The International Conference on Sustainable Development Goals

"Collaborative Action for a Sustainable Future"

The International Conference on Climate Change & Sustainability

"Transforming Challenges into Opportunities"

08th – 09th May 2026

Joint Conference Abstract Book 2026 of ICSDG 2026 & ICCCS 2026

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Joint Conference Abstract Book of the International Conference on Sustainable Development Goals (ICSDG 2026) and the International Conference on Climate Change and Sustainability (ICCCS 2026)

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Joint Abstract Book of the International Conference on Sustainable Development Goals (ICSDG 2026) and the International Conference on Climate Change and Sustainability (ICCCS 2026)

Edited by Dr. Patrick Paul Walsh, Dr. Nurul Ain Bt Abu Bakar (Mardi) and Dr. Muhammad Hammad Rasool

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WELCOME MESSAGE FROM THE CONFERENCE CONVENER

It is my pleasure to welcome you to the joint conference, The International Conference on Sustainable Development Goals 2026 (ICSDG 2026) and The International Conference on Climate Change & Sustainability 2026 (ICCCS 2026).

This year marks a significant milestone, as it is the first time these two conferences are being organized together, creating a unified platform to address some of the most pressing global challenges of our time. The themes, "Collaborative Action for a Sustainable Future" and "Transforming Challenges into Opportunities," highlight the importance of collective efforts and innovative approaches in responding to today's sustainability and climate-related issues.

As a leading academic conference organizer in Asia, *iConferences* strongly believes that fostering dialogue and pledging commitment toward the Sustainable Development Goals (SDGs) and addressing climate change challenges are both timely and essential in the current global context. Platforms such as this conference play a vital role in advancing knowledge, encouraging collaboration, and promoting impactful research.

We are pleased to bring together participants from over 20 countries, reflecting the truly global nature of this conference. The abstracts presented in this volume showcase a diverse range of research, ideas, and perspectives that contribute to meaningful discussions and solutions in these critical fields.

I would like to extend my sincere appreciation to our conference chairpersons, keynote speakers, reviewers, and organizing committee for their valuable contributions in making this conference a success.

I wish you all a productive and enriching conference experience.

Liyanage Thulakshana Dilrukshi Perera
Conference Convener
ICSDG 2026 and ICCCS 2026
Director, iConferences, Sri Lanka

MESSAGE FROM THE CONFERENCE CHAIRPERSON ICSDG 2026

It is my great privilege to welcome all distinguished delegates, researchers, practitioners, policymakers, and industry representatives to the 1st International Conference on Sustainable Development Goals (ICSDG 2026) organized by iConferences.

In today's rapidly evolving global environment, sustainable development stands as a pressing priority and a shared responsibility across all sectors and nations. Complex global challenges including climate change, environmental degradation, social inequality, economic uncertainty, and governance challenges are deeply interconnected and demand integrated, interdisciplinary, and evidence-informed solutions.

The Sustainable Development Goals provide a comprehensive and guiding framework that brings together environmental sustainability, economic resilience, social inclusion, and strong governance. Achieving meaningful progress requires action at all levels, from international and national systems to organizational practices and individual behaviors, where daily decisions collectively shape sustainable outcomes.

ICSDG 2026 serves as an important platform for fostering collaboration and dialogue among academia, government, industry, and civil society. It facilitates the exchange of research insights, practical experiences, and innovative strategies that can be translated into effective and real-world solutions.

From an environmental perspective, the conference highlights the importance of responsible resource management and climate resilience. Economically, it promotes inclusive and sustainable growth pathways. Socially, it emphasizes equity, inclusion, and human well-being. Good governance remains central to ensuring transparency, accountability, and the successful implementation of sustainability initiatives.

I would like to sincerely acknowledge and commend the efforts of the organizing committee, scientific committee, and all contributors for their commitment in bringing this conference to fruition. I am confident that ICSDG 2026 will inspire meaningful dialogue, strengthen collaborations, and generate impactful outcomes that advance sustainability across disciplines and sectors.

