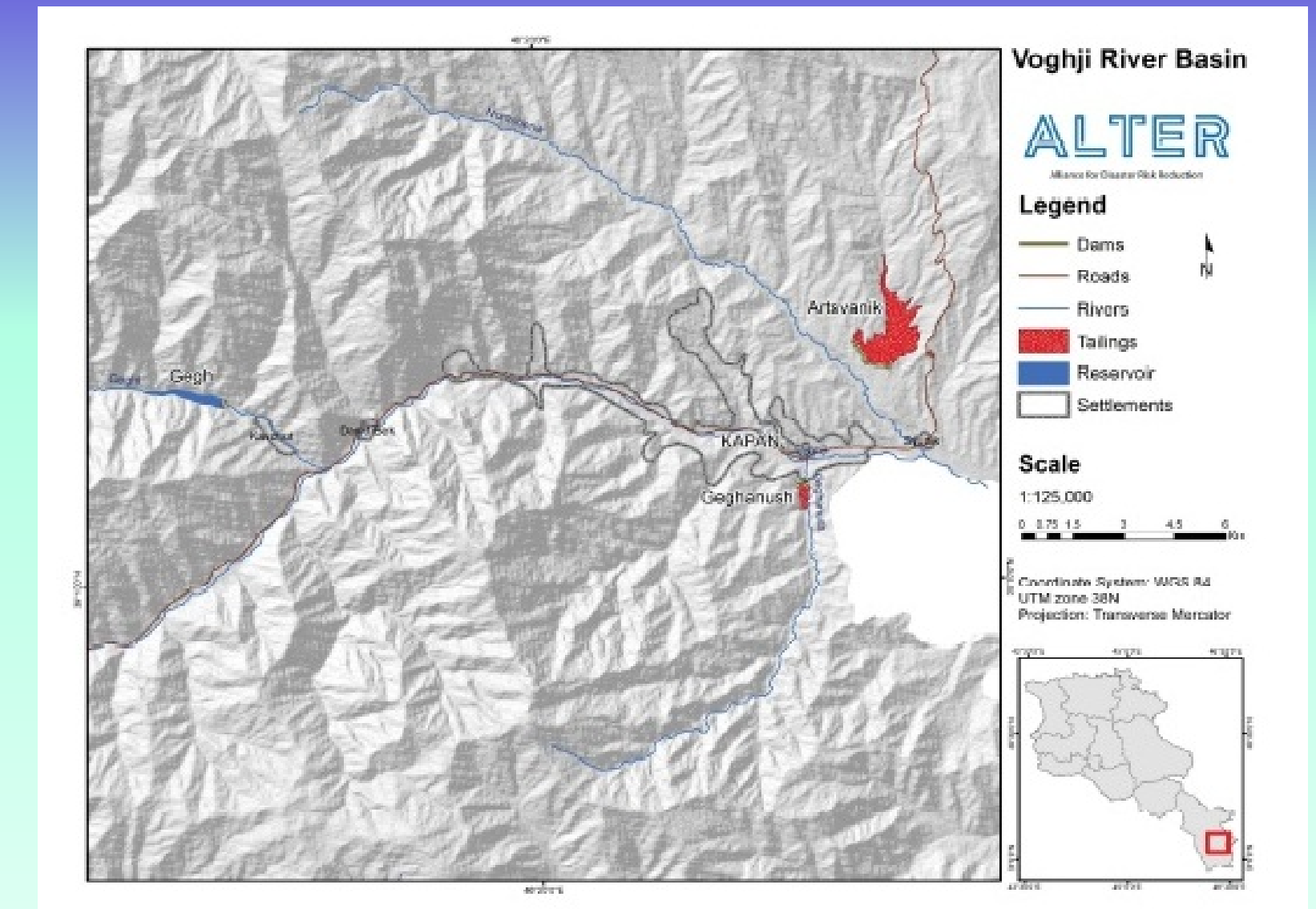
