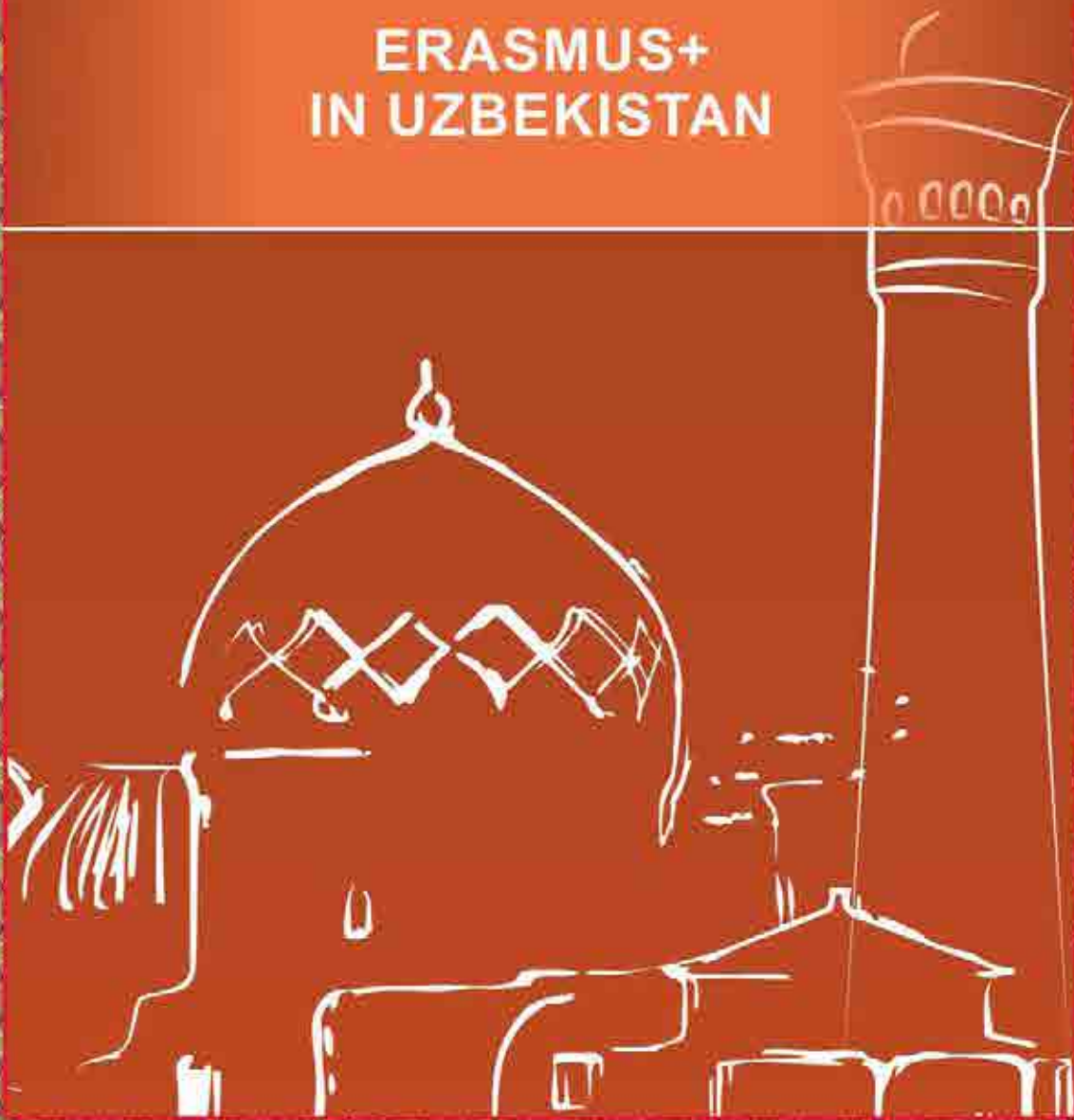




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ENVIRONMENTAL PROTECTION IN CENTRAL ASIA (EPCA): DISASTER RISK MANAGEMENT WITH SPATIAL METHODS

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Аннотация: Эразмус+ ЕРСА лойиҳаси Марказий Осиёда атроф муҳитни муҳофаза қилиш: табиий офатлар рискинни масофадан олинган маълумотлар асосида камайтириши ҳамда уларни географик ахборот тизимлари орқали таҳлил қилиш бўйича кадрлар салоҳиятини оширишига қаратилган. У 2017 йил 15 октябрдан бошланди ва 3 йилга мўлжалланган. Ушбу мақолада лойиҳанинг регион учун аҳамияти, асосий мақсад ва вазифалари ҳамда унга жалб қилинган университетлар ҳақида қисқача маълумотлар келтирилган.

