جامعة هليوبوليس

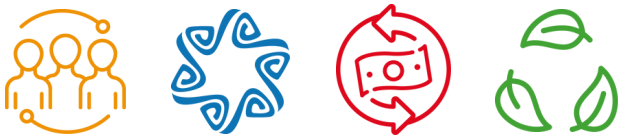
Heliopolis University

for Sustainable Development

# Sustainable Development for Global Impact Scientific Conference

## Conference Proceedings

23 & 24 September 2025



# Foreword from the Organizing Team

The *Sustainable Development for Global Impact (SDGI)* Conference emerged from a simple yet ambitious vision: to create a space where research, practice, and policy intersect to drive meaningful change. As the organizing team at Heliopolis University for Sustainable Development, we are proud to have hosted this first edition, which brought together voices from across disciplines, generations, and geographies to explore how sustainability can be reimagined - not as a technical framework, but as a living, cultural, and ethical practice.

Over two days, the SDGI Conference became more than a collection of presentations and workshops. It became a platform for dialogue, experimentation, and shared learning. Researchers, practitioners, and policymakers exchanged insights on ecology, economy, society, and culture - reminding us that sustainable development is inseparable from human values, creativity, and collective responsibility.

We witnessed a remarkable diversity of contributions: from solar-powered desalination and circular bioeconomy models to arts-based education, participatory research, and community-driven innovation. Each presentation, panel, and workshop reaffirmed that the path toward sustainability must be both *scientifically grounded* and *socially inclusive*.

The organizing team would like to express its deep gratitude to all contributors, facilitators, reviewers, volunteers, and partners who helped make this event possible. Your commitment turned an idea into a living ecosystem of knowledge exchange.

This proceedings book captures a snapshot of that ecosystem, the ideas, insights, and collaborations that unfolded during the conference. We hope it serves as both a record and a catalyst - inspiring continued inquiry, partnerships, and action toward a more just and regenerative future.

Sincerely,

**The SDGI Scientific Committee Team**
Heliopolis University for Sustainable Development
September 2025

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# Conference Overview

The first edition of the *Sustainable Development for Global Impact (SDGI)* Conference was hosted at Heliopolis University for Sustainable Development on **September 23–24, 2025**. It brought together researchers, students, entrepreneurs, practitioners, and policy experts from Egypt and beyond, showcasing a wide array of innovative solutions to today's interconnected sustainability challenges.

## Key Figures

- **Participants: 250+** across 2 days
- **Presenters:** 50+ speakers across different pillars and formats
- **Workshops:** 12 hands-on, interdisciplinary workshops
- **Sessions:** 2 keynote presentations, 2 keynote panels, 6 thematic oral presentation sessions, and 1 poster presentation sessions
- **Conference Pillars:** Ecology, Economy, Society, and Culture
- **Format:** In-person
- **Publication Output:** Abstract-only proceedings book (digital), including panel summaries and workshop briefs and a special edition of the International Journal for Holistic Research

## Goals and Objectives

The SDGI Conference aimed to:

- Provide a platform for researchers and practitioners working across disciplines to share insights on sustainable development challenges and solutions.
- Facilitate the integration of scientific research with community-based practice, policy dialogue, and educational innovation.
- Highlight the role of **transdisciplinary approaches** in addressing complex issues such as climate resilience, regenerative agriculture, biodiversity conservation, inclusive economies, health equity, and cultural sustainability.
- Promote collaboration between academic institutions, grassroots initiatives, social enterprises, and international organizations in Egypt and the Global South.

## Structure and Program Design

The program was designed around a whole-systems approach to sustainability, with sessions categorized under four interlinked pillars: **Ecology**, **Economy**, **Society**, and **Culture**. Highlights included:

- **Keynote Panels** featuring international and national thought leaders discussing themes such as the just green transition, the ethics of innovation, and the future of global sustainability.
- **Oral Presentation Sessions** covering research on circular bioeconomy, digital agriculture, environmental law, gender equity, education, heritage, and more.
- **Poster Presentation Sessions** offering a visual display of early-stage and applied research projects from university students and young researchers.
- **Workshops** providing interactive, hands-on experiences, from embodied movement to sustainable fashion, from policy co-creation to regenerative farming.

# Conference Pillars

The *Sustainable Development for Global Impact (SDGI)* Conference was uniquely structured around four interrelated thematic pillars: **Ecology**, **Economy**, **Society**, and **Culture**. Each pillar was designed to emphasize transdisciplinary approaches and uncover the synergies between environmental, economic, social, and cultural systems in advancing sustainable development.

These pillars provided a guiding framework for submissions, presentations, panels, and workshops. Rather than treating these areas as separate domains, the SDGI program encouraged reflection on their interdependence and integration - from policy to practice, research to education.

## Culture Pillar

This pillar celebrated the role of heritage, language, and the arts in regenerative futures. It featured:

- The preservation and promotion of traditional knowledge systems
- Revitalizing indigenous languages (e.g., Amazigh in Morocco)
- Lessons from Islamic architecture in sustainable design
- The role of universities in fostering cultural identity
- Arts-based workshops connecting movement, music, and environmental consciousness

Sessions illuminated how culture is not peripheral but central to sustainability — shaping values, behaviors, and collective memory.

## Ecology Pillar

This pillar focused on regenerative approaches to environmental management, sustainable agriculture, and technological innovation. Contributions explored:

- Desalination using solar power
- AI for adaptive water management
- Green hydrogen applications in rail systems
- Remote sensing for climate-smart farming
- Scaling organic and biodynamic agriculture
- Nature-based solutions for ecosystem restoration
- Integrated waste–energy–agriculture systems

Discussions emphasized the Global South's leadership in energy transition, highlighting the importance of local context, biodiversity, and ecological knowledge systems in shaping solutions.

## Economy Pillar

The economy pillar explored the ethical dimensions of growth and value creation, proposing regenerative and solidarity-based economic models. Topics included:

- Biodynamic agriculture as a core component of the Economy of Love model
- Climate finance, eco-tourism, and technology-enabled green entrepreneurship
- Circular bioeconomy and digital agriculture in emerging economies
- Youth employment and livelihood models in fragile contexts
- Nature credit markets centered on Indigenous stewardship

Many sessions focused on the role of policy innovation and private-sector collaboration in bridging the gap between research and market adoption, with values-based entrepreneurship emerging as a key enabler of impact.

## Society Pillar

Centered on justice, dignity, and inclusion, this pillar highlighted the societal dimensions of sustainability. Contributions ranged from:

- Biopsychosocial frameworks in healthcare
- Gender disparities in rural education
- Human rights as foundations for sustainable development
- Youth-led environmental action labs
- Neuroscience-informed learning in schools

- Holistic health and integrative medicine in underserved areas

Discussions stressed that sustainability cannot be achieved without addressing equity, agency, and community wellbeing - particularly for women, youth, and rural populations.

# Keynote Panels and Discussions

The keynote panels at the SDGI Conference offered not only expert insights but also provoked critical reflection on what it means to pursue sustainability in a rapidly changing, interconnected world. Rather than static lectures, these sessions became living dialogues where science met values, and visionary ideas were grounded in lived experience. The panels were curated to represent multiple dimensions of sustainability and brought together leaders from academia, civil society, development institutions, and regenerative enterprises.

## Reflections from Key Note Presentations and Panels

### What Does "Leaving No One Behind" Truly Mean?

Throughout the plenary sessions, participants returned to one key question: What principles must guide a just, inclusive, and culturally grounded green transition? The answers varied, but a shared vision emerged. Sustainability must be rooted in freedom in education, love in economic development, and equality in social structures. Panelists argued that the current global transition will only be just and inclusive if it is **culturally nurturing, intergenerationally accountable, and spiritually connected to nature**.

Rather than pursuing sustainability through sacrifice or restriction, it must be framed as an expansion of possibility, dignity, and a reconnection to our ecosystems and each other. It was emphasized that **the misconception of sustainability as "having to go without" is a major barrier** and must be countered through storytelling, policy, and practice that demonstrate joy, abundance, and shared benefit.

### Innovation, Implementation, and Impact: Bridging Research and Reality

A major theme across the conference was the urgent need to **close the gap between research and implementation**. Panels tackled hard questions:

- How can academic research be translated into scalable, context-specific solutions?
- What role do innovation management, tech partnerships, and values-aligned business models play?