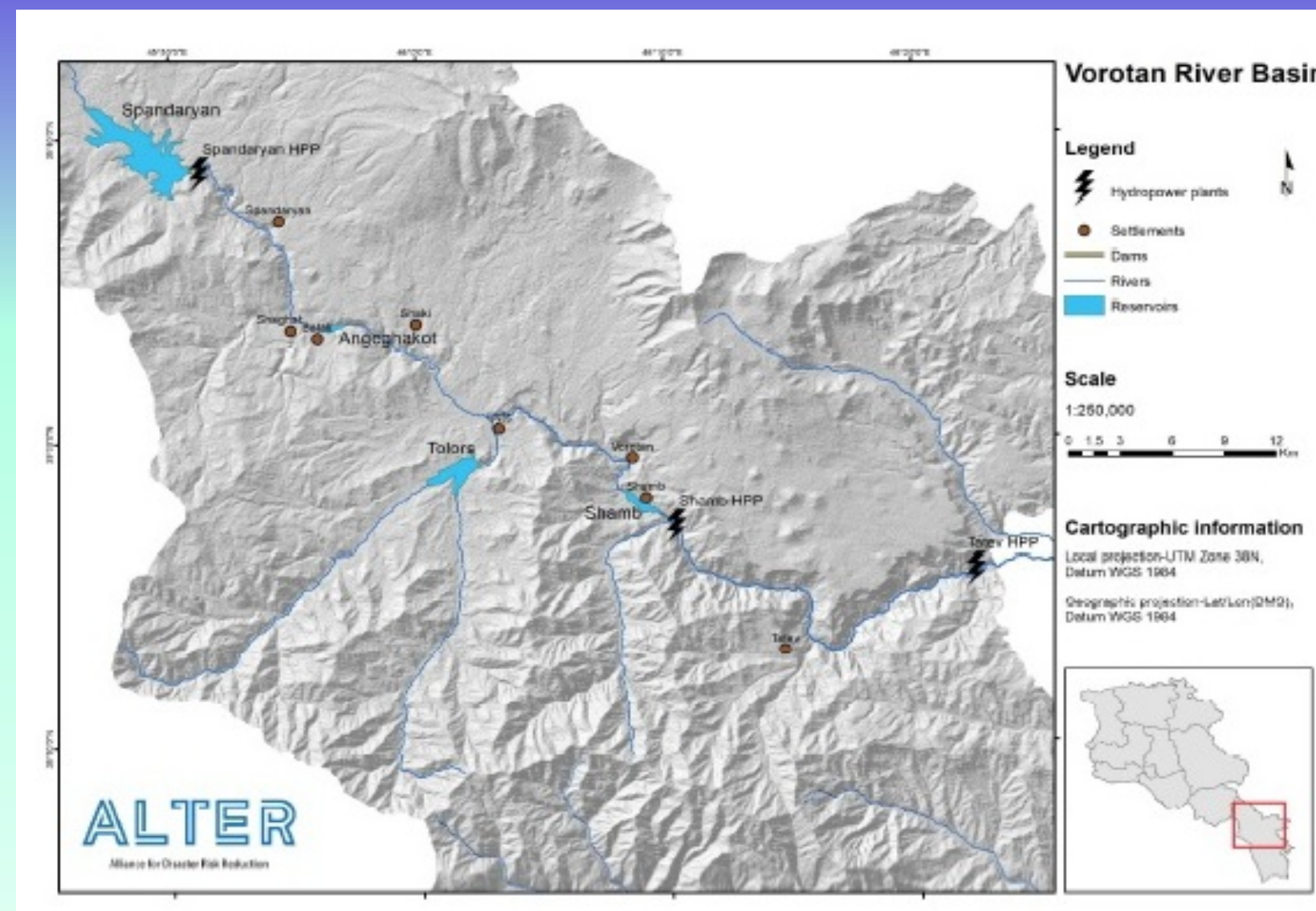
