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The Impact of Land Use Intensity and Environmental Management Policies on the Ecological Environmental Quality Index in West Lombok

Muhammad Salim*
STIS Harsyi Lombok Tengah, Indonesia

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ABSTRAK

Penelitian ini bertujuan untuk menganalisis pengaruh intensitas penggunaan lahan dan kebijakan pengelolaan lingkungan terhadap Ecological Environment Quality (EEQ) di Kabupaten Lombok Barat. Pendekatan kuantitatif digunakan dengan mengintegrasikan data penginderaan jauh, survei lapangan, dan analisis kebijakan lingkungan. Data intensitas penggunaan lahan diperoleh dari citra satelit multispektral, sedangkan indeks kualitas ekologis dihitung menggunakan Remote Sensing Ecological Index (RSEI) yang mencakup parameter vegetasi, suhu permukaan, kelembapan, dan kecerahan. Hasil penelitian menunjukkan bahwa peningkatan intensitas penggunaan lahan, terutama pada wilayah urban dan kawasan wisata, berkontribusi signifikan terhadap penurunan nilai EEQ. Sebaliknya, wilayah dengan kebijakan pengelolaan lingkungan yang konsisten, seperti pengawasan tata ruang dan konservasi vegetasi, memiliki stabilitas ekologis yang lebih tinggi. Simulasi komputasi menunjukkan bahwa penerapan kebijakan adaptif dan pengendalian alih fungsi lahan dapat meningkatkan kualitas ekologis secara berkelanjutan. Penelitian ini menegaskan pentingnya integrasi antara data spasial, validasi lapangan, dan kebijakan lingkungan dalam menjaga keseimbangan ekosistem. Hasilnya diharapkan menjadi dasar ilmiah bagi pemerintah daerah dalam merumuskan strategi pengelolaan lahan dan lingkungan yang berkelanjutan guna menjaga kualitas ekologis Lombok Barat.

ABSTRACT

This study aims to analyze the effect of land use intensity and environmental management policies on Ecological Environment Quality (EEQ) in West Lombok Regency. A quantitative approach was used by integrating remote sensing data, field surveys, and environmental policy analysis. Land use intensity data were obtained from multispectral satellite imagery, while the ecological quality index was calculated using the Remote Sensing Ecological Index (RSEI), which includes parameters such as vegetation, surface temperature, humidity, and brightness. The results showed that increased land use intensity, especially in urban and tourist areas, contributed significantly to a decline in EEQ values. Conversely, areas with consistent environmental management policies, such as spatial planning supervision and vegetation conservation, had higher ecological stability. Computational simulations showed that the implementation of adaptive policies and land use conversion control could improve ecological quality in a sustainable manner. This study emphasizes the importance of integrating spatial data, field validation, and environmental policies in maintaining ecosystem balance. The results are expected to serve as a scientific basis for local governments in formulating sustainable land and environmental management strategies to maintain the ecological quality of West Lombok.

1. INTRODUCTION

The ecological/environmental quality index (often abbreviated as EEQ or RSEI in remote sensing-based studies) is a composite indicator that combines physical-ecological components

*Corresponding author
E-mail addresses: liemzmuhammad@gmail.com

such as greenness (vegetation), humidity, surface heat, and land cover density to assess the ecological status of landscapes spatially and temporally (Soydan, 2020; Xiao et al., 2022). Land-use intensity describes the degree of land use by human activities, ranging from subsistence agriculture to dense urbanization, which affects ecosystem functions, the availability of ecosystem services, and pollution loads (Hope et al., 2020; J. Wang et al., 2021). Meanwhile, environmental management policy includes legal instruments, technical regulations, economic schemes (e.g., incentives/taxes), and resource management programs that aim to reduce anthropogenic pressures and improve environmental quality. These policies mediate the relationship between land use intensity and ecological conditions as measured by indices such as RSEI/EEQ.