I wish all participants a highly productive and rewarding conference.

Dr. Patrick Paul Walsh
Conference Chairperson, ICSDG 2026
Vice President of Education of UN Sustainable Development Solutions Network (SDSN), Vice President of Education and Director of the SDG Academy, School of Politics and International
University College Dublin, Ireland

MESSAGE FROM THE CONFERENCE CO-CHAIR ICSDG 2026

It is my great pleasure to welcome all delegates, researchers, practitioners, policymakers, and industry representatives to the 1st International Conference on Sustainable Development Goals (ICSDG 2026). In an increasingly interconnected world, the pursuit of sustainable development has become both an urgent necessity and a shared global responsibility. Challenges such as climate change, environmental degradation, economic inequality, social vulnerability, and governance gaps transcend national boundaries and sectors. Addressing these complex issues requires holistic thinking, integrated solutions, and collective action grounded in sound evidence and inclusive dialogue. The Sustainable Development Goals provide a comprehensive framework that connects environmental protection, economic resilience, social well-being, and effective governance. Sustainability must be understood not only at the global and national levels, but also at the organisational and individual levels where daily decisions, innovations, and behaviours collectively shape long-term outcomes. ICSDG 2026 serves as a vital platform to advance this integrated approach. The conference brings together diverse perspectives from academia, policy, industry, and civil society to share research findings, practical experiences, and innovative solutions. Such exchanges are essential for translating sustainability concepts into actionable strategies that can be implemented across different contexts and scales. From an environmental perspective, the conference highlights the importance of safeguarding natural resources, addressing climate risks, and promoting responsible production and consumption. Economically, it underscores the need for development pathways that are resilient, inclusive, and capable of generating long-term value without compromising future generations. Socially, it reinforces the central role of equity, inclusion, and human well-being in sustainable development. Equally important, strong governance provides the foundation for coherence, accountability, and trust, ensuring that sustainability efforts are effectively designed, implemented, and monitored. I would like to commend the organisers, scientific committee, and contributors for their dedication and commitment in making ICSDG 2026 a meaningful and impactful gathering. I am confident that the discussions, insights, and collaborations emerging from this conference will contribute to advancing sustainable development in both theory and practice. I wish all participants a productive, engaging, and inspiring conference.

Dr. Nurul Ain Abu Bakar,
Conference Co-Chair, ICSDG 2026
Senior Research Officer,
Malaysian Agricultural Research and Development Institute (MARDI),
Malaysia

MESSAGE FROM THE CONFERENCE CHAIRPERSON ICCCS 2026

It is a distinct honour and privilege to welcome you to the International Conference on Climate Change and Sustainability (ICCCS 2026) . As the global community confronts escalating climate uncertainties, resource constraints, and sustainability imperatives, the need for rigorous scientific dialogue and interdisciplinary collaboration has never been greater. This conference serves as an important intellectual platform to advance critical discourse, foster innovation, and promote actionable solutions to some of the most pressing challenges of our time. Addressing climate change demands more than isolated technological progress; it requires integrated perspectives that bridge science, engineering, policy, economics, and societal transformation. In this spirit, ICCCS 2026 and ICSDG 2026 bring together researchers, practitioners, policymakers, and emerging scholars to explore pathways toward climate resilience, energy transition, sustainable resource management, and long-term environmental stewardship. This gathering also reflects the growing recognition that sustainable development must be pursued through collaborative and systems-based thinking. I am particularly encouraged by the participation of early-career researchers and students, whose intellectual curiosity and innovative contributions will help shape the future of climate and sustainability research. I trust this conference will serve not only as a venue for disseminating impactful research, but also as a catalyst for meaningful partnerships, transformative ideas, and enduring collaborations across disciplines and borders. I extend my sincere appreciation to the organizing committee, keynote speakers, authors, reviewers, and participants for their valuable contributions and commitment to advancing knowledge in support of a more sustainable and resilient world. I wish you a stimulating and rewarding conference experience.

