XII. MAGYAR FÖLDRAJZI KONFERENCIA

XII. Hungarian Geographical Conference

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URBAN WATER ACCESS INEQUALITY IN JORDANIAN CITIES: THE CASE OF AMMAN, IRBID, AND ZARQA

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This study investigates urban water inequality in Jordan's three main urban cities—Amman, Zarqa, and Irbid—using Gini, Theil L, and Theil T indices across seven parameters. This study offers an urban analysis capturing inequality among low- and high-access groups. Findings reveal persistent urban inequality and social vulnerability. Disparities in supply frequency show daily access remains a privilege, reflecting fragmented service. Safe water access is income-dependent; poorer households use unsafe alternatives, requiring quality enforcement and subsidized filtration techniques. Coping strategies depend on economic status. Inequality in appliance ownership reflects resilience gap, calling for social support and equitable planning.

AGRICULTURAL WASTE INTO BIOCHAR FOR SLOW-RELEASE UREA COATED WITH NANO-SULFUR ENRICHED BIOCHAR IN ARID AREAS OF BORNO STATE, NIGERIA

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Borno State, situated in Northeastern Nigeria, has an arid agroecosystem that is defined by severe climatic problems, including droughts, desertification, and irregular rainfall. The depletion of soil organic carbon and essential plant nutrients made it worse by the practice of crop residue burning. A sustainable approach is to switch into producing biochar from locally available agricultural waste. Notable feedstocks available include rice straw, groundnut shells, sorghum stalks, rice husks, maize cobs, and some invasive plant species e.g., 'Prosopis juliflora'. Based on reports from other arid regions, biochar from these feedstocks/agricultural waste positively improves soil conditions of the arid regions and outperforms direct organic waste utilization for long-term plant nutrition benefits. Implementation of this technology as part of a post-conflict plan, farmers can benefit from dual objectives of soil restoration and food security through waste-to-value transformation. Successful implementation of this sustainable arid soil management in Borno state depends on vital research for strategic measures alongside localized production systems, together with policy support to overcome economic obstacles like production expenses and technical limitations. However, with tonnes of biochar needed per hectare of land, production of this quantity seems economically unfeasible with local kiln production. Therefore, our studies tend to explore the alternative use of urea coated with nano-sulfur modified biochar as slow-release fertilizer tailored to the alkaline nature of arid and semi-arid soil of Borno state. It is expected that sulfur can balance the high pH nature of biochar and maintain near neutral pH of arid and semi-arid soils. This aids the availability of micronutrients while biochar facilitates slow release of the most nitrogen for a longer period accessible to crops. Cumulatively, this management practice helps improve nutrient absorption, minimize fertilization wastage and enhance farming yields in this area.

NEAR-SURFACE GEOPHYSICAL IMAGING: MONITORING WATER INFILTRATION IN A DYKE FLOOD TEST

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This investigation utilized near-surface geophysical imaging techniques to monitor water infiltration within a small dyke segment during controlled flooding tests. The experiment evaluated both wet and dry conditions, with soil samples subjected to analysis for properties including grain size and moisture content to corroborate the imaging findings. Geophysical imaging successfully identified regions of water infiltration, highlighting zones of weakness near the dyke's crest and on one flank. These results, corroborated by soil data, substantiate the efficacy of near-surface geophysical methods for non-invasive monitoring of dyke stability. This methodology offers a practical means for early detection of potential failures, thereby facilitating improved maintenance strategies. Through the integration of geophysical imaging and soil analysis, this study endorses data-driven decision-making processes aimed at enhancing dyke reliability and protecting communities from flood hazards.

MAPPING CLIMATE VULNERABILITY AND CARBON ROLES OF KAYA KAUMA: A SACRED FOREST SYSTEM IN COASTAL KENYA

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Kaya Kauma, located in Kilifi County, southeastern Kenya (3°40′S, 39°45′E), is a UNESCO-inscribed sacred forest traditionally conserved by the Mijikenda community. As a relic coastal forest within Kenya's diverse ecological mosaic, it represents a high-value socio-ecological system facing mounting climatic and anthropogenic pressures. This presentation draws on a systematic literature review of biomass estimation, forest typologies, and climate change interactions in Kenya to explore the spatial and cultural significance of Kaya Kauma in the context of environmental change. Using structured database searches and thematic analysis, the study synthesizes research on Afromontane, mangrove, dryland, plantation, and community forests across Kenya. Key concepts include forest structural variation, climate-driven degradation, ecosystem services, and the integration of carbon markets. Kaya Kauma is examined as a culturally governed forest fragment that illustrates the intersection of traditional ecological knowledge and climate vulnerability. Positioned within a broader spatial typology, its forest structure, carbon potential, and governance challenges mirror wider regional dynamics. This contribution conceptualizes Kaya Kauma as a lens through which to understand forest–climate–culture relationships in fragmented East African landscapes. We highlight implications for forest-based climate policy, including the Forest Conservation and Management Act (2016) and community forest association frameworks.