- How do we move from prototypes to policies, from pilots to systemic change?

From climate financing models to commercialization pathways for agroecological solutions, the panels underscored that **technical innovation alone is not enough**; it must be met with **long-term planning, values-aligned business models, and cross-sector alliances** that prioritize regeneration over extraction.

## The Role of Consciousness, Culture, and Education

Several discussions delved into the inner dimensions of change: **consciousness, creativity, and care**. Rather than seeing sustainability as an external system problem, panelists framed it as a **developmental journey** of individuals, institutions, and societies

Themes included:

- The role of **neuroscience and character formation** in schools
- Cultivating **intergenerational trust** and listening to youth voices
- Respecting the **temporal rhythms** of daily life in urban planning
- Honoring **Indigenous and local knowledge** in environmental action

In this context, universities were called to act not merely as knowledge producers but as **cultural stewards**, **innovation incubators**, and **facilitators of holistic human development**.

## Artificial Intelligence and the Future of Sustainable Development

Amid the global rise of automation and generative AI, the panels explored the potential and risks of technology. Rather than framing AI as an existential threat, the discussion focused on agency:

> "AI is here to stay. But how we use it, that is still up to us."

Speakers warned against blind adoption and instead called for human-centered design. The message was clear: AI must be **guided by human creativity, ethical oversight, and systems thinking** if it is to serve sustainable development. Otherwise, it risks reinforcing inequalities, accelerating extraction, and eroding trust.

# Abstracts

## Culture Pillar

### Session 1: Education for Sustainable Development

**Overview**

Education for Sustainable Development (ESD) lies at the heart of cultural transformation and the transition toward regenerative societies. Within the context of the SDGI 2025 Conference, this session explored the evolving role of education as both a driver and a reflection of sustainability practice, emphasizing not only what is taught, but *how* knowledge is co-created, experienced, and applied.

From a **scientific perspective**, ESD has evolved from an environmental education framework into a systemic model that integrates cognitive, emotional, and behavioral dimensions of learning. Contemporary research highlights the importance of **transformative pedagogy**, which fosters critical thinking, empathy, and long-term ecological consciousness. ESD also builds upon social learning theory, recognizing that sustainable transitions require collective, experiential learning processes that connect classrooms with communities, and theory with practice.

From an **applied perspective**, the session demonstrated how educational initiatives can catalyze sustainable behavior and institutional change. Presentations ranged from studies on leadership for sustainability in rural schools to case-based examples of higher education reform and interdisciplinary teaching. Collectively, these contributions illustrate how educational environments - formal and informal - can nurture the competencies needed for sustainability: systems thinking, collaboration, self-awareness, and agency.

In the Egyptian and broader MENA context, ESD carries additional relevance as a mechanism for **cultural renewal and social inclusion**. It enables youth to participate meaningfully in addressing local challenges such as climate change, resource management, and economic resilience, while grounding global frameworks like the SDGs in lived realities. The session reaffirmed that education, when designed holistically, serves not only as a pathway to employability but also as a means of cultivating values, creativity, and citizenship aligned with sustainability.

The abstracts that follow reflect this dual orientation, anchored in rigorous inquiry and directed toward practice. They showcase innovative methodologies, cross-sector collaborations, and pedagogical models that seek to bridge the gap between **learning about sustainability** and **learning for sustainable living**.

# Introduction to Practical Skills Therapeutic Education

Gordon, A. [1]*, O'Flynn, S.[1]

[1] Ruskin Mill Trust, United Kingdom

* Correspondence Email: Aonghus.Gordon@rmt.org

## Abstract

Ruskin Mill Trust has recently secured academic validation, through the University of Huddersfield, for a master's degree in *Practical Skills Therapeutic Education (PSTE)*—a programme grounded in the Trust's distinctive educational methodology for children and young people. This innovative postgraduate offering is informed by Rudolf Steiner's theory of the phases of human development, is situated within a uniquely British tradition of socially and educationally progressive practices and is applied through a method called the Seven Fields of Practice. The curriculum draws upon principles from ecology, the arts and crafts movement, and Johann Wolfgang von Goethe's phenomenological approach to the *genius loci* (Field 1). This framework enables each Ruskin Mill Trust centre to develop a curriculum that is deeply rooted in the identity and character of its specific location, while simultaneously resonating with international educational discourses. Following a comprehensive audit of place, the programme transitions into Field 2, where learners engage directly with primary natural materials—such as clay, wood, and fleece—to produce crafted items intended for service. This phase fosters a tangible connection between the learner, the material, and the act of making. The ecological dimension of the programme (Field 3) is underpinned by Steiner's biodynamic agricultural philosophy, offering a model of sustainability that is both educational and transformative. The integration of biodynamic ecology into the educational environment cultivates a profound sense of belonging and relationality—anchoring learners within both the historical and emergent narratives of their landscapes. Empirical research supports the assertion that consciously designed environments, such as biodynamic farmsteads, yield significant benefits for children's health and wellbeing—sensory, psychological, and spiritual. These environments serve not only as therapeutic spaces but also as catalysts for developmental growth and educational re-engagement. The programme culminates in an exploration of transformative leadership (Field 7), particularly within the context of social entrepreneurship. This model of leadership emphasises integrity and empathy as foundational principles for decision-making, especially within the third sector. The high standards achieved by Ruskin Mill Trust's schools and colleges exemplify the potential of this approach to deliver meaningful and lasting impact. A recent evaluation by England's school inspectorate, the Office for Standards in Education (Ofsted) (2025) underscores the transformative potential of the Trust's educational model: "For many pupils who attend Grace Garden School, it is a life-changing experience. Most pupils have had a negative experience of education. The caring, supportive staff and 'hand, head, heart' approach used by the school re-engage pupils back into education effectively. Over time, this transforms pupils' attitudes to learning." (Ofsted, 2025)

***Keywords***: *Ruskin Mill, Practical Skills Therapeutic Education, craft, biodynamic farming, leadership*

# The Role of University Education Leaders in Egypt in Achieving Sustainable Development: An Analytical Theoretical Study

Doaa Mahmoud Mohamed Tohamy[1]*

[1] Faculty of Education, Suez University, Egypt

*Corresponding email: doaatohamy09@gmail.com

## Abstract

The research aims to study and analyze the role of university education leaders in Egypt in achieving sustainable development by identifying the theoretical foundations of this approach according to contemporary literature and evaluating the current reality of the role of these leaders in Egypt. The descriptive method was adopted, and data were collected through a questionnaire distributed to a sample of 225 participants, including university leaders, vice deans, and administrative staff. The results revealed a general weakness in understanding the concept of sustainable development among some educational leaders, along with ambiguity regarding their roles and responsibilities in implementing it. The study emphasized the need to improve administrative practices and enhance the principles of transparency, accountability, equality, and community participation to ensure the effective application of the societal dimension of sustainable development. It discussed the concept, importance, and challenges of leadership in higher education and its relationship to sustainable development. The research also examined the emergence, objectives, and dimensions of sustainable development, emphasizing the necessity of developing clear educational policies that promote sustainability principles. It recommended implementing specialized training programs to build leadership capacity, modernizing educational infrastructure with advanced technology, and strengthening community engagement and cooperation among stakeholders. Moreover, it called for continuous performance evaluation mechanisms to ensure quality educational outcomes, reduce negative environmental and social impacts, and enhance Egypt's progress toward sustainable development in higher education.

***Keywords***: *Role , Leadership, University Education, Sustainable Development*

# The Holistic Methodology of Acting: A Neurobiological Perspective on Consciousness, Empathy, and Social Transformation

Walter, D.[1]*

[1] Independent Researcher, Psychologist and Performing Artist, Cairo, Egypt / Lanzarote, Spain

*Correspondence email: coaching@dorotheawalter.com

## Abstract

Theatre functions as a holistic, embodied practice that affects human consciousness on cognitive, emotional, and social levels. Drawing on neuroscience (mirror neurons, dopamine, neuroplasticity) and integrative psychology, this paper explores acting's transformative impact on empathy, ethical awareness, and cognitive flexibility. Based on applied theatre work (2018–2024) at Heliopolis University in Cairo, and integrating performance theory, this research identifies key themes: habit transformation, collaborative dynamics, presence and ethics, embodied imagination, and the role of the body in consciousness. Case studies illustrate how acting fosters self-awareness and collective responsibility, offering profound implications for education, psychology, and societal change.

