

## Annual Project Progress Report

**Project title:** «Strengthening National Capacity for Seismic Risk Assessment, Prevention and Response to Potential Earthquakes»

**Award ID:** 102378

**Project ID:** 104475

**Implementing partner:** Institute of seismology and Atmospheric Physics of the Academy of Sciences of Turkmenistan

**Period covered in this report:** 01.01.2021 – 31.12.2021

**Date of last Annual Report:** 20 January 2021

**Date of the last Project Board meeting:** 29.04.2021

**Date of last Quality Assurance and rating:**

### 1. Project Performance

**Please state the expected Output of the Project, set indicators and corresponding CP Outcome (as per project document/AWP):**

**Project Output 1:** A comprehensive assessment of the seismic risks of Ashgabat was carried out on the basis of modern scientific and technical approaches.

**Output indicators:**

- 1.1. The number of methodological recommendations and proposals for testing some modern methods of seismic micro-zoning and assessing the vulnerability of buildings.
- 1.2. The number of seismic maps of different zoning levels and directions developed (updated) for the city of Ashgabat.
- 1.3. The number of geospatial models of earthquake susceptibility of buildings in the target areas (housing and administrative buildings) based on the characteristics of buildings and soils.

**Output targets:**

- 1.1. Collection and analysis of existing methods and data, as well as development of a detailed project activity plan in cooperation with IGE RAS (E. M. Sergeev Institute of Geoecology of the Russian Academy of Sciences), CAIZ (Central Asian Institute for Applied Earth Research), GFZ (German Center for Earth Research) and national partners.
- 1.2. Carrying out practical works and seismic measurements necessary for high-quality development of documentation on forecasting and monitoring of seismic events together with CAIZ, GFZ (including analysis of exposure of buildings and assessment of seismic risk).
- 1.3. Supporting the Institute of Seismology and Atmospheric Physics of the Academy of Sciences of Turkmenistan in creating new and updating/supplementing existing seismic zoning maps.
- 1.4. Interpretation of the obtained results of research and observations, carrying out the necessary modeling (including the preparation of geospatial models of the exposure of buildings to earthquakes in the target areas (housing and administrative buildings).  
Preparation of a report on a comprehensive assessment of seismic risks in Ashgabat.

b) Were the indicators and output achieved?      Yes       No       Partially

c) If no or partially, please explain why?

1) Implementation of Outcome 1 is planned for the entire project implementation period.

2) The long delay in project funding has resulted in the suspension of all work and extension of the project deadline to 06.30.2022.

**Project Output 2:** Scientific and technical and human capacities of the Institute of seismology are strengthened for more effective work in the field of seismic hazard assessment and earthquake monitoring, as well as seismic risk assessment.

**Output indicators:**

2.1 Number of laboratories of the Institute of Seismology equipped with the necessary and updated scientific and technical equipment.

2.2. Number of employees of research institutes (research institutes), ministries and departments who have passed trainings and courses on modern methods of seismic risk assessment.

2.3. The number of scientific, methodological and practical bases developed to improve the principles of existing preparation for emergency situations (ES), integrated monitoring and notification of seismic events.

**Output targets:**

2.1. Determination of parameters, procurement and delivery of the necessary set of equipment and office equipment for the Institute of Seismology and Atmospheric Physics of the Academy of Sciences of Turkmenistan.

2.2. Organize training courses for staff of scientific institutes working in the field of engineering seismology, as well as for specialists of line ministries working in the field of disaster risk reduction (DRR) on seismic risk assessment and reduction.

2.3. Development of scientific and methodological materials for advanced training of employees of research institutes (RRI).

b) Were the indicators and output achieved?      Yes       No       Partially

c) If no or partially, please explain why?

1) Implementation of Outcome 2 is planned for the entire project implementation period.

2) The long delay in project funding has resulted in the suspension of all work and extension of the project deadline to 06.30.2022.

**Project Output 3:** Increase the level of preparedness for response and response to the threat and occurrence of disasters caused by earthquakes.

**Output indicators:**

3.1. Number of developed scenarios of occurrence and development of disasters under the influence of strong earthquakes in the target localities on the advanced scientific-methodological basis for example, the spatial bound of the scenario impacts for different time periods.

3.2. A number of training methods and materials for assessing earthquake risk, the associated risk of secondary and cascading disasters replicated and sent to the local Executive bodies for future use.

3.3. Number of recommendations to the Ministry of Education of Turkmenistan on the inclusion of modules on seismic hazard and risk assessment in the educational process of higher educational institutions (HEIs) for further involvement of young personnel in scientific activities.

