

Annex 2 - CASP+ Feasibility Study - Appendix to Chapter 3

Measures Envisaged under CASP+

Innovation for Achieving Sustainable Herd Size in Tajikistan

Draft Technical Note

Problem statement

- Tajikistan experienced a transition from an intensive to an extensive livestock production system in the aftermath of the breakdown of the socialist system of livestock production at the start of the 1990s.
- The deterioration of the feed base in Tajikistan was largely responsible for an unprecedented initial fall in livestock by 30 percent due to liquidation of livestock inventories in agricultural enterprises. On the other hand, inventories on household plots, not directly supported by the socialist industrial feeding system, remained predominantly untouched by this initial downturn.¹
- The household farm sector now dominates livestock production and relies primarily on grazing supplemented by limited cultivated feed crops and minimal concentrates. More than 92% of ruminants are kept by individual households with 5-7 animals per households with only ~0.15 ha of land holding.²
- The shortage of feed entailed a sharp fall in livestock productivity with milk and meat yields both declining until 1997. Today, both productivity indicators have recovered somewhat from the severe decline of the early nineties, but have stopped rising since 2003.
- Overall livestock inventories in Tajikistan increased by 71% from 1991 to 2019, nearly exclusively as a result of growth in household farms. The rapid expansion of livestock inventories despite the fall in feed availability has kept feed availability per animal extremely low with low levels of productivity. At less than 700 kg per cow per year, milk yields in Tajikistan are far below yields in Western countries and the lowest among the CIS countries.³
- Despite the low rates of productivity, overstocking is pursued as a strategy by smallholders in these inefficient production systems because of (a) perception of wealth and status associated with a large herd; b) In the absence of financial inclusion and lack of other prospects of savings, animals function as savings; c) a larger herd mitigates the risks associated with investing in livestock prone to high rates of morbidity and mortality.
- Climate Change is expected to have far reaching consequences for dairy, meat and wool production mainly arising from its impact on grassland and rangeland (CASP+ Climate Scenario – Annex 2).⁴ While natural pastures and hayfields play an important role in protecting soil from erosion and increasing its fertility, their productivity is dependent in turn on climate change and its spatial distribution during the vegetation period. For instance, rising temperature of 2-4°C in February and March can lead to 20% decrease in winter – spring pasture productivity, a decline that is greatly exacerbated during dry spells.⁵

¹ David Sedik.FAO. The Feed-Livestock Nexus in Tajikistan: Livestock Development Policy in Transition. Policy Studies on Rural Transition No. 2010-1. October 2010.

² WorldTAP Policy Brief 6 - Strategy to Adapt and Mitigate Potential Impacts of Climate Change on Livestock Production Systems in Tajikistan. MSU. 2011.

³ David Sedik.FAO. The Feed-Livestock Nexus in Tajikistan: Livestock Development Policy in Transition. Policy Studies on Rural Transition No. 2010-1. October 2010.

⁴ Calvosa, C., D. Chuluubaatar and K. Fara, 2009. Livestock and Climate Change – Livestock Thematic Papers – Tools for Project Design. 2009. IFAD, Rome, Italy, pp 20.

⁵ WorldTAP Policy Brief 6 - Strategy to Adapt and Mitigate Potential Impacts of Climate Change on Livestock Production Systems in Tajikistan. MSU. 2011.