**Keywords:** acting, consciousness development, empathy, holistic education, mirror neurons, neuroplasticity, social change

# The Right to Freedom of Religion as a Foundation for the Implementation of the Sustainable Development Goals

Chołaszczyński, K. 1*

[1]University of Social and Media Culture in Toruń, Poland (Akademia Kultury Społecznej i Medialnej w Toruniu – Akademia Nauk Stosowanych)

*Correspondance email: krystian.cholaszczyski@aksim.edu.pl

## Abstract

The right to freedom of religion, enshrined in Article 18 of both the Universal Declaration of Human Rights (1948) and the International Covenant on Civil and Political Rights (1966), constitutes a cornerstone of democratic societies and an essential component of sustainable development. Within the framework of the 2030 Agenda, religious freedom is directly linked to the realization of Sustainable Development Goals (SDG 16 – Peace, Justice, and Strong Institutions; SDG 4 – Quality Education). This presentation explores the global and regional dimensions of violations of the right to freedom of religion, with particular attention to their impact on social cohesion, institutional stability, and sustainable development.

Empirical research demonstrates that societies upholding religious freedom exhibit higher levels of democracy, trust, and institutional effectiveness (Fox, 2016). Conversely, the suppression of religious freedom—manifested through persecution, discrimination, and violence—undermines human dignity and erodes the foundations of inclusive and peaceful societies. Recent trends indicate a concerning escalation of such violations worldwide, exacerbated by crises such as the COVID-19 pandemic. The situation in Poland serves as a case study illustrating that religious freedom requires constant protection even in stable democracies.

The analysis emphasizes that sustainable development cannot be reduced to economic growth; it must incorporate cultural and religious dimensions that shape collective identity, solidarity, and resilience. Safeguarding freedom of religion is therefore not only a moral and legal imperative but also a strategic condition for achieving the Sustainable Development Goals. Ensuring this right for all individuals remains a prerequisite for building just, peaceful, and sustainable societies.

***Keywords:*** *Freedom of Religion, Sustainable Development Goals (SDGs), Human Rights, Religious Persecution, Cultural Diversity*

# The Impact of Extra-Curricular Activities and Neuroscience in the Promotion of Academic Excellence and Character Building: A Holistic Model for Schools Progression

Daniel, M. [1]*

[1]Aspire Consulting International, Egypt (Affiliation)

*Correspondance email: marinaw.daniel@gmail.com

## Abstract

This study explores the impact of extra-curricular activities, as co-curricular activities, on students' character development, academic achievement and professional development. This is done through an evaluation of 'School with Spirit Model'- a model developed by an Egyptian consulting and training firm, Aspire Community Transformation. The model was applied in ten applied technological schools in Egypt for three consecutive years. The study provides a comparative analysis of two schools, one which employed the model and another that did not. Analysis focus on GPA scores, job placements and participation in ECAs.

***Keywords:*** *Academic Excellence, Co-Curricular Activities, Education, Extra-Curricular Activities, School with Spirit.*

# Culture Pillar

## Session 2: Cultural Heritage and Traditional Practices in Sustainability

**Overview**

Cultural heritage and traditional knowledge systems represent enduring sources of resilience, adaptation, and ecological wisdom. This session examined the intersections between cultural identity, heritage conservation, and sustainable development, highlighting how inherited practices and worldviews continue to inform contemporary responses to environmental and social challenges.

From a **scientific perspective**, the relationship between culture and sustainability has gained growing recognition within fields such as heritage studies, anthropology, and ecological economics. Research underscores that cultural heritage serves as both a repository of adaptive knowledge and a framework for community organization. Traditional practices in agriculture, architecture, crafts, and governance often embody centuries of experimentation with sustainable resource use, biodiversity conservation, and social cohesion. Integrating these insights within modern sustainability frameworks is critical for designing locally grounded and culturally responsive solutions.

From an **applied perspective**, the session's contributions demonstrated how heritage preservation can align with innovation and sustainable livelihoods. Presentations explored topics such as the role of traditional architectural techniques in climate-responsive design, the revitalization of indigenous languages as a vehicle for cultural continuity, and the use of museum spaces as platforms for sustainability education. These examples showed that safeguarding heritage is not a backward-looking endeavor but a dynamic process that supports creativity, inclusion, and ecological responsibility.

In the MENA and Euro-Mediterranean contexts, cultural heritage carries a dual responsibility: to **protect memory** and to **inform transformation**. As the region faces rapid urbanization, environmental degradation, and social change, traditional knowledge systems offer valuable models for balance, interdependence, and stewardship. At the same time, new generations are reinterpreting these traditions, embedding them into contemporary art, design, and education as a form of regenerative innovation.

The abstracts that follow represent a convergence of disciplines and perspectives, bridging conservation with creativity. Together, they illustrate how culture can anchor sustainable development in meaning, continuity, and belonging.

# Language Sustainability: the Case of Amazigh Language in Morocco

Oblak, P. [1]*

[1]Euro-Mediterranean University / Faculty of Humanities, University of Primorska, Slovenia

*polona.bnd@gmail.com

## Abstract

Language, being the most important condition for maintaining the identity of an ethnic community, as well as the foundation for preserving its culture, can be considered the essential element that allows access to the invisible past of that community and to its ancestral homeland, all the way to the area where the community lives today.

This presentation examines the intersection of language sustainability and policy through the case of Amazigh language in Morocco, highlighting the comprehensive strategies employed to ensure the preservation and revitalization of this indigenous language. Once marginalized, Amazigh language has become a focal point of Morocco's linguistic landscape, thanks to a series of innovative and institutional measures.

The development of a modernized Tifinagh alphabet, the landmark constitutional recognition of Amazigh language as an official language of Morocco, it progressive integration into the national education system, and its use in official signage represent concrete institutional and societal measures that actively contribute to language sustainability. These initiatives not only standardize and legitimize the language but also embed it within public, educational, and legal domains, thereby supporting a healthy and enduring relationship between the Amazigh people and their language.

The key focus of the presentation is the author's concrete example of sustainable preservation: a project involving the transcription of Amazigh oral narratives directly into written form in five foreign languages, making them available to diverse international audiences. As a final step in this sustainable language preservation project, the Amazigh oral narratives will be transcribed into written Tifinagh (book form), recorded as audio in the Amazigh language, and adapted into a cartoon, ensuring that this cultural heritage is accessible, engaging, and transmitted across generations through multiple complementary media.

The Moroccan case demonstrates that language sustainability requires a holistic approach, combining script development, legal recognition, educational integration, public visibility, and the documentation of oral traditions.

***Keywords:*** *Language sustainability, Amazigh Language, Oral tradition, Indigenous languages, Language preservation*

# Transforming Agrifood Education: The SEKEM Case Study on Biodynamic Agriculture and Entrepreneurship Programs within the NextFOOD Project

El Hawwary, A.[1], Ali, R. F.[1,2*]

[1]Organic Crop Production Department, Faculty of Organic Agriculture, Helipolis University, Cairo, Egypt.
[2]Zoology and Agricultural Nematology Department, Faculty of Agriculture, Cairo University, Giza, Egypt.
*Correspondence email: reham.aly@hu.edu.eg

## Abstract

The SEKEM case study, part of the NextFOOD project, focuses on innovative educational approaches in the agrifood system through two sub-cases: a Biodynamic Agriculture Course and an Entrepreneurship Program. The Biodynamic course, designed for undergraduate students of the faculty of Organic Agriculture at Heliopolis University, emphasizes hands-on learning in sustainable farming practices, integrating five core competencies: observation, dialogue, participation, visioning, and reflection. Despite challenges such as logistical issues and adapting to new teaching methodologies, students showed significant improvement in these competencies, particularly in observation and participation, as evidenced by pre- and post-training self-assessments. The Entrepreneurship Program targeted aspiring agri-food entrepreneurs, providing training in business development, sustainable agriculture, and leadership skills. Participants, including students and local farmers, developed start-up projects, gaining practical skills in market analysis and product development.

