

## Support to Food Security & Biodiversity in Tajikistan



Completion of the first project phase (Vakhsh, 2021)

## EXECUTIVE SUMMARY

### Context

FSD is a humanitarian NGO that is specialized in mine action and environmental remediation. FSD has been working in Tajikistan since 2003. During this time, the organization's deminers have released more than 11 million m<sup>2</sup> of mine and unexploded ordnance contaminated land back to communities and destroyed 820 tons of obsolete stockpiles of weapons and ammunition.

FSD's current project in Tajikistan, which started in 2016, involves cleaning up land contaminated with pesticides. Exposure to pesticides has been correlated with a series of negative health effects, various types of birth defects and cancers. Unfortunately, Tajikistan remains to date as not just the poorest country, but also the most vulnerable to climate shocks in the Central Asian region. The root causes of this can be found in the country's unsustainable agricultural practices and poor infrastructure; local authorities also lack the resources and expertise to tackle these issues adequately. FSD seeks to increase its existing environmental remediation activities to provide assistance in complementary sectors such as sustainable irrigation, protection of soil bio-diversity and food security.

### Project Summary

Throughout this proposed intervention, FSD aims to support Tajikistan's commitment to sustainable development through resilience against climate change, increased food security and the depollution and protection of agricultural and pastoral land. Activities will include the removal of contaminated soil, planting of trees and shrubs and the rehabilitation and construction of greenhouses and irrigation systems. Communities will also be educated to operate and maintain these systems under their own self-sufficiency. In parallel, risk awareness campaigns will be conducted in affected communities to improve knowledge of nutrition and safe food chains.

### Funding

FSD already has a well-established footprint and HQ team in Dushanbe where all its Central Asia operations are managed from. This includes its own vehicles and systems for procurement, logistics, financial management and maintenance. Therefore, the required funding and resources needed for this initiative would be light in comparison to a newly established project. The project would contribute only a small fraction of the office rental and day-to-day office costs (internet, heating, electricity etc.) This means that a large proportion of money raised will go directly to beneficiaries and projects results providing value for money.

### Duration

The activities are planned to complement an intervention that FSD implements for the United Nations Environment Program (UNEP) and the Swiss Development Cooperation (SDC), which is

scheduled for 24 months from 01 March, 2022. The amount of funding raised will define the extent and duration of the activities.

## DETAILED PROPOSAL

### 1 - Situation

The Central Asian region contains some of the most contaminated land in the world. Multiple countries in this area have been, and continue to be heavily mined for uranium, heavy metals, and other resources. Poor environmental management of these activities has left areas of severe radiological and toxic pollution. A significant source of contamination, especially in Tajikistan, includes the legacy from the extensive use of DDT (Dichlorodiphenyltrichloroethane) based insecticides in the 1950s. Almost half the world's obsolete pesticide stockpiles remain in the former Soviet Union and particularly in the Central Asian states. Along with the collapse of the Soviet Union, the monitoring and maintenance of these pesticide stockpiles ended.

#### 1.1 - Health risk

This contamination of land with Persistent Organic Pollutants (POPs) represents a significant health risk to humans and animals. Exposure to POPs correlates with a series of negative health effects, ranging from problems with the nervous, immune, reproductive and endocrine systems, to various types of birth defects and cancers. The longevity of DDT is shown, for example, in the breast milk of Tajik women; the permissible concentration exceeds the limit value many times over in several studies.<sup>1</sup>

Contamination can affect humans through multiple pathways, including leachate from mining waste soil heaps entering water sources, legacy contaminants present in buildings now used for human habitation and airborne particulates from unmanaged storage facilities. POPs are drawn into the root structures and tissues of several plants (including agricultural crops) and they represent a threat to human health via the food chain.