- The reduction in livestock inventories are also designed as a strategy for reducing GHG emissions. Tajikistan's total GHG emissions in 2014 were 11.96 million metric tons of carbon dioxide equivalent (MtCO₂e), totaling 0.02 percent of global GHG emissions. The agriculture sector serves as the predominant source of GHG emissions in Tajikistan, with 46.3 percent of emissions from this source, 41.4 percent from energy, 7.1 percent from industrial processes, 5.2 percent from waste, and 0% from land-use change and forestry. As per its NDC (December 2021), Tajikistan is committed to an unconditional target which is an emissions cap of 60 to 70% of existing GHG emissions in 1990 level by 2030 and an emissions cap of 50-60% of 1990 levels by 2030, conditioned upon receipt of substantial international funding and technology transfer.⁶
- Tajikistan's agriculture is very vulnerable to climate change. Adaptation measures are of priority both for crop production (including cereals and leguminous crops, technical crops, vegetables and horticulture and viticulture) and livestock subsectors (NDC, Dec 2021). Key measures identified in the NDCs include:
 - Introduction of "green" technologies and "green" infrastructure in agro-industrial production
 - Improvement of livestock breeding
 - Development of agroforestry and conservation agriculture,
 - Improved pasture management
 - Raising awareness and increasing access to climate change information
- The NDCs, supported by background analysis including a comprehensive report by UNDP, note that GHG emission in the country are strongly driven by the contribution of the Agriculture, Forestry and Other Land Use sector, with over 40% of national total emissions attributable to this sector in the historical and projected period. Given its impact in national total GHG emissions and its prospects, the AFOLU sector has also been prioritized within the mitigation efforts of the country. In particular, the implementation of the Forest Sector Development Strategy for 2016-2030 and the continuation of the Comprehensive livestock development program, Pasture Development Programme, etc., are key for the country to adopt a low carbon development trajectory for the country.⁷
- The CASP+ is designed to deal with some of these key challenges. The carrying capacity of the rangelands in the country at the national level is estimated at 1,391,990 Livestock Units (LSUs), while the actual livestock population amounts to twice this amount at 2,858,600 LSUs (Tajikistan National Agriculture Investment Plan, draft 2020). To adjust the stocking rate to the carrying capacity and help the country meet its emissions targets, livestock inventories need to be halved.
- Several elements have been contributing to the excessive growth of inventories in the past decades, including cultural elements, limited access to technologies and knowledge to increase the productivity of animals and shortage of appropriate financial services leading to use of livestock as saving measure. The CASP+ project intervenes on the economic and financial incentives to transform livestock production system at household level (92% of the ruminants) and limit the excessive rate of livestock growth.
- By applying proper herd management methods, culling unproductive stock, developing better supplementary feeding regimes and grazing management have shown to reduce stocking rates without reducing net income and in most cases improving net income from livestock.⁸ CASP+ will lead to a reduction of growth rate of livestock numbers expected to lead to a reduction in total emissions per year (carbon dioxide equivalent – CO₂e) reaching a 24% reduction in Year 7 from 2,162,940 t CO₂e in the Without Project situation to 1,640,354 t CO₂e in the With Project situation.
- Results from the Impact assessments of IFAD investments in the Livestock sector in Tajikistan through the Livestock and Pasture Development Projects I and II show that at the end of

⁶ Greenhouse Gas Emissions Factsheet: Tajikistan. March, 2019.

⁷ GoT, Nationally Determined Contributions (December 2021) – also supported in UNDP. GHG Forecasting in Key Sectors and Impact Assessment of Climate Change Mitigation Policies and Measures. Technical Report, August 2020.

⁸ Redesigning livestock strategies to reduce stocking rates and improve incomes on western China's grasslands. Charles Strut University. 2011.

phase II, the average weight of cattle per animal in the treatment group increased by 30 per cent compared to the control group. Similarly, cattle kept by households in the treatment group had more total milk production and productivity than households in the control group. Beneficiary households' annual milk production from the cattle herd increased by 120 per cent compared to the control group.⁹ LPDP II succeeded in enhancing livestock productivity and livestock income partly through increased access to preventive treatment, feeding, housing, and improved access to water points. Livestock assets as measured by Tropical Livestock Units (TLU) declined by 29 per cent while productivity and incomes increased as a result of participation in LPDP II.¹⁰ Thus, Project support in achieving productivity objectives aligned with environmental objectives.

Strategy envisaged by CASP+

A key element of the project's strategy to increase adaptation to climate change by increasing the productivity of the livestock sector with co-benefits for the environment. The objective of this strategy is to help households to maintain sustainable and productive herd sizes which is likely to entail a reduction in the growth of animal populations from the current 12% to 6% in the target villages or lower in the project implementation period. The project has a host of interventions that will invest in selective breeding, improved animal health and nutrition, increased productivity and reduction in morbidity and mortality. To achieve these targets the project's strategy will entail a combination of economic, financial and institutional incentives for PUUs and individual livestock owners.

Economic incentives:

Livestock Productivity Enhancement package:

- Animal health: CASP+ will support animal health to reduce the spread of contagious animal diseases, and increase proximity to private veterinary services to reduce animal morbidity and mortality.
- Feeding: the project will support sustainable management of pastures through implementation of Pasture Management Plans (rotation, appropriate stocking rates that comply with carrying capacity), promotion of fodder cultivation through demonstrations, roll out of FFS, and provision of fodder harvesting equipment (under CsCAPs)
- Breeding: the project will support the implementation of a large-scale Artificial Insemination campaign (100,000 AIs) and distribution of improved bulls to improve productivity and value of animals.