Key findings highlight the effectiveness of real-life case studies and interactive learning in enhancing students' and participants' competencies. Supporting forces included strong stakeholder collaboration and immersive farm experiences, while hindering forces involved administrative burdens and the need for better instructor training in NextFOOD methodologies. Lessons learned underscore the importance of preparatory meetings, flexible planning, and continuous feedback loops. Future plans include expanding field visits, refining training materials, and fostering intercultural communication. This case demonstrates the transformative potential of holistic, competency-based education in preparing the next generation of agrifood professionals.

***Keywords:*** *Agrifood, SEKEM, Education, Biodynamic, Egypt*

# Ecology Pillar

## Session 1: Climate Resilience

The Climate Resilience session addressed the urgent need to strengthen ecological and socio-economic systems against the accelerating impacts of climate change. Presentations examined strategies for sustainable land management, low-carbon transitions, and adaptive technologies that enhance environmental integrity and human well-being. Collectively, the session underscored that resilience is not merely a technical goal but a cultural and institutional process requiring collaboration, innovation, and behavioral change across sectors.

From a **scientific perspective**, research presented in this session reflected the growing shift from reactive adaptation to proactive transformation. Studies on water management, soil health, and renewable energy highlighted integrated models that combine mitigation and adaptation strategies. The discussions emphasized the role of **systems thinking** in managing interdependencies between agriculture, energy, and infrastructure, where local ecological data and long-term planning are essential for informed decision-making.

From an **applied perspective**, the session showcased case studies and empirical findings with direct relevance to Egypt's national climate priorities. Several key insights emerged:

- **Upscaling organic fertilizers** is critical for soil regeneration and emissions reduction, yet requires a **cultural transformation** at both organizational and individual levels.
- The sector faces a **shortage of specialized companies**, despite clear environmental and economic benefits, pointing to opportunities for enterprise development and capacity building.
- Establishing **comprehensive agricultural databases** is essential for climate-smart planning and for tailoring adaptation measures to local conditions.
- The development of **coherent national policies**, supported by international cooperation frameworks such as those of the European Union, is fundamental to scaling sustainable practices.
- Bridging the **gap between Egyptian and international construction markets** remains a major challenge for decarbonization and resilience, especially in terms of policy alignment, cost structures, and technical expertise.

Together, these findings reflect a convergence between scientific inquiry and practical implementation. They demonstrate that achieving climate resilience demands both **technological innovation** and **institutional coordination**, guided by policies that integrate environmental stewardship with economic viability.

The abstracts that follow expand on these themes through diverse methodologies and scales of analysis—from experimental research on sustainable agriculture and renewable energy systems to applied studies in infrastructure, waste management, and green building.

# Pioneering Green Futures: How Egypt's Carbon Footprint Center is Redefining Climate Action

Seada, Thoraya[1]*, Bahaaeldin, A[1].

[1]Carbon footprint center , Heliopolis University, Egypt

*Correspondence email: thoraya.seada@hu.edu.eg,abeer.bahaa@hu.edu.eg

## Abstract

The Carbon Footprint Center (CFC), established at Heliopolis University for Sustainable Development, serves as a pioneering hub in Egypt and the MENA region for quantifying, monitoring, and reducing greenhouse gas (GHG) emissions. The center drives climate action through strategic partnerships, capacity building, and the development of carbon offsetting projects aligned with international standards.

A core initiative is the development and management of the Economy of Love (EoL) standard, an ethical and transparent framework that includes a carbon credit mechanism to incentivize regenerative farming. To date, CFC has supported over 5,000 farmers in adopting practices like biodynamic agriculture, afforestation, and composting, enabling their participation in carbon certification and climate finance.

CFC's impact is amplified through key collaborations, including a partnership with EoL to support smallholder carbon projects and a protocol with the Authority for Import and Export to integrate carbon assessments into national trade procedures. Capacity building programs, developed with partners like GIZ and the German Export Council, train diverse stakeholders in carbon footprint management and sustainable development. The center also contributes to broader regional and national goals through its role in the EU-PRIMA Farms4Climate project and by supporting the development of the Egyptian Carbon Market.

Underpinned by research including publications on *True Cost Accounting for Food* and *The Future of Agriculture in Egypt* CFC provides a full suite of services: carbon and ecological footprint assessments, sustainability reporting, and climate education. Through this multifaceted, science-based approach, the Carbon Footprint Center acts as a central catalyst for Egypt's green transition, supporting climate-resilient, low-carbon development from the grassroots to the national level.

***Keywords:*** *Carbon Footprint, Regenerative Agriculture, Carbon Credits, Capacity Building.*

# Early Warning Systems in Agriculture: Adapting to Climate-Induced Disaster Risks and Reducing Food System Vulnerability

El Kenawy, A. H.*[1], Fahim, M. A.[2], Elshafei, A. M. D.[3]

[1] Plant Protection Research Institute - Agricultural Research Centre, Giza 12619,

[3] Central Laboratory for Aquaculture Research, Agriculture Research Center, Egypt

[1 2 3] Climate Change Information Centre &Renewable Energy &Expert system - Agricultural Research Centre, Giza 12619,

* Correspondence email: ahmed.hamed.elkenawy@gmail.com

## Abstract

Early warning systems (EWS) are critical tools for mitigating climate-induced disaster risks and enhancing the resilience of agricultural systems. By integrating real-time data monitoring, risk assessment, and proactive communication, EWS enable timely interventions to safeguard food security and livelihoods. Climate change has intensified the frequency and severity of droughts, floods, and extreme weather events, disproportionately impacting smallholder farmers and vulnerable communities. Effective EWS addresses these challenges by combining advanced forecasting technologies with localized adaptation strategies. EWS relies on multi-scale data assimilation, including satellite monitoring, climate modeling, and on-ground sensors, to predict hazards such as droughts and floods. Economically, enhanced EWS could boost global agricultural productivity by up to $30 billion annually while reducing asset losses by $2 billion, with benefit-to-cost ratios exceeding 10:1. These systems also address emerging threats like flash droughts, which require rapid communication channels to prevent cascading impacts on food production. Despite progress, barriers persist, including fragmented data sharing, limited local capacity, and insufficient integration with policy frameworks. Successful EWS requires multi-stakeholder collaboration evident in FAO-WMO partnerships advancing weather forecasting and climate services. Future efforts must prioritize ICT-enabled platforms to empower remote communities, alongside scaling region-specific tools like disease early warning systems in Southeast Asia23. Embedding EWS within national adaptation strategies and safety net programs remains essential to building systemic resilience against climate shocks.

***Keywords:*** *Early Warning Systems, Climate Change Adaptation, Disaster Risk Reduction, Food Security*

# The Earth as a Living Being - a Basic Idea for the Future

Schad, A. [1]*

[1]Freie Hochschule Stuttgart, Germany

*Correspondence email: albrecht.schad@t-online.de

## Abstract

Man-made climate change is a drastic reminder that we cannot continue to treat the earth in this way. In order for us humans to be ready to work together with the earth again, we need true images that help us to connect emotionally with the earth. One such true image can be the idea of a living earth.

The results of ecology, microbiology and molecular biology are breathtaking in many ways. They enable us today to grasp the idea of a living earth in a more concrete and comprehensible way. We are only just discovering Rudolf Steiner's ideas on this subject after 100 years. Steiner also speaks specifically about the earth being a living being. Today we know a whole series of processes that we only know in connection with life, properties of life (see also Rosslenbroich, Bernd 2023:Properties of Life: Towards a Theorie of Organismic Biologie. The MIT Press, Boston). We can also describe these processes for the Earth. For example, life is characterized by sensitivity. The Earth has been able to keep its surface temperature constant (homeothermy) within a narrow corridor for around 4 billion years. It has a constant body heat, which we otherwise only know from the most highly developed vertebrates, birds and mammals. Another example is the fact, that life on earth forms its own protective shell like a skin: the ozone layer. It not only protects us from the hostile cosmic radiation. Without it, the oceans would dry out. We can see this on Mars.

Today we can say, that we humans owe our existence to the formation of rocks and the life of plants and animals. They are part of us and we are part of them (see Schad, Albrecht 2023: Vom Leben unserer Erde. Verlag Freies Geistesleben.) The formation of rocks and the life activity of plants and animals have reshaped the earth over huge periods of time in such a way, that it has become more hospitable to life. If we work together with life, human cultural activity can take the development of plants, animals and landscapes into a shared future.

