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Uncertainties and policy challenges in implementing Land Degradation Neutrality in Russia

German Kust[a,*], Olga Andreeva[a,b], Vasiliy Lobkovskiy[a], Natalya Telnova[a]

[a] Institute of Geography, Russian Academy of Sciences, Staromonetniy 29, Moscow, 119017, Russia
[b] Moscow State University, Leninskie Gory, Moscow, 119991, Russia

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ABSTRACT

The theoretical concept of Land Degradation Neutrality (LDN) developed by the UNCCD needs testing at the national level. We studied the uncertainties and challenges for LDN application in Russia as a country with high variability of natural and social-economic conditions. Having a great influence on the political decision-making and institutional politics is one of the challenges, and in this regard we found: (i) in national legislation: inadequate conceptualization of "land" as a natural entity, and of the processes of "land degradation" for non-agricultural lands, especially occurring in boreal and arctic regions; (ii) the need for a differentiated approach to establishing LDN baseline for different regions within the country with different causes and trends of degradation revealed through the great territory; (iii) the importance of assessing accumulated degradation risks as the basis for articulating priorities in LDN "response hierarchy"; (iv) the importance of a differentiated approach for selecting time intervals for determining the LDN baseline, taking into account long-term natural and socio-economic processes. Despite the well-established State Land Monitoring system in Russia, these circumstances identify the following tasks required to achieve LDN objectives: (i) zoning of the country's territory in accordance with the classification of "like for like" exchanges in various biophysical and socio-economic conditions; (ii) considering the role of natural restoration processes in the planning of LDN activities in natural and managed systems. Principles that appear important for developing national LDN policy are: close interaction with climate change adaptation programs, detailed land degradation assessment for non-agricultural lands, keeping administrative division of territory as the basis for LDN spatial monitoring.

1. Introduction

Elaborating key sustainable development strategies and policies at the national level always begins with the creation of a universal theoretical approach based on some tentative assumptions, and the concept of Land Degradation Neutrality (LDN) is no exception. The translation of these assumptions into action demands ongoing refinements with due regard to local specific features. In respect of LDN national target setting, Russia can be considered as a complex region with a high diversity of natural landscapes and socioeconomic conditions, which can hardly be represented with simple policy models. Russia also has complicated and multifocal systems of land monitoring and land management, with a complex history of land rearrangement and land use changes.

As the largest country in the world, Russia occupies about 11% of the global land area, and thus has a global responsibility for sustainable conservation and maintenance of land resources. Russia is an active party to multilateral environmental agreements particularly the UN Convention to Combat Desertification (UNCCD), which is a custodian of the target 15.3 of Sustainable Development Goals: "By 2030, combat desertification, restore degraded land and soil, including land affected by desertification, drought and floods, and strive to achieve a land-degradation-neutral world" (UN, 2015).

The identification of the land degradation problems and their scientific analysis are not novel for Russia. Modern soil science originated in Russia in the late 19th century from the ideas of Vasily Dokuchaev (Moon, 2005; Zonn, 1979) as a scientific response to catastrophic consequences of severe drought in grain-producing regions of the Russian Empire. Science-based land use practices elaborated throughout 20th century had a positive influence on economic development. Nevertheless, after the collapse of Soviet Union in 1991, Russia has faced new land degradation issues (Dobrovol'skij and Kust, 1996; Rosinformagroteh, 2008; Barsukova and Zvyagintsev, 2015). The wise and sound adoption of the LDN concept with respect to national

* Corresponding author.
E-mail address: gkust@yandex.com (G. Kust).

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peculiarities can help to overcome land degradation problems.

The LDN concept was officially presented in 2011 at the UNCCD 10th Conference of the Parties and then widely recognized at the United Nations Conference on Sustainable Development (UN, 2012). In 2015 the UNCCD declared the concept of LDN as part of the core agenda of the Convention and defined LDN as: "a state whereby the amount and quality of land resources, necessary to support ecosystem functions and services and enhance food security, remains stable or increases within specified temporal and spatial scales and ecosystems" (UNCCD, 2015). In 2014, UNCDD launched an LDN Target Setting Programme (LDN TSP), which encompassed initially 14 countries, and currently more than 100 other parties have joined the process. Russia joined the LDN TSP in 2015; however, the country is encountering significant difficulties to establish national LDN targets and baseline because of policy challenges considered in this paper.

2. Objective

This paper focuses on the process of LDN adoption and implementation in Russia and the main associated challenges influencing national environmental and land policies. The Scientific Conceptual Framework (SCF) for LDN developed by UNCCD (Orr et al., 2017; Cowie et al., 2018) and the LDN rationale introduced in earlier publications (Chasek et al., 2015; Grainger, 2015; Stavi and Lal, 2015; Akhtar-Schuster et al., 2017; Kust et al., 2017) facilitate the deployment of the LDN theoretical model in practice. On the other hand, an attempt to operationalize the SCF at national level in Russia during the LDN TSP detected a number of challenges, which needed additional scientific assessment. The following narratives describe the most considerable challenges and uncertainties identified in the implementation of the LDN Target Setting Project:

- Basic terminology of LDN differs from official terminology used in Russia;
- Establishing a LDN baseline involves uncertainties in defining a concerted time period and spatial extent;
- Selection and use of core national LDN indicators;
- Institutional arrangements and integrated planning cycle for national LDN policy.

