

Tajikistan Case Study Policy Brief

Implementing no-till technology and intensifying gardening productivity creates economic benefits while reducing land degradation

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: Tajikistan

The Republic of Tajikistan is located in the south-west of Central Asia, covering about 143,100 km². About 93 per cent of the land is covered with mountains, it has a continental climate, and also accounts for more than 60 per cent of water resources in Central Asia. Tajikistan has 8.2 million inhabitants, of which 73.4 per cent live in rural areas. The proportion of people living in extreme poverty was 42 per cent in 2003, but dropped to 14 per cent in 2011. This is related to increased macroeconomic stability, as well as increased labour migration and remittances.

More than half of Tajikistan's gross domestic product (GDP), which was estimated at USD 8.5 billion in 2013, come from service provisions (53 per cent). Agriculture accounts for just slightly more than 21 per cent.

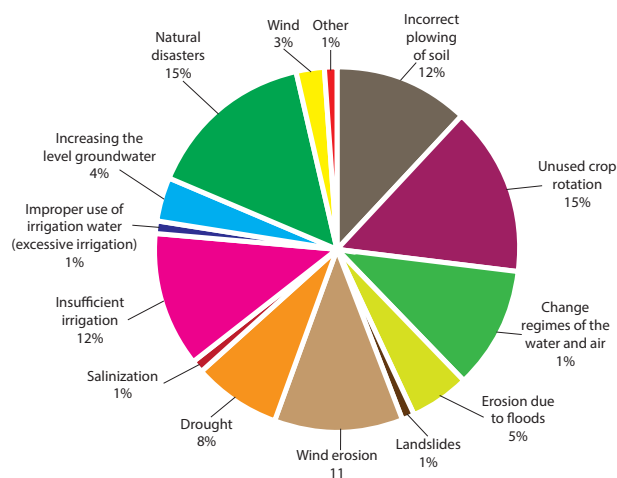


Challenges

Currently, no state authority conducts regular data collection on soil quality and land degradation across Tajikistan. In 2004, it was estimated that up to 60 per cent of irrigated land is affected by erosion¹, and at the same time, inefficient irrigation systems and salinisation have caused damage to 97 per cent of cultivated land. On top of that, 85 per cent of the total pasture area – about 3 million hectares – is degraded from overgrazing². According to government statistics, 4 per cent of land has been completely destroyed since 1991 as a result of land degradation from unsustainable agricultural practices³.

FIGURE 1

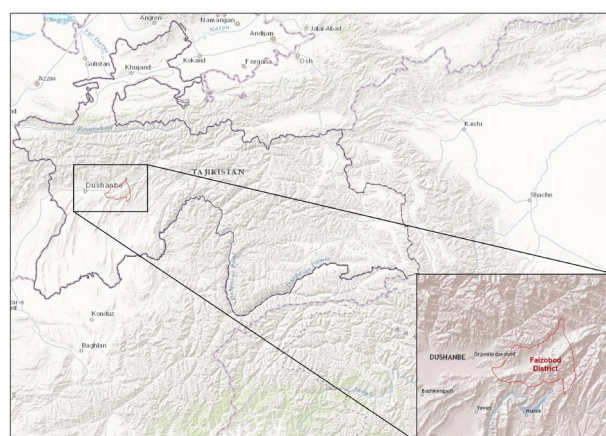
Causes of land degradation



The two main factors contributing to soil degradation processes in Tajikistan are **water erosion** and **gully erosion**. These processes are exacerbated by anthropogenic factors through intensive agricultural development on slopes, as well as unsustainable crop cultivation practices⁴. Further, inefficient pasture management leads to overgrazing, which reduces vegetative cover and increases erosion and degradation. This leads to a loss of value of land and land-based ecosystem services like carbon sequestration and nutrient provision. To help address this, the ELD study undertook economic evaluations of current practices in agricultural landscapes, as well as possible scenarios that would improve sustainable land management.

FIGURE 2

Faizobod district

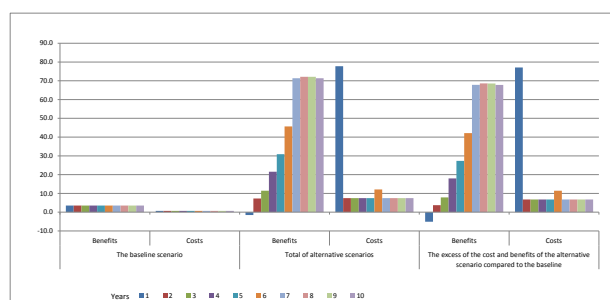


Research and findings

Cost-benefit analyses were undertaken on the current scenario in the Faizobod District as well as two alternative scenarios that are both feasible and economically beneficial. These include the introduction of *no-till* technology and a shift towards intensive gardening on a limited amount of land currently used.

