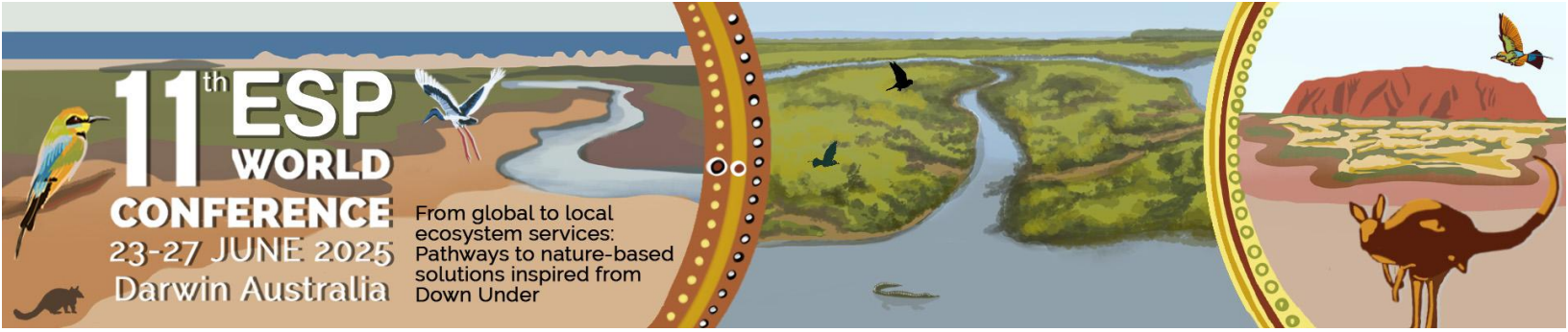


BOOK OF ABSTRACTS

I. SESSION DESCRIPTION

ID: O10

Climate and sustainability challenges in diverse regions

	Name	Organisation	E-mail
Host:	Iskra Konovska	Foundation for Sustainable Development	iskra.konovska@fsd.nl

Abstract:

This session will focus on the climate and sustainability challenges faced by different regions around the world. It will cover a range of topics, including how ecosystems and communities are affected by climate change and what solutions are being developed to address these issues.

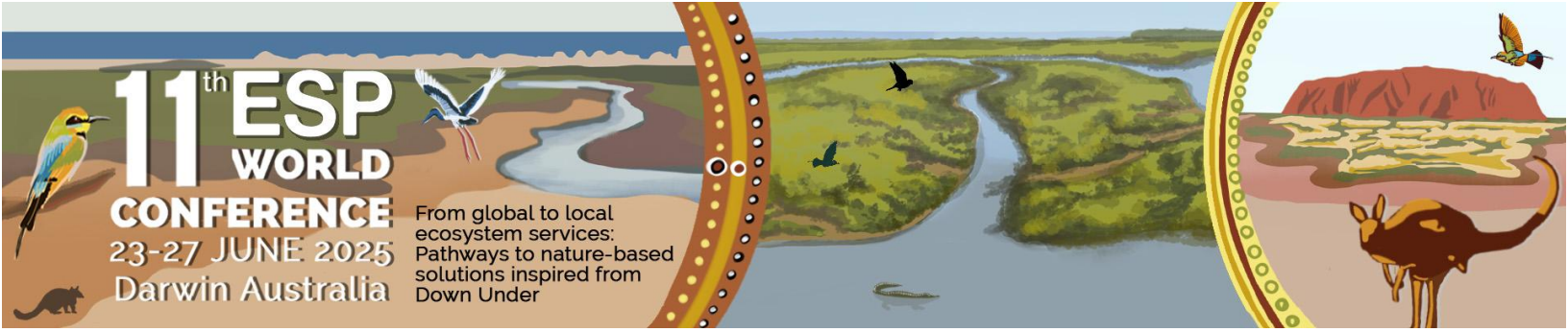
The presentations will look at the role of ecological restoration, the importance of sustainability policies in the private sector, and how social and health systems can respond to changes in ecosystem services. Other topics will include water resource planning in island territories and strategies for conservation in areas at high risk from climate change.

The format of this session will be the usual one of presentations followed by discussions.

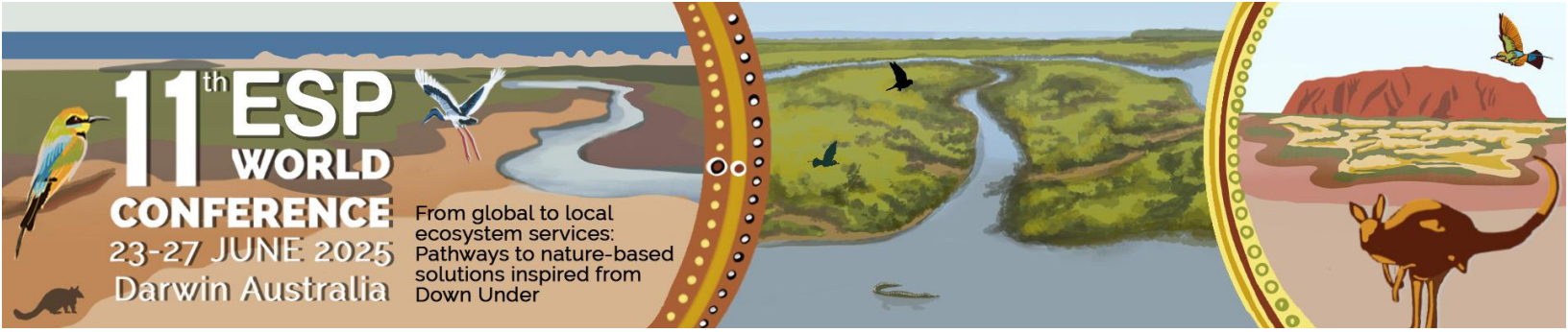
II. SESSION PROGRAM

Room: Hall 1
Date of session: 26.06.2025
Time of session: 10:30-12:30

Timetable speakers:



Time	First name	Surname	Organization	Title of presentation
10:30 – 10:33	Iskra	Konovska	Foundation for Sustainable Development	Welcome and overview of the session
10:33 – 10:46	Rui Alexandre	Castanho	Valoriza Research Center – IPP, Portalegre-Portugal & WSB University, Dabrowa Górnicza-Poland	Ephemeral Lifelines: Can Intermittent Rivers Unlock the Future of Mediterranean Ecosystems?
10:46 – 10:59	Gerald	Danao	Weed Management Branch – Land Resources Division – Department of Lands, Planning and Environment, Northern Territory Government	Biological Control of Invasive Coral Cactus Using Dactylopius tomentosus in Arid Northern Australia: Early Establishment and Management Outcomes
10:59 – 11:12	Kati Susanna	Kiiski	University of Eastern Finland	How can the social and health service system respond to the welfare and health challenges posed by human-induced changes in ecosystem services? One solution in the life of people living in the midst of global challenges.
11:12 – 11:25	Zihan	Wang	Shanghai Jiao Tong University	A Three-Dimensional Framework for Climate-Resilient Marine Conservation in China's Seas
11:25 – 11:38	Amar	Uuld	Mongolian University of Life Sciences	Exploring multiple values and future scenarios of tarbagan marmot consumption, hunting, and its habitat
11:38 – 11:51	Tauqeer	Nawaz	Beijing Forestry University	Developing strategies for Carbon Neutrality Through Restoration of Ecological Spatial Networks in the Thal Desert, Punjab
11:51 – 12:04	Siyuan	Wang	Xi'an Jiaotong-Liverpool University	Shaping Well-Being in Urban Spaces: Interactions of Nature, Society, and Self-Perception, a case study of Suzhou City, China.



Time	First name	Surname	Organization	Title of presentation
12:04 -12:17	Soomrit	Chattopadhyay	Centre for Sustainable Development,Gokhale Institute of Politics and Economics	Green public policies and sustainability reporting: A case study on the Private Sector
12:17 - 12:30	Iskra	Konovska	Foundation for Sustainable Development	Discussion & Closing of Session

III. LIST OF ABSTRACTS

The first author is the presenting author unless indicated otherwise.

1. Ephemeral Lifelines: Can Intermittent Rivers Unlock the Future of Mediterranean Ecosystems?

First authors(s): Rui Alexandre Castanho

Other author(s): Luís Loures, Ana Loures, Chané de Bruyn

First author affiliation: Valoriza Research Center - IPP, Portalegre-Portugal and WSB University, Dabrowa Górnicza-Poland

Contact: acastanho@wsb.edu.pl

Keywords: Ecosystem Services, Intermittent Rivers, Nature-based Solutions, Mediterranean Landscapes, Transboundary Resources

Ecosystem services (ES) are crucial in sustaining both natural and agricultural landscapes, particularly in Mediterranean environments where water availability fluctuates seasonally. Intermittent rivers and ephemeral streams (IRES) are essential yet often overlooked components of these landscapes, providing multiple ecological, socio-economic, and cultural benefits. This study builds on a comparative analysis of ephemeral river ecosystem services in agricultural and natural landscapes, focusing on the Caia River, a transboundary watercourse between Portugal and Spain. Using an integrated assessment approach, we examine how the hydrological phases of IRES—flowing, pooling, and dry—affect ES provision across different land uses.

Our findings highlight that IRES enhance provisioning services such as water supply for irrigation, livestock sustenance, and biodiversity conservation during the flowing phase. In contrast, the dry phase poses challenges, increasing the vulnerability of riparian habitats, intensifying competition for resources, and elevating soil degradation risks. The study also reveals that intermittent rivers contribute significantly to cultural ecosystem services, supporting aesthetic values, recreational activities, and traditional agricultural practices. Furthermore, our analysis underscores the necessity of adaptive management strategies to balance agricultural intensification with ecological conservation.

Contextually, by integrating insights from natural and agricultural contexts, this research contributes to a broader understanding of how intermittent rivers shape ecosystem service dynamics in Mediterranean landscapes. Our findings reinforce the need for sustainable land-use policies prioritizing Nature-based Solutions (NbS) to enhance ecological resilience and mitigate the impacts of climate change.

2. Biological Control of Invasive Coral Cactus Using Dactylopius tomentosus in Arid Northern Australia: Early Establishment and Management Outcomes

First authors(s): Gerald Danao

Other author(s): Gregory Doddrell

First author affiliation: Weed Management Branch – Land Resources Division – Department of Lands, Planning and Environment, Northern Territory Government

Contact: gerald.danao@nt.gov.au

Keywords: : biological control, Dactylopius tomentosus, coral cactus, invasive species, Northern Territory, arid ecosystems, ecosystem services

Cylindropuntia fulgida var. mamillata (coral cactus) is an invasive weed threatening biodiversity and land productivity in arid and semi-arid regions of Australia. In response, the cochineal insect Dactylopius tomentosus (cholla bug), approved for national release since 2015, was introduced as a biological control agent to suppress coral cactus populations.

The first release in the Northern Territory occurred in August 2024 at Singleton Station, Tennant Creek. Specimens were sourced from established wild colonies maintained by collaborators in New South Wales and Queensland. Two nearby sites—S1 (release) and C1 (control, located 40 metres east)—each with ~600 shaded coral cactus plants, were established. Fourteen infested cladodes were introduced at S1. By month three, cochineal colonies had established on initial hosts in all directions. At six months, infestation affected 50% of surrounding plants within 15 metres, extending up to 24 metres to the northwest, with 10% die-off near the release point. By nine months, the spread peaked at 89 metres northwest, with 95% of plants infested. Die-off reached 60% in the south and 95% in the northwest. Spread was primarily northwest, consistent with prevailing southeasterly winds likely aiding passive crawler dispersal, and with limited host availability beyond 20 metres to the south. No infestation was recorded at C1, though the spread reached 5 metres of its centre—35 metres from the release point.

A secondary release site (S2) was established in November 2024 at the Tennant Mining Company in Warrego. Ten infested cladodes were introduced to an open area with 25 cactus plants, but the attempt failed—likely due to extreme heat and a lack of shaded hosts. A followup release in February 2025, mid-way through the wet season when healthier cactus patches were available, introduced 10 cladodes to a partially shaded area with 45 plants. Three months later, a localised cochineal establishment was observed on the lower segment of a single host plant.

These early results highlight the potential of D. tomentosus as a biological control agent for C. fulgida var. mamillata, particularly under favourable seasonal and microclimatic conditions.

3. How can the social and health service system respond to the welfare and health challenges posed by human-induced changes in ecosystem services? One solution in the life of people living in the midst of global challenges.

First authors(s): Kati Susanna Kiiski

Other author(s): Yakabal Shekhamaheboob, Utkarsh Singh

First author affiliation: University of Eastern Finland

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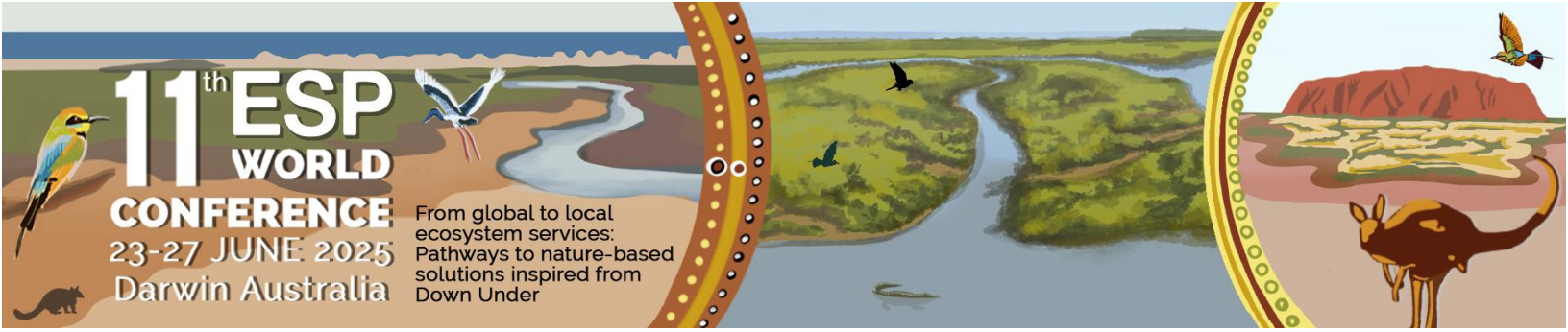

Keywords: health, wellbeing, health and social service system

Human-induced changes to ecosystem services have been shown to have negative impacts on human health and well-being. This topic has been on the agenda of health and well-being research for a long time and there is scientific evidence of a link. (For example Vora, Narayan, Aluso Donatti, El Omrani, Hannah et al. 2024)

In my literature review, I examined the relationship between these health and well-being effects and the solutions used in the social and health service system (The article has been submitted to Journal of Future and Foresights, but at the time of writing there is no information on publication.) I found that, at least now, there is no universal method that can be implemented anywhere in the world (or that is not in use). Instead, I found that there are specifically local, even traditional, ways of responding to change and impact.

This encouraged me to experiment with the Finnish conditions to conduct a delfoi panel survey for national experts and stakeholders on the topic. At the time of writing, the panel study is still ongoing, but I expect to have results in the spring of 2025. So I will be looking at, among other things, the ways in which the social and health service system could respond to these changes in different places and circumstances in Finland. Finland is a long country, so there are certainly many possible solutions. They relate to methods, interventions, skills, working processes and management.

The carbon footprint of healthcare has certainly been studied and recommendations have been made (Pulkki et al). Last autumn, a major study estimated that increasing exposure to nature has the potential to save billions in public health expenditure in Finland (Tyrväinen et al.). Now it is time to study how we do that.

References:

Pulkki J et al. (2023) Ekologisesti kestävä sosiaali- ja terveydenhuolto. Selvitys kansallisesta tavoitteesta ja ohjausmekanismeista. Valtioneuvoston selvitys- ja tutkimustoiminnan julkaisusarja 2023:49

Tyrväinen, L., Halonen, J.I., Pasanen, T., Ojala, A., Täubel, M., Kivelä, S., Leskelä, A.-R., Pennaanen, P., Manninen, J., Sinkkonen, A., Haahtela, T., Haveri, H., Grotenfelt-Enegren, M., Lankia, T. & Neuvonen, M. 2024. Luontoympäristön terveysvaikutukset ja niiden taloudellinen merkitys. Luonnonvara- ja biotalouden tutkimus 76/2024. Luonnonvarakeskus. Helsinki. 89 s.

Vora, Neil M et al. (2024) Nature-based solutions are essential for climate and health action. The Lancet, Volume 404, Issue 10456, 913 – 915

4. A Three-Dimensional Framework for Climate-Resilient Marine Conservation in China's Seas

First authors(s): Zihan Wang

Other author(s): Ling Cao

First author affiliation: Shanghai Jiao Tong University

Contact: ilxlddove@sjtu.edu.cn

Keywords: climate change, spatial conservation planning, vertical connectivity, conservation goal, climate vulnerability assessment

Protecting marine biodiversity amidst climate change requires advanced planning that addresses the three-dimensional complexity of marine ecosystems. Existing conservation efforts in China lack sufficient depth-specific planning to safeguard vulnerable species habitats across the water column. In response, we developed a three-dimensional marine planning framework using data for 8,452 marine species, integrating climate models to project species distributions and assess vulnerability under three Representative Concentration Pathways (RCP2.6, RCP4.5, RCP8.5) by 2100. Results indicate substantial habitat loss and poleward shifts, with an average of 38.4% of current habitats potentially unsuitable under high-emission scenarios. Species richness may decrease in the south and increase in the north in the seas of China. This study identifies new, three-dimensional low-regret conservation priorities encompassing 21.6% of China's adjacent seas, targeting areas with lower vulnerability, such as the East China Seas shelf, Northern South China Sea, West and East seas of Liaodong Peninsula and seas around Taiwan Islands. The identified priority areas show a critical threshold transition in conservation efficacy for future species habitats by the mid-21st century, due to projected habitat loss. Our findings offer a crucial foundation for a depth-inclusive MPA network, promoting resilience in marine conservation under a warming ocean.

5. Exploring multiple values and future scenarios of tarbagan marmot consumption, hunting, and its habitat

First authors(s): Amar Uuld

Other author(s): Bryan Joel Mariano, Ganzorig Gonchigsumlaa

First author affiliation: Mongolian University of Life Sciences

Contact: amar.u@muls.edu.mn

Keywords: culture, herder, Mongolia, wildlife, zoonosis

The project ZooMap “Zoonosis and cultural evolution: Mapping the past, present, and future of wildlife consumption and trading in Mongolia and the Philippines“ conducted a multistakeholder scenarios workshop on the tarbagan marmot (Marmota sibirica) in Mongolia. The multistakeholder workshop consisted of identification of multiple values of marmots and their habitat and participatory scenario development. Using the IPBES Nature Futures Framework (NFF), the participants identified several intrinsic, relational, and instrumental values of marmots and their habitat. all stakeholder groups anticipate the future of the marmot's habitat to worsen in the next ten years. Similarly, they perceive the increase in marmot hunting and consumption in the same time period. The insights derived from the workshop underpin the socio-cultural and social-ecological importance of the tarbagan marmot among various actors and how this species show the role of culture in the emergence of zoonotic diseases.

6. Developing strategies for Carbon Neutrality Through Restoration of Ecological Spatial Networks in the Thal Desert, Punjab

First authors(s): Tauqeer Nawaz

Other author(s): Muhammad Gohar Ismail Ansari, Qiang Yu, Buyanbaatar Avirmed, Farhan Iftikhar, Wang Yu, Jikai Zhao, Muhammad Anas Khan, Muhammad Mudassar Khan

First author affiliation: Beijing Forestry university

Contact: tauqeernawaz2022@bjfu.edu.cn

Keywords: Ecological Spatial Network (ESN), Optimization, EFCT-Model, Topological indicator, Carbon neutrality

Carbon neutrality is an important goal for addressing global warming. It can be achieved by Increasing carbon storage and reduce carbon emission. Vegetation plays key role in storing carbon but it is often lost or damaged, especially in affected areas by desertification. Therefore, restoring vegetation in this area is crucial. Using advanced techniques to improve ecosystem structure can support ecological process and enhance soil and environmental conditions, encourage vegetation growth and boost carbon storage effectively. This study focuses on optimizing Ecological Spatial Networks (ESN) for revitalization and regional development, employing advanced techniques such as the MCR model for corridor construction, spatial analysis, and Gephi for mapping topological attributes. Various ecological and topological metrics were used to evaluate network performance, while the EFCT model was applied to optimize the ESN and maximize carbon sinks. In the Thal Desert, ecological source patches (ESP) were divided into four modularity levels (15.6% to 49.54%) and five communities. The northeastern and southwestern regions showed higher ecological functionality but lower connectivity, while the central region exhibited the reverse. To enhance the ESN structure, 27 patches and 51 corridors were added to 76 existing patches, including 56 forest and 20 water/wetland patches, using the EFCT model. The optimized ESN resulted in a 14.97% improvement in carbon sink capacity compared to the unoptimized structure, primarily due to better functioning of forest and wetland areas. Enhanced connectivity between components contributed to a more resilient and stable ESN, supporting both ecological sustainability and carbon sequestration.

7. Shaping Well-Being in Urban Spaces: Interactions of Nature, Society, and Self-Perception, a case study of Suzhou City, China.

First authors(s): Siyuan Wang

Other author(s): Yuehan Dou

First author affiliation: Xi'an Jiaotong-Liverpool University

Contact: wsy070501@163.com

Keywords: human well-being; urban landscape; human nature interactions; engagement

This study investigates human well-being when urban public interactions with natural, cultural, and other urban landscapes in Suzhou, China, through 861 surveys across 16 sites. Using principal component analysis (PCA) and hierarchical cluster analysis (HCA), we identified four key activity engagement clusters: intensive physical activities, light physical activities, local activities, and spiritual activities. Structural equation modeling (SEM) was employed to elucidate both the direct impacts of landscape characteristics on human well-being and the mediating role of activity engagement. Furthermore, the study highlights activity engagement as a mediator influenced by personal motivations, sociodemographic characteristics, and exposure duration, all significantly shaping human well-being. These findings highlight the complex relationships between landscape characteristics, personal motivations, and social factors and activity engagemnt in shaping human well-being. The results suggest that urban landscape design should account for diverse engagement drivers to foster well-being and promote sustainable urban environments. This research provides valuable insights for public health policy, emphasizing the importance of optimizing urban ecosystem services to align effectively with diverse population needs and preferences.

8. Green public policies and sustainability reporting: A case study on the Private Sector

First authors(s): Soomrit Chattopadhyay

Other author(s): Yakabal Shekhamaheboob, Utkarsh Singh

First author affiliation: Centre for Sustainable Development,Gokhale Institute of Politics and Economics

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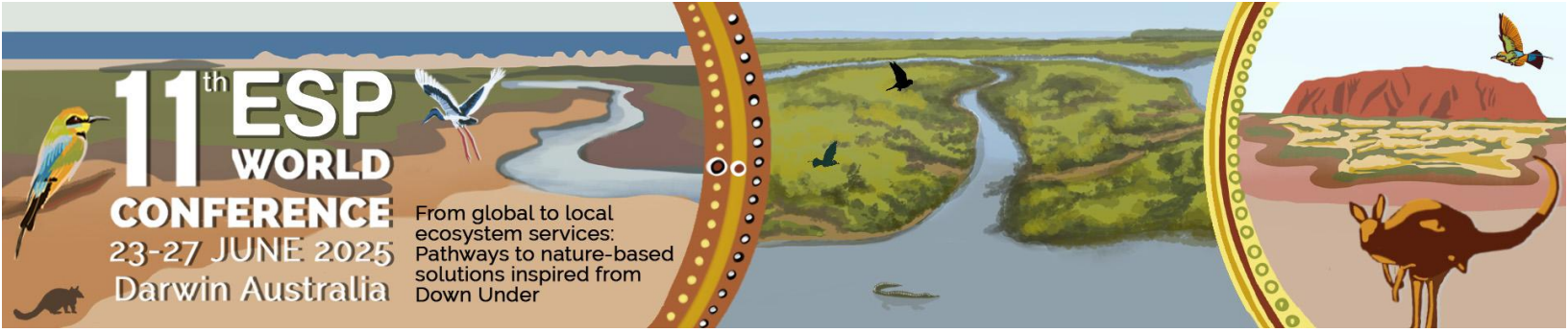
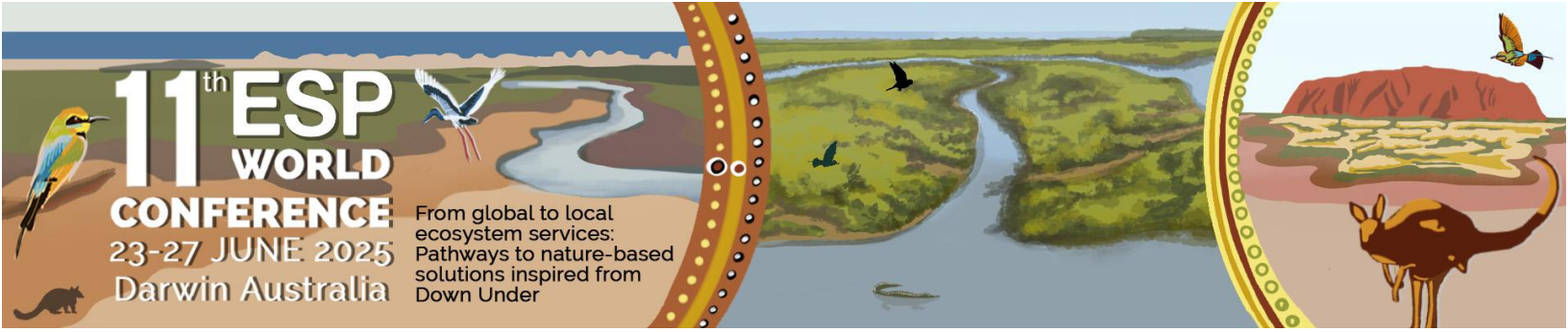


Keywords: Sustainability, Reporting, Carbon

The Dichotomy of the ambitious Carbon Credit and green credit policies of India and the potential for greenwashing through clever accounting and financial manipulations is presented in this study..In 2023,India saw the passage of 3 legislations namely the Green Credit Policy,Compliance Carbon Trading Scheme(CCTS) and the changes to the Environment and Biodiversity Act.

India witnessed significant dilutions in its environmental laws, particularly in the penal provisions of key regulations. The Ministry of Environment, Forest and Climate Change (MoEFCC) proposed amendments to laws such as the Environment (Protection) Act, 1986, the Air (Prevention and Control of Pollution) Act, 1981, and the Water (Prevention and Control of Pollution) Act, 1974, aiming to dilute the penal provisions, which include imprisonment of offenders.

These dilutions have raised concerns about the potential impact on environmental protection and the fundamental rights of communities. The proposed dilutions have been criticized by experts and environmental organizations, highlighting the need to maintain the integrity of environmental laws and regulations to ensure sustainable development and environmental justice. The dilutions in environmental laws have been viewed as contradictory to India's commitment to depart from a "business as usual" approach and have sparked discussions about the need for stronger regulatory mechanisms to safeguard the environment. The passage of the carbon credit laws, particularly the Carbon Credit Policy, may impact the existing regulatory framework related to environmental compliance and corporate social responsibility. The introduction of a compliance carbon market and the issuance of Carbon Credit Certificates (CCCs) may lead to a shift in the focus of companies towards carbon mitigation activities, potentially affecting their prioritization of CSR initiatives and environmental compliance. The absence of a concrete definition of 'carbon credits' and the open-endedness of the carbon trading scheme have raised concerns about regulatory ambiguity and the need for robust oversight to prevent greenwashing and ensure the integrity of the marketAdditionally, the establishment of a cross-sectoral regulatory mechanism and the empowerment of the central government to specify the carbon credit trading scheme under the Energy Conservation (Amendment) Act, 2022, indicate a significant regulatory overhaul to accommodate the carbon credit market.



An overhaul in terms of technological reporting through regulatory mechanisms that could eventually lead to a mess in terms of industries compliance on paper. The industries will be free not to undertake any compensatory activities on the site of the industry and thus becoming free of any commitments the affected area's population .This will be facilitated by the celebrated green credit and carbon credit policy of India which once implemented has the potential to wreak havoc on the current environment.This paper looks at policy solutions to the impending crises of accountability in the green credit and carbon credit sector.The study underscores the need to balance use of technology and in environmental policies especially with respect to governance and public policies that pertain to the environment. This study explore the use of sustainability reports and analyses some of the companies in the top five market capitalization per various sectors as of 2022-23.