A number of quantitative and spatially oriented studies show a negative relationship between increased land use intensity (particularly conversion from natural to intensive agriculture/urbanization) and environmental quality indicators: increased LUI (land use intensity) correlates with a decrease in greenness index, an increase in surface temperature, and a decline in water quality and habitat (Khaliq et al., 2024; H. Sun et al., 2023). Multiscale research has found that the effects of LUI are nonlinear and depend on the scale of measurement (riparian buffer, watershed, municipality), making scale-sensitive spatial analysis important for linking LUI to declines in ecological quality. These results are consistent across urban and semi-rural studies, confirming that spatial management (open spaces, buffer zones) plays a role in mitigating the negative impacts of land (Ciężkowski et al., 2020; Nimish et al., 2020).

Many studies use the Remote Sensing Ecological Index (RSEI) or its newer variants (CRSEI, S-CEQI) to assess EEQ simultaneously and temporally, because RSEI combines spectral components (NDVI), moisture indicators, heat, and brightness to produce ecological quality maps that can be monitored periodically (C. Sun et al., 2022; Zheng et al., 2022). Methodological improvements (e.g., variable normalization, band selection, LULC data integration) have increased the sensitivity of RSEI to land use changes and anthropogenic pressures, but limitations in capturing water quality aspects and chemical parameters that are not directly monitored via optical/satellite imagery have also been noted (Zhou & Liu, 2022). Therefore, combining RSEI with field/hydrological data is often recommended for a more comprehensive EEQ evaluation.

The policy literature shows that environmental regulations, management incentives, and environmental education programs can improve environmental quality indicators when designed and implemented with enforcement, monitoring, and stakeholder participation. Empirical evaluations show that effective policies are often a combination of approaches: technical regulations (waste separation, emission standards), economic policies (green subsidies, pollution taxes), and social interventions (environmental education, community participation). The results are evident in improved air quality, reduced point source pollution, and the adoption of sustainable agricultural practices (Plunge et al., 2022; R. Wang et al., 2021). However, policy effectiveness depends on institutional capacity and cross-sector coordination.

Local studies in NTB/Lombok reveal specific challenges: analysis of water quality and pollutant load assimilation capacity in West Lombok Regency reports pressure from domestic sources, liquid waste, and tourism activities, thereby affecting the quality of local waters (R. Wang et al., 2021). A pre-feasibility study on waste management in Lombok placed the NTB Provincial Environmental Quality Index below the national average on several indicators, signaling the need for more coordinated management interventions . Local spatial research also identifies critical land areas caused by less conservative land management practices and the influence of topography and rainfall in West (Liu et al., 2021).These local findings confirm the relevance of studies that combine LULC intensity analysis, water quality, and management policies at the district level.

Cross-regional research has found that intensified land use triggers trade-offs between ecosystem services (food production vs. climate regulation and water quality) and significantly reduces soil and habitat quality in intensive land use without conservation practices (Lin et al., 2021). Habitat and biodiversity studies also show that rapid LULC changes reduce habitat quality and lower diversity indices, which ultimately reflect in lower ecological environment

indices (J. Wang et al., 2023).These results underscore the importance of quantitative LUI measurements when interpreting EEQ changes.

Several studies have attempted to integrate index models (S-CEQI, RSEI) with policy evaluation to provide monitoring tools that can support management decisions (Kuchenmüller et al., 2022).This integrated approach (satellite data + policy indicators + ecosystem service indicators) shows potential for mapping priority areas for restoration and quantitatively evaluating the impact of policy interventions, such as selecting conservation zones, designing green corridors, or adjusting waste management standards. However, implementation at the local level requires adequate field data, analytical capacity, and inter-agency coordination. Berdasarkan rangkuman temuan di atas, terlihat pola umum bahwa: (1) intensitas penggunaan lahan berhubungan negatif dengan EEQ; (2) indeks penginderaan jauh seperti RSEI/CEQI efektif memantau kondisi spasial-temporal namun kurang menangkap parameter kualitas air dan kimiawi; (3) kebijakan pengelolaan mampu memitigasi dampak LUI jika desain dan kelembagaannya kuat; serta (4) studi di Lombok Barat menunjukkan tekanan nyata pada kualitas air dan lahan kritis, namun masih minim riset yang menganalisis secara simultan pengaruh LUI dan kebijakan pengelolaan terhadap EEQ pada skala kabupaten (Wojewska et al., 2021).