EVERYDAY LIFE OF BANGLADESHI MIGRANTS IN HUNGARIAN CITIES

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This presentation sets out to understand the everyday lives of Bangladeshi migrants living in Hungarian cities by exploring their experiences of space. By analysing the findings derived from 31 in-depth interviews conducted with a diverse sample of Bangladeshi migrants residing in five different cities, the authors aim to substantiate the following argument: the members of the minority group of international migrants studied here do not merely passively participate in uneven geographical development, nor are they merely victims of discrimination and exclusion that are entrenched in unequal power relations. In their daily lives, they make compromises but also try to resist structural conditions. The authors claim that these efforts can be seen as steps towards changing urban society, efforts that make sense in a transnational space. In addition to ontology, however, this presentation also approaches this topic from an epistemological viewpoint, arguing that the combination of the concepts of everyday life and uneven development can lead to new results. This integrated approach offers a perspective on the analysis of migration decisions and the challenges posed by migration, which differs from explanations based on one-way dependence and the passive role of the disadvantaged. The other concept used here, the 'right to the city', can help to understand the lived spaces of non-citizen urban dwellers and to put the interpretation of this right itself into a new, 'transnational' perspective.

THE INDUSTRIALIZATION OF SMALL TOWNS – A DRIVER OF UNEVEN DEVELOPMENT IN THE EUROPEAN PERIPHERY?

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The rise and fall of small towns as centres of economic dynamics and employment have been discussed as a powerful process driving the differentiation and uneven development in non-metropolitan spaces in CEE. The paper is to introduce the first results of a 3-year research project which aims to understand more of the structural conditions and the interplay of local and non-local agency in the development of small towns which emerged as "unlikely winners" of peripheral industrialization in the post-GFC period. Relying on census, employment, income, and firm (Opten) data, we analysed the full range of Hungarian small towns having 5.000-30.000 residents located outside major urban agglomerations to identify (i) the centres outperforming the majority of their national urban network in terms of industrial output, employment and global embedding (export, FDI), and (ii) the different paths they took. We argue for that while all local trajectories are highly dependent on macro-processes, locally embedded assets entail divergent paths, which are rooted in post-transition structural changes as well as in global sectoral transitions and current state policies. This allows us to relate the concept of uneven development firmly to peripheral industrialization and local agency literature.

INTEGRATING GROUND PENETRATING RADAR AND MACHINE LEARNING FOR ASSESSMENT OF LAKE BED PERMEABILITY AND POTENTIAL VERTICAL-WATER-LOSS ZONES IN SHALLOW LAKE UNDER CLIMATIC STRESS

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Climate change and increasing anthropogenic pressures have intensified the vulnerability of inland water bodies, altering their hydrological balances, reducing their water levels, and degrading their water quality. One critical issue in this context is the limited understanding of lake bed hydrogeology, particularly the extent to which sediments hinder (as aquitards) or permit subsurface leakage. Although sediment sampling provides valuable point-based information, its spatial coverage is limited, emphasizing the need for high-resolution, lake-wide geophysical methods. This study determined whether the bed of Lake Vadkerti, a shallow lake experiencing persistent water level decline, facilitates vertical water loss. An integrated method combining ground-penetrating radar (GPR) and sediment sampling was used to evaluate subsurface sediment structures. A dense grid of GPR profiles was collected, enabling 2D profile interpretation and 3D time-slice visualization. Amplitude polarity, reflector geometry, and attenuation modeling were applied to identify stratified sedimentary layers. The resulting aquitard zoning map revealed heterogeneous lake bed conditions: low-permeability aquitards dominate the central and southern areas, whereas higher-permeability non-aquitards appear along the northeastern and central-western margins, indicating potential zones of groundwater interaction. The performance of four machine learning models—K-nearest neighbors, random forest, extra trees, and gradient boosting—in classifying aquitard zones based on GPR amplitude features was evaluated. The extra trees model demonstrated the most balanced performance across all classes and stronger generalization, with 97% accuracy and high recall across all classes (aquitard: 100%, leaky aquitard: 86%, non-aquitard: 79%). Moreover, its spatial predictions were consistent with observed hydrostratigraphic patterns. This approach provides a comprehensive framework for understanding the hydrological functioning of lake beds and informing sustainable water management in climatically sensitive freshwater systems.