Ts. Dr. Muhammad Hammad Rasool
Conference Chairperson, ICCCS 2026
Petroleum Engineering Department, Universiti Teknologi Petronas, Malaysia

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ABSTRACTS OF ORAL SESSIONS

PAPER SESSION (A)
EDUCATION, YOUTH & INNOVATION FOR SDGS

A1 **[01]**

A SYSTEMATIC LITERATURE REVIEW OF CARBON FOOTPRINT TRACKING APPS AS EDUCATIONAL TOOLS FOR SUSTAINABILITY LITERACY AND BEHAVIOUR-RELATED OUTCOMES IN HIGHER EDUCATION

Adeniran, M.O

University of Gothenburg, Sweden

This study aims to examine how carbon footprint tracking applications are used as educational tools to support sustainability literacy and behavior-related outcomes among university students. The objective is to understand their educational value within higher education and their contribution to learning for sustainable development. The methodology is based on a systematic literature review of peer-reviewed studies that explore the use of digital carbon tracking tools in educational contexts. Relevant literature was identified, screened, and analyzed to identify key themes related to learning outcomes, student engagement, and behavior change. The results indicate that carbon footprint tracking applications can improve students' awareness of environmental impacts, support reflective learning, and encourage more sustainable daily practices when integrated into educational activities. The literature also highlights the importance of guidance, context, and collaboration between educators and technology developers to maximize learning outcomes. The study concludes that carbon footprint tracking applications have strong potential as supportive tools for sustainability education in higher education. However, further research is needed to strengthen evidence on long-term behavior change and effective pedagogical integration. These findings contribute to discussions on technology-enabled learning and youth engagement in sustainable development.

Keywords: Sustainability literacy, Education for Sustainable Development, Digital learning tools, Carbon footprint tracking, Behavior change, Higher education

A2 **[02]**

A STRUCTURED APPROACH TO SCALING INNOVATION WITH UNICEFS 5-DIMENSIONAL (5D) INNOVATION FRAMEWORK TO IDENTIFY, VALIDATE, AND SCALE INNOVATION

Kim, L., Subbiah, S., Powell, J.

UNICEF's Office of Innovation, Sweden

Accelerating progress toward the Sustainable Development Goals requires systematic approaches to scaling innovative solutions for children. This memo presents UNICEF's 5D Innovation Framework, a structured methodology designed to advance innovations from pilot to scale while achieving meaningful impact for children. The framework was designed to help innovators at UN agencies, academia, private sector partners and NGOs identify, validate and scale solutions with transformational potential, thereby addressing persistent barriers for scaling. Developed through a collaborative research process innovation literature and informed by extensive practical experience, the framework underwent iterative refinement through consultations with colleagues, partner agencies and external reviewers. The framework comprises of five core dimensions and eighteen sub-dimensions that enable systematic assessment of innovation readiness, objective evaluation of scaling potential and strengthened portfolio management discipline. Implementation across more than 10 UNICEF offices, demonstrates practical application in solution prioritization, governance processes and investment decision-making, with documented examples from Serbia, Ethiopia, Egypt and the Office of Innovation. In conclusion, while the framework effectively clarifies evidentiary requirements for scaling decisions, practitioners require additional methodological guidance for evidence collection, prompting development of a complementary Innovation Monitoring, Evaluation and Learning (MEL) Toolbox. The memo recommends organizational investment in capacity building, strategic partnerships, and early-stage framework adoption to strengthen stakeholder ownership and ensure sustainable institutionalization of innovation.

Keywords: Monitoring and Evaluation, Innovation, Social Impact

A3 **[03]**

HABLE ARTE: A BILINGUAL ARTS AND PUBLIC SPEAKING MODEL ADVANCING EDUCATIONAL EQUITY FOR ENGLISH LEARNERS IN CALIFORNIA

Charlu, S., Cabrera Pérez, R. M.A.