#### 1.2 - Food insecurity

Tajikistan remains dependent on imports for several foodstuffs and although the agricultural capacity of the country has grown recently (estimated at 8% a year between 2000-2008), this growth has been accompanied by a 40% increase in population since the 1990s, increasing demand for food and elevating prices.<sup>2</sup>

Unsustainable farming practices in the agricultural sector has made food insecurity a growing problem for many people in the rural areas of Tajikistan. Farmers often rely on soviet era machinery and production systems which are not sustainable in terms of land management practices. This contributes heavily to Tajikistan being the poorest country in Central Asia. In

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<sup>1</sup> Ulugov, Umidjon Amonovich, Lyudmila Sergeevna Bobritskaya, and Julia Sinitsky. "Inventory of obsolete pesticide warehouses in Tajikistan and implications for removal of contaminated soil." *Journal of Health and Pollution* 8.17(2018): 1-5.

<sup>2</sup> Akramov, K and Shreedhar, G, "Economic Development, external shocks and food security in Tajikistan", International Food Policy Research Institute Discussion paper 01163, (March 2012): 1-2

rural areas, where agriculture remains vital to many livelihoods but is under-resourced and poorly supported, people are even more disproportionately poor.

### 1.3 – Climate extremes

Rural populations are threatened by the legacy of pesticide contamination, food insecurity and the growing impact of climate change, a threat to which the farming systems of Tajikistan are particularly vulnerable. In recent World Food Programme reporting, Tajikistan was even listed as the most vulnerable country to climate shocks of all the European/Central Asian (ECA) states analysed.<sup>3</sup> Unsustainable agricultural practices and poor infrastructure lead to issues of land degradation, inefficient use of water resources and poor livestock management.

Four out of five food insecure people in the world live in countries that are prone to climate-related disasters and have high levels of environmental degradation.<sup>4</sup> Their lives are made harder by floods, drought and storms that destroy assets, land, livestock, crops and food supplies, making it more difficult for people to reach food markets, to grow and sell products and to develop sustainable social networks.

Climate risks further combine with conflict, gender inequalities, environmental degradation, poor access to health services, sanitation and education, population growth and weak markets, all of which further drive hunger and malnutrition. The poorest people are therefore more exposed to climate risks than average populations and lose much more of their wealth when hit by climate-related shocks.<sup>5</sup>

## 2 – FSD in Tajikistan

FSD has over 25 years' experience of clearing explosive hazards in challenging post-conflict and post-disaster environments. Throughout the last decade FSD expanded its work to include the protection and clearance of land in underdeveloped countries of all toxic, chemical and persistent organic pollutants (POPs).

FSD's experience of working in difficult and remote parts of the world, combined with its knowledge of land clearance and remediation, places FSD in an ideal position in affected, and often vulnerable, communities. This gives FSD the opportunity to develop programmes to enhance socio-economic recovery and livelihoods connected to that land and also to help those communities build secure environments where food production and cultivation of land are protected from the effects of climate change.

In Tajikistan, FSD's well-established programme has been involved in the remediation and protection of a Uranium tailings site in Chkalovsk, and the large-scale remediation of organic pesticide soil contamination in several villages in the south, an effort which had a strong element of social engagement and community education.

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<sup>3</sup> World Food Programme Inception report FP067: Building climate resilience of vulnerable and food insecure communities through capacity strengthening and livelihood diversification in mountainous regions of Tajikistan, March 2021.

<sup>4</sup> FAO. 2015. The State of Food Insecurity in the World. Meeting the 2015 international hunger targets: taking stock of uneven progress. <http://www.fao.org/3/a4ef2d16-70a7-460a-a9ac-2a65a533269a/i4646e.pdf>.

<sup>5</sup> World Bank. 2015. Shock Waves: Managing the Impacts of Climate Change on Poverty, <https://openknowledge.worldbank.org/handle/10986/22787>.

Throughout this project, particular care was taken to integrate the views and needs of the local community. Tajikistan remains a major focus of environmental efforts for FSD, and work continues with UNEP and FAO in ongoing POP remediation work in affected villages and in the stabilisation of legacy pesticide stores in this region. In particular, work has involved the renovation of infrastructure and remediation of contamination at the major pesticide storage facility of Vakhsh in the southwest of the country.

