



Project Partner 8



Executive Forest Agency, Ministry of Agriculture and Food

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main focus of institution and department

The Executive Forest Agency within the Ministry of Agriculture and Food is responsible for the management of the state forests and the control over all the rest forests and forested lands, irrespective the ownership. The forest policy of the EFA is oriented towards the conservation, maintenance and increasing of forestry areas, their sustainable development and the protection of biodiversity, towards their multifunctional use combining the ecological, economical and social issues in the conditions of various ownership and market economy. EAF is a legal entity funded by the State Budget and the National Fund "Bulgarian Forest". It is responsible for the financing, management and control over the following activities: regeneration of forests, afforestation, anti-erosion activities, thinning; protection of biodiversity; protection of forests from pests and diseases; silvicultural activities; utilization of timber and non-timber forest resources; hunting and game protection; extension services and others.

The present structure of State forest administration is at three levels – Headquarters in Sofia, Regional Forestry Directorates, State Forest Enterprises and State Hunting Enterprises. There are also specialized territorial units covering seed control, protection of forests from pests and diseases, nature park management, etc. The territory of the country is covered by the 16 RFBs, the territories of which are divided to different in number State Forest Enterprises (141 in total in the country) and State Hunting Enterprises (37 in total in the country). Taking into consideration that all State Forest Enterprises and State Hunting Enterprises are within the structure of SFA, they are registered by the Trade Act and in this way their employees are not included in the number of governmental officials.

short description of PP activities

Legal and organisational aspects:

- Increasing the ability of the authorized institutions to react in emergency situations and to implement in-time the foreseen preventive and rescue activities by updating the activities in the unified system for observation, early warning and management of natural disasters (floods)
- Proposals for changes in some regulatory acts aiming to include more stakeholders
- Improvement of the public discussion in the process of planning and management of the territory in periods of natural disasters by drawing the attention of civil organizations/civil society



- Working out of trends for effective sharing of responsibilities among the separate institutions and guarantee transparent management of the recovery programs
- Elaboration of preventive measures for protection of the flood waters from contamination
- Elaboration of model complex plans consisting of: design of anti erosion technical facilities and anti erosion afforestation; changes in the land use within water catchments; prohibition of construction activities in the risk zones, etc.
- Training of voluntary formations for actions in emergency cases and assistance to the population

Technological aspect:

- Establishment or further development of data base for past events related to torrents and floods; executed measures; actions of the stakeholders. Analysis on the activities by municipalities.
- Exchange of information among the regional structures and the stakeholders, as well as coordination of this information
- Observation and control on the determined risk zones
- Updating (if necessary) and maintenance of hazard map
- Programmed management of the resources in order to minimize the vulnerability, planning of activities for elimination of the consequences by floods
- Development of plans and operative programmes for early warning in the regions under risk and for preventing the development of risk factors into direct and indirect threats to the population, environment and national economy
- Investigations, analyses, prognoses and assessments of the risk factors and hazards to the population, environment and national economy

Participatory aspect:

- Training modules for different target groups
- Elaboration of practical guidelines for action in case of emergency, caused by flood or torrent
- Publishing of brochures, organization and performing of trainings, seminars, workshops for improving the capacity of the responsible regional and local institutions with respect to prevention and management of the risk in case of floods and torrents
- Increase the knowledge of the population about natural disasters by training in schools and distribution of specialized explanatory materials. Preparation of preliminary information for the existing risk by concrete natural disasters according to regions in order to minimize the vulnerability of the population
- Organization of regular meetings of the representatives of different stakeholders
- Development of approaches aiming to increase the effectiveness of communication among the stakeholders, expressed in structuring of information according to time, way of presenting, sources, terminology
- Exchange of information on transnational level