**Output targets:**

3.1. Development of dynamic scenarios for the occurrence and development of disasters on a scientific and methodological basis on the example of a spatially linked scenario for the development of consequences for subsequent transfer to the Ministry of Defense of Turkmenistan and other state institutions as agreed.

3.2. Development of materials for assessing earthquake risks and taking these risks into account in municipal planning and other activities for subsequent recommendations to the relevant departments.

3.3. Preparation of recommendations for the inclusion of modules on seismic hazard and risk assessment in the educational programs of pilot universities.

3.4. Development of the DRR investment strategy at the macro level, based on the results of the project.

b) Were the indicators and output achieved?      Yes       No       Partially

c) If no or partially, please explain why?

1) With the exception of two activities in 2020, the Annual Work Plan did not provide for the achievement of Result 3.

2) The above two activities were not implemented due to a long delay in funding the project.

**2. Progress Reporting**

**Please summarize the main achievements during the project cycle:**

**Project Output 1:**

1.1. Determination of seismic vulnerability for each of the representative categories of buildings in Ashgabat was carried out.

1.2. A set of works on drawing up a map of active tectonic faults of the territory of Ashgabat and its geological and tectonic environment was carried out.

1.3. The 1st stage (of 2) of the complex of works including: a) measurement of the background of ordinary microseismic waves to determine the velocities of transverse waves  $V_s$ , as well as complex measurements of seismic noise to obtain data on resonance-frequency characteristics of the soils of Ashgabat. b) engineering survey of representative types of buildings in Ashgabat, including assessment of their actual seismic resistance and seismic vulnerability.

1.4. The 1st part of works on creation of GIS for spatial analysis of seismic hazard and seismic risk of Ashgabat city territory was carried out.

**Project Output 2:**

2.1. Two trainings were conducted to train local personnel in the use of seismic vibration recording equipment for engineering survey of buildings.

2.2. The 1st part of works on compilation of English-Turkmen and Russian-Turkmen explanatory dictionary on geology, geophysics, seismology, seismic hazard, vulnerability and risk was carried out.

2.3. Toolkit for building engineering survey defined, specification prepared, supplier selected and first part of the toolkit delivered.

**3. Project Risks and Issues**

**The project Risk Log is maintained throughout the project implementation to capture potential risks to the project and associated measures to mitigate risk. The Project Manager shall maintain and update the Risk Log and ensure that risks are identified,**

communicated and managed effectively.  
A number of potential risks are listed below.

Description of risk	Type and category	Risk management actions	Current situation
Long delay in financing the project.	Financial	Patient and persistent repeated appeals to State bodies.	As a result of numerous requests, it has not been possible to achieve the transfer of the third tranche from mid-2021. Requests continue to be made.
Lack of trained young personnel to apply GIS of Ashgabat territory for spatial analysis of seismic risk.	Personnel	Search, search, and search again.	One trained young specialist was found for GIS training and application in the city of Ashgabat.
The situation caused by COVID-19.	Epidemiology	Search for alternative ways to implement activities, primarily education	The format was defined, and a program was prepared with training materials for distance learning to work with equipment for engineering survey of buildings.

#### **4. Lessons learned and follow-up steps (if applicable)**

##### **a) Please provide the lessons learned and further steps after the project's closure.**

In cooperation with government agencies, it is necessary to keep in mind the real possibility of a very long-term solution of issues, especially in connection with financing.

#### **5. Transfer of Assets or other related matter**

##### **a) Please state on any past or future transfer of assets made within the project cycle (Attach list of equipment, cooperation frameworks with beneficiaries, etc.)**

Under the Agreement on the transfer of ownership of non - expendable material and equipment from the United Nations Development Programme office dated February 19, 2020, computer equipment was transferred to the National Partner and executor of the project-the Institute of Seismology and Atmospheric Physics of the Academy of Sciences of Turkmenistan for a total amount of 52541.00 US dollars (fifty-two thousand five hundred and forty-one US dollars and 00 cents). The agreement and the list of equipment are attached

#### **6. Financial management**

Budget item	Total approved in 2020 (in USD)	Expenses + commitments	Budget utilization in % to planned
Component 1	270,710.00	166,053.91	% 61.34

<b>Component 2</b>	83,460.00	82,073.05	% 98.34
<b>Component 3</b>	0,00	-	-
<b>Project management</b>	63,665.00	44,644.07	% 70.12
<b>Total delivery in 2021</b>	<b>417,835.00</b>	<b>373,103.78</b>	<b>% 89.29</b>
<b>In % to total project budget</b>	% 20.03	% 17.87	

**Prepared by:** Japar Karayev, **Project Specialist**

**Date:** 25.01.2022

**Approved by:** Farhat Orunov, **Programme Specialist**

**Date:** 25.01.2022