School of Education, University of California, USA

In Santa Ana, California, where 96% of residents are Hispanic, most core and enrichment programs remain English-only, despite 20.3% of California's K-12 students being English Learners (ELLS) and only 8-9% of US public schools offering bilingual instruction. Existing research confirms that English-only classrooms reduce ELL confidence and participation, while dual-language models significantly improve literacy, English proficiency, graduation rates, and college readiness. Observing local ELL students internalize the belief that Spanish "does not belong" in academic spaces led to the design of this interventional program rooted in expression, dignity, and cultural affirmation. Habla Arte is a year-round bilingual arts and public speaking program for ages 5-12, serving economically disadvantaged elementary students through weekly classes, workshops, summer camps, and a free bilingual app, Speak Art. The curriculum integrates visual arts, storytelling, Spanish-English communication, and public speaking to foster confidence and creativity. We implement this program in partnership with local schools and outreach centers. Since its inception, the program has delivered over 600 instructional hours to over 1000 students, with 150 additional students accessing the app. Pre-program surveys indicated that 78% of students felt that Spanish was not accepted in classrooms and they should speak only English, and 89% reported low confidence in artistic expression and public speaking. Following implementation of the curriculum, 75% of students reported increased comfort learning in a bilingual environment, 92% felt more confident expressing themselves, and all students presented original artwork orally. Additionally, 78% of teachers observed improved academic engagement. Habla Arte demonstrates that bilingual arts-based education is a replicable, community-grounded strategy for advancing educational equity (SDG 4) and social justice (SDG 10) by affirming identity, strengthening communication skills, and expanding equitable access to quality learning.

Keywords: Bilingual education, educational equity, English Learners, arts-based learning, public speaking, confidence building, dual-language instruction, community empowerment

PAPER SESSION (B)
EQUITY, INCLUSION & SOCIAL JUSTICE

B1 **[04]**

SEXUAL ORIENTATION, MENTAL HEALTH, AND COUNSELLING SERVICES IN TANZANIAN UNIVERSITIES: STUDENT AWARENESS, BARRIERS, AND PATHWAYS FOR REFORM

Kessy, H.

Dar Es Salaam Tumaini University, Tanzania

This study investigates Tanzanian university students' awareness of sexual orientation, its influence on mental health, and the accessibility of counselling services. Despite growing discussions on inclusivity, empirical evidence remains limited in this context. Using a mixed-methods design, data were collected through questionnaires and focus groups across multiple faculties. Quantitative findings revealed that while 80.3% of students were aware of counselling services, 57.9% reported difficulty accessing them. Chi-square analysis showed no significant variation by gender or program of study, suggesting systemic rather than individual barriers. Qualitative insights highlighted stigma, discrimination, and lack of curriculum-based exposure to sexual orientation as key contributors to psychological distress and underutilization of services. Nearly all respondents (98.7%) identified stigma as a major obstacle to mental well-being. Recommendations include integrating sexual orientation education into curricula, expanding counselling outreach, and training more mental health professionals. Institutional reforms are also needed, including stronger inclusivity policies, increased funding, and accountability mechanisms in higher education. While limited to urban universities and partly reliant on self-reported data, the findings underscore the urgency of multidimensional strategies to improve student support systems.

Keywords: Sexual Orientation, Mental Health, Counselling Accessibility, Student Awareness, Higher Education, Tanzania

B2 **[05]**

SEXUAL HARASSMENT AGAINST WOMEN WORKERS IN INDONESIA: A MULTIDISCIPLINARY ANALYSIS OF CAUSES, IMPACTS, AND PENTAHELIX-BASED INTERVENTIONSGEMINI

***Sitorus, P. S. T.*[1],** Ahmada, R. M. [1], Iltizamulloh, M.R. [2], Salima, L.Q.[2]

[1]Universitas Gadjah Mada [2]Universitas Padjadjaran, Indonesia
[2]Universitas Padjadjaran, Indonesia

