

## Kazakhstan Case Study Policy Brief

**More sustainable land management in desert forests can lead to economic and environmental benefits**

### Political context

Independence from the former Soviet Union in 1991 presented the republics of Central Asia, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan, with severe challenges for land management with ensuing economic, social, and environmental crises. Driven by the historic development of irrigation projects, often unsupportable increases in livestock numbers on rangelands, and agricultural land conversion in steppe areas under communism, land degradation has become a serious issue in the region and threatens current and future livelihoods of rural populations. All countries have recognised this in the development of their National Action Plans for the United Nations Convention to Combat Desertification (UNCCD) and are currently developing their Nationally Determined Contributions for this and other UN conventions under the 2015 Sustainable Development Goals.

### Land degradation in Central Asia

Although estimates vary and can be imprecise, land degradation is claimed to be quite extensive in Central Asia, ranging from 4-10 per cent of cropped land, 27-68 per cent of pasture land and 1-8 per cent of forested land. In total, this represents 40-66 per cent of area degraded in each country. While technologies exist to remedy this, there is a need to express the problem in terms of money, enabling governments to have common metrics. Decisions can factor in likely returns on investments for different options and sectors, both for future economic development and to safeguard and improve the livelihoods of their people.

The Economic of Land Degradation (ELD) Initiative is a global initiative that aims to support understanding of the economics of sustainable land management. Given

the specific land degradation occurring in Central Asia, a regional project has been developed in 2015. This project estimates economic values of a range of sustainable land management approaches. It compares the overall value derived from existing land use with specific and feasible alternatives from each country, evaluating by including aspects beyond marketable provisioning services like food and timber. To achieve this, national scientists have been trained in new approaches to assess the value of land management options, making the project support capacity building towards the establishment of scientifically informed and locally adapted improved land management.



## Country summary: Kazakhstan

Kazakhstan is the largest country in Central Asia covering 272.5 million ha, and the ninth largest in the world. About 37 per cent of the land is agricultural, with around 9 per cent forests, and 40 per cent described as 'reserve lands', mainly in plain areas. The territories of the plains are subject to extreme water shortages and unfavourable climatic conditions. Most of the forested area on plains are divided into six different silvicultural types ranging from birch and aspen to pines, saxaul, and Tugai forests. Most of these forests are under the control of local governments (*akimats*). The population of Kazakhstan is 17 million people, with an average per person GDP of USD 13,650.

## Challenges

Land degradation has become more pronounced in Kazakhstan since the 1950s, with a rapid increase of land conversion from natural steppe or fallow lands to agricultural and industrial land. This led to allocation of large parts of forest lands for grazing by collective and state farms before 1993. While only 7 million hectares were arable land in 1953, by the 1980s it was 35 million hectares, with about 12 per cent of land in Kazakhstan converted. The transition of vast swathes of territory

into arable lands also created pressure on rangelands. As a result of over-exploitation, 48 million hectares of pastures have become degraded lands. This has resulted in as much as a 30-60 per cent decrease in soil fertility from wind and water erosion, as well as severe dust storms that have covered up to 9 million hectares some years. Degraded land as a result of salinisation and erosion in and around the Aral Sea is estimated to be some 6 million hectares.

In particular, the forests of Kazakhstan have been degraded mainly through animal grazing, cutting of trees, and other agricultural activities. About 36 per cent of forestlands are estimated to be degraded, especially on conifer and saxaul plantations. Loss caused by degradation was not accounted for in the past due to a lack of economic valuation of forests, as well as an absence of attempts to value ecosystem services beyond provisioning services (mainly timber production). As a result, the public are generally unaware of the total economic value of forests, resulting in land management practices that are unsustainable. Further, not knowing the value of currently non-marketed ecosystem services means that the population lacks capacity to identify potential buyers or markets for additional ecosystem services.

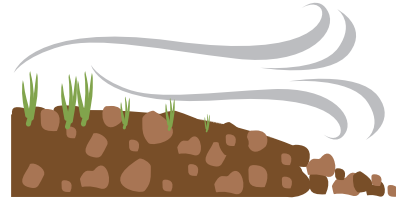


Map of Kazakhstan. Source: Wikipedia

## Key facts



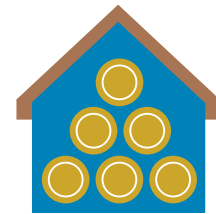
12 % of land in Kazakhstan has been converted from natural steppe, fallow lands, and forests to agricultural and industrial land since the 1950s.



48 million hectares of pasture have since become degraded, resulting in as much as 30-60% decrease in soil fertility, and about 36% of forests have become degraded, especially on conifer and saxaul plantations.