**Keywords:** climate change, properties of life, earth as a living being, cultural activity, shared future.

# Agroforestry as a Potent Catalyst for Environmental and Economic Sustainability

Elromy, M. H.[1]*, Asal, S. A.[1], Zahran, Y. A.[1], Ghanem, Y. M.[1], Khaled, H.[1], Nour Eldeen, E.[1], Shaddad, S. M.[1,2], Hendawy, S. F.[1,3], Ali, R. F.[1,4]

[1]Organic Crop Production Department, Faculty of Organic Agriculture, Heliopolis University, Cairo, Egypt.

[2]Soil Science Department, Zagazig University, 44511 Zagazig, Egypt.

[3]Medicinal and Aromatic Plants Research Department, National Research Centre, Dokki 12622, Cairo, Egypt.

[4]Zoology and Agricultural Nematology Department, Faculty of Agriculture, Cairo University, Giza, Egypt.

*Correspondence email: mohand211535@hu.edu.eg

## Abstract

Biodiversity loss poses a significant global threat, profoundly affecting food security, agricultural longevity, and environmental health, especially in biodiverse nations like Egypt. Egypt, home to over 20,000 species, faces escalating threats from climate change, pollution, urbanization, and unsustainable farming. Traditional agriculture, consuming 80-85% of Egypt's water, exacerbates a looming food crisis driven by population growth and water scarcity. Agroforestry, an integrated system blending trees with crops and/or livestock, offers a powerful solution to these interconnected challenges. This research focuses on evaluating the environmental and economic advantages of implementing agroforestry at a SEKEM farm in El Sharkia Governorate, Egypt.

The study utilizes an observational and correlational design, comparing three distinct agroforestry zones with a monoculture control plot from October 2024 to March 2025. The authors assess crucial parameters including crop yields, soil health such as microbial diversity, nutrient content, physicochemical properties, and insect population dynamics for beneficial and harmful species. Through a multidisciplinary approach encompassing soil, microbiology, and crop production analyses, this research aims to quantify productivity gains, identify beneficial biological groups, and underscore the vital role of biodiversity within agroforestry systems. The anticipated findings will provide empirical, context-specific data, bridging knowledge gaps in integrated agricultural research. Ultimately, this study seeks to offer valuable recommendations for promoting sustainable agricultural practices that simultaneously boost crop production and conserve biodiversity in agro-ecosystem environments.

***Keywords:*** *Agroforestry – sustainability – biodiversity richness – Egypt.*

# Transition to Digital Agriculture as a Pathway for Sustainable Development

Sweilam, M. N. *[1], Tharwat, A. M.[2]

[1] Economic Lecturer, Heliopolis University, Egypt

[2] Economic Expert, Egyptian Cabinet, Egypt

*Correspondence email: marwa.swelam@hu.edu.eg

## Abstract

Modern agriculture era is characterized by employing advanced digital technologies. Egypt's agricultural sector is currently moving towards digital agriculture as a pathway for sustainable development. The current paper surveys success stories for both developed and developing countries and evaluate the lessons learned, that can pave the way for adopting digital agriculture in Egypt. The study assesses how digital technology acts as a catalyst for agricultural growth, and evaluates different aspects affecting its implementation.

The results find that Egypt has limited access to digital agricultural tools, restricted by socio-economic constraints, and high implementation costs. Governmental programs and private sector initiatives are gradually fostering the growth of digital agriculture in the country, and increasing the potential investment in Egypt's digital agriculture tools.

In response, the paper recommends strengthening technological capabilities, directing private investment and foreign partnerships towards increasing farmers' financial inclusion, and modernizing institutional structures. These recommendations aim to chart a strategic path for sustainable development and accelerate the adoption of digital technologies across Egyptian agriculture.

***Keywords***: *Agriculture Sector, Climate Smart Technologies, Digital Technologies, Egyptian Economy, Sustainable Development.*

# Opportunities and Challenges of Climate-Neutral Farming in the European Union – Experiences from Bringing Together Farmers, Advisors, and Researchers

Bautze, L.[1]*, Steffens, M.[1]

[1]Research Institute of Organic Agriculture (FiBL)

## Abstract

The European Union has committed to making the agriculture sector a key contributor to achieving climate neutrality by 2050. This goal requires extensive collaboration among scientists, advisory services, farmers, and value chain actors. Several projects at regional, national, and EU levels are fostering mutual learning and helping to identify suitable methods, models, tools, and approaches to support this transition.

The Horizon EU projects ClieNFarms, Climate Farm Demo, and Organic Climate Net offer valuable insights into harmonizing data collection and tool assessments across the EU. Additionally, long-term trials in Switzerland and regional compensation initiatives shed light on the complex challenges faced by farmers and scientists in carbon sequestration and participation in carbon credit market.

***Keywords***: *climate change, mitigation, adaptation, organic agriculture, practical research*

# Ecology Pillar

## Session 2: Water-Energy-Food-Ecosystem Nexus

This session explored the interdependence of water, energy, food, and ecosystems as a cornerstone for climate-resilient development. Presentations focused on technologies and management models that connect resource efficiency with ecological integrity, revealing how integrated systems approaches can optimize sustainability outcomes across multiple sectors simultaneously.

From a scientific perspective, the WEFE Nexus framework was examined as an analytical and operational tool for balancing competing demands on natural resources. Research presented at the conference demonstrated that sustainability challenges cannot be addressed in isolation; they require systemic solutions combining technology, policy innovation, and natural processes. Studies on solar-powered desalination, green hydrogen production, aquaponics, and renewable energy integration provided empirical evidence of feasible decarbonization pathways for Egypt and the wider MENA region.

From an applied perspective, several practical insights emerged:

- Integrated Solutions are Essential. The research affirmed that cross-sector collaboration is key to efficient resource management and climate adaptation.
- The Energy Transition is Underway. Concrete pathways were showcased, including hydrogen generation from wastewater and the use of solar and wind power for decentralized energy access.
- Circular Economy Models are Actionable. Case studies demonstrated how plastic and agricultural waste can be transformed into valuable inputs for industry and agriculture, reducing pollution and generating employment.
- Evidence Supports Sustainable Agriculture. Long-term studies confirmed that organic and biodynamic systems improve soil health, enhance biodiversity, and strengthen ecosystem resilience.
- Technology is a Force Multiplier. The adoption of remote sensing, GIS, AI, and IoT-based monitoring systems enables precise water management, biodiversity tracking, and early-warning mechanisms for environmental risks.
- From Local Insight to Global Relevance. The findings contributed to Egypt's Vision 2030 goals while offering replicable models for resource-constrained regions worldwide.

Discussions also addressed enabling conditions for implementation: establishing national databases on farm and water systems; aligning construction and infrastructure policies with sustainability criteria; and strengthening international cooperation frameworks such as those supported by the European Union.

In conclusion, the session illustrated that the WEFE Nexus is not merely a theoretical construct but a practical blueprint for integrated climate action. Through innovation, data-driven governance, and community engagement, Egypt and its partners can translate research into scalable, context-specific solutions that secure both human prosperity and ecological balance.

# Solar-Powered Electromagnetic Desalination of Groundwater: A Pilot Study in Egypt for Sustainable Water Management

Yousef, M. E. [1]*, Mousalm, H. A. [1], Elsawahly, Y. M. [1], Abd-Elmajed, A. S. [1], Monir, M. M. [1],

[1]Department of Electromechanics, Engineering, Faculty of Engineering, Heliopolis University, Cairo, Egypt.

*Correspondence email: mohamed.yossef@hu.edu.eg

## Abstract

High water salinity is a critical threat to freshwater security, especially in regions already stressed by climate change and population growth. Conventional desalination technologies, such as reverse osmosis and thermal methods, are often energy-intensive and environmentally costly. This study evaluates a more sustainable and cost-effective alternative electromagnetic field-based desalination powered by solar energy. The method involves passing saline water through a non-conductive conduit wrapped with copper coils connected to solar panels, generating a magnetic field that alters ionic chemistry and facilitates salt separation without reactive chemicals. Experimental trials on brackish water samples showed a reduction in salinity by 60% and energy consumption lower by 35% compared to traditional methods. Literature review and recent global efforts confirm this approach's technical feasibility and potential scalability. While still in early development, electromagnetic desalination offers advantages in portability and suitability for remote or off-grid locations, supporting sustainability goals and providing a promising solution for agricultural and potable water needs in high-salinity areas. Further research is recommended to optimize system performance and validate long-term effectiveness.

