

Informal Consultation for Europe and Central Asia

12-15 July 2021

Background Note

Session 5

Environmental sustainability in agricultural production systems –

Regional Priority 3

Regional Priority 3 promoting sustainable natural resources management and facilitating resilience in agriculture, forestry and other land-use sectors, including mitigating and adapting to climate change.

Case study presentation:

Environmental sustainability in agricultural production systems prone to drought and salinity in Central Asia: implementation of the ‘Integrated Natural Resources Management on drought-prone and salt-affected agriculture production landscapes in Central Asia and Turkey’ (CACILM-2¹) project in Kazakhstan.

1. Introduction

Central Asia is vulnerable to desertification, land degradation and drought, because of its geographic location and climate, with more than 50 percent of agricultural land in Central Asia subject to varying degrees of degradation. Climate change, over-exploitation, and deterioration of natural resources through inefficient and unsustainable agricultural practices, have further aggravated land degradation in recent times.

Agriculture makes a significant contribution to the economies of Central Asia, where it plays a big role in GDP and employment – amounting to 10 percent to 38 percent of GDP, and 18 percent to 65 percent of all employees.² The economies of the region are vulnerable to the impact of drought, which causes agricultural production loss, price and trade volatility, decreases in farm income, and unemployment.

In Kazakhstan, drought occurs across all territories, with its impact exacerbated as climate change becomes more severe.³

In this regard, in 2018 the Food and Agriculture Organization of the United Nations (FAO) and Global Environmental Facility (GEF) jointly launched the five-year regional CACILM-2 project under the umbrella of the ‘Central Asian Countries Initiative for Sustainable Land Management’ programme, with the main goal of disseminating and scaling up best practices and approaches for integrated natural resources management (INRM) in 18 drought-prone, salt-affected, and soil degradation-prone pilot zones in Kazakhstan, Kyrgyzstan, Tajikistan, Turkey, Turkmenistan, and Uzbekistan.

¹ Central Asian Countries Initiative for Land Management, phase 2. More information is available here: <http://www.fao.org/in-action/cacilm-2/en/>

² FAO. 2017. *Drought Characteristics and Management in Central Asia and Turkey*. FAO Water Report 44. Rome. 114 pp. (also available at <http://www.fao.org/policy-support/tools-and-publications/resources-details/en/c/897235/>)

³ According to the World Bank, the grassy plains of Kazakhstan are the most vulnerable to suffer from climate change and desertification as evapotranspiration is expected to increase. Source: World Bank. 2005. *Drought Management and Mitigation Assessment for Central Asia and Caucasus*. Washington, DC. (available at <http://hdl.handle.net/10986/8724>)



This case study provides an overview of key project activities aimed to achieve the sustainable management of natural resources at policy, technical and field levels, with a focus on mapping tools in Kazakhstan. Among other development indicators, the project aims to promote the scaling up of INRM and sustainable land management approaches, and facilitate resilience in agriculture and other land-use sectors, including mitigating and adapting to climate change (Regional Initiative-3). The project includes the following development interventions:

1. integration of sustainable natural resources management and resilience factors into national institutional capacity development and policies;
2. development of national drought vulnerability and soil salinity maps to produce a soil information system for evidence-based decision-making, and;
3. field demonstration of INRM technologies for their further scaling up, and capacity development.

2. Environmental sustainability in agricultural production systems prone to drought and salinity in Kazakhstan

1) Integration of sustainable natural resources management and resilience factors into national institutional capacity development and policies

A lack of holistic approaches and coordination mechanisms in national policies leads to an inefficiency in the use of natural resources, and an increase in climate-change vulnerability. In order to prevent unsustainable natural resources management, and make resilient environments as a response to climate change, INRM approaches should be integrated into national policies, with resilience enhanced, at multiple levels. To this end, the project encouraged the development of a National Working Group consisting of three sectors – land, water, and forestry – to provide guidance on resilience mainstreaming, supervise national coordination, and facilitate national investment for INRM scaling up. The involvement of key partners and decision-makers from all relevant sectors creates a platform to discuss and share ideas and recommendations on how to mainstream project objectives in national investment frameworks for future scaling up of successful experiences.

As a result, the project is working closely with the Ministry of Agriculture on incorporating INRM approaches into a new concept and State Programme on the Development of Agriculture for 2022–2026. The Government of Kazakhstan, in regular parliamentary meetings, has endorsed the concept and Action Plan on Sustainable Land Management that was jointly developed by the project partners. Thus, the project has succeeded in mainstreaming INRM approaches in national policies, and ensuring sustainability even beyond the term of the project.

Moreover, in Kazakhstan, FAO and GEF gender policies strive to target gender gaps in areas such as management of natural resources, access to benefits and services, and meaningful and balanced participation in decision-making. The project also supports the mainstreaming of social-inclusion principles via its developed Gender and Social Inclusion Strategy that uses capacity development to influence particular socially excluded groups, such as rural women, people with disabilities, elderly people, and youth.