Including the value of ecosystem services, saxaul forests are currently worth USD 1.6 billion in Kazakhstan, and these are only half of the country's forests.

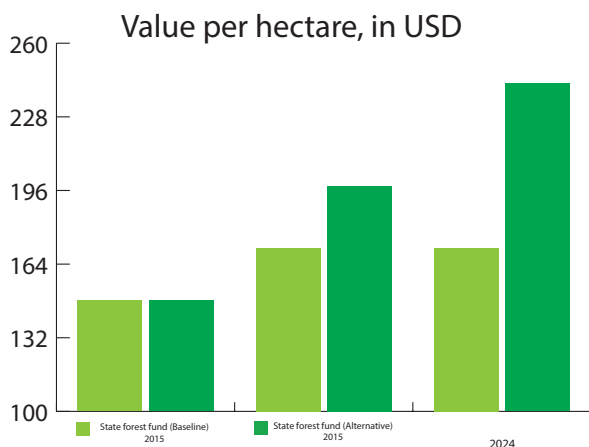


Net benefits from sustainable land management practices suggested in the alternative scenario increase from USD 231.1 million in the first year up to USD 378 million after 10 years. Of this, net benefit in the first year alone from carbon sequestration is USD 32 million.

## Research and findings

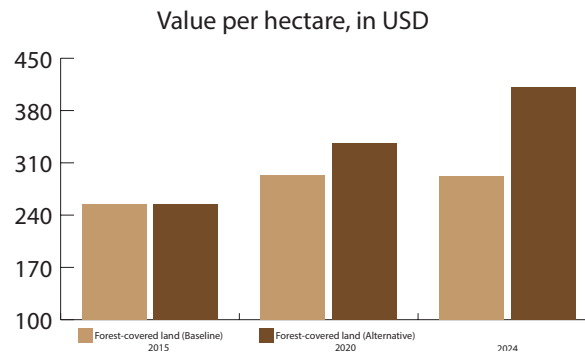
This study focused on the Bakanas State forest in the Balkhash District of the Almaty province, which covers 1.6 million hectares. The forest is mainly black and white saxaul and is in fairly close proximity to Almaty, which accounts for a significant portion of the forest ecosystem service users. Saxaul forests account for half of Kazakhstan’s forestlands, and thus sustainable land management necessarily involves addressing their specific issues. They are also similar to other forested areas in other Central Asian countries like Turkmenistan and Uzbekistan, creating a positive situation for lateral knowledge transfer in the region. The topography of the study site includes flat and tuberous areas, with around 150 mm rainfall annually, and a large diversity of desert and riparian flora and fauna species. Animal husbandry and crop production are the main agricultural activities.

**FIGURE 1**



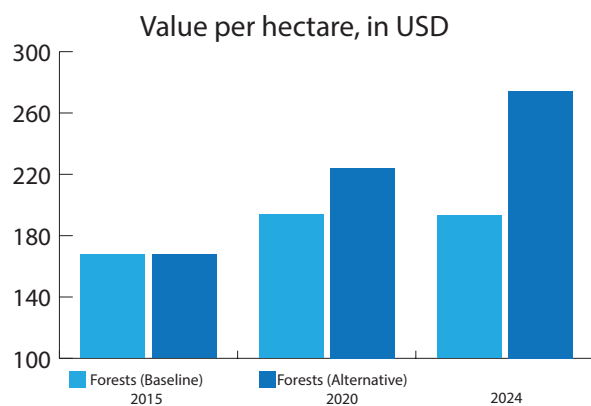
The saxaul forests of the Bakanas State forest have traditionally been considered more productive than others. However, over time and under the influence of the intensive growth of Almaty and the long-term impacts of natural and anthropogenic factors like fires, permitted and illegal tree cutting, pests and diseases, changes in the Ili River water regime, and uncontrolled grazing, productivity has declined and land degradation has increased. From 1993-2013, there has been a 1 per cent (15,400 hectare) decrease in state forestry lands, 1.6 per cent of forest-covered lands, 45 per cent of white saxaul forests, 32 per cent of oleaster and Asiatic poplar forests, and 10.6 per cent in areas with other shrubs. From these land use practices, the costs of this baseline scenario were calculated, inclusive of ecosystem services provided by the Bakanas forests like timber, non-timber forest products (mushrooms), fodder, medicinal plants, carbon fixation, prevention of soil erosion, water cycling, biodiversity etc.