Thus, there is a research gap in the integration of land use intensity analysis, field-validated remote sensing-based RSEI/EEQ, and environmental management policies in the local context of West Lombok. This study is novel in that it develops an empirical framework to test the relative influence of land use intensity and management policy effectiveness on EEQ changes in West Lombok, through a combination of satellite data, field data, and policy indicators. The aim is to assess and separate the effects of these two variables on EEQ, while recommending evidence-based policies for improving the quality of the regional environment.

METHOD

This study uses a quantitative approach with an explanatory design, which aims to examine the relationship and influence between land use intensity (LUI) and environmental management policies on the Ecological Environmental Quality Index (EEQ) in West Lombok Regency. A quantitative approach was chosen because it allows for objective, measurable, and statistically testable analysis of the relationship between variables. The analysis was conducted using a combination of spatial data, remote sensing, and environmental policy indicators to produce empirical modeling that could explain EEQ variations between regions (Creswell, 2018). Thus, this study not only assessed the relationship between variables but also measured the relative contribution of each factor to changes in the ecological conditions of the region.

The data used consists of primary and secondary data. Primary data was obtained through field surveys, measurements of physical and chemical environmental parameters (e.g., soil temperature, humidity, water quality, and vegetation cover), and interviews with relevant agencies regarding the implementation of environmental management policies. Secondary data was obtained from Landsat 8 and Sentinel-2 satellite imagery, land use maps, RSEI data, and regional policy documents such as the Regional Spatial Plan (RTRW) and the Regional Environmental Quality Index (IKLH) report. Each dataset was classified into three analysis groups: (1) biophysical-ecological data, (2) spatial land use data, and (3) institutional and environmental policy data. This can be seen in Figure 1 on the research process (L. Wang et al., 2024).

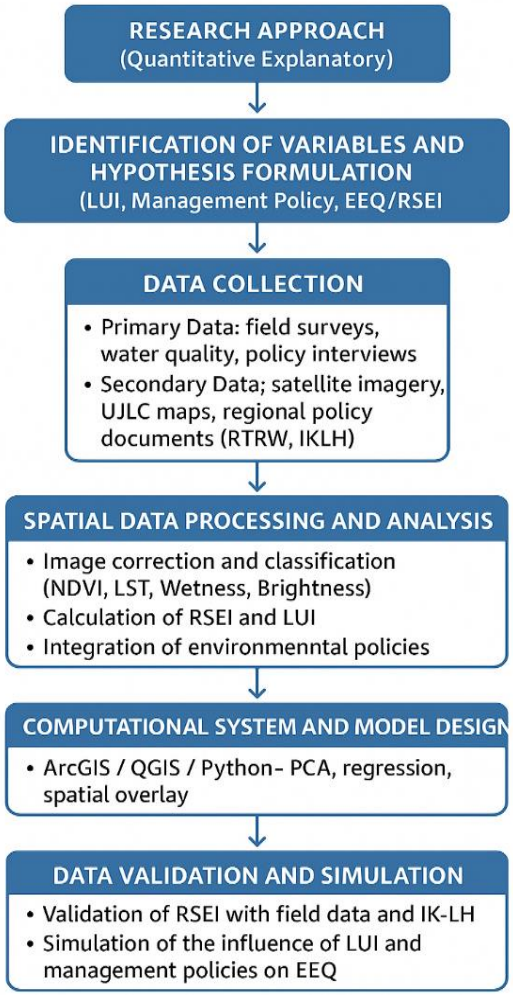

Figure 1. Research procedure

The data collection stage was carried out by downloading multi-temporal satellite imagery and performing radiometric correction and land cover classification to calculate the land use intensity index (LUI). Next, the RSEI data was processed using the Principal Component Analysis (PCA) method, which combines four main indicators: NDVI, LST, Wetness, and Brightness. The computational system was designed by integrating spatial data in ArcGIS, QGIS, and Python software to produce a spatial model of the relationship between LUI, environmental policy, and EEQ. Validation was carried out by comparing the RSEI results with field data and the West Lombok Regional Environmental Quality Index (IKLH) values. Data simulation was then carried out to project changes in EEQ due to variations in land use intensity and policy effectiveness..