Sexual harassment remains a prevalent issue among workplaces in Indonesia with 70.93% of workers around the country reporting to have experienced some form of sexual harassment. This research aims to analyze the causes and impacts of sexual harassment against women workers in Indonesia from a multidisciplinary perspective and identify Pentahelix-based interventions for workplace sexual harassment prevention. A qualitative approach based on a narrative literature review was used to integrate and interpret existing empirical evidence. Based on the literature review, workplace sexual harassment is attributed to four main factors: weak legal frameworks and regulations, organizational cultures that facilitate or tolerate sexual harassment, abuse of power within workplace hierarchies, and the level of victim vulnerability. The identified impacts include psychological distress, decreased productivity and work performance among victims, as well as organizational losses. The reviewed studies also identify intervention strategies involving a pentahelix collaboration among government, organizations, academia, community, and the media to address workplace sexual harassment. This research is aligned with SDGs 5 on Gender Equality and SDGs 10 on Reduced Inequalities. Departing from those Indonesian sexual harassment issues, the authors found that to reduce or even removing such challenges, several approaches and actions need to be conducted, which are strengthening the existing institution, along with the communities, and ensuring the implementation of Law No 12/2022 on Sexual Violance Crime for preventing the legal gaps upon the sexual harassment cases.

Keywords: Sexual Harassment, Women workers, Workplaces, Pentahelix

PAPER SESSION (C)
CLIMATE SESSION

C1 **[06]**

CLIMATE GOVERNANCE AND SECURITY SECTOR ENGAGEMENT IN DISASTER RESPONSE: LESSONS FROM CYCLONE IDAI IN ZIMBABWE

Hwacha, F., Mahawan, K, Berakademi, W

University of Indonesia

The rise in occurrences and intensification of climate change-induced disasters has led to a situation that has presented governance and disaster response challenges for vulnerable and developing countries. Cyclone Idai, which occurred in 2019, presented a situation that exposed weaknesses and gaps in disaster response systems and mechanisms by different institutions and agencies in Zimbabwe, especially in districts that were highly affected by the disaster, such as Chimanimani. The study has three objectives: to investigate and establish the role played by the Zimbabwe Republic Police during disaster response and management, and to evaluate how different policies on climate change adaptation and disaster response were implemented during Cyclone Idai. The study employed a qualitative study design that involved a review of different documents on disaster response and management and interviews with different stakeholders. Despite having disaster response and climate change adaptation policies and strategies, it is evident that these policies and strategies were not effectively implemented during Cyclone Idai response and disaster management because of different challenges and gaps that existed during response and disaster management. The Zimbabwe Republic Police played a critical role during disaster response and management. There is a need to enhance climate change governance by improving coordination and institutional capacity and incorporating different security agencies into climate change adaptation and disaster response policies and strategies.

Keywords: Climate Governance, Climate Change Adaptation, Disaster Risk Reduction, Institutional Resilience, Cyclone Idai

C2 07]

IMPACT OF CLIMATE CHANGES ON GLOBAL FISH AND SEAFOOD PRODUCTION

Samarajeewa, U.

University of Peradeniya Sri Lanka

Climate changes modify the oceans by increasing carbon dioxide concentrations, acidifying seawater, lowering pH, reducing oxygen availability, increasing temperature, disturbing the buffering action of calcium carbonate-bicarbonate systems, and changing the salinity. The changes arise from anthropometric and industrial activities releasing greenhouse gases, where carbon dioxide is the main component. Greenhouse gases prevent infra-red radiation from leaving the atmosphere, resulting in increased atmospheric and oceanic temperature. The results of climate changes in seawater have reduced calcification of corals and development of shells in marine invertebrates. The fish communities are migrating towards polar regions with rising sea temperatures affecting the ocean ecosystems. The stress factors in oceans have negatively affected life processes in fish including growth, movements, sensory capacities, immune mechanisms, and community interactions. The adaptation of the marine fish to changing environment is yet to be understood. The pressures have caused death of corals providing food and shelter to fish, and shift of fish communities towards more favorable environment. The quantity, quality, and safety of seafood are strained. The climate changes have aggravated the current plateau of marine fish availability, threatening fishing industries and human food chains. Global Interactions to minimize climate-based stressors on the marine biota is essential. Farming macroalgae carrying high photosynthetic capacity, and ability to capture sunlight inside the oceans for increased carbon sequestration, may partly mitigate increasing carbon dioxide concentrations.

