CERIS : Civil Engineering Research and Innovation for Sustainability

Strengthening community resilience to disasters, climate change and water insecurity in Armenia

Summary

Water security is one of the main challenges that the ecosystems and societies are facing with because of the human activities such as urbanization, population growth, socioeconomic change, increased groundwater use, unsustainable pumping practices for irrigation, and agriculture. This reality has put unprecedented pressure on water resources and the achievement of water security especially at community level is the key to sustainable development. This tesis focuses on assessment of community resilience for giving a comprehensive insight on the concept of water security, its challenges related with ongoing environmental changes (e.g., urbanization, socioeconomic, etc.) and various implications. Moreover, it underscores the essential role of science-based, data driven and participatory decision making at local level, thus enhancing the efficiency and accuracy of groundwater data management, promoting proactive climate adaptation measures, and ensuring risk informed development at community level.

This tesis also investigates the social dimensions of groundwater use and monitoring, interconnection with disaster risk and the role of community in implementation of risk mitigation strategies, as well as existing mechanisms ensuring equal participation of marginalized groups in decision-making processes, through utilization of quantitative and qualitative data assessment methodologies. In conclusion, it presents different sustainable solutions to achieve water security and community resilience. This thesis captures the persistently changing dimensions and new paradigms of ground water security providing a comprehensive sustainable approach to address water security challenges requires connecting social, economic, and environmental systems at multiple scales.

The next step of the work will be secondary data collection on ground water and field assessment at community level. By using the vulnerability and capacity (VCA) assessment tools, we will review the main challenges and risks that the communities are facing because of climate change and ground water insecurity with the implementation of participatory assessment with engagement of all relevant stakeholders at local level. During the assessment the data wil be collected through utalization of several tools such as direct observation, focuse group discussions, community mapping, interview with the residents and community administration. The GIS and remote sensing technologies will be used for collection of data on seasonality and weather conditions, ordering of on-demand satellite imagery with necessary characteristics of vegetation growth, water use etc. Assessment of existing scientific data will be conducted as a part of research and compared with the collected VCA and GIS data to identify the real impact of climate change on the ground water security and community resilience.

Keywords

Community resilience, groundwater, climate change, risk informed development, science-based, social inclusion.

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