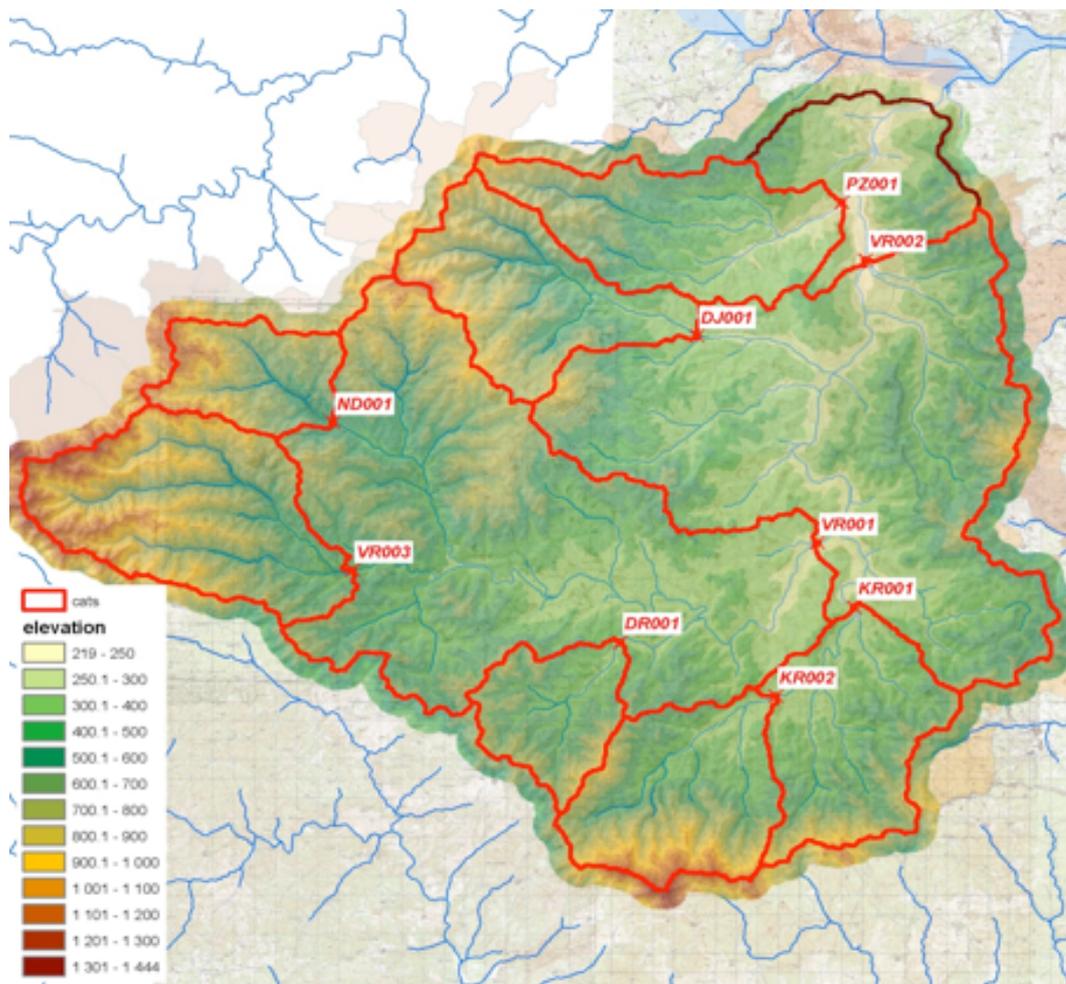
short description of test area

Location – central part of the Eastern Rhodopes, Varbitsa river is right tributary of Arda river
Total area – 1191 km².

Altitude – the watershed of Varbitsa river varies from 220 up to 1440 m

Number of tributaries – 20 local rivers

Varbitsa river springs west of Zlatograd town and flows into “Studen kladenets” dam.



Geographic description of the test bed

The watershed of Varbitsa river is influenced by the Mediterranean climate and the average annual temperatures in this region are from 10° to 13°C. It is part of the watershed of Arda river, which characterizes with precipitations between 650mm and 1000mm, water flow module from 10 up to 30 l/s.km² and density of the river system between 0.8 and more than 2.0 km/km². Arda river is the only one with maximum water flow observed during the autumn-winter period, not in spring season as it is for the other rivers in Bulgaria.

The mean annual water flow of Varbitsa river (station Dzhebel) for the period 1961–1998, (in m³/s) is: for the upper course – 0,333; for the middle course – 7,267; for the lower course – 16,58

The water flow module is 14,43 l/s.km², the average annual water flow widely varies from 4,9 to 37,4 m³/s with minimal value of 4,912 m³/s. Low water level is clearly expressed at the end of summer period (August – October), with maximal frequency in September.

The module of suspended sediment load for the period 1960-2000 at Dzhebel station is 435 t/an.km².

The relief is dominated by steep slopes with average inclination of about 25-30% but reaching up to 75% which determines the high speed of surface water flow and the formation of high waves. The basic rocks in the region are presented by gneisses, schists, quartzites, diabases, as well as sandstones, conglomerates, andesites, tuffs, etc.