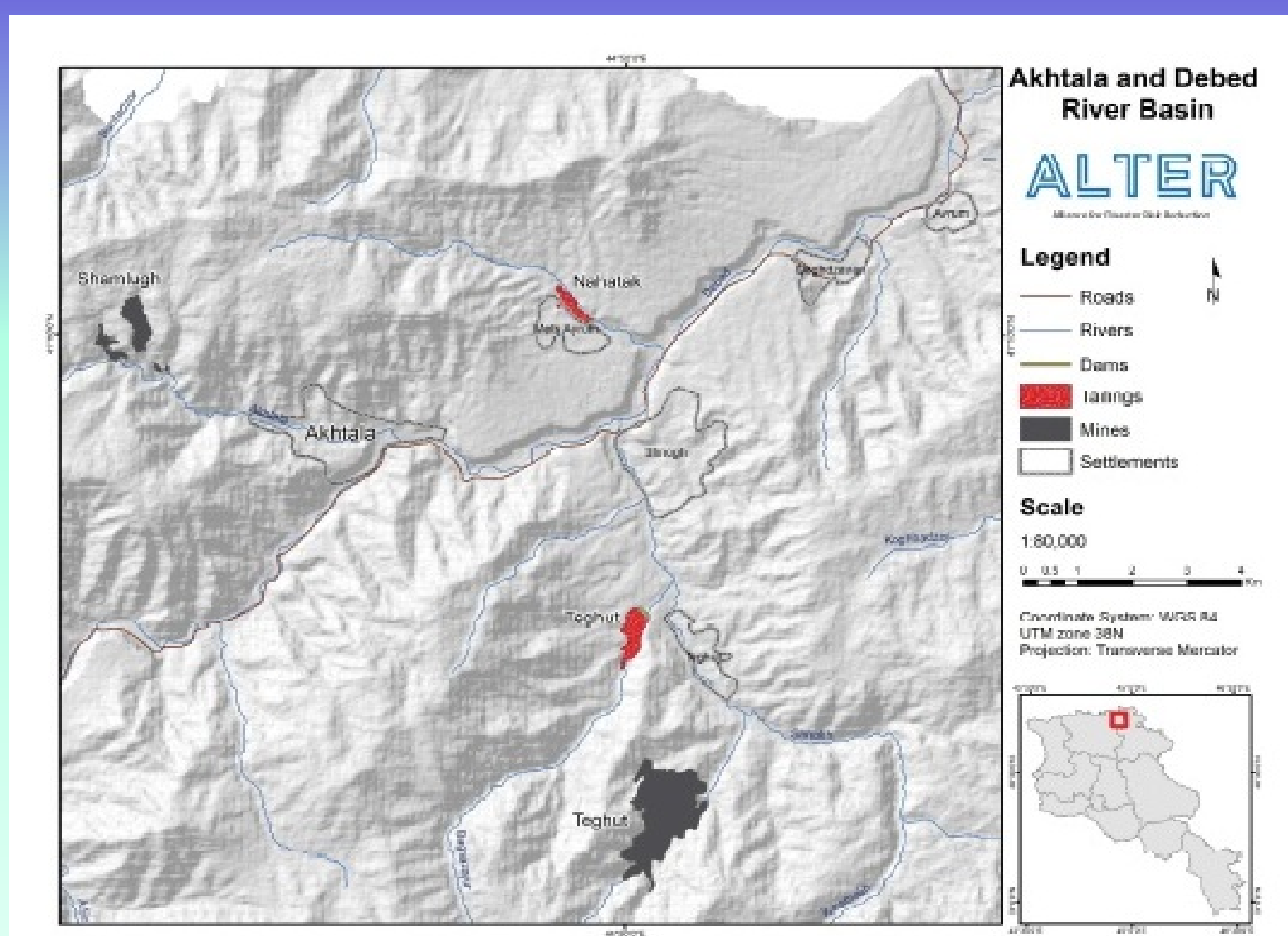