FIGURE 3

Cost-benefit analysis for scenarios and for years, in million TJS



Without taking any action towards sustainable land management and continuing to practice 'business-as-usual', net benefits from ecosystem services are 551 million Tajikistani Somoni (TJS) (USD 83.2 million), while costs are TJS 100.5 million (USD 15.2 million). Net benefits from other ecosystem services constitute TJS 3 million (USD 0.45 million). During the last three years, the average annual cost of recovery from disasters that directly result from land degradation and which are preventable, amount to TJS 1 million (USD 0.2 million). The estimated deficit from all degraded land ranges from TJS 3.3 to 3.6 million per site (USD 0.5-0.54 million).

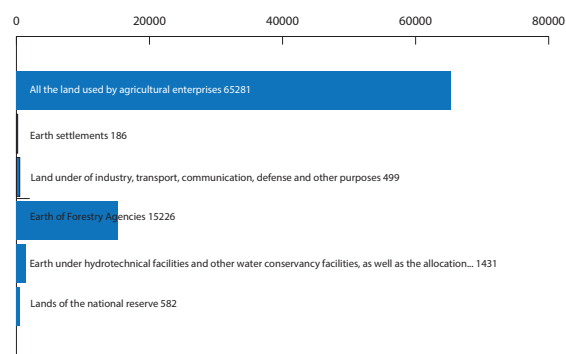
The introduction of *no-till* technology, can provide TJS 3,200/ha (USD 483) in net benefits. Introducing this technology on just 10 per cent of land currently used for cereal crops can increase net benefits to TJS 1.3 million (USD 0.2 million). Additionally, the establishment of intensive gardening practices on just 10 per cent of land under fruit crops will create a net benefit of TJS 101.2 million (USD 15.3 million) over a 10 year period.

Economic values for ecosystem services in the Faizobod district was estimated to be TJS 203.5 million in 2014. The net present value of incremental net benefits (difference between incremental benefits and incremental costs between alternative and new scenario) of the first alternative equals TJS 69.7 million (USD 10,529), while the internal rate of return is 22 per cent. These values

can form a basis for positive policy changes in Tajikistan, with the support of the appropriate government bodies and policies.

FIGURE 4

The main land users of Faizobod district



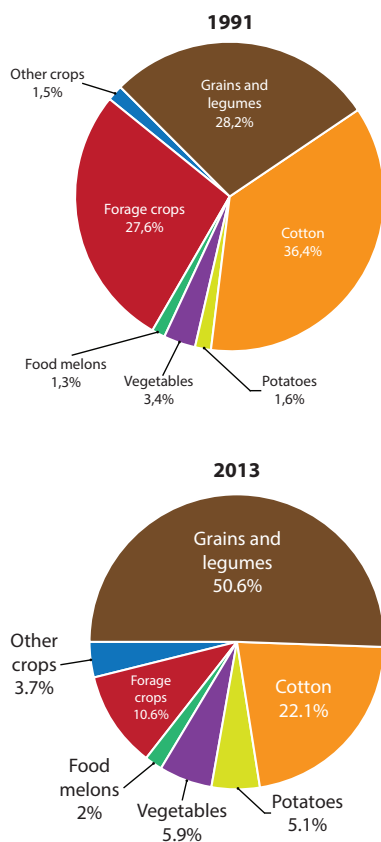
Recommendations

Build capacity for, and raise awareness of, sustainable land management and ecosystem service use understanding and evaluation at national, regional, and local levels of management. To obtain maximum benefits from ecosystem service use and prevent land degradation, a network of experts and specialists needs to be established, as well as facilities to train them. Further, functional relations need to be established across management scales, including capacity built at local management levels, as they are focal nodes and interfaces between research institutes, policy-/decision-makers, and land users. Training can be regional or national, but must be able to adapt national policies to their own local needs. This will require a system of training, communications, mass media outreach, and knowledge exchanges.

Further, as land users like farmers will be the actual implementers, they require capacity building and training in sustainable land management practices. Farmers are critical in demonstrating to policy-/decision-makers the actual benefits realised from the implementation of sustainable practices. Through public outreach, further evaluations of existing ecosystem services and use can be achieved. Training and understanding is also needed in formal education. This can be supported through developing educational materials/aids of successful case studies, best practices,

FIGURE 5

Crops structure



and findings from ELD research, conducting special modules on evaluating and conserving ecosystem service values, and general support for scientific research, conferences, and workshops.

Laws and policies inclusive of ecosystem services.

Basic terms and definitions must be agreed upon, legal and regulatory frameworks for their evaluation and use set, secondary legal acts for implementation, evaluation, and maintenance, and legal training to raise awareness of new legislation and regulation for local authorities and users. We suggest the introduction of taxes and fees for ecosystem services, paid for by local users.