Аннотация: Проект Эразмус+ ЕРСА «Охрана окружающей среды в Центральной Азии» направлен на повышение квалификации кадров в использовании анализа геоинформационных систем, а также уменьшение рисков стихийных бедствий с использованием дистанционного зондирования. Начало проекта 15 октября 2017 года и реализация его рассчитана на 3 года. В этой статье приведена информация о значимости проекта в регионе, об основных целях и задачах, а также краткая информация об участвующих ВУЗах.

1. Importance of the EPCA in Central Asia

Environmental Protection in Central Asia (EPCA): Disaster Risk Management with Spatial Methods is a Erasmus+ CBHE project and the main aim of this project is to build capacity, using spatial methods, for better environmental protection and disaster risk management in Central Asia (CA).

Most countries in CA have a history of devastating disasters, having caused enormous human and economic losses across the region. Different types of disasters such as draughts, floods, landslides, debris flows, earthquakes, and extreme temperatures have struck the region. According to the reports from the World Bank, ISDR, and CAREC (1), the annual economic losses linked to natural disasters in Uzbekistan and Kyrgyzstan are estimated as 2900 and 220 Million USD respectively, during the last ten years. An example of human impact is that more than 7 million people in the two countries have been affected by droughts and floods during the last decade. A majority of the disasters are results of improper monitoring and misuse of environmental resources (1). For example, overuse of underground water is a main factor influencing draught and landslides. Overuse of wood resources and exploitation of forests and green lands result in soil erosion, which increases flood risk. Evidently, improved environmental protection is essential in order to reduce risks of disasters (2, 3).

Spatial Information Science and Technologies (SIST), including Geographical Information Systems (GIS), Remote Sensing (RS), and Spatial Data Infrastructures (SDI) have proven to be crucial for environmental protection and disaster risk management (EP-DiRiM)(4). Remote sensing, mainly through satellite images, can be used to e.g. monitor environmental changes; GIS can be used to model and analyse trends of changes and consequent potential disasters. GIS can also be used to e.g. analyse and simulate measures to protect the environment and mitigate the incidence of disasters. An SDI is required to overcome the technical and conceptual barriers in sharing heterogeneous spatial data. Different sources of data, GIS software components, spatial DB, and analysis tools, can be combined in an SDI to provide integrated environmental modelling for Uzbekistan and Kyrgyzstan; web services provided by SDI can be used to e.g. publish results and make them available to policy-makers, planners, and the public.

Although SIST has proven to be a very useful tool to improve environmental monitoring, disaster risk analysis, and disaster management planning, it is still a new concept in Uzbekistan and Kyrgyzstan.

In Uzbekistan, GIS and RS have only been taught in higher education for less than a decade. Local experts have limited knowledge and experience of SIST, mainly due to inadequate education in combination with limited financial resources. After independence, only a few international GIS/RS projects, such as UNESCO/ZEF Khorezm and TEMPUS (5, 6), have been conducted. SDI is a totally new concept in the country. The above-mentioned has resulted in a situation where the use of SIST in different fields, including EP-DiRiM, is extremely limited and not well realized. Research and capacity building in environmental protection and disaster risk reduction using SIST is highly demanded in Uzbekistan, in order to develop modern and efficient infrastructure, as well as tools for socio-economic and environmental growth and protection.

Kyrgyzstan is in a similar situation as Uzbekistan. During recent years, some initiatives have been taken in order to increase knowledge in the field of SIST, focusing on applications in environmental monitoring and disaster management. However, SIST is still not well and deeply integrated in society and curricula of higher education institutes. Kyrgyzstan does not have the critical mass of experts to efficiently apply and use SIST in EP-DiRiM, as well as to introduce SIST to policy-makers. The number of emergency and crisis situations in the Kyrgyz Republic is estimated to reach 220-240 cases per year in the next few years. Analysis of the last five years shows (3) a steady increase in the number of emergency and crisis situations due to environmental changes. There is no doubt that proper use of SIST is highly needed for better environmental protection and disaster risk management in Kyrgyzstan.

Both Uzbekistan and Kyrgyzstan focus on mitigating environmental threats within the framework of national development strategies, and have thus involved UNDP and Asian Development Bank to improve disaster management. However, the relevant stakeholders (disaster management and environmental protection related organizations in the countries) do not have the required capacity (human resources, systems, and tools) to use SIST for efficient environmental protection and disaster risk management.