2) Development of national drought vulnerability and soil salinity maps to produce a soil information system for evidence-based decision-making

Because there were no up-to-date maps showing the current situation regarding land, and salinity maps have not been updated since the 1980s, the government had no evidence-based information to identify vulnerable areas requiring urgent intervention, and so could not take decisions based on scientific assessment. In order to support evidence-based decision-making, the project team produced four types of map: on land degradation, salinity, drought vulnerability, and soil organic carbon. The land degradation map covers the entire territory of Kazakhstan, the salinity and soil organic carbon maps cover the Zhambyl region, and the drought vulnerability map covers the Kostanay region. In order to ensure sustainability, the project organized training



sessions on creating land degradation and salinity maps with GIS tools, and developed participants' capacity to create and update a map on their own.

The salinity mapping is performed in collaboration with the government and Global Soil Partnership. The government collects and provides ground data, which is used to produce a more precise result, combined with satellite data. Salinity maps for Kyzylorda and Pavlodar regions are planned to be produced in 2021, and more regions are expected to be covered in the future as the government officially includes data collection in its action plan, and mapping capacity is sufficiently developed through training sessions. As more regions are covered, sustainable natural resources management will be enhanced and the global information on salt-affected soils will be updated.

3) *Field demonstration of INRM technologies for their further scaling up, and capacity development*

There is a low awareness and understanding of INRM approaches among farmers, training materials on INRM technologies are barely developed, and INRM technologies are not widely used. In order to promote INRM technologies more broadly and deeply, the capacities of local executives, rural advisory service providers, and farmers, should be strengthened. Local executives, being in charge of making a Pasture Management Plan (PMP), have difficulties making detailed PMPs due to the absence of proper guidelines and a lack of capacity. Rural advisory service providers and farmers, including female farmers, have limited knowledge of up-to-date INRM technologies.

To fill these gaps, the project in Kazakhstan developed a methodology for a multi-partner land-use plan, and piloted sustainable land-use plans for two sites according to the methodology for the capacity development of local executives. INRM technologies were put to the test in local conditions – such as through the cultivation of drought-resistant and salt-resistant crops, and the rehabilitation of degraded pastoral lands – combined with training sessions for the capacity development of rural advisory service providers and farmers.

The multi-partner land-use plans were developed for Petrovsky rural district (Karagandy region) and Talapsky rural district (Almaty region), and they are going to be piloted further in 2021. These two sites were selected – in consultation with the Committee for Land Resource Management of the Ministry of Agriculture of Kazakhstan – based on the ecosystems, availability of geobotanical data, the interest of beneficiaries, the willingness of local executive bodies, as well as the level of land degradation. The methodology for a multi-partner land-use plan, and the pilot plans, will be helpful when other regions create their own PMPs, through which INRM approaches will be scaled up.

As for the demonstration of drought-resistant and salt-resistant crops, the project team established a plant nursery with 200 crop varieties to assess their suitability for the local soil and climatic conditions of southeast Kazakhstan. Additionally, drought-resistant and salt-resistant crop varieties such as Sorghum, African millet, barley, oat, *Onobrychis viciifolia*, *Agropyron*, *Medicago sativa*, Triticale were produced for seed multiplication in project demo sites in Almaty region. These seeds will be distributed to farmers and multiplied on a district and provincial scale. This is to ensure resistance to the effects of climate change, drought and desertification, and create a sustainable seed bank of drought-resistant and salt-resistant crops that will help the Government of Kazakhstan to ensure food security in a changing world, especially in the face of the COVID-19 pandemic. As for the demonstration of land-rehabilitation practices, the rehabilitation of overgrazed pastures and approaches to manage saline soils were also demonstrated. A book was published to outline and consolidate the methods of saline soils rehabilitation.

In order to raise awareness of INRM and facilitate the adoption of INRM technologies in the field, more than 20 training sessions were conducted on effective INRM technologies, eight of which were field days conducted off-line at demo sites. Over 30 percent of the participants in the training were women, and a stand-alone pilot workshop on gender equality in INRM for over 80 people from research institutes, academia, and the farming community, was also conducted.



Due to COVID-19 restrictions, all training sessions were held as webinars, except for the field days. The field days were conducted at demo sites, with participants able to observe how INRM technologies worked in local conditions. In addition, 16 sets of training materials were developed and distributed to agricultural producers, research institutes, and extension centres at demo sites.

3. Guiding questions for discussion related to Regional Priority 3

- How can we effectively establish seed banks with further reproduction and sustainable multiplication of drought-resistant and salt-tolerant crop seeds at national level?
- What bottlenecks exist in scaling up conservation in agriculture practices and how could these bottlenecks be overcome?
- What are the main factors and barriers to mainstreaming INRM approaches and technologies in national policies, strategies and budget planning in your country (SDG 13.2)?