Technology Fact Sheet

Sector	Agriculture
Adaptation needs	Adaptation to increased desertification of agricultural lands situated on slopes, occurring due to increased erosion generated by climate change. In Moldova the lands on slopes with a gradient greater than 2 ° account for 57 percent of the total area. Eroded soils on agricultural lands pedologically evaluated occupy 878 thousand ha. The crops harvested from eroded arable lands (400 thousand hectares) are by 20% smaller in comparison with crops from non-eroded lands. Based on the average yield of cereal crops of 3 t / ha on non-eroded soils, crop losses are 0.6 t / ha / year, or 240 tons / year units of cereals on all eroded areas, which in terms of money is 46 million euro / year. Climate change is expected to generate aridization, increased frequency of torrential rains and, consequently increased erosion (Annex 1). This will lead to increased fertile soil losses and water from the arable soils on slopes, increased pedological drought and crop reduction. To facilitate adaptation to climate change two simple, inexpensive and effective soil erosion control technologies are proposed. Technology (small scale/short term implementation)
Name of technologies	**Cultivation of agricultural crops in alternative strips**[i] (fig.4)
How this technology contributes to adaptation	Reduces erosion by 50-60 percent. In combination with field operations proposed for lands requiring cultivation, it practically stops the erosion on up to 8° gradient slopes. Minimization of soils degradation processes and improvement of the slopes soils moisture regime decrease the risk of desertification of arable soils eroded as a result of climate change.
Background, Short description of the technology option sourced from ClimateTechWiki.	The technology is based on the principle of differential protection provided to soil by the crop foliage and variable crop density, which according to the degree of protection are divided into the following groups: Very good protective crops - perennial grasses and legumes after the first year of growth, provide 90-95 percent protection; Good protective crops - cereal grains, legumes and perennial grasses in the first year of vegetation, annual high density fodder plants, provide 70-90 percent protection; Medium protective crop - annual legumes, provide 50-70 percent protection; Weak protective crops - low density of weeding crops requiring cultivation (corn, sunflower, beets, vegetable crops), provide 20-50 percent protection.

	Anti-erosion effect on the slopes is ensured by alternating strips of very good and good protective crops, and medium and poorly protective ones.
How this technology will be implemented and spread across the sector?	Can be implemented without limitations. The optimal width of the strips shall be determined based on a very simple special diagrams, depending on the slope. This technology shall be implemented by agricultural businesses on their own land. The initial location of the strips will require appropriate topographical work by a surveyor.
Costs	Large additional expenditures are not necessary. One time investment, of about 40 € for a plot (field), in the first year of implementation, to instrumentally correctly locate the strips on the slopes, will be needed. Given the average area of 20ha of a field on a slope, the implementation cost will be 2 € / ha or 800 thousand euro for the entire area of eroded arable soils (400 ha).
Country social development priorities	It will effectively protect soils from damage caused by erosion, ensure long-term welfare of the rural population, will decrease migration of population, will make it possible to develop and implement various social projects
Country economic development priorities (economic benefits)	The yields on arable eroded soils (about 400 thousand ha) will increase by 5 percent or 1q grain units generating a benefit of about 20 € / ha / year, and a total benefit for all arable eroded soils (400 thousand ha) will be 8 million per year.
Country environmental development priorities (environmental benefits)	The erosion-caused soil degradation processes will be minimized. The risk of roads, ponds, rivers, valleys salination and groundwater pollution will decrease.
Social Benefits	The socio-economic effect from the implementation of this technology will be the following: increased turnover and quality of agricultural production on eroded soils will increase well being and decrease migration of rural population.
Other considerations and priorities (ex. market potential)	This technology implementation potential will grow due to the fact that climate change will lead to increased danger of erosion on agricultural lands
Capital (investment) costs	Implementation of this technology requires upfront expenditures of 2 € / ha or 800 thousand euro for the entire area of eroded arable soils (400 000 ha), for surveying services.
Operational and	The costs will be 1 € / ha / year or 400 thousand euro for the entire area of

maintenance costs	eroded arable soils for maintenance and operational correction of alternative bands size
Growth potential	The weight of the technology on the market will increase along with the increasing danger of climate change related erosion. Annually, this technology can be implemented on approximately 5-10% of agricultural lands on slopes.

[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/**