 1) Cf. article 1.e of the United Nations Convention to Combat Desertification (UNCCD).
- 2) From Vedas Sanskrit Scripture – 1500 BC.
- 3) The President of the 66th Session of the UN General; Op Cit.
- 4) Source: World Resources Institute, South Dakota State University, the IUCN and the Global Partnership on Forest Landscape Restoration - <http://www.wri.org/map/global-map-forest-landscape-restoration-opportunities>.
- 5) Rattan Lal, Keynote speech at the UNCCD COP-10 High-Level Segment; Changwon, 18 Oct 2011.
- 6) Due to drought and desertification each year 12 million ha are lost, where 20 million tons of grain could have been grown.
- 7) Rattan Lal, Ibid.
- 8) The President of the 66th Session of the UN General Assembly, Op Cit.
- 9) The President of the 66th Session of the UN General Assembly, Op Cit.
- 10) In “AFRICA CONSENSUS STATEMENT TO RIO+20”, Addis Ababa; 25 October 2011. See also the President of the 66th Session of the UN General Assembly in his Chair’s summary at the closing of the UN GA High-level Meeting on “Addressing Desertification Land Degradation and Drought in the context of sustainable development and poverty eradication”, New-York, September 20th, 2011.



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