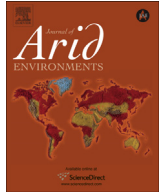




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## Operationalizing Zero Net Land Degradation: The next stage in international efforts to combat desertification?

Pamela Chasek <sup>a, c, 1</sup>, Uriel Safriel <sup>b, c, \*</sup>, Sem Shikongo <sup>d</sup>, Vivian Futran Fuhrman <sup>e</sup>

<sup>a</sup> Earth Negotiations Bulletin, International Institute for Sustainable Development, 300 East 56th Street #11D, New York, NY 10022, USA

<sup>b</sup> The Jacob Blaustein Institutes for Desert Research, Sede Boqer Campus of Ben-Gurion University of the Negev 84990, Israel

<sup>c</sup> The Department of Ecology, Evolution and Behavior, The Hebrew University of Jerusalem, Safra Campus, Jerusalem 91904, Israel

<sup>d</sup> Ministry of Environment and Tourism, Republic of Namibia, Private Bag 13306, Windhoek, Namibia

<sup>e</sup> Ben-Gurion University of the Negev, Albert Katz International School for Desert Studies, Jacob Blaustein Institutes of Desert Research, Sede Boqer Campus, 84990, Israel

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## ABSTRACT

At the United Nations Conference on Sustainable Development (Rio+20) in June 2012, governments adopted “The Future We Want” outcome document, which recognized (in paragraph 206) “the need for urgent action to reverse land degradation. In view of this we will strive to achieve a land-degradation neutral world ... .” This paragraph sets a goal of maintaining a world where the total amount of degraded land remains constant, and that would secure the currently available productive land for the use of present and future generations.

This article examines the challenges of operationalizing this concept of Zero Net Land Degradation (ZNLND) and its global derivative, a land degradation neutral world (LDNW).

First, the concept and need for ZNLND is introduced and explained. Then we look at the expectations from ZNLND/LDNW targets within the context of promoting the recognition of land degradation as a global threat and contributing to global food security. Next we elaborate the challenges in making ZNLND operational, including: scoping (determining the spatial scale and the selected domain for which land degradation neutrality is to be achieved); mapping (classifying the lands by their current use and state of their productivity); prescribing (prescribing management practices relevant to each of the land classes); applying the selected land management (for either reducing degradation, restoring productivity, or increasing resilience); and monitoring management and its outcome.

We then examine the enabling environment necessary to capture ZNLND opportunities and address the technical challenges facing the operationalization of ZNLND. The article concludes with recommendations for the way forward: first, recognize existing projects suitable for ZNLND testing and establish new pilot projects at the local community or landscape scales; and the second, seek recognition and support for achieving ZNLND at the global scale through the United Nations system.

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### 1. Introduction: What is Zero Net Land Degradation and a Land Degradation Neutral World?

At the United Nations Conference on Sustainable Development (Rio+20) in June 2012, governments adopted “The Future We

Want” outcome document, which recognized (in paragraph 206) “the need for urgent action to reverse land degradation. In view of this we will strive to achieve a land-degradation neutral world ...” (United Nations, 2012). This paragraph sets a goal of maintaining a world where the total amount of degraded land remains constant, i.e., it does not increase, and that would secure the currently available productive land for the use of present and future generations (UNCCD, 2012a,b). Achieving a state of land degradation neutrality involves both reducing the rate of land degradation, and offsetting newly occurring degradation by restoring the productivity and the provision of other ecosystem services of currently degraded lands; in other words, achieving zero **net** (rather than

\* Corresponding author. The Jacob Blaustein Institutes for Desert Research, Sede Boqer Campus of Ben-Gurion University of the Negev, 84990, Israel. Tel.: +972 77 300 6905.

E-mail addresses: [pam@iisd.org](mailto:pam@iisd.org) (P. Chasek), [uriel36@gmail.com](mailto:uriel36@gmail.com) (U. Safriel), [sts@met.na](mailto:sts@met.na), [s\\_shikongo@hotmail.com](mailto:s_shikongo@hotmail.com) (S. Shikongo), [Vivian.Futran@gmail.com](mailto:Vivian.Futran@gmail.com) (V.F. Fuhrman).

<sup>1</sup> Manhattan College, Riverdale New York, 10471, USA.

zero) land degradation - ZNLD (Lal et al., 2012), whose global-scale derivative is a land degradation neutral world (LDNW).

Including a “land degradation neutral world” in the UN vision of “The Future We Want” is a result of the advocacy of the Secretariat and other stakeholders of the United Nations Convention to Combat Desertification (e.g., UNCCD, 2012a and b), an intergovernmental treaty that defines “land degradation” as “the reduction or loss ... of the biological or economic productivity ...” of all types of land uses (UNCCD Article 1(f)). More recently, researchers (Vogt et al., 2011), suggested that land degradation is qualified as a **process** of persistent reduction or loss of biological productivity, whose terminal **state** is that of **desertification** (defined as land degradation in the drylands (UNCCD Article 1(a)). It has been also suggested (Vogt et al., 2011) that “*though the risk of land degradation and desertification is mostly addressed in the drylands, this also impinges on non-drylands.*” It follows, therefore, that the term “land degradation” in ZNLD includes all types of land degradation the world over, including that of “desertification,” thus qualifying LDNW (land degradation neutral world) as a global derivative of ZNLD.