3. Results and discussion

3.1. Uncertainties and challenges related to the use of LDN basic terminology

Harmonization of national land degradation statistics with a global assessment primarily supposes closeness or similarity of basic definitions. In this regard, a challenge for Russia is connected with difficulties in the use of the basic terms of "land" and "land degradation", and their poor compatibility with globally accepted concepts. The Land Code of the Russian Federation (2001) as a main national law treats land as "a natural entity preserved as the most important component of nature, a natural resource used as a means of production in agriculture and forestry…and at the same time as an immovable property, the ownership and other rights relating to land" (Gosduma, 2001). While the land plot as "real estate" is clearly defined in the Land Code, the concept of land as the component of nature or as a natural resource, is not properly specified.

The history of land legislation in Russia after the collapse of the Soviet Union in 1991 testifies to non-uniform development of concepts with regard to different "categories of land". It leads to the absence of the unified concept of "land as a natural entity" in the legal framework. "Land degradation" is legally considered only for agricultural lands (Gosduma, 1998). As a result, official nationwide data on land degradation for other land use categories are not available in Russia. In this regard, the adoption of the LDN concept can serve as an effective measure not only to ensure consistency between national and global data, but also for harmonization and integration of national land statistics and assessments.

Concepts outside the Russian legal framework, such as "ecosystem services" and "land-based natural capital" are used in the LDN definition and its associated SCF. Though the terms of ecosystem services and natural capital are now actively involved in scientific discourses in Russia (Glazyrina, 2001; Lukyanchikov and Potravny, 2007; Bobylev and Zakharov, 2009), for the national LDN target setting they cannot be consider as policy options, representing only scientific interests.

3.2. LDN baseline for further land monitoring at the national level

Cowie et al. (2018) state that "the LDN baseline as … the initial value of each of the indicators used to monitor LDN…, the baseline values of the indicators at the start of the implementation of the policy … are compared to the values measured at the target date … to determine the change in land-based natural capital… Ideally, all countries would agree to use the same baseline period for tracking progress, to enhance comparability and assessment at the global scale". Our analysis evidence that these clear recommendations are difficult to apply in Russia. The main difficulties associated to establishing the LDN national baseline are discussed hereafter.

3.2.1. Diversity of natural and socioeconomic conditions

The Russian territory occupies about a third of the Eurasia landmass (with its 24% located in Eastern Europe and the rest in North Asia) and it extends (for 4000 km from north to south and more than 11,000 km in W-E direction) through several climate belts and landscape zones, from polar deserts to Mediterranean subtropics; 85 main administrative divisions called federal units vary in size from 860 km^2 to 3.08 million km^2 and comprise very diverse land use patterns: densely populated industrial and agricultural regions in the European part, Ural region and Southern Siberia contrast to virgin boreal forests and tundra of most of Siberia and Far East. Forest is the prevailing land category in Russia (about 2/3 of the country land area) and lands for agricultural purposes occupy 383.7 million ha or 22.4% (Fig. 1); about 60–65% of the territory is covered by permafrost (Rosgidromet, 2012).

We evaluated land use/land cover changes (LULCC) for the southern part of European Russia from 2000 to 2015 based on the interpretation of the European Space Agency's global Climate Change Initiative Land Cover dataset (ESA, 2017). The results obtained for the different federal units demonstrate a great diversity of natural and socioeconomic drivers of LULCC throughout the neighboring macro-regions of the Lower Volga and Eastern Caucasus (Fig. 2).

As well, our analysis shows that the same types of land cover transitions represented in Fig. 2 may be interpreted as positive for one region, and as negative in another geography; e.g. transition of "irrigated lands to shrub lands" or "abandonment of irrigated lands" can lead to restoration of salinized soils, or can be regarded as a negative transition because of water shortage due to the use of non-effective and out-of-date irrigation technologies.

According to LDN SCF "counter balancing should occur only within individual land types, distinguished by land potential, to ensure "like-for-like" exchanges", and "to increase the likelihood that there is no net loss in ecosystem services". Hence, the LDN vision does not imply a mechanism of mutual compensation of different processes out of the integrated biophysical systems, i.e. the rehabilitation of agricultural lands cannot compensate a reduction of a forested area. As well, restoration of severely eroded soils is not a compensation measure for land loss under chemical pollution.

It is, hence, an urgent task for Russia to categorize lands taking into account specific regional features and establishing main criteria of land quality and interpret all the LULC changes as positive and negative. The existing scheme of land degradation assessment is used only for agricultural lands but it is yet to be elaborated for other land categories. To