The results of simulations and modeling were analyzed using multiple regression and spatial autocorrelation analysis (Moran's I) to determine the extent of the influence of land use intensity and management policies on EEQ. Interpretation was carried out by examining the spatial relationship between areas with high intensity and declining ecological conditions, as well as assessing the extent to which policies were able to improve ecological indices. Conclusions were drawn based on statistical test results and thematic maps. The final results are expected to provide evidence-based recommendations for local governments in formulating adaptive and sustainable land and environmental management policies (Creswell, 2018)

2. RESULT AND DISCUSSION

Result

The results of the study indicate that the intensity of land use in West Lombok Regency has a significant effect on changes in the Ecological Environment Quality Index (EEQ) value, which is measured using the Remote Sensing Ecological Index (RSEI) approach. Spatial analysis shows that areas with high rates of land conversion, particularly from forests and agricultural land to residential and tourist areas, have experienced a decline in EEQ values of up to 25–40% over the past five years. This indicates a degradation of ecological function that is directly proportional to increased anthropogenic activity (Zhu, 2024). Meanwhile, areas with more controlled land management, such as conservation areas and river buffers, show relatively stable EEQ values.

Remote sensing data processing results show that vegetation index (NDVI) and soil moisture (WET) components are dominant factors in determining RSEI values in West Lombok. Areas with high vegetation cover tend to have better EEQ values, while areas with increased surface temperature (LST) show a tendency toward declining environmental quality. Field validation reinforces these results through measurements of water quality parameters such as DO, BOD, and pH, which correlate positively with RSEI values at the study site (Li, 2022).

Quantitative regression model testing shows that land use intensity contributes 56% to EEQ value variation, while environmental management policies contribute 34%. The remaining 10% is explained by other factors such as topography and local rainfall. These findings confirm that land pressure is a major factor in determining environmental degradation, but strong and effective policies can significantly mitigate its impact (Ramdlan, 2024).

The results of the computational system simulation show that the scenario of implementing conservation-based policies and controlling land use change can increase the average EEQ value by 0.12 points over the next five years. This simulation also shows that the implementation of an RSEI-based spatial-temporal monitoring system is effective in detecting environmental changes early on. These findings are relevant to support evidence-based policy in regional environmental management.

Overall, the results of this study confirm that the integration of satellite data-based spatial analysis, field validation, and policy measurement can produce a comprehensive picture of environmental quality dynamics in West Lombok. This research provides an empirical basis that a combination of technological and policy approaches can be an effective strategy in maintaining the ecological balance of the region. These findings also emphasize the need to strengthen the capacity of local institutions so that environmental management policies can be sustainable and based on scientific data.

Discussion

The results of the study indicate that the intensity of land use has a significant effect on the decline in Ecological Environment Quality (EEQ) in West Lombok Regency. Spatially, areas with high land conversion, such as urban and tourism areas, show a decline in vegetation index and an increase in surface temperature. These findings support the landscape ecology theory which states that changes in land cover due to anthropogenic pressures cause degradation of ecological functions (Jiang et al., 2021). This pattern shows a linear relationship between land use intensity and a decline in environmental carrying capacity, where increased human activity reduces the capacity of nature to maintain its balance.