This concept of land degradation neutrality is based on three premises. The first is a realization that a goal to completely prevent further degradation (“zero land degradation”) is currently too ambitious and hence not likely to be attainable. This is because in spite of increased attention to land degradation since the UNCCD entered into force in 1996, productive lands continue to be degraded by their users at all levels. Locally, for example, in Tongyu County, China, during the period 1992–2002 an area of 1814 km<sup>2</sup> became degraded through excessive reclamation of grassland for farming, over cultivation and overgrazing (Gao and Liu, 2010). Regionally, for example, during the period 1961–2009 per capita arable land in Sub-Saharan Africa fell by about 76 square meters a year (Nkonya et al., 2011a). Globally, four percent human-induced degradation occurred during the period 1981–2006, expressed by a land degradation proxy—a climate factored-out estimate of biomass-generated greenness detected from space (Bai et al., 2010). These are only samples of the available knowledge on ongoing degradation that support the claim that “there are few ‘win–win’ opportunities to simultaneously increase production and reduce land degradation” (Pender et al., 2004) and the recognition that completely stopping land degradation is unattainable. However, the observation that only part of the land under use is being degraded attests to the fact that land can be used without causing additional degradation, which is indeed the case (e.g., Mortimore and Harris, 2005). Furthermore, information on degradation-reducing practices that are successfully adopted by land users is currently being accumulated (e.g. Liniger and Critchley, 2007), which suggests that although land degradation cannot be completely prevented its rate can be reduced.

The second premise is the observation that at the end of the 20th century 10–20 percent of global lands have been already degraded (Millennium Ecosystem Assessment, 2005; Safriel, 2007). The third premise is the experience that productivity and the provision of other ecosystem services of degraded lands can be recovered or even restored. Examples of this include in Burkina Faso, restoration of rangeland productivity by changing livestock management practices (Reij et al., 2005); and in Niger, restoration of productivity through Farmer Managed Natural Regeneration (FMNR) of indigenous trees, over an area of 5–6 million hectares, within which areas that had lost all tree growth by 1984 had tree cover of 100–120 trees/hectare (Tougiyani et al., 2009). Thus, ZNLD can be achieved when in a given site or region degradation of used land is either avoided, reduced or offset by restoring the productivity of a similar amount of already degraded land, such that the area of productive land remains stable or increases (Lal et al., 2012), and the accumulation of local

and regional successes would result in a land degradation neutral world.

The distinct feature of the ZNLD as a strategy to address land degradation is the integration of the three activities prescribed by the UNCCD (Article 1(b)) for “combating desertification,” through offsetting degradation occurring in spite of efforts aimed at “prevention and/or reduction of land degradation” by restoration, either through “rehabilitation of partly degraded land,” or by “reclamation of desertified land.” This offsetting is an essential component of the ZNLD approach, yet unlike the “cap and trade” system for emissions reductions (e.g. Hepburn, 2007), the ZNLD tool should not in any way constitute a “license to degrade.” It is not envisaged to restore the productivity of a one area of degraded land for offsetting degradation that has taken place somewhere else on the planet. Rather, a “land degradation neutral world” is the sum of land degradation neutrality achieved by local communities the world over—implementing the adage “think globally, act locally.”

## 2. What is the need for ZNLD/LDNW?

### 2.1. Strengths and weaknesses of the UNCCD in addressing land degradation

Defining desertification as land degradation in the drylands, the UNCCD set to address its objective to “combat desertification” by employing “... integrated strategies that focus ... on increased productivity ... and the rehabilitation, conservation and sustainable management of land ...” (UNCCD Article 2) Yet, 16 years after the UNCCD entered into force the 2012 Rio+20 conference still recognized a “need for urgent action to reverse land degradation.” This does not belittle the UNCCD’s achievements. The UNCCD text excels in capturing sustainability by linking economic and social development with an environmental concern (Bassett and Talafre, 2003): it provides an effective framework for poverty reduction, gender equality, community participation, and science-based land management. Indeed, the Convention’s institutions and its stakeholders highlighted the links between land degradation and poverty, which incentivized mainstreaming of land degradation issues into the development realm (Poulsen and Lo, 2006), and the integration of dryland issues into bilateral and regional development cooperation programmes. The Convention also advocated for and supported the involvement of civil society, the private sector and the scientific community in addressing land degradation, it also set implementation targets as well as the indicators for monitoring their success, and it dramatically increased awareness of land degradation within the UN system and the international community.

Yet, on the ground, implementation of the Convention was and still is, fraught with difficulties: the parties’ obligations and the Convention’s expectations from parties are not quite clear, the robust financial and political capital necessary for its implementation is still not in place, the major tool for on the ground implementation, the National Action Plans (NAP), are irrelevant to mainstream policy making and development cooperation, and in many cases donors address land degradation issues bilaterally rather than under the framework of the Convention (Bassett and Talafre, 2003). Furthermore, the meaningful involvement of local communities in defining, identifying, monitoring and responding to desertification, namely participation, which is one of the UNCCD centerpieces of “combating desertification”, is for various internal and external reasons often missing (Stringer et al., 2007). Given these constraints in addition to its dryland-restricted mandate, the UNCCD is hindered from assuming global responsibility for land degradation. The result is that there is no clear indication of the amount of land degradation that has been successfully reversed in

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