**FIGURE 2**



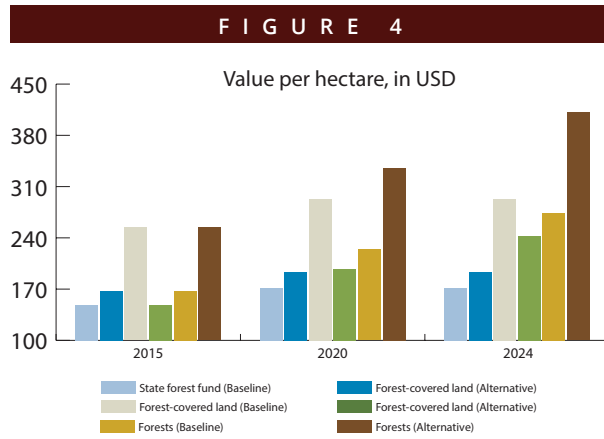
An alternative scenario was also evaluated to determine the economic feasibility of sustainable land management in the Bakanas State forest. Activities in this scenario include expanding forested areas on 1,559,000 hectares of land, strengthening state forestry activities for forest and wildlife protection through increased staffing of foresters and rangers as well as horses for transportation, creating a position for an ecosystems service manager, and raising awareness in Almaty of their distanced but significant impact on the sustainability of land-based ecosystem services in the saxaul forests. Imposing a moratorium on harvesting live wood, and instead allowing for the collection of dead wood was also included in this scenario, at no added cost. Net benefits from the sustainable land management practices suggested in the alternative scenario increase from USD 231.1 million in the first year up to USD 378 million after 10 years. Of this, net benefit in the first year alone from carbon sequestration is USD 32 million.

**FIGURE 3**





The results of our calculations indicate that all forests in Kazakhstan are estimated at a total of USD 1.6 billion. It is important to note these account for only 49 per cent of the country's forests, and estimations should be undertaken for the rest.



## Recommendations

On the basis of our research and the economic valuations presented in our report, we make the following policy recommendations to support a shift towards sustainable land management in Kazakhstan that is also economically viable.

- 1. Designate the saxaul forests of Balkhash as specially protected natural territories or reserves, and seek to extend such areas under protection nationwide.** This decision will help in conserving such a fragile ecosystem of Kazakhstan, as the saxaul forests on sandy areas.
- 2. Raise awareness of the concept of ecosystem services and formally introduce them into legislation in order to value, protect, and**

**exploit them sustainably.** This should include a government supported assessment of natural capital throughout the country for other ecosystems to develop economic understanding of their value.

- 3. Expand the economic assessment of ecosystem services in all major regions and ecosystems of Kazakhstan.** This can be accomplished through scientific and technical capacity building within research institutes and universities including incorporation into university syllabus. The dissemination of methods and tools for economic assessments of land and land-based ecosystems should also be shared with other similar areas of Central Asia, allowing for a coalescing of efforts and a transboundary approach to sustainable land management.
- 4. Develop strategies to empower the Forestry and Wildlife Committee at the Ministry of Agriculture to undertake decision-making for the protection of valuable biological resources.** This entity will then be in the best position to determine, implement, and regulate optimal scenarios for the conservation, sustainability of natural resources, and determine economic and environmental benefits for local populations, as well for Kazakhstan.
- 5. Establish an inter-ministerial republic committee responsible for the achievement of land degradation neutrality.** Synthesising the capacities and priorities of different ministries is key in developing an effective, unified approach to meet the goal of land degradation neutrality as laid out by the United Nations Convention to Combat Desertification. Regional plans should also be developed that take into consideration local conditions and needs.



Photo: Gileva

## Global links

Land degradation was recognised as an imminent threat to the livelihoods and wellbeing of the world's poorest people when the UN developed its Sustainable Development Goals in 2015. Secretary General Ban Ki-Moon stated that "land degradation and desertification undercut human rights, starting with the right to food, adding that nearly 1 billion people lack adequate nutrition and those living off degraded areas are among the most affected. Their situation could worsen if land degradation reduced global food production by 12 per cent as projected." The UNCCD has invited states "in accordance with their domestic legal and policy frameworks, to include provisions in their laws that facilitates the progressive realization of human rights such as the right to life, food and water in the context of combating desertification, land degradation and drought". Hence Goal 15 has been developed to "protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat

desertification, and halt and reverse land degradation and halt biodiversity loss". A more specific target is 15.3 "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".

The work undertaken in this project represent an input into the efforts to comply with Goal 15 and others linked to land (2, 3, 6, 7, 11, 12, and 13) by providing economic evidence on sustainable land management practices and alternative land uses that are needed as one of several inputs and preparatory activities to implement the concept of land degradation neutrality. It also provides tools, methods, and capacity building for economic evaluations to be undertaken in each country for each land cover and land use type, likely future requirements for land degradation neutrality.



**This research has been undertaken by Sabit Baizakov (Kazakh National Agrarian University) and Zhaili Toktassynov (RGKP "Kazlesproject") with support from the ELD Initiative and CGIAR.**

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