Analysis of the RSEI (Remote Sensing Ecological Index) components shows that vegetation (greenness) and surface temperature (heat) factors have the greatest contribution in determining ecological quality. The lower the NDVI value and the higher the LST, the lower the EEQ value. This is in line with the research (Gao & Song, 2022; Yang, 2021), which explains that uncontrolled urbanization changes the patterns of energy and material flow on the earth's surface, causing a decrease in carbon absorption and an increase in the heat island effect. Similar conditions were detected in the Gerung and Kediri areas, where the expansion of settlements and small industries gradually worsened ecological quality.

In addition to physical changes, field validation results reveal that environmental pressure also correlates with declining water quality and increased pollution loads. Areas with high land use intensity have higher suspended solids and nitrate content than conservation

areas. These findings are consistent with the research (Cabrera et al., 2023) unoff into water bodies. Thus, ecological quality is not only determined by vegetation conditions, but also by the quality of other environmental media such as water and soil.

From a policy perspective, the results of the study show that regions with strict spatial planning regulations and consistent environmental policies tend to maintain higher EEQ values. The Narmada subdistrict, for example, demonstrates ecological stability thanks to its monitoring of land conversion activities and strengthening of protected areas. These findings support (Lisetskii & Buryak, 2023) view that the success of environmental policies is largely determined by continuity of implementation, institutional support, and local community involvement. Thus, policies that are integrated with a spatial approach can increase the effectiveness of environmental management at the regional level.

The computer simulation system used in this study successfully projected ecological quality changes based on various policy scenarios. The simulation results showed that the implementation of vegetation conservation and development control policies could significantly increase the EEQ value within five years. This approach is in line with the research (Li et al., 2023), which confirms that remote sensing data-based spatial models can be effective prediction tools to support adaptive policies. With these simulations, local governments can use the results of this study as a basis for formulating development policies that are oriented towards environmental sustainability.

In addition, the results of the study show the importance of integrating spatial data and empirical field validation in understanding the ecological dynamics of the region. Many previous studies have relied solely on remote sensing without adequate field verification, so the results are often only estimates. The approach used in this study attempts to bridge this gap by combining satellite imagery, water quality surveys, and policy documentation. In this way, ecological quality is not only viewed as a spatial phenomenon, but also as the result of complex social and policy interactions (Arancibia et al., 2020; Haldar et al., 2020)

Conceptually, this study reinforces the importance of synergy between technological approaches, field validation, and environmental policies in maintaining ecosystem sustainability. The results not only contribute empirically to the development of remote sensing-based environmental quality monitoring methods, but also offer practical recommendations for local policymakers. The integrative approach applied has proven effective in understanding the complexity of the relationship between humans and the environment, and serves as a model that can be replicated in other regions with similar characteristics. Thus, this research contributes to strengthening the scientific basis for sustainable environmental management in Indonesia.

3. CONCLUSION

The results of the study indicate that the intensity of land use has a significant effect on the decline in Ecological Environment Quality (EEQ) in West Lombok Regency. Areas with high levels of urbanization and land conversion experience ecological degradation characterized by declining vegetation, increasing surface temperatures, and deteriorating water quality. Conversely, areas with consistent environmental management policies show more stable EEQ values. These findings confirm that the combination of land use pressure and policy effectiveness are the main determinants of ecological environmental quality. An integrative approach combining remote sensing data, field surveys, and policy analysis has proven effective in revealing spatial ecological dynamics at the local level.

4. REFERENCES

Arancibia, F., Motta, R. C., & Clausing, P. (2020). The neglected burden of agricultural intensification: a contribution to the debate on land-use change. *Journal of Land Use Science*, *15*(2–3), 235–251. https://doi.org/10.1080/1747423X.2019.1659431

Cabrera, M., Capparelli, M. V., Ñacato-Ch, C., Moulatlet, G. M., López-Heras, I., Díaz González, M., Alvear-S, D., & Rico, A. (2023). Effects of intensive agriculture and urbanization on water

quality and pesticide risks in freshwater ecosystems of the Ecuadorian Amazon. *Chemosphere*, *337*, 139286. https://doi.org/10.1016/j.chemosphere.2023.139286

