



UNIVERSITY OF LIFE SCIENCES "KING MIHAI I" FROM TIMISOARA

"YOUNG PEOPLE AND MULTIDISCIPLINARY RESEARCH IN APPLIED LIFE SCIENCES"



"Young people and multidisciplinary
research in applied life sciences"

21-22 November 2024

SUSTAINABLE MANAGEMENT OF NATURAL RESOURCES FOR BIODIVERSITY AND ECOSYSTEM RESILIENCE

CALIN MACEDON TIMIS¹, FRANCOIS GUYVENCHY¹, LAURA VORNICU¹, DICU DANIEL¹, Raul PAȘCALĂU¹,
¹University of Life Sciences" King Mihai I" from Timisoara, 300645, 119, Calea Aradului, Timisoara, Romania
e-mail: raul.pascalau@usvt.ro

Abstract: In present-day dialogues pertaining to the stewardship of the environment, the essential interconnectedness between the management of resources sustainably and the conservation of biodiversity has surfaced as an issue of considerable significance. The efficacious overseeing of natural resources, which includes both ecosystems found on land and in water, is fundamentally necessary for the preservation of the fragile equilibrium that supports the resilience of ecosystems. The intensifying pressures stemming from climate change, urban expansion, and the exploitation of resources compel the adoption of novel strategies which must not only safeguard the resource availability for forthcoming generations but also actively advance the well-being of ecological systems. This discourse will delve into the complex interrelation between practices of sustainable resource management and their repercussions on biodiversity, positing that an all-encompassing approach is crucial. By amalgamating principles of ecology with considerations rooted in socio-economics, it is plausible to bolster the resilience of ecosystems that are progressively susceptible to human-induced influences. In conclusion, the discussion will elucidate potential routes toward a future characterised by sustainability, emphasising the recognition that the health and vitality of our natural resources are fundamentally intertwined with biodiversity and the stability of ecosystems.

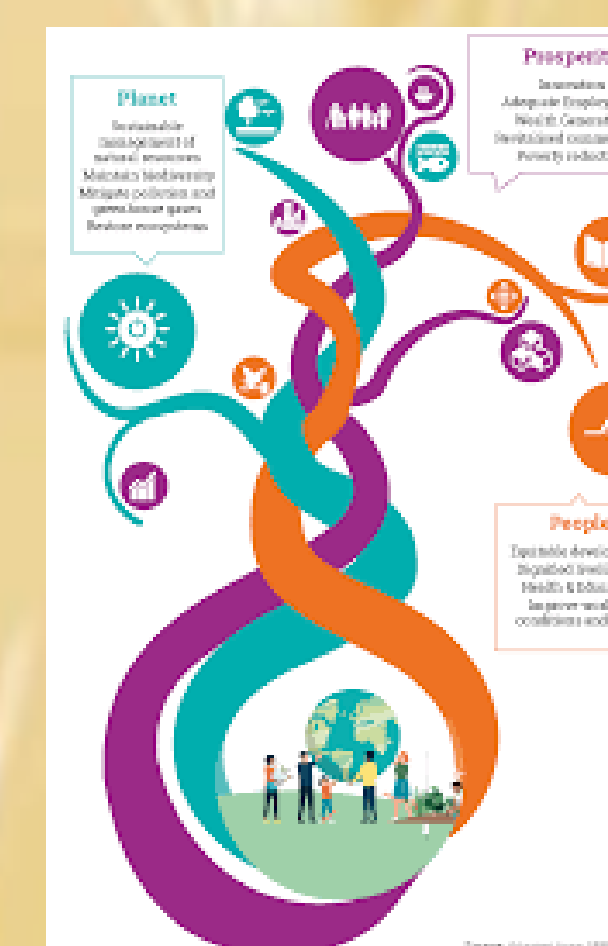
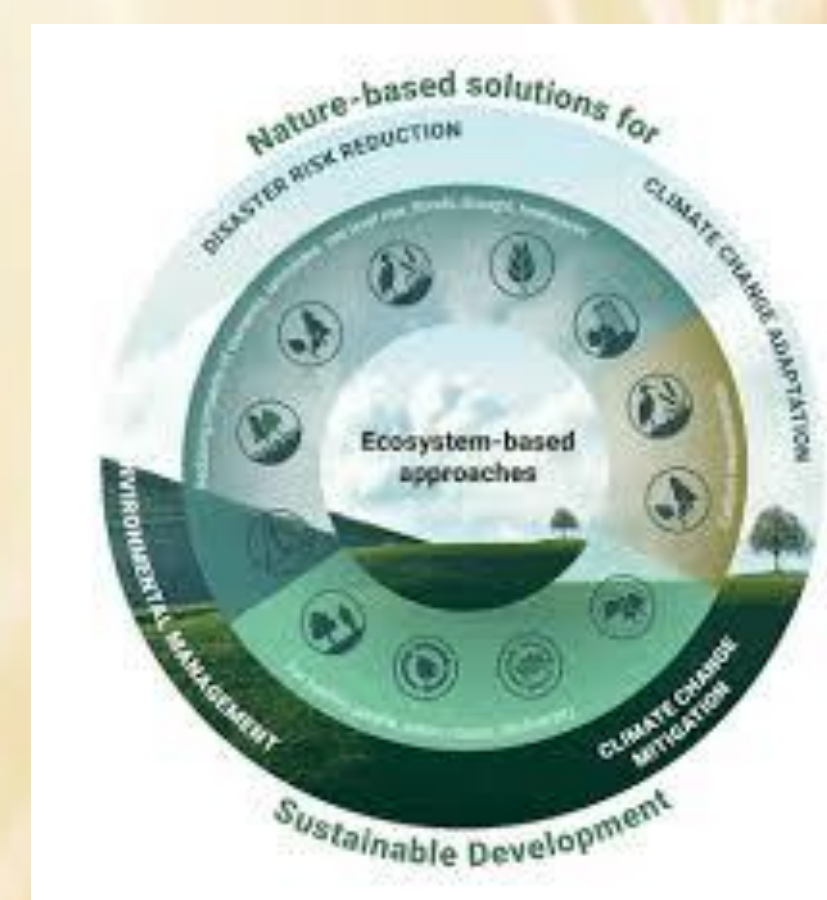
• Introduction