Keywords:

C3 **[08]**

SURGE AND SWAB PRESSURE PREDICTION USING GRAPHENE OXIDE ENHANCED DRILLING FLUIDS

Sabo, U.N., Ridha, S., Rasool, M.H., Bano, H..

Universiti Teknologi PETRONAS, Malaysia

Surge and swab pressure remain critical challenges in drilling operations, particularly in formations with narrow pressure margins where uncontrolled pressure fluctuations can lead to wellbore instability and loss of circulation. This study aims to establish a quantitative relationship between nanoparticle-enhanced drilling fluid rheology and transient pressure response during pipe tripping operations. Water-based drilling fluids were modified using low concentrations of graphene oxide and evaluated under controlled laboratory conditions. Rheological characterization demonstrated enhanced shear-thinning behavior, with model fitting showing excellent agreement with experimental data. Surge and swab experiments conducted across pipe diameters ranging from 3.7 to 8.5 cm, eccentricities from 0 to 0.9, and tripping speeds between 0.45 and 0.54 m/s showed a maximum surge pressure reduction of 22.57 percent compared to the base fluid, along with a 16 percent reduction in fluid loss. An analytical model based on annular flow principles was developed using experimentally derived rheological parameters and an eccentricity correction factor. Model validation demonstrated strong predictive capability with very low error and high correlation across all operating conditions. The results confirm that controlled graphene oxide incorporation improves flow behavior and significantly mitigates transient pressure fluctuations. This study provides a validated framework for integrating nanoparticle-enhanced drilling fluids into hydraulic design and pressure management applications.

Keywords: Surge pressure, Swab pressure, Graphene oxide, Drilling fluids, Analytical modelling

C4 **[09]**

SENSITIVITY ANALYSIS OF RESERVOIR PARAMETERS AFFECTING CO_2 ADSORPTION IN SHALE GAS RESERVOIR FOR CO_2-ENHANCED GAS RECOVERY AND CARBON SEQUESTRATION

Mubashir, M.

Universiti Teknologi PETRONAS, Malaysia

This study evaluates the feasibility of carbon dioxide injection into shale gas reservoirs to enhance methane recovery while enabling long-term subsurface storage of carbon dioxide for environmental sustainability. The objective is to investigate how key reservoir and operational parameters influence adsorption behavior and gas displacement efficiency. A numerical simulation approach is employed using a grid-based reservoir model to capture competitive adsorption between carbon dioxide and methane, transport mechanisms, and desorption processes under varying conditions. A comprehensive sensitivity analysis is conducted on parameters including rock density, ash content, moisture content, water saturation, temperature, pressure, porosity, permeability, reservoir volume, and injection rate. The results indicate that pressure, temperature, and adsorption related properties strongly control methane displacement efficiency and carbon dioxide storage capacity, while optimized injection strategies significantly improve gas recovery and retention performance. The findings demonstrate that carefully designed injection schemes can enhance methane production while maximizing the secure storage of carbon dioxide within the shale matrix. In conclusion, this study confirms that carbon dioxide injection in shale reservoirs is a technically viable and environmentally beneficial approach that supports sustainable energy production and contributes to reducing greenhouse gas emissions through effective subsurface storage.

Keywords: Carbon dioxide injection, shale gas, methane recovery, adsorption, reservoir simulation, carbon storage

PAPER SESSION (D)
SUSTAINABLE SYSTEMS, INFRASTRUCTURE & POLICY INNOVATIONS

D1 **[10]**

THE OPPORTUNITY FOR GOVERNMENTS TO REBALANCE FOOD PRICE MARGIN DISTRIBUTION IN GLOBAL AGRI-FOOD VALUE CHAINS INCORPORATING GLOBAL SUSTAINABILITY AND SCALE.

Lumsdon-Taylor, M.J.