### 3 - Planned intervention

This project will contribute to sustainable development in Tajikistan through the removal of legacy pollution within communities and the enhancement of food production systems and agriculture. This will also increase food security and nutrition and protect soil biodiversity, irrigation systems and food chains in vulnerable communities.

#### 3.1 - Depollution and protection of land

To reduce the threat and risk from pesticide contamination in priority communities and locations, rapid environmental risk assessments (REAs) will be conducted, in line with international best practice and Basel, Rotterdam and Stockholm convention methodology. This will be done in coordination with the Tajik Committee for Environmental Protection and all activities will be integrated with the country's waste management strategy.

Contaminated soil will be physically removed from affected sites and transferred to the central Tajik waste repository in Vakhsh. Trees and shrubs will be planted in remediated areas to increase soil stability and to trial absorption and phyto-remediation of residual low level POP remnants<sup>6</sup>.

Risk awareness education sessions will also be conducted in affected communities to improve knowledge of nutrition and safe food production and harvesting. In addition to this, FSD will work closely with local academics and Swiss based universities (EPFL) in order to carry out bench mark trials and research to monitor performance of remediation efforts. Work will also be coordinated closely with community focal groups to maintain knowledge and to increase local participation.

#### 3.2 - Increased Food Security

Survey and coordination with national authorities will help to identify priority areas for food production and education, particularly in those areas vulnerable to climate changes and natural disasters (mountainous and flood affected areas).

FSD will then work with those communities to construct communal greenhouse facilities with drip irrigation or rehabilitate existing ones in order to help those communities grow sustainable crops, fruit and vegetables. Improvements in farming techniques, infrastructure or crop rotations will also be matched with an element of social engagement and education which can help to empower local people to achieve better nutrition rather than simply enabling them to grow more crops.

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<sup>6</sup> Hine, R (ed), *The Oxford Dictionary of Biology, Eighth edition*, (Oxford: Oxford University Press, 2002)

Communities will be educated to maintain these systems and to manage food production under their own self-sufficiency. FSD has already engaged with FAO (Food and Agriculture Organization) and with WFP on similar projects across Tajikistan.

### 3.3 - Resilience against climate change

Building greenhouses will help to limit the impact of extreme weather conditions; new irrigation channels will enhance productivity and prevent inefficient use of water. Following baseline survey and community focus groups, reforestation zones will be identified and suitable trees, shrubs and plants will be planted to increase resilience to weather extremes and land degradation will be limited as new vegetation protects the soil from erosion.

Strips of small tree saplings will act in addition as windbreaks and reduce wind/soil erosion, a major source of crop loss. The increased biodiversity provided by the trees will also help to boost crop and food yields through the introduction of a habitat for natural pest controlling species, reducing the need for pesticides.<sup>7</sup>

## 4 - Funding

FSD is looking for financial support for the proposed project. The already-established programme in Tajikistan will mean less funding is needed for management and administrative costs; this represents better value for money, and ensures a high proportion of funding contributes directly to beneficiaries and hard results.

<b>CHF 500</b>	Starter packages for a community green house to produce fruits and vegetables for a year (organic fertilisers and soil, seeds, plants, growth trays and pots, watering pipes and pump power, heating for winter protection etc.)
<b>CHF 1,000</b>	Three months of community training and development in sustainable crop production and management as well as basic food production in community greenhouses and land.
<b>CHF 5,000</b>	100 km of modernised irrigation channelling in a 12-month period
<b>CHF 10,000</b>	10,000 trees planted with irrigation systems
<b>CHF 20,000</b>	Two 10m by 6m community greenhouses serving over 200 families.
<b>CHF 50,000</b>	A full team to deliver sustainable food production techniques and environmental pollutant and risk awareness to over 10,000 beneficiaries in 12 months

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<sup>7</sup> See: <https://www.ifad.org/en/web/latest/-/csa-georgia>