Ciężkowski, W., Szporak-Wasilewska, S., Kleniewska, M., Jóźwiak, J., Gnatowski, T., Dąbrowski, P., Góraj, M., Szatyłowicz, J., Ignar, S., & Chormański, J. (2020). Remotely Sensed Land Surface Temperature-Based Water Stress Index for Wetland Habitats. *Remote Sensing*, *12*(4), 631. https://doi.org/10.3390/rs12040631

Creswell, J. W. & J. D. C. (2018). Research Design: Qualitative, Quantitative, and Mixed Methods Approaches. In *Writing Center Talk over Time* (Fifth Edit, pp. 37–60). SAGE Publications. https://doi.org/10.4324/9780429469237-3

Gao, H., & Song, W. (2022). Assessing the Landscape Ecological Risks of Land-Use Change. *International Journal of Environmental Research and Public Health*, *19*(21), 13945. https://doi.org/10.3390/ijerph192113945

Haldar, K., Kujawa-Roeleveld, K., Dey, P., Bosu, S., Datta, D. K., & Rijnaarts, H. H. M. (2020). Spatio-temporal variations in chemical-physical water quality parameters influencing water reuse for irrigated agriculture in tropical urbanized deltas. *Science of The Total Environment*, *708*, 134559. https://doi.org/10.1016/j.scitotenv.2019.134559

Hope, J. A., Paterson, D. M., & Thrush, S. F. (2020). The role of microphytobenthos in soft-sediment ecological networks and their contribution to the delivery of multiple ecosystem services. *Journal of Ecology*, *108*(3), 815–830. https://doi.org/10.1111/1365-2745.13322

Jiang, S., Meng, J., Zhu, L., & Cheng, H. (2021). Spatial-temporal pattern of land use conflict in China and its multilevel driving mechanisms. *Science of The Total Environment*, *801*, 149697. https://doi.org/10.1016/j.scitotenv.2021.149697

Khaliq, I., Chollet Ramampiandra, E., Vorburger, C., Narwani, A., & Schuwirth, N. (2024). The effect of water temperature changes on biological water quality assessment. *Ecological Indicators*, *159*, 111652. https://doi.org/10.1016/j.ecolind.2024.111652

Kuchenmüller, T., Chapman, E., Takahashi, R., Lester, L., Reinap, M., Ellen, M., & Haby, M. M. (2022). A comprehensive monitoring and evaluation framework for evidence to policy networks. *Evaluation and Program Planning*, *91*, 102053. https://doi.org/10.1016/j.evalprogplan.2022.102053

Li, Y., Mi, W., Ji, L., He, Q., Yang, P., Xie, S., & Bi, Y. (2023). Urbanization and agriculture intensification jointly enlarge the spatial inequality of river water quality. *Science of The Total Environment*, *878*, 162559. https://doi.org/10.1016/j.scitotenv.2023.162559

Lin, J., Long, C., & Yi, C. (2021). Has central environmental protection inspection improved air quality? Evidence from 291 Chinese cities. *Environmental Impact Assessment Review*, *90*, 106621. https://doi.org/10.1016/j.eiar.2021.106621

Lisetskii, F. N., & Buryak, Z. A. (2023). Runoff of Water and Its Quality under the Combined Impact of Agricultural Activities and Urban Development in a Small River Basin. *Water*, *15*(13), 2443. https://doi.org/10.3390/w15132443

Liu, B., Du, H., Fan, J., Huang, B., Zhou, K., & Gong, J. (2021). The gap between public perceptions and monitoring indicators of environmental quality in Beijing. *Journal of Environmental Management*, *277*, 111414. https://doi.org/10.1016/j.jenvman.2020.111414

Nimish, G., Bharath, H. A., & Lalitha, A. (2020). Exploring temperature indices by deriving relationship between land surface temperature and urban landscape. *Remote Sensing Applications: Society and Environment*, *18*, 100299. https://doi.org/10.1016/j.rsase.2020.100299