MHA, Baker Tilly International, UK

Chronic buyer power imbalances restrict primary producers to under 24% of final consumer expenditure, directly violating United Nation Sustainable Development Goal (UNSDG) 8.5 (full employment and decent work), UNSDG 8.8 (protection of labour rights), SDG 12.3 (halving food loss by sustainable supply chains), and UNSDG 17.10 & 17.17 (rules based equitable trading systems). This study advances a replicable governmental strategy for equitable margin distribution via mandated Environmental Social Governance (ESG) transparency. The integrates the proprietary "Country (region) as Publicly Traded Company (PTC)" valuation framework (Rural PLC, 2012) with quasi-experimental analysis of the EU Unfair Trading Practices Directive, the UK groceries supply code and specific global supply chain legislation. The method applies policy triangulation through international parliamentary bodies on fair value in the food chain and consolidated empirical findings from 2020 to 2025. The results showed the opportunity of a 'farm gate' margin uplift up to +32 %; a late payment reduction of over 50%; An increased 'living income' disclosure coverage of 62%; a $1.8bn annual efficiency gain; and an increase to political impact of parliamentary fairness references by up to 180% with three specific recommendations enacted in the UK since 2025. In conclusion, the study shows that disclosing jurisdictions as sustainably aligned PTCs constitutes a scalable blueprint for global ESG transparent food chain margins. It offers proven pathways to an SDG enshrined compliant fair food price margin distribution by 2040

Keywords:

D2 **[11]**

FROM FLOOD TO FLOW

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Flooding has become one of the fastest-growing natural hazards worldwide. As these events become more frequent, there is an urgent need to rethink the materials used in housing, especially in communities that lack access to durable construction systems. This project examines the early, theoretical development of a flood-resistant composite wall panel designed to improve how homes withstand extended water exposure and the forces generated during flood events. To better understand the challenge, the study first looks at why widely used construction materials fail when subjected to flooding. Concrete can crack under lateral pressure, adobe dissolves, timber swells, and steel corrodes. These weaknesses were examined using examples from Peru, Brazil, India, and several regions in the United States, combined with research on hydrodynamic loads and patterns of structural deterioration. Based on these observations, the project proposes a multilayer composite panel built from a fiberglass core bonded with epoxy resin, protected by a flexible silicone layer and coated with a hydrophobic surface finish. Initial modeling suggests that this type of composite panel could retain its structural capacity even after long periods of saturation. It may also help reduce reconstruction expenses by as much as 40% compared with traditional materials. Although productive, the design is still theoretical, with the implication that there is huge potential within modular, low-maintenance, resilient designs as solutions for housing. This project attempts to provide a vision for a future where vulnerable families can remain safe within their dwellings despite increasing flood events caused by climate change.

Keywords: Flood resilience, infrastructure, prevention, community awareness, sustainable design, flood mitigation

D3 **[12]**

GREEN EDGE: A SUSTAINABLE MODEL TO REDUCE HOSPITAL FOOTPRINT AND STRENGTHEN GREEN HEALTHCARE DELIVERY

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Hospitals at district and community level in many low- and middle-income countries shoulder with long patient queues with unreliable power supply, slow internet, and overstretched staff. Every shift generates a stream of portable X-rays, pulse-oximeter traces and point-of-care test results that could sharpen bedside decisions if intelligence lived inside the hospital building instead of in a distant cloud. This chapter presents an eight-point roadmap called EDGE-SAFE for such on-site deployment,i.e. Efficacy, Drift-readiness, Governance, Energy-awareness, Sociotechnical fit, Accountability, Fairness and an Edge-first architecture that works without the cloud. Drawing on bedside observations from five Asian and African hospitals with insights from 120 recent papers on edge computing, federated learning, explainable AI, green hardware, and hands-on prototypes for ten-watt single-board computers. Guided by this evidence we redesign three high-value tasks waiting-room triage, X-ray sorting and early sepsis alerts to run locally. In 14000 retrospective cases the edge models kept AUROC above 0.90, cut median decision time from twenty seconds to eleven, and reduced device power use by 55 % compared with a small cloud GPU server. At a load of 120 patients a day the hardware pays for itself in sixteen months and avoids about three tonnes of CO_2 equivalent per year modest per site but substantial. across a national district-hospital network. Front line doctors and nurses reported higher trust when each prediction arrived with a colour coded a colour coded SHAP heatmap that showed the driving features and a one-page safety checklist mirroring local accreditation forms. To move from pilot to practice, the chapter ends with three printable aids: a budget sheet that captures capital, licence and energy costs; a bias-audit checklist for spotting demographic skew and drift; and a step-wise upgrade guide that lets hospitals add new AI tasks, such as ECG interpretation, on the same low-power box. Together, EDGE-SAFE offers resource-constrained hospitals a practical, low-carbon path to safe, sustainable and equitable artificial intelligence.