***Keywords:*** *Electromagnetic Field Desalination, Solar Energy-Driven Desalination, Groundwater Salinity Management, Magnetic Field Effects on Ion Migration, Water Scarcity Solutions, Ion Immobilization Techniques, Water resource management*

# Biodiversity Monitoring Across Two Locations (El Sharkia and Nuweibaa) Egypt, Recording the Impact of Organic Practices on Yield Production and Social Community

Ashraf, H.[1]*, Nagy Ahmed, N.[1], Abdelnasser, H.[1]*, Sherif, M.[1]*, Ghanem, Y. M.[1], Khaled, H.[1], Nour Eldeen, E.[1], Shaddad, S. M.[1,2], Barakat, M. M.[3], Ali, R. F.[1,4]

[1]Organic Crop Production Department, Faculty of Organic Agriculture, Heliopolis University, Cairo, Egypt.

[2]Soil Science Department, Zagazig University, 44511 Zagazig, Egypt.

[3]Rural Sociology Department, Faculty if Agriculture, Ain Shams University, Cairo, Egypt.

[4]Zoology and Agricultural Nematology Department, Faculty of Agriculture, Cairo University, Giza, Egypt.

*Correspondence email: hazem211588@hu.edu.eg

## Abstract

This research comprehensively assesses biodiversity in two distinct Egyptian regions: El Sharkia in the Nile Delta and Nuweibaa in South Sinai. The study's core objective is to compare biodiversity levels, examining species richness, abundance, and ecosystem characteristics. El Sharkia, a highly cultivated and human-influenced landscape, contrasts with Nuweibaa's less disturbed natural coastal and desert ecosystem. Standardized biodiversity survey techniques, including direct observation, transect sampling, and photographic documentation, were employed for data collection, focusing on flora and selected fauna such as insects and other arthropods. Data was recorded during similar seasonal conditions to ensure accurate comparative analysis. Representative plots in each region facilitated consistent data collection and understanding of local biodiversity patterns. Results revealed significant biodiversity differences. El Sharkia displayed notably higher species richness and habitat diversity than Nuweibaa. While El Sharkia's human-modified environments like agricultural fields and irrigation canals create diverse microhabitats, they also introduce long-term ecological pressures. Nuweibaa, despite retaining more natural ecosystems, showed reduced biodiversity, likely due to recent urbanization, tourism, and water scarcity negatively impacting native species and ecological balance. These findings underscore the critical need to preserve natural habitats like Nuweibaa and implement sustainable practices in developed areas such as El Sharkia. The contrast highlights Egypt's diverse ecological challenges, from habitat loss to environmental degradation. This study emphasizes the value of regional biodiversity monitoring for guiding conservation efforts and policy planning. It also included evaluating the impact of organic agricultural practices on communities surrounding SEKEM and Habiba Farms, noting positive changes in farmers' and growers' living standards. Further long-term studies are recommended to track ongoing changes.

***Keywords:*** *Biodiversity - Monitoring – Social Community – El Sharkia – Nuweibaa - Egypt.*

# Economy Pillar

## Session 1: Sustainable Business & Entrepreneurship

This session examined how entrepreneurship and business innovation can drive sustainable development when guided by ethical frameworks, inclusive models, and long-term systems thinking. Presentations and discussions highlighted the transition from extractive to regenerative business practices, emphasizing entrepreneurship as both an economic and social force for sustainability in the Global South.

Research on sustainable entrepreneurship has evolved to integrate ecological economics, social innovation theory, and impact measurement frameworks. Scholars have increasingly argued that the private sector's role extends beyond profit generation to include **shared value creation**, **resilience building**, and **cultural renewal**. The session reflected this paradigm shift by situating entrepreneurship within broader sustainability transitions, recognizing it as a mechanism for catalyzing technological diffusion, employment generation, and behavioral change. Session contributions demonstrated diverse ways in which sustainable enterprises are reshaping economic systems in Egypt and beyond:

- **Purpose-driven business models** such as the *Economy of Love* and *biodynamic agricultural enterprises* exemplify how values-based certification systems can align market incentives with ecological regeneration and social justice.
- **Education-driven entrepreneurship** programs showcased how universities and incubators can cultivate sustainability competencies among youth, linking academic research to startup ecosystems and local value chains.
- **Circular economy initiatives** illustrated how integrating waste, energy, and agricultural sectors creates holistic bioeconomy systems, maximizing resource efficiency and minimizing environmental impact.
- **Inclusive financial instruments** and **climate finance innovations** were discussed as essential enablers for scaling sustainable business ventures and ensuring that small and medium enterprises (SMEs) are not left behind in the green transition.
- **Participatory and community-based models**—particularly those led by women and youth—were highlighted as powerful agents for equitable growth and localized sustainability outcomes.

Speakers underscored the need for **policy coherence** to support green entrepreneurship ecosystems, including incentives for sustainable production, access to ethical investment capital, and institutional mechanisms for social enterprise recognition. It was also noted that collaboration between research institutions, the private sector, and development agencies is critical for transforming sustainability from a niche pursuit into a mainstream economic paradigm Overall, the session positioned entrepreneurship not only as an engine of economic growth but as a **vehicle for systemic change**. It reaffirmed that sustainable business models can harmonize profitability with purpose, turning markets into platforms for regeneration rather than depletion.

The abstracts that follow explore these intersections through empirical studies, case analyses, and practice-based innovations from Egypt, the MENA region, and international contexts.

# Integrating Waste, Energy, and Agriculture: A Holistic Circular Bioeconomy Model for Egypt

Ibrahim, A. M. [1]*

[1]Independent Researcher & Circular Economy Practitioner, Cairo, Egypt

*Correspondence Email: Ahmed_m_i@hotmail.com

## Abstract

Egypt faces a critical nexus of waste pollution, energy insecurity, and agricultural soil degradation, demanding innovative and integrated solutions. This study evaluates a comprehensive circular bioeconomy model that valorizes the country's 30-35 million t/year of agricultural residues, 13 million t/year of animal manure, and 200 kt/year of waste oil. The proposed system processes 50% of these streams through anaerobic digestion (yielding 0.4m³ biogas/kg volatile solids) and transesterification. Biogas is converted to electricity at 2kWh/m³ and sold at a $0.04/kWh tariff, while digestate is upgraded to biofertilizer ($80/t). Carbon credits, calculated via VERRA VM0042 with a 70% conservatism factor, yield $15/t $CO_2$-eq.

**Key Findings:**

- **Gross Revenue:** $793M/year (energy: $480M, carbon: $90M, fertilizer: $115M, tipping fees: $108M)
- **Operational Costs:** $688M/year (procurement, logistics, processing)
- **Net Profit:** $105M/year (4% ROI baseline)
- **Scalability:** 0.8GW renewable capacity and 100k+ desert acres reclaimed by 2030

  Strategic policy integration, including waste procurement subsidies and formal partnerships with the Waste collectors "*Zabbaleen*" (Cairo's informal waste collectors), can increase ROI to 9.6%. This model transcends mere techno-economic analysis; it advances SDGs 7 (Energy), 11 (Cities), 12 (Consumption), and 13 (Climate) by formalizing 10k+ informal workers, preserving their unique socio-cultural heritage, and creating a scalable blueprint for sustainable development in arid regions.

**Keywords:** Circular Bioeconomy, Waste Valorization, Carbon Finance, Social Inclusion, Egypt 2030, ROI Analysis

# Integrating Energy and Economic Policies for Sustainable Development in Emerging Economies: Challenges and Opportunities

Ibrahim, M. H.[1]*

[1]South Cairo Electricity Distribution Company - Ministry of Electricity and Renewable Energy, Egypt

*Correspondence email: mahmoud.hassan38@outlook.com

## Abstract

The presentation explores a comprehensive analysis of the pathways for emerging economies to achieve sustainable development through the integration of energy and economic policies. The presentation emphasizes the importance of international cooperation, policy alignment, and innovative financial mechanisms such as green bonds and green taxation to promote renewable energy deployment and reduce reliance on fossil fuels. It discusses strategies for enhancing the sustainability of the global energy mix, highlighting the transition towards cleaner energy sources like solar, wind, and hydro power, with targets such as achieving 15% to 40% clean energy utilization. The report also examines the role of green fiscal incentives, including carbon taxes and subsidies, to incentivize environmentally friendly investments and foster green job creation. Challenges such as policy coordination, financial constraints, and technological barriers are addressed, alongside opportunities presented by green financing and policy instruments. The overall goal is to offer a roadmap for emerging economies to balance economic growth with environmental sustainability through integrated energy and economic policymaking, ultimately contributing to global sustainable development goals.