Historical information of natural hazards in test bed

Damages from floods of Varbitsa river for the period 1990–2001:

- 29 swellings
- 92 residential buildings flooded and damaged
- 30 supporting walls, 17 bridges and 6 drain-pipes destroyed
- 54 roads, a dam lake embankment dam wall and the piers of 6 bridges damaged
- military equipment damaged and destroyed
- production of 73 private farms destroyed
- 15 people died

In the period 2002–2006 Varbitsa river causes 5–7 floods every yearq which results in significant material losses. The main problems related to risk management of torrents are:

- the torrent character of Varbits river
- extraction of inert materials in the main flow and in the tributaries
- influences on the water regime and on the river bed as river bed changes, building of hydro-technical facilities, etc.
- sensitive zones – many of the tributaries of Varbits river after the village of Benkovski till its flow into “Studen cladenets” dam have torrent character.

Relevance of test bed regarding MONITOR II

The main factors that increase the risk of hazard events are the relief and soil structure; intensity of the precipitations and water flow; abrupt snow melt; anthropogenic destruction of the vegetation. Most of the watershed of Varbitsa river is located between 300 and 600 m altitude, which is the vegetative belt with highest anthropogenic pressure. The disturbed vegetation cover creates prerequisites for strong surface flow and increased danger of floods. Industrial extraction of inert materials from the river beds in the region should be also put under control.

Main objectives of the analysis in the Test-bed

The basic factors, influencing torrent risks in Varbitsa river watershed area were analysed. These are intensive precipitations, vertical intersectional relief, poor and shallow soils and bad status of the vegetation.

For the purposes of the investigation were determined 9 risky areas. The watersheds above each risky segment were mapped and on the basis of the obtained data, the possibility of hazard events was determined and basic factors were analysed. The frequency, category, intensity and range of risk from floods in the watershed were determined.

The analyses show that restoration activities are required to be carried out several times at many of these objects, which considerably raises their costs in the region.

Necessity of building hydrometric station in Kirkovska river is well-grounded. A system for early warning of the population is necessary, as well as monitoring network for precise outlining and analysis of factors for floods in risky areas.

what does the partner bring into the project?

The afforestation on the terrains affected by erosion in Varbitsa watershed started in the 30-es of the last century and the barrages construction – after 1947. In 1954 technical project for erosion control in the watershed of “Studen cladenets” dam was approved and in 1969 similar project was made for the watershed of Djebelska river (Dermen dere). In the period 1980–2000 a National long-term programme for erosion control was elaborated and implemented. Vast areas were afforested and big scale anti-erosion constructions were established during the execution of the technical and forest management plans.



Afforested lands in the Varbitsa watershed basin

STATE FOREST ENTERPRISE	AFFORESTED AREAS, HA
Kardzhali	460
Momchilgrad	12 800
Kirkovo	15 100
Zlatograd	6 500
Total	34 860

Technical facilities for erosion control in the watershed forest

TYPE OF THE FACILITIES	MEASURE	AMOUNT	STATE FORESTRY ENTERPRISE
Check dams (Barrages)	m3	19 557	Momchilgrad (71 numbers)
		1 711	Zlatograd (7 numbers)
Correction belts	km	3	Momchilgrad
Small stone thresholds	m3	85 000	Momchilgrad and Kirkovo
Wattles	m2	40 000	Momchilgrad, Kirkovo and
Bank low wattles	m	80 000	all
Branch blocking	m3	40 000	all
Gabion tresholds	m3	4 000	all

During the first stage of investigation (Monitor I) nine Risky objects (segments) were determined on the basis of losses caused in past events taking into account information about registered events (torrential floods) and damages (flooded objects, emergency switch off of machinery and data about caused losses).

Most risky, with respect to frequency of swelling and caused damages, is the watershed of Kirkovska river (two risky segments) followed by the Drangovska river watershed and the upper part of the Varbitsa river watershed area (above the pump stations near Fotinovo).

benefits for the partner by participation in the project

- Unified integrated system for monitoring, analysis, simulative modelling and management of risks by floods and torrents, elaborated on the basis of realized investigations, collected data and performed analyses in a selected as part of MONITOR pilot region including the water catchments of Varbitsa river. The purpose of such system will be to conserve data about past events and to maintain dynamic map of risk zones and objects; to reflect the variety of activities and regimes in the different plans and projects; to inform in-time the stakeholders in case of hazard arising beyond a certain level; to model the dynamic processes related to the effects of high waves (risk zones, lands under flood damage, energy of the torrents, etc.). The monitoring system will be charged with data for past events, risk analyses, continuous measurements of parameters supplied by field devices (intensity and quantity of precipitations, water level), dynamic outline of the risk zones, data about the stakeholders in order to send early warning signal.
- Training modules for different target groups – schools, municipal administration, population
- Practical guidelines about the actions at risk by flood
- Increased knowledge of the population and stakeholders about the actions at risk by flood
- Improved efficiency in communication among the different stakeholders



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