Increased Market access incentives

- Low productivity animals with low milk yields are one of the principal reason that leads to overstocking as farmers try and meet their home consumption and income needs by keeping a large stock of dairy animals. Furthermore, there is a high degree of loss of dairy produce in the absence of adequate storage, transport and processing capacity. The purpose of this support will be to deal with these issues to 2,000 producers through training in increasing milk yields and establishing Milk Collecting Centers, in partnership between private aggregators and farmer's groups.

Promotion of livelihoods diversification

- In order to facilitate the diversification from unproductive livestock based livelihoods, the project will work with Common Interest Groups (CIGs), facilitating their access to technical and entrepreneurial skills on agricultural production, processing and marketing as well as

⁹ R. Cavatassi, S. Gemessa. 2022 . Impact Assessment Report. Livestock and Pasture Development Project II (LPDP II). Pages. Rome: IFAD.

¹⁰ TLU, or Tropical Livestock Units are livestock numbers converted to a common unit. The assets include number of cattle, sheep, goats, horses, donkeys, and poultry owned. See Table X for description of all the outcome variables.

to relevant productive equipment. It will facilitate their economic production and marketing, by liaising with private sector entrepreneurs working in the agrifood value chains.

Institutional measures

Supporting local institutions (PUUs) in setting clear Pasture management measures

- The introduction of Pasture Management Plans in all targeted communities will be the main tool aimed at improving pasture conditions, forage availability and animal productivity. PUUs will be encouraged to implement measures that enable effective control of animal numbers and avoid overgrazing through issuance of grazing permits based on carrying capacities. The PUUs will be assisted in determining carrying capacity and putting in place rules for rotational grazing through a system of community participation and management.

Supporting local institutions (PUUs) in control of animal populations (Project incentives)

- In order to encourage PUUs to better govern the pastures, the project will provide incentives to PUUs that are able to effectively control growth of animal populations. A specific criterion will be included in the formula used to calculate the amount of grant allocated to PUUs for the implementation of their CsCAPs.

Innovative use of Pasture Users Union Fees

- With the objective to improve the efficiency of the livestock investments and maintain sustainable herd size, the project will train small producers in the economics of livestock production to cull unproductive animals, moderate the calving intervals and provide improved animal nutrition.
- An innovative approach will be tested on pilot basis under which **incentives** which include a **Rewards-based** and **Fee-based** mechanisms will be instituted for maintaining animals with higher Feed Conversion Ratios.
 - Reward
 - PUU would provide a monetary reward to a farmer for each male animal 2> year old (or similar technically advisable threshold) that is being slaughtered.
 - Amount: Annual PUU decision, symbolic figure, defined as 20-50% of the annual pasture fee.
 - Financing: from the PUU pasture fees (not project)
 - Fee
 - Surcharge on pasture fee for male animals >2y
 - Amount: Annual PUU decision, minimum 20-50% of the annual pasture fee (with annual fees between 3-10 Somoni per year)
 - PUUs who institute either or both reward/fee and implement it successfully for 2 years would get additional allocation for their CsCAP, in the range of 5-10%.

- **Expected effects:**

Behavioural Change: A financial reward would create awareness of the wastefulness in the practice of keeping oversized herds for the sake of status/savings and in the long term change community values towards a more efficient and intensive livestock husbandry practices.

Economic Incentives: The realization of higher productivity and incomes by maintaining more efficient and smaller herds will bring about a paradigm shift in herd size and management practices.

GHG Reductions: The incentives provided to PUUs and communities to reduce herd size and improve degraded lands will reduce GHG emissions.

Sustainability: The sustainability of the measures will be assured as a result of the improved efficiency of the production systems, the strengthening of the PUUs as a result of concrete role in management and tools to enforce and reward the system of incentives.

Evidence-based Policy dialogue: The project will support adoption of policy measures that discourage livestock **accumulation**. Several key policy measures to this end are elaborated and included in the National Investment Plan endorsed by the Ministry of Agriculture.

Conclusion

This project will be the first large scale programme to propose the paradigm shift which will result from the measures proposed under CASP+. It is expected that the lessons and evidence generated will be replicated and scaled up and will lead to a nationwide transformation of the sector. The experience under LPDP II and the experience in other countries in Central Asia with similar geo-climatic and socio-economic characteristics gives strong confidence that these measures will be effective.