A core component of the discussion revolves around the integration of renewable energy into national energy portfolios. Specific targets, such as increasing clean energy shares, are proposed as part of a strategic roadmap for transitioning the energy mix toward sustainability. Achieving these targets requires comprehensive policy reforms, including the deployment of innovative financial instruments like green bonds and green taxation, which serve to incentivize investments in renewable energy infrastructure and technology. These fiscal tools not only stimulate green investments but also promote the creation of green jobs, thus supporting economic growth alongside environmental objectives.

In conclusion, the presentation offers a comprehensive roadmap for emerging economies to balance economic growth with environmental sustainability through integrated energy and economic policies. It advocates for a multifaceted approach involving international cooperation, innovative financing, policy reform, technological advancement, and stakeholder engagement to realize the full potential of sustainable development and mitigate the risks posed by climate change and energy insecurity.

***Keywords:*** *Energy Policies, POLY-CRISIS, Fiscal Policy Tools, Monetary policy tools, Macroeconomic*

# Society Pillar

## Session 1: Diversity, Equality and Inclusion

The session on *Diversity, Equality, and Inclusion (DEI)* addressed one of the most fundamental dimensions of sustainable development: ensuring that social transformation is equitable, participatory, and grounded in human dignity. Contributors explored how inclusive practices across education, health, governance, and the workplace shape the broader fabric of sustainability, both as a value system and as a measurable development outcome.

From a **scientific perspective**, the DEI agenda has evolved beyond its traditional social policy framing into an interdisciplinary field linking sociology, gender studies, public health, and sustainable development research. Contemporary studies underscore that sustainability cannot be achieved without justice and representation. Equality of access to education, healthcare, and employment directly influences community resilience and environmental stewardship. The session's academic contributions reflected this understanding, presenting data-driven insights into the relationships between social inclusion, quality of life, and collective capacity to adapt to global challenges.

From an **applied perspective**, the session offered tangible examples of how inclusive systems can drive sustainable outcomes:

- **Gender-responsive programming** was shown to advance both economic opportunity and environmental awareness, particularly through women-led climate resilience initiatives and rural education projects.
- **Participatory governance** and community engagement emerged as essential tools for ensuring that marginalized voices are reflected in local sustainability planning and monitoring processes.
- **Inclusive education models**, integrating neuroscience and character formation, demonstrated how curricula can foster empathy, cooperation, and agency among learners.
- **Health equity research** presented in the session highlighted the importance of addressing biopsychosocial dimensions of care, especially in critical care settings, as a foundation for justice in public health systems.
- **Human rights frameworks**, including the right to freedom of thought, conscience, and religion, were discussed as vital cornerstones of sustainable societies, ensuring that progress does not come at the expense of autonomy or cultural identity.

Speakers emphasized that diversity and inclusion are not end goals but **ongoing processes**—requiring institutional commitment, policy coherence, and sustained dialogue between academia, civil society, and decision-makers. They also called attention to the need for context-specific DEI frameworks that reflect the social, cultural, and historical realities of Egypt and the MENA region, while aligning with global norms and the Sustainable Development Goals (SDGs).

The discussions ultimately converged on a shared insight: societies that value diversity and practice inclusion are **more adaptable, creative, and resilient** in the face of crisis. Inclusion, therefore, is not peripheral to sustainability—it is its precondition. The abstracts that follow provide both empirical and conceptual contributions to this dialogue, offering research and field-based evidence on how equity and participation can strengthen the foundations of sustainable development.

# Gender Disparities in Baharia Oasis Children's House-Tree-Person (HTP) Performance: A Descriptive study

Kareema A.Alsaid, K. A.[1,2*] , Balata, G. F. [1,3], Abulsoud, A [4,5], Khamis, A. A.[1].

[1] Integrative health centre, Heliopolis University for sustainable development, Cairo 11785, Egypt.

[2] Lecturer of Clinical Psychology, Department of pharmacology, Faculty of pharmacy, Heliopolis University for sustainable development, Cairo 11785, Egypt.

[3]Department of Pharmacy practice, Faculty of pharmacy, Heliopolis University for sustainable development, Cairo 11785, Egypt.

[4]Biochemistry and Molecular Biology Department, Faculty of Pharmacy (Boys), Al-Azhar University, Nasr City, Cairo 11231, Egypt

[5]Faculty of Pharmacy, Heliopolis University for sustainable development, Cairo 11785, Egypt.

*Correspondence email: karima.abdelhalem@hu.edu.eg

## Abstract

The current study aims to determine gender disparities in Aabharia oasis children in House-Tree-Person test , sample of 81 late childhood children (56 girls and 25 boys) between the ages of 6 and 12 was subjected to a descriptive method using HTP projective drawing test. The self-report measures assessed included self-confidence, self-actualization, decision-making, responsibility-taking, and rational thinking.

Findings revealed a considerable effect of gender on several personality-related variables including self-confidence, self-actualization, decision-making, taking responsibility, and rational thinking. Both genders showed high levels of psychological resilience, but males showed comparatively greater resilience, which was probably impacted by Baharia Oasis cultural norms and gender roles.

***Keywords***: House-Tree-Person test, gender, psychological resilience, childhood

# Integrating International Environmental and International Human Rights Law to Advance the Sustainable Development Goals

Shehata, M. A. [1]*

[1]PhD in Public International Law from the Institute for Arab Research and Studies

*Correspondence email: m.a.zakaria2030@gmail.com

## Abstract

The Sustainable Development Goals (SDGs), adopted by the United Nations in 2015, represent an ambitious global agenda to address interconnected challenges related to poverty, inequality, environmental degradation, and human dignity. Achieving these goals requires a robust legal framework that bridges ecological protection and human rights. This paper explores the integration of international environmental law and international human rights law as complementary legal regimes essential for realizing the SDGs. Using a descriptive-analytical methodology, the research investigates how legal norms and mechanisms from both international systems intersect and reinforce one another. It highlights the recognition of a clean, healthy, and sustainable environment as a human right, and examines the synergies between environmental treaties and human rights instruments.The study identifies key areas where legal integration is most impactful, It also addresses legal and institutional challenges that hinder effective coordination and coherence between the two legal fields. By analysis of jurisprudence, UN reports, and best practices, the paper argues that only by a harmonized legal strategy grounded in sustainability and dignity can the SDGs be attained. It makes recommendations to facilitate integration and guide stakeholders to leverage legal harmonization for the attainment of the 2030 Agenda.

***Keywords:*** *Sustainable Development Goals (SDGs), International Environmental Law, International Human Rights Law, Legal Integration, Climate Justice.*

# Improving Job Prospects for Palestinian Youth: The Role of Internships and Volunteering in Enhancing Employment Opportunities Amidst Conflict

Salameh, S. A.[1]*

[1]Arab American University, Palestine

*Correspondence email: Ssalameh123@gmail.com

## Abstract

This in-depth study investigates the role of internships and voluntary work in improving employment opportunities for Palestinian youth, graduates, and new entrants to the labour market, especially in the on-going political and economic crisis still facing the country.

The Palestinian labour market still suffers from continuous instability and high unemployment rates, particularly among youth, graduates, and women. This is due to limited economic opportunities and political instability, which undermines youth opportunities and prevents them from accessing decent work opportunities. In Palestine, internships and volunteering are promoted as effective strategic tools to bridge the gap between educational outcomes at all levels and labour market needs by providing participants with the practical, technical, and life skills required by employers. Based on theories of human and social capital and career path, this study uses a quantitative empirical approach to measure the impact of these programs on the ability of youth and graduates to access available job opportunities compared to their peers who did not participate in these programs in the conflict-affected Palestinian context.

This study aims to shed light on the importance of internships and volunteering in bridging the gap in the Palestinian labour market between educational outcomes and market needs, thus adding a valuable research contribution to the Palestinian and global scientific and research library. After analysing the results of a survey of 398 participants of all ages and educational levels, using several statistical tools, including correlation coefficients and logistic regression coefficients, the results answered the research question: Will young people and recent graduates who train and/or volunteer find employment opportunities faster and better than others in light of the on-going conflict in Palestine?

