Technology Fact Sheet

Sector	**Agriculture**
Adaptation needs	Adaptation to increasing desertification by dehumification, dissolution and secondary compaction of the soil arable layer (fig.3) Climate aridization along with classic cultivation lead to dehumification of agricultural soils, soil structure damage and strong secondary compaction of the arable layer (Annex 2). Currently the arable layer of agricultural soils lost its natural ability to compaction resistance. Dehumification, dissolution and secondary arable soil compaction is a global problem, but particularly acute in Moldova where 80 percent of soils are characterized by fine texture. These soils have a high production capacity only if their structure is agronomically favorable and contributes positively to regulate air-fluid and nutrients regimes, ensuring optimal conditions for plant growth and development. In a compacted layer of soil moisture reserves are almost by 2 times less accessible than in the same loose layer with agronomically favorable structure. Therefore, soils with high content of humus, agronomically favorable structure and loose arable layer are more adapted to climate change. To adapt to increasing desertification due to dehumification, dissolution and secondary compaction of the arable layer of soil generated by climate change, 6 technologies described below are recommended.
Name of technologies	**Introduction of 50 t/ha of manure with bedding to agricultural soils once in five years**[i] (fig.7)
How this technology contributes to adaptation	This technology helps maintain a stable content of organic matter in the soil. The content of nutrients increases, and the soil structure improves. The arable layer becomes more loose, more resistant to compaction, better provided with reserves of water accessible to plants. This increases crop resistance to drought.
Background, Short description of the technology option sourced from ClimateTechWiki, etc	The technology implies the return of the biophil elements contained in dung, urine and vegetal waste of cattle bedding, in the biological circuit. One tone of manure with bedding at 50-55% humidity contains about 15-16 kg of nitrogen, phosphorus and potassium.
How this technology will be implemented and spread across the sector?	Currently there are no large farms and cattle herd is concentrated in rural households. To use manure as fertilizer, municipalities have to organize the collection, storage, fermentation and storage of manure on special platforms. Technologies for processing and introduction of manure in the

	soil are provided in specially developed recommendations (Organic Fertilizer User Ghuide. Ch Pontos, 2012.115p). Realistically possible reserves of manure collection in the country do not exceed 2 - 3 million tons, which would be sufficient to fertilize only 200 thousand ha of agricultural lands annually, provided this amount is indeed collected (regretfully the amount collected is tens times smaller). The amount of manure possible to collect is 9 times lower than required.
Costs	The incurred costs will be for collection, processing, transportation and incorporating manure into the soil. Investments are needed to build communal manure platforms and purchase the equipment necessary for such platforms (fig.7)
Country social development priorities	This technology will ensure long-term preservation of soil fertility - the main means of production of the country, will protect agricultural land from desertification processes which lead to impoverishment of population and migration. It will improve the sanitary condition of rural environment.
Country economic development priorities (economic benefits)	The total increase of crop through the entire period of action of the 50 t of manure / ha is 1t/ha/year grain units in 5 years or - 200 € / ha/year in money terms. Total (gross) benefit over 5 years is 1000 € / ha or 200 € / ha annually. If this technology is applied regularly, it contributes to developing carbon balance in soil, and practically excludes CO2 emissions from agricultural soils.
Country environmental development priorities (environmental benefits)	This technology stops the accelerated degradation of soils, it reduces the risk of nitrate pollution of water in wells in villages, improves sanitary conditions in villages and health of population.
Social Benefits	The social - economic effect of this technology implementation will be the following: it will increase the turnover and quality of agricultural production on arable soils, wellbeing of rural population, decrease migration, and increase the earnings for social infrastructure development.
Other considerations and priorities (ex. market potential)	Along with the growth of cattle herds, areas fertilized with manure will also expand.
Capital (investment) costs	Investments are needed to build communal collective platforms for manure collection - about 70 thousand euro and 30 thousand euro - for purchase of an excavator, a total of 100 thousand euro.

Operational and maintenance costs	About 4000 euro per year will be needed to pay the salary to two manure collection platform operators.
Functionality ensuring needs per technological unit per day (optional)	Expenditures for application of manure amount to 12 € per ton, 600 € for 50 t / ha introduced once in five years, or 120 € / ha / year
Growth potential	The weight of this technology on the market will grow along with environmental friendliness of agriculture

[i] This fact sheet has been extracted from TNA Report - Technology Needs Assessment for climate change adaptation - Republic of Moldova. You can access the complete report from the TNA project website **http://tech-action.org/**