The European participants in this consortium are universities which have extensive knowledge and experience on teaching and research in SIST. They are also well experienced in applications of SIST for environmental protection and disaster management. The regional partners are from departments of geography that are in charge of teaching, research, and dissemination of SIST in Uzbekistan and Kyrgyzstan. They are aware of the shortages and needs in the countries, linked to EP-DiRiM. Associate partners consist of stakeholders in the region, all highly linked to environmental protection and management as well as ministries of higher education. All associate partners are fully aware of the shortages and needs in the region, and are/will be the main users of SIST for environmental protection and disaster risk management. The consortium wishes to carry out capacity building on using SIST for a better environmental protection in Central Asia.

2.Aim and objectives of the project

This project aims to go beyond course development and training, disseminating the use of SIST in environmental planning and disaster risk management. Considering above mentioned conditions following objectives were selected:

- Developing innovative and blended courses in Spatial Information Science and Technology for environmental protection and disaster risk management: The developed courses will be taught at the partner universities with the aim of skill formation and filling knowledge gaps. The graduated students will be skilled professionals, who can potentially be employed by relevant stakeholders to develop and improve the application of spatial methods in EP-DiRiM.

- Training of trainers: Faculty members at the regional partner universities will be trained on how to teach the developed courses. The ability of local teachers to teach and update these courses guarantees lifelong learning and continuation of the education and usage of the courses.

- Improving quality of education and teaching: Online learning techniques/tools have revolutionized the pedagogic world. CA partners will be equipped with e-learning and open network learning (ONL) tools. This makes it possible to offer normal SIST courses as well as the developed courses in this project, online. Online programs/courses provide stakeholder employees, who cannot quit the job and start education at the universities, with the possibility to learn about SIST and its applications in EP-DiRiM.

All courses in this project will be developed based on the Bologna process. Using the Bologna framework helps to introduce the framework and its advantages to the non-EU partners. To use the courses in CA, a conversion between Bologna standards and local standards has to be carried out. For this, the courses will be offered to the ministries of higher education for accreditation.

- System development: Internet-based information Management System for Environmental Protection and disaster risk management (iMSEP) will be developed and implemented. The aim is to make a GIS system widely available for stakeholders to be able to use it for data collection, storage, analysis, and decision-making. The system can be further developed to satisfy further requirements of the stakeholders in future.

- Dissemination of the outcomes: Environmental protection and disaster management authorities, at policy-making, planning, and operational levels, will become aware of the advantages and applications of SIST in environmental protection and disaster risk management to support the development and use of SIST in their countries. They will also get possibilities to gain required skills to be able to use SIST in planning and decision-making for EP-DiRiM. This will be achieved through workshops, seminars, and short courses which will be organized.

- Developing HEIs within society: The link between HEI, government, and enterprise is not well established in Uzbekistan and Kyrgyzstan. As a result, students may not find an adequate job after graduation, and they may not be able to deliver good services to the society in their job carriers. An aim of this project is to strengthen this link by developing courses, which are required by the governmental sector and the society, as well as making stakeholders aware of the technologies they need to use (where universities can help with) and the educated group of graduates that can be employed to support it.

3. Involved universities and organizations

The partners/participants involved include 4 EU participants which are Lund University (LU) in Sweden (Coordinating institute), Vilnius Gediminas Technical University (VGTU) in Lithuania, National Technical University of Athens (NTUA) in Greece, and University of Minho (UM) in Portugal, and 4 non-EU partners Urgench State University and Karakalpak State University in Uzbekistan, and Kyrgyz State University named after I. Arabayev and Osh State University in Kyrgyzstan. The choice of partners/participants is motivated by competence and experiences. The partner universities are located in major regional centers. Note that there are existing networks linking many of the partners and participants together. The fact that many of the partners/participants already know each other, and have successfully worked together before, makes management much easier. Multi and intercultural situations in CA also were considered to choose partner universities to provide inter-national friendship. For example, participants from Karakalpak origin work with Uzbeks in Uzbekistan and Uzbeks work with Kyrgyz participants in Kyrgyzstan. All EU participants have substantial expertise in management of large educational and international programs, such as Erasmus Mundus, but also other EU programs like LP, Tempus, and ALBAN. All participant universities have experience in international academic cooperation. Moreover, all EU participants are coordinating or participating in multiple EM programs.

The project also includes an appropriate and diverse range of non-academic, governmental, and non-governmental associated partners, in order to benefit from their different experiences, networks, and specific expertise, and also to strengthen the links to the labor market and to reinforce the systemic impact of the project. They are State Agency of Hydrometeorology under Ministry Of Emergency Situations of The Kyrgyz Republic, Ministry of Emergency Situations of the Republic of Uzbekistan, Ministry for Higher and Secondary Specialized Education of the Republic of Uzbekistan, Ministry of Labour and Social Security of the Republic of Karakalpakstan, Ministry of Education and Science of the Kyrgyz Republic, Central-Asian Institute for Applied Geosciences.

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