The study also presented a set of practical and policy recommendations to maximize the benefits of internships and volunteering programs to increase their positive impact on employment opportunities for participants. This research will clearly contribute to presenting new insights on how training and volunteering can enhance youth's resilience and integration into the labour market, especially in societies experiencing conflict and political and economic instability.

***Keywords:*** *Education Outcomes, Employment Opportunities, Internships, and Volunteering*

# Society Pillar

## Session 2: Integrative Health

The session on *Integrative Health* explored the convergence of medical science, holistic practice, and social well-being as interdependent components of sustainable development. It examined how health systems can evolve beyond disease management toward prevention, equity, and wholeness—recognizing that human health and planetary health are fundamentally interconnected.

From a **scientific perspective**, integrative health draws from systems biology, psychology, and social medicine to address the multidimensional nature of well-being. Current research emphasizes the interlinkages between physical, mental, social, and environmental determinants of health. Presentations in this session reflected this holistic understanding, spanning molecular studies on inflammation and gene expression, analyses of psychosocial stress in healthcare workers, and models for integrative and preventive care. Collectively, they demonstrated that sustainable health systems require both biomedical innovation and cultural transformation in how health is defined and pursued.

From an **applied perspective**, the session highlighted how integrative approaches can bridge the gap between clinical practice, community health, and environmental stewardship:

- **Biopsychosocial frameworks** were presented as evidence-based models for equitable healthcare, particularly in critical care and chronic disease management, where patient dignity and agency are central.
  **Traditional and complementary medicine** practices were revisited through a scientific lens, showing their role in reducing dependence on synthetic pharmaceuticals and supporting culturally resonant care pathways.

- **Nutrition, movement, and mental health** were discussed as integrated pillars of prevention, emphasizing the importance of lifestyle-based approaches in both public and occupational health systems.
- **Transdisciplinary research** approaches, involving collaboration between clinicians, psychologists, environmental scientists, and community practitioners, were identified as essential for developing inclusive, context-sensitive health models.
- The notion of **"health as a social contract"** emerged, recognizing that equitable access, empathetic care, and environmental responsibility are mutually reinforcing drivers of societal well-being.

Speakers and participants agreed that integrative health is not an alternative to modern medicine but a **broadening of its scope** - a call to reframe health as a shared responsibility that encompasses individuals, communities, and ecosystems. Within the Egyptian and regional context, this approach is particularly relevant to addressing systemic health challenges, from rising chronic disease burdens to disparities in access between urban and rural populations.

The abstracts that follow advance this discussion through empirical studies and applied models of care that link healing, education, and sustainability. Together, they illustrate that integrative health is not only a medical paradigm but a cornerstone of a regenerative and equitable future.

# Enhancing Survival in Septic Shock: A Comprehensive Review of Diagnosis and Treatment Strategies.

Faysal,A[1], Adnan, M.[1], Maher, M[1], Nabil, K.[1], Abulsoud, A.[2,3]*

[1]Department of Biochemistry, Faculty of Pharmacy, Heliopolis University, Cairo 11785, Egypt.

[2]Biochemistry and Molecular Biology Department, Faculty of Pharmacy (Boys), Al-Azhar University, Nasr City, Cairo 11231, Egypt.

[3]Integrative Health Centre, Faculty of Pharmacy, Heliopolis University, Cairo 11785, Egypt.

*Correspondence email: ahmed.abulsoud@hu.edu.eg.

## Abstract

Septic shock continues to be a leading cause of death in hospitalized patients. Enhancing awareness, understanding of the issue, and knowledge of optimal treatment choices can lower mortality rates. Timely and accurate identification of septic shock is essential for enhancing survival probabilities. Sepsis is defined by intense inflammation, coagulation, and inhibition of fibrinolysis. Treatment emphasizes infection control, hemodynamic stability, and modulation of the septic response. Lipopolysaccharides were induced Septic shock is a critical condition with a low likelihood of survival, requiring the administration of drugs that mitigate cardiac complications related to shock. Targeted intensive care exerts a lesser influence on management compared to sufficient antibiotic and hydration treatment. The injection of steroids and activated protein C, together with stringent glucose control, can modulate the septic response. Additional efficacious treatments for sepsis encompass low tidal volume ventilation and high-volume hemofiltration. As septic shock deteriorates and proves unresponsive to all interventions, it is imperative to be ready to restrict and discontinue treatment. In conclusion, addressing septic shock requires a multifaceted approach that emphasizes early recognition, prompt intervention, and continuous assessment of treatment efficacy. By enhancing our understanding of septic shock and implementing evidence-based strategies, we can significantly improve patient outcomes and reduce mortality rates associated with this critical condition.

**Keywords:** Septic shock – Sepsis - Treatment strategies - Infection control – preventive medicine.

# Evaluating the Biopsychosocial Model in Relation to Critical Care Nurses' Vigilance During Extended Shifts in Ramallah Governorate Hospitals: Toward Just and Equitable Care

Ibrahim, A.[1*]

[1]PhD Candidate at Health Sciences Research Program, University of Jaén, Spain , Health Programs Coordinator at the Palestine Red Crescent Society.

*Correspondence email: aa000150@red.ujaen.es

## Abstract

This study evaluates the biopsychosocial (BPS) model as it applies to critical care nursing, highlighting its role in fostering equitable and patient-centered healthcare. While critical care traditionally emphasizes biological outcomes, the BPS model integrates psychological and social dimensions, offering a holistic framework that addresses disparities in treatment and outcomes. The research explores how nurses in high-intensity clinical environments can adopt the BPS model to strengthen cultural sensitivity, improve communication, and enhance trust between providers and patients. By acknowledging the patient's lived experience, identity, and socio-cultural background, the BPS model not only promotes better health outcomes but also cultivates just and equitable communities within healthcare systems. Findings suggest that applying this model contributes to reducing inequalities, empowering both nurses and patients, and aligning care practices with the values of dignity, equity, and human flourishing. This paper positions the BPS framework as a critical tool for advancing sustainable development in health by bridging the gap between clinical efficiency and cultural competence.

***Keywords:*** *biopsychosocial model, critical care nursing, vigilance, extended shifts, health equity*

# Feasibility and Reliability of a Health Screening Questionnaire for Assessing Occupational Health Among Organic/Biodynamic And Conventional Farmers in Egypt

Gehan, F..B. [1,2,3]*, Ahmed, I. A. [4,5], Sara, M. E. [1,2], Hadi, M. E.[1], Nermeen*, G.R.[1,6], Haidy, R.S.[7], Rana, H. H.[1], Mariam, M. W., Ahmed, E. S. , Hamza, H. A. , Asil, M. [8], Silke, S. [9], David, M.[9,10]

[1] Integrative health centre, Heliopolis University for sustainable development, Cairo 11785, Egypt.

[2]Department of pharmacy practice, Faculty of pharmacy, Heliopolis University for sustainable development, Cairo 11785, Egypt.

[3] Department of pharmaceutics, Faculty of pharmacy, Zagazig University, Zagazig, Egypt.

[4]Biochemistry and Molecular Biology Department, Faculty of Pharmacy (Boys), Al-Azhar University, Nasr City, Cairo 11231, Egypt

[5]Faculty of Pharmacy, Heliopolis University for sustainable development, Cairo 11785, Egypt

[6] Department of pharmacology, Faculty of pharmacy, Heliopolis University for sustainable development , Cairo 11785 Egypt.

[7] Data analysis department, Sekem group, Cairo, Egypt.

[8] Pharmacy students at Heliopolis University, Cairo, Egypt

[9] Chair of Medical Theory, Integrative and Anthroposophic Medicine, Insitute of Integrative Medicine, University of Witten/Herdecke, Germany

[10] University Children's Hospital, Tübingen University, Tübingen, Germany

*Correspondence email: gehan.fathy@hu.edu.eg

## Abstract

The potential advantages of organic and biodynamic farming practices for human health and environmental sustainability are becoming more widely acknowledged due to differences in pesticide exposure, physical labour, and lifestyle choices. The aim of the study is to assess the feasibility and reliability of a developed questionnaire designed for further use in a prospective health screening study of organic/biodynamic farmers compared with conventional farmers in Egypt. A total of 70