

2.3. Action plan for flood warning technology

Flood warning technology can improve security of the water supply and significantly reduce the effects of flooding, and their negative social and economic impacts. The cost of this technology is by far less than the economic damages that floods cause to the country.

Application of this technology lines with the country's social, economic and environmental development priorities. With regard to the country's social development priorities, this technology increases the livelihood of the population by reducing flood damage risks.

The summary of an enabling framework and related stakeholders needed to overcome the barriers of each technology is outlined in previous parts of this report. Overall, possible solutions for addressing the economic barriers include allocating funds for maintenance programs and research works and waiving copyright fees. For the capacity barriers, the possible solutions are listed as follows:

- Promoting the utilization and exchange of the data and research outcomes among stakeholders;
- Providing an accessible database free of charge;
- Developing data verification and screening systems with low uncertainty;
- Developing data standardization and data collection procedures;
- Providing training programs for data administrators to enable accurate data collection;
- Providing governmental scholarships or training programs to increase the number of skillful human resources in the fields of mathematic program development and GIS;
- Promoting international collaboration in conducting research for technology transfer.

The capability development of sensor webs emphasizes increasing the number of experts and practitioners, especially for governmental sectors. Device purchasing and maintenance are the major areas requiring technology investments.

There are no specific programmes or strategies in Azerbaijan related to application of flood warning technology.

Main barriers of technology diffusion could be listed as follows:

Barriers	Application of flood warning technology
Economic/financial	- High investment cost for surveying devices - High operating cost - Lack of funds
Policy/regulatory	- Lack of coordination among relevant institutions - Non-existence of mechanism for customs regulations for stimulation of import of necessary technology
Technological	- Lack of data and data management system - Lack of data linkage among the models - Lack of system to automatically analyze a situation to support a command
Information/capacity	- Lack of experts to develop programs for automatic analysis, processing, and interpreting images - Lack of research works including short-range run-off models and short-range weather forecast models

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.

TAP for the technology is provided in table 6.

Table 6: TAP for flood warning technology

#	Measures	Priority	Why it is important	Time scale	Related stakeholders, implementers	Key indicators	Risks	Funding sources	Costs
Policy/regulatory									
1	Clearly determining policy/agreement from state management in order to create understanding among agencies involved in data collection, co-ownership, and data sharing (urgent)	High	- Institutional basis improved	0-3 years	National Parliament, MENR, SWA, local authorities	- The number of data agreements	- State procedures may be slow to endorse proposed recommendations	State	\$ 100,000
Economic/financial									
2	Investing in the procurement of high-quality devices used in conducting water source surveys	High	- Out-dated technology used	2 years	MED, MOF, MENR, SWA, NGOs, local authorities	- The budget ratio spent on the procurement of survey devices	- Insufficient State funds	State	\$ 250,000
3	Determining a long-term budget plan to cover maintenance	High	- Lack of financial support during maintenance	2 years	MED, MOF, MENR, SWA, NGOs, local authorities	- Improved budget plan for maintenance	- Insufficient State funds	State	\$ 60,000
Technology									
4	Promoting devices and supporting locally-developed devices/research works	High	- Need for modern technologies	0-4 years	National Academy of Sciences, MENR, SWA, NGOs, local authorities	- Improved capacity of R & D institutions	- No major risk	State, International	\$ 200,000
5	Promoting research works in collaboration with foreign agencies/private companies in order to receive and transfer the technologies	High	- Need for modern technologies	0-4 years	National Academy of Sciences, MENR, SWA, NGOs, local authorities	- Improved capacity of R & D institutions	- No major risk	State, International	\$ 60,000
Information/capacity									

#	Measures	Priority	Why it is important	Time scale	Related stakeholders, implementers	Key indicators	Risks	Funding sources	Costs
6	Enhancing the performance of data administrative officers to ensure they can collect and prepare data according to the standard before distributing the data	High	- There is need for capacity improvement	3 years	MENR, SWA, NGOs, local authorities	- The number of personnel capable of transferring knowledge on data collection and preparation	- No major risk	State, International	\$ 200,000
7	Providing knowledge and understanding on how the system operates to both managers and operators, in order to set an efficient line of command	High	- There is need for capacity improvement	3 years	MENR, SWA, NGOs, local authorities	- The number of trainings/meetings	- No major risk	State, International	\$ 250,000
8	Developing governmental personnel involved in R & D in mathematic programs/geoinformatics	High	- There is need for capacity improvement	5 years	MENR, SWA, NGOs, local authorities	- The number of personnel in the fields of mathematic programs/geoinformatics	- Weak collaboration of personnel	State, International	\$ 150,000
Other measures									
9	Develop mechanism for implementation of demonstrative pilot projects	High	- Demonstrate practical advantages	0-5 years	Local authorities, International and National donors, NGOs	- Practical knowledge and skills of farmers increased	- Lack of funds	State, International	\$ 900,000