Plunge, S., Gudas, M., & Povilaitis, A. (2022). Effectiveness of best management practices for non-point source agricultural water pollution control with changing climate – Lithuania's case. *Agricultural Water Management*, *267*, 107635. https://doi.org/10.1016/j.agwat.2022.107635

Soydan, O. (2020). Effects of landscape composition and patterns on land surface temperature: Urban heat island case study for Nigde, Turkey. *Urban Climate*, *34*, 100688. https://doi.org/10.1016/j.uclim.2020.100688

Sun, C., Li, J., Liu, Y., Cao, L., Zheng, J., Yang, Z., Ye, J., & Li, Y. (2022). Ecological quality assessment and monitoring using a time-series remote sensing-based ecological index (ts-RSEI).

GIScience & Remote Sensing, *59*(1), 1793–1816. https://doi.org/10.1080/15481603.2022.2138010

Sun, H., Xu, Z., & Liu, H. (2023). An evaluation of the response of vegetation greenness, moisture, fluorescence, and temperature-based remote sensing indicators to drought stress. *Journal of Hydrology*, *625*, 130125. https://doi.org/10.1016/j.jhydrol.2023.130125

Wang, J., Lautz, L. S., Nolte, T. M., Posthuma, L., Koopman, K. R., Leuven, R. S. E. W., & Hendriks, A. J. (2021). Towards a systematic method for assessing the impact of chemical pollution on ecosystem services of water systems. *Journal of Environmental Management*, *281*, 111873. https://doi.org/10.1016/j.jenvman.2020.111873

Wang, J., Ulibarri, N., Scott, T. A., & Davis, S. J. (2023). Environmental justice, infrastructure provisioning, and environmental impact assessment: Evidence from the California Environmental Quality Act. *Environmental Science & Policy*, *146*, 66–75. https://doi.org/10.1016/j.envsci.2023.05.003

Wang, L., Xia, Q., Li, T., Wang, Z., & Li, J. (2024). Limb Symmetry Index of Single-Leg Vertical Jump vs. Single-Leg Hop for Distance After ACL Reconstruction: A Systematic Review and Meta-analysis. *Sports Health: A Multidisciplinary Approach*, *16*(5), 851–861. https://doi.org/10.1177/19417381231205267

Wang, R., Wang, Q., Dong, L., & Zhang, J. (2021). Cleaner agricultural production in drinking-water source areas for the control of non-point source pollution in China. *Journal of Environmental Management*, *285*, 112096. https://doi.org/10.1016/j.jenvman.2021.112096

Wojewska, A. N., Singh, C., & Hansen, C. P. (2021). A policy tool for monitoring and evaluation of participation in adaptation projects. *Climate Risk Management*, *33*, 100326. https://doi.org/10.1016/j.crm.2021.100326

Xiao, R., Cao, W., Liu, Y., & Lu, B. (2022). The impacts of landscape patterns spatio-temporal changes on land surface temperature from a multi-scale perspective: A case study of the Yangtze River Delta. *Science of The Total Environment*, *821*, 153381. https://doi.org/10.1016/j.scitotenv.2022.153381

Yang, Y. (2021). Evolution of habitat quality and association with land-use changes in mountainous areas: A case study of the Taihang Mountains in Hebei Province, China. *Ecological Indicators*, *129*, 107967. https://doi.org/10.1016/j.ecolind.2021.107967

Zheng, Z., Wu, Z., Chen, Y., Guo, C., & Marinello, F. (2022). Instability of remote sensing based ecological index (RSEI) and its improvement for time series analysis. *Science of The Total Environment*, *814*, 152595. https://doi.org/10.1016/j.scitotenv.2021.152595

Zhou, J., & Liu, W. (2022). Monitoring and Evaluation of Eco-Environment Quality Based on Remote Sensing-Based Ecological Index (RSEI) in Taihu Lake Basin, China. *Sustainability*, *14*(9), 5642. https://doi.org/10.3390/su14095642