ALTER Project focuses on establishing public-private partnerships to understand and address flood risks originating from dams' failures due to the occurrence of large earthquakes and mining dam failures. Know-how, technology and experience from the European Union will be transferred to Armenia. The role of **ALTER Project** is to bring experience from European Union Joint Civil Protection Mechanism area to Armenian partners (Armenian Government and key stakeholders) and through certain activities to build long term sustainable coalitions. Activities will stress the importance of full cooperation between local communities, non-governmental organizations, government ministries, and private-sector companies.

Project duration: 24 months, **Start Date:** Feb 1, 2018, **Co-financed** by the EU's Humanitarian Aid & Civil Protection Directorate (DG ECHO Grand Number: 783214)

ALTER Project will focus on three pilot areas where dams and other activities presents risks to local communities.



The alliance will be based on transfer of methods, tools, knowhow and experience to serve specific objectives:

1. Identification and analysis of three (3) pilot areas. According to the special characteristics of each area, a specific set of activities on resilience will be elaborated.
2. Design and implementation of an activities package that will increase resilience at the selected areas, underlining the importance of local communities and the cooperation between public and private sectors.
3. Improvement of risk management capabilities at local and regional levels.
4. Transfer of methods, tools, knowhow and experience for risk management planning and implementation of modern procedures at the selected areas. Design, implementation and evaluation of risk awareness and dissemination campaigns to sensitize entities, stakeholders, local communities and general public. Focus will be at pilot territories and key decision makers that can also enable fast transfer of paradigm to other areas of Armenia and neighboring countries (cross border dimension).
5. Integration, evaluation and continuation of activities through training workshops and small scale exercises.



Many initiatives exist to enhance cooperation between EU countries and less developed Mega Regions, such as Black Sea and Western Balkans. In those mega regions, some countries are members of EU CP (European Union Civil Protection) Mechanism and some are not. As those countries need to make a "frog leap" to catch up with institutional, technological and procedural advances already in place in EU CP mechanism countries, specific well calculated steps have to be made. Disaster risk reduction strategies must be put in place, following extensive risk assessment. Risk management capabilities must be strengthened; cooperation with other countries must be sought, while entities and local communities must be aware of the risks, the benefits of relevant reduction strategies and how policies and initiatives interfere with these strategies. Since the public administration framework and the socio economic characteristics are not the same among countries outside EU CP Mechanism or between those countries inside and those outside the mechanism, certain areas must have the role of pioneers being the example for the rest..

Therefore it is absolutely vital to transfer tools, methods knowledge, knowhow and best practices to specific territorial authorities in countries outside mechanism (municipalities, prefectures, and regions) to make the catalyst for accelerating general progress at country level. Such transfer can be effective through collaboration of research centers in countries outside the joint civil protection mechanism. ALTER project aims to support that effort. ALTER focus on prevention and especially in preventing floods that originate from earthquakes, such as those that can happen after Dams' failure. Beside the direct risk for people, there is the risk of pollution in the cases were mining facilities are in place in the area expected to be flooded. Such complicated challenges in countries outside the EU CP Mechanism can be addressed if all potential stakeholders cooperate. The dams are critical infrastructures that are subjected to failure risk, due to potential strong earthquake. In such case, a major flood can hit the areas downstream that will face double risk: Earthquake itself and flood due to dam's failure. At the same time the companies that own – manage the dams create jobs and can provide wealth to the neighboring areas. Therefore, the cooperation between those companies and the local communities can benefit all parties in medium – long term. It is important to identify the areas where such cooperation can be launched and where the results can be significant. Improvement of existing emergency plans, increased resilience of local communities through establishment of early warning systems, support of regional operational centers, organization of focused media campaigns and implementation of joint training activities and exercises can be few of the fields where a public – private sector cooperation can be built. Social responsibility of investors and private companies together with comprehensive planning and communities elaboration from public authorities can lead to fast improvement of resilience and secure the economic growth and development of less favored areas in Armenia.

The **ALTER Project** expected results are:

- ✓ Increased risk prevention and management capabilities of Armenian entities.
- ✓ Increased engagement of key stakeholders, local communities and public that will support relevant initiative in the long term.
- ✓ Improved systems for early warning and decision making
- ✓ Higher level of Methodologies, Technology and Know - how transfer between countries participating in EU CP mechanism and those still not.



Indicative installation sites of short period geophones on the pilot tailing dam walls.

Monitoring the stability of a pilot tailing dam with ambient seismic noise

To prevent and prepare for any potential catastrophic tailing dam failure in Armenia there is an urgent need to deploy a cost-effective method to monitor the structural stability of these constructions over time. Ambient seismic noise can be used to detect internal changes in tailings dam walls (Olivier et al., 2017). Within **ALTER Project** we plan to deploy in a pilot tailing dam short-period geophones to record continuously the seismic ambient noise. Any small changes in seismic velocity of the construction will be measured with seismic interferometry methods using ambient noise that create virtual seismic sources. This relatively inexpensive method will be tested and calibrated for monitoring and locating any small changes in the interior of the pilot dam and correlate them with rainfall, seepage flow rates, and fluid pore pressure.



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