Develop a more effective approach to management and finance planning and develop internal capabilities to implement sustainable practices on the basis of recently approved national guidelines to address insufficient pastoral resource management jointly with the state enterprise "Trust of Pastures and Amelioration". Responsibility for the management of all pasture systems is with the Ministry of Agriculture,

who can integrate long-term thinking for sustainable pasture management. The following points should be considered:

- Introducing monitoring systems is critical, as it is currently not done. Evaluation of new plant introductions, carrying capacity, grazing pressures, and regional needs must be established. Such systems will also be essential for reporting to international institutions, such as the UNCCD;
- Rotation is part of current policies, regulations, and pasture management, and cannot be seen separately;
- Infrastructure needs to be improved to provide access to remote pastures. Currently, only the most experienced shepherds are able to reach these challenging but productive lands;
- Establish regional breeding programs to optimise livestock (sheep, cows, goats) quality and diversity, and increase productivity. Such programs require careful analyses and planning as shepherds do not want to end up with an unmanageable amount of degrading livestock;
- Establish regional seed banks and nurseries, and provide new species that increase soil and pasture productivity and provide added economic benefits. New varieties in mixed pastures can enhance vegetative health, but plants must be allowed to regenerate and reach palatable levels;
- Create better governance to enable farmers to store fodder reserves at the household level, as well as winter crops. Some farmers lack access to winter pastures and keep animals in their homes, but require advance planning to calculate feed requirements;
- Agro-tourism, eco-tourism, and hunting must be explored for land users in the region as well. Authorities should be encouraged to organise product exhibitions and local craft markets to demonstrate the viability of these alternative incomes.
- Incentives can be provided through awareness raising on the long-term effects of degradation, pasture improvement for sustainable use, and the value of sustainable land management. It is challenging to change everything at once, and it is difficult to see beyond the short-term costs to long-term productivity. Thus, training and education for all stakeholders on ecosystem services is very necessary, and requires government or other funding resources and incentives.

Laws and agreements on limits of livestock must also be established. A maximum number of livestock should be legally controlled and monitored – as farmers tend to conceal the actual number of animals in their possession from governance representatives. This can be supported through increased executive powers for local communities. Pasture management committees funded and staffed by farmers can establish flexible, simple penalty processes to enforce adherence. In addition to caps, it is necessary to regulate and enforce three-day pasture rotations. Violations should be addressed through transparent and strictly controlled penalties, managed by the local governance through representatives of jamoat and district committees, as economic leverage is the most effective for pastoralists beyond training and education. Meanwhile, positive incentives should be sought for farmers who voluntarily adopt alternative and sustainable approaches and can be showcased as pioneers.

There also needs to be agreements of shared land usage with neighbouring countries; shepherds from Kyrgyzstan often use Tajik pastures as they are more accessible for those living close to the border, but this use should take place and be monitored under internationally negotiated sustainable land use principles. **Following the voluntary guidelines on the responsible governance of tenure of land, fisheries and forests in the context of national food security from FAO with its recent technical guide on improving governance of pastoral lands is highly recommended.** Transboundary cooperation in Central Asia and surrounding countries on joint pasture and water management, as well as wildlife preservation should also be sought. Joint efforts can facilitate coordination efforts with international donors working

in these fields, and discussions of this nature can also support knowledge exchange on best practices in shared regions.

Improve the efficiency and long-term sustainability of irrigated land use through sustainably increased productivity and the creation of intensive orchards.

There is an order from the President of the Republic of Tajikistan № 683 (2009) that supported the establishment of 46,900 hectares of new orchards and vineyards from 2012-2014, and a 2015 resolution that envisages the creation of another 20,000 ha by 2020. In addition to this ongoing effort, the government should increase opportunities for the economically rewarding practices of intensive gardening on irrigated and rain-fed arable, cultivated, and newly developed land. This can be through the provision of long-term loans with low interest rates, and grants to support farmer's transition. To raise demand and increase benefits, there can be support for multinational companies or intergovernmental agreements with countries like Russia and Kazakhstan in the export of fresh, dried, and processed fruit products.

Awareness must be raised on the economic efficiency of the suggested measures through the organisation of training courses, seminars, field agricultural schools, demonstration videos, and other materials.

These should also raise local awareness of the need to address domestic food security. This can be supported by the Institute of Horticulture of the Tajik Academy of Agricultural Sciences and Tajik Agrarian University, to improve the level of competence of farmers and local experts through training and the inclusion in government programs of new projects on the assessment and development of intensive orchards.



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 was 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.

References

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RESEARCH PROGRAM ON Dryland Systems