A crucial component of the safeguarding of ecological integrity pertains to the sustainable administration of natural resources, which is characterised as the action of utilising these resources in a way that addresses current demands without endangering the capacity of subsequent generations to satisfy their own. This necessitates the equilibrium of ecological, economic, and social imperatives, thereby enhancing biodiversity and the resilience of ecosystems. Approaches like community-based natural resource management (CBNRM) serve to empower local populations to partake in sustainable methodologies, thus augmenting the effectiveness of conservation initiatives. Additionally, the incorporation of ecosystem services into the governance of natural resources elucidates the interconnections between human welfare and the vitality of ecosystems. The adoption of ecosystem-based adaptation strategies, as exemplified in a variety of international case studies, can assist resource management in alleviating climate vulnerabilities whilst concurrently preserving biodiversity (2024). In conclusion, the sustainable governance of natural resources formulates a foundational structure for resilience, permitting ecosystems to flourish in the face of inexorable environmental alterations and human-induced pressures.



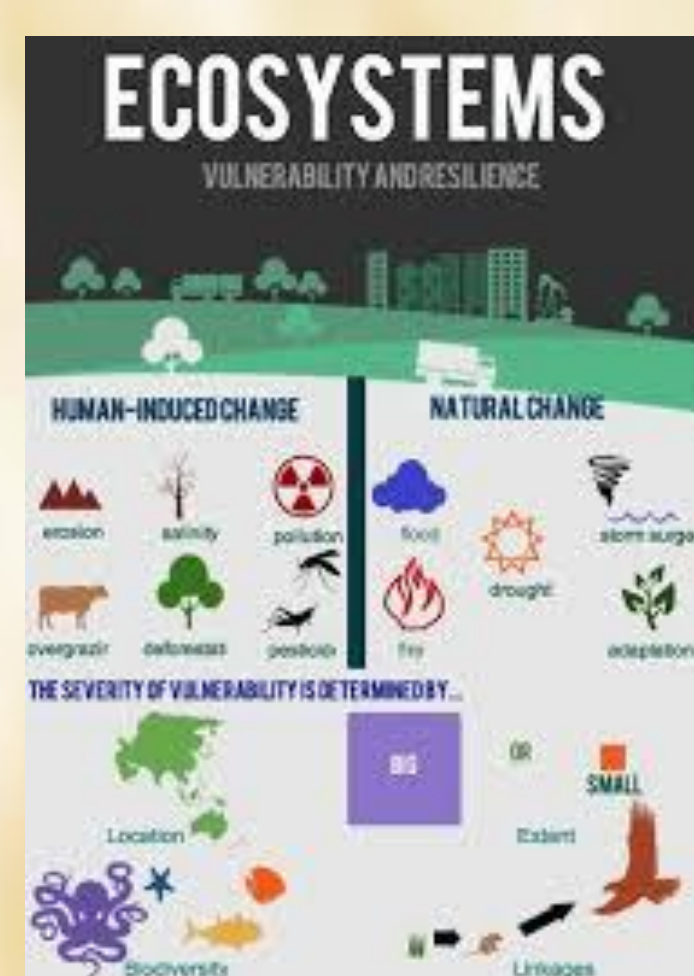
• Results and discussions

In the context of tackling the urgent matters linked with the decline of biodiversity, practices that are deemed sustainable have come to play crucial roles within conservation frameworks. These practices, whilst not solely fixating upon the management of resources, also serve to augment the robustness of ecosystems when confronted by pressures instigated by human activities. A case in point can be seen in Mozambique, where endeavours aimed at conserving biodiversity highlight sustainable land management along with habitat restoration, yielding encouraging outcomes regarding the promotion of species diversity and the overall health of ecosystems (Fatima Ngwenya, 2024). Furthermore, the incorporation of adaptive management methodologies, including Integrated Fire Management (IFM) and Closer-To-Nature Forest Management (CTNFM), appears to considerably enhance the resilience of forests against threats posed by wildfires, which have been exacerbated by climate change (Nikolaos Kalapodis et al., 2024). Such integrated approaches not only underpin the conservation of ecological frameworks but also contribute to the livelihoods of local populations via the sustainable utilisation of resources. Hence, by integrating sustainable practises within conservation initiatives, one can achieve a semblance of balance between anthropogenic activities and naturally occurring ecosystems, culminating in the safeguarding of biodiversity and an uplift in ecosystem resilience. ties in reconciling the preservation of the environment with the use of resources.



• Material and method

We used the analysis method because I work in the field and it is very important for me to analyze now, after studying environmental engineering, at another level, the things I work with and how important it is for my job. The complicated interrelationship existing between biodiversity and resilience of ecosystems stands as a significant factor in the maintenance of the ecological equilibrium of the planet as well as the well-being of humans. A varied collection of species has the capacity to promote strong ecosystem functionalities through the provision of stability and adaptability in relation to environmental alterations. Biodiversity is fundamentally important for a variety of essential services, including the purification of water, pollination, and the regulation of climate, all of which are vital components in ensuring food security and general livelihoods



• Conclusions

The sustainable management pertaining to natural resources has surfaced as an imperative tactic aimed at augmenting biodiversity whilst ensuring resilience within ecosystems amidst increasing environmental predicaments. An all-encompassing approach, as evidenced by methodologies such as conservation agriculture (CA), not solely bolsters food security but concurrently safeguards water resources and advocates for responsible consumption ((Muhammad Farooq, 2023)). Moreover, the inherent connection between forestry and the regulation of climate accentuates their vital function in carbon sequestration, thus highlighting the essentiality of sustainable forest management in order to address climate change proficiently ((D. Rajasugunasekar et al., 2023)). In conclusion, the amalgamation of these practices engenders an atmosphere where ecological integrity alongside social welfare are esteemed, thereby advancing the realisation of numerous Sustainable Development Goals. In our pursuit of managing the intricacies of resources, the encouragement of collaboration among varied stakeholders, in addition to the promotion of innovative methodologies, will prove to be paramount in engendering resilience. Such a multifaceted strategy guarantees that natural resources are administered in a manner that preserves both future generations and the diversity of life globally.

