

CHAPTER 1. THE AGRICULTURAL SECTOR

1.1. Action at sectoral level

Agriculture is the sector of the economy most dependent on climate conditions. A slight change in climate conditions makes a considerable impact on agricultural production.

Most of Azerbaijan's territory is characterized by high warming resources, mild winter conditions, moisture shortage in the summer and continuous droughts. Of the total 11 main types of climate, 8 types are found in Azerbaijan -- from semi-desert and dry land climate extending into lowlands and foothill areas to mountain tundra climate in high mountainous zones (Second National Communication, 2010).

The key documents setting out the government policies for the country, agriculture, rural and agro-industry development include:

- (i) the State Programme on Socio-Economic Development of the Regions of Azerbaijan for 2009-2013;
- (ii) the State Programme on Poverty Reduction and Sustainable Development for 2008-2015;
- (iii) the State Programme on Reliable food supply to the population for 2008-2015;
- (iv) "Azerbaijan-2020: glance to future" Development Conception.

Main aspects of agricultural development are more specifically represented by the "Azerbaijan State Programme on Reliable Food Supply of Population" (2009-2015). Its Action Plan consists of 12 main goals including improving land and water use efficiency, plant protection services and crop production. However, the programme lacks in aspects related to future tendencies of climate change in spite of the fact that climate change projections have already been provided in the Second National Communication of Azerbaijan to UNFCCC. Therefore, necessary actions need to be taken in order to overcome existing barriers to the implementation of prioritized technologies.

General barriers to deployment of prioritized technologies under agricultural sector could be summarized as follows:

- *Economic/financial barriers*: weak access to acceptable financial means, weak access to markets, expensive feasibility study, lack of fiscal support to R & D institutions, high investment costs;
- *Policy/regulatory barriers*: no specific subsidy mechanism to promote application of technologies, improper pricing mechanism;
- *Technological barriers*: lack of technological knowledge and skills, weak access to agricultural machinery;
- *Information/capacity barriers*: weak capacity of research institutions, weak agricultural extension services, low level of awareness of economic and ecological advantages;
- *Social barriers*: unfamiliarity with new technology and small-scale lands.

Measures to overcome these barriers and technological action plans have been provided separately for each prioritized technology in the chapters below.

1.2. Action plan for introduction of crop species resistant to expected climate change technology

The introduction of new cultivated species and improved crop varieties is a technology aimed at enhancing plant productivity, quality, health and nutritional value and/or building crop resilience to diseases, pest organisms and environmental stresses.

Crop diversification refers to the addition of new crops or cropping systems to agricultural production on a particular farm, taking into account the different returns from value-added crops with

complementary marketing opportunities.

Such technology will be applied mainly in arid and semi-arid zones of the country. Assessment of vulnerability should be provided in areas with the highest risk to negative impacts of climate change (Food Security and Agriculture Highlights: Azerbaijan, 2011). Agricultural research institutions must be involved in the process in order to provide analyses and experiments with new species.

Main barriers of technology diffusion could be summarized as follows:

Barriers	Introduction of crop species resistant to expected climate change
Economic/financial	- Weak access to acceptable financial means, weak access to markets, high transaction costs
Policy/regulatory	- No subsidy mechanism to promote use of technology
Technology	- Weak capacity of research institutions
Information/capacity	- Weak agricultural extension services - Low level of awareness of economic and ecological advantages
Social	- Unfamiliarity with new technology

During the preparation of TAP, measures have been assessed taking into account their priorities, time scale, related stakeholders, key indicators for measuring implementation and funding resources.

Subsidy mechanisms are effective tools to promote and stimulate application of the technologies. At the same time, this measure is a significant tool in overcoming financial barrier to technology deployment. There is a positive example for stimulation of initiatives in Azerbaijan using specific subsidy, mostly applied in the agricultural sector. Similar mechanisms, with different features adjusted to the type of adaptive technology, could be developed by the government to stimulate initiatives in related fields.

Capacity building measures include activities related to awareness raising and increase of knowledge/skills of all related stakeholders such as decision-makers, technology users, and service providers of the applied technology. These activities include organization of round-table discussions, training sessions, workshops, seminars and study tours during the project implementation period.

“Information campaign on the advantages of applied technology” is the measure used to address the barrier “Low level of awareness of economic and ecological advantages”. It is considered an effective tool to raise awareness level on the advantages of the technology. This includes dissemination of information on technology advantages, as well as current opportunities for national and local decision makers and local communities (technology users), through mass media, publications, organization of workshops and seminars.

TAP for the introduction of crops resistant to climate change technology is provided in table 1.

Table 1: TAP for introduction of crop species resistant to expected climate change technology

#	Measures	Priority	Why it is important	Time scale	Related stakeholders, implementers	Key indicators	Risks	Funding sources	Costs
Economic/financial									
1	Develop mechanism for provision of long-term and low-interest loans, as well as grants through state, private and international funds	High	- Create access to financial sources	0-5 years	MED, MoA	- Easy access to funds created for farmers	- Low interest of financial institutions - Insufficient State funds	State, International	\$ 200,000
2	Develop specific subsidy mechanism to promote application of the technology	Medium	- Promote wide application of technology	5-10 years	MoA, MoF, MED	- new set of package to support local farmers during application of new species	- State procedures may be slow to endorse proposed recommendations	State, International	\$ 100,000
Technology									
3	Technical support to R & D institutions	High	- Improve technical capacity of R & D institutions	5-10 years	MED, MoA	- Improved capacity of R & D institutions	- No major risk	State, International	\$ 500,000
4	Strengthen international research network programmes	Medium	- Share best practices and experiences	5-10 years	MoA, National Academy of Sciences	- National R & D institutions actively participate in international research network	- No major risk	State, International	\$ 40,000
Information/capacity									
5	Organize specific capacity building programmes (trainings, seminars, workshops) for local farmers	High	- Increase capacities	0-10 years	MoA, NGOs	- Increased capacity	- No major risk	State, International	\$ 600,000
6	Develop and conduct information campaigns on the advantages of	High	- Raise awareness	0-5 years	MoA, NGOs	- Awareness level on	- No major risk	State, International	\$ 500,000

#	Measures	Priority	Why it is important	Time scale	Related stakeholders, implementers	Key indicators	Risks	Funding sources	Costs
	applied technology		level			advantages of new technology increase by 50%		nal	
7	Develop mechanism for support to agricultural extension services	High	- Increase quality of agricultural extension services	0-10 years	MoA, MED, MoF, NGOs	- Capacity and quality of current extension service providers improved	- Weak collaboration with existing extension service providers	State, International	\$ 800,000
Other measures									
8	Donor coordination in order to enhance support to R & D project initiatives related to the technology	Medium	- Coordinate various donor initiatives - Demonstrate practical application of the technology	0-10 years	MED, MoA	- Donor coordination meetings organized at least once a year	- Weak collaboration of related organizations	State, International	\$ 100,000
9	Develop mechanism for implementation of demonstrative pilot projects	High	- Demonstrate practical advantages	0-5 years	MED, MoA	- Practical knowledge and skills of farmers increased	- Lack of funds	State, International	\$ 600,000