Keywords: Edge AI, low-resource hospitals, sustainable healthcare, District Hospital, CHC, PHC, explainable artificial intelligence, federated learning, patient safety, AUROC.

POSTER SESSION

A4 **[13]**

CENTERING YOUTH VOICE IN SUSTAINABLE DEVELOPMENT GOAL ACTION: DEVELOPMENT OF A YOUTH-LED DIGITAL PLATFORM FOR CAPACITY BUILDING AND ENGAGEMENT

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Young people are widely recognized as powerful agents of social change, and the United Nations Youth Strategy 2030 emphasizes the central role of youth leadership in achieving the Sustainable Development Goals. Despite this recognition, many young people face persistent barriers to meaningful engagement, including limited access to reliable information, unequal availability of in-person and virtual volunteering opportunities, and a lack of youth-centered digital platforms that connect them to age-appropriate, Sustainable Development Goals–aligned work. These gaps constrain participation and limit the potential for youth-led impact, particularly among students from under-resourced communities. This project addresses these challenges by developing a globally accessible, youth-driven digital platform to help young people discover, evaluate, and engage with nonprofit organizations and opportunities aligned with the Sustainable Development Goals. Modeled after familiar review-based search platforms, the website empowers youth to share experiences, assess opportunities, build skills, and make informed decisions about civic engagement. The platform was developed using a participatory, youth-centered design process incorporating iterative feedback from students, educators, and nonprofit leaders to ensure relevance, usability, and equity. Nonprofit organizations were identified through public databases and evaluated using predefined Sustainable Development Goals alignment criteria. Core features include searchable opportunities, Sustainable Development Goals tagging, youth-authored reviews, and impact indicators. Iterative testing prioritized accessibility, inclusivity, global scalability, and cross-device functionality. The platform is expected to increase youth awareness of Sustainable Development Goals–aligned opportunities, strengthen youth capacity building, and promote sustained, meaningful engagement by translating global development priorities into actionable pathways for young people worldwide.

Keywords: volunteerism, youth engagement, capacity building, digital platform, Sustainable Development Goals, UN Youth Strategy 2030, nonprofit organizations

B3 **[14]**

SUSTAINABLE MULTIDIMENSIONAL POVERTY REDUCTION IN VIETNAM: SOCIAL SECURITY CHALLENGES AND POLICY PATHWAYS TOWARD SUSTAINABLE DEVELOPMENT GOALS

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Reduction in poverty have become essential pillars for ensuring a sustainable development environment in Vietnam, closely related to the effective implementation of social welfare policies. Despite the fact that poverty rates saw a significant reduction between 2016 and 2024, living conditions of low-income households remained vulnerable and inadequate. Therefore, the data may not have fully captured the state of multidimensional poverty. Vietnam's sustainability application in reducing poverty, within the framework of social welfare, will specifically correspond to Sustainable Development Goals 1 (No Poverty), 8 (Decent Work & Economic Growth), 10 (Reduced Inequalities) and 16 (Peace, Justice, & Strong Institutions).

Keywords: Vietnam, Multidimensional Poverty, Social Protection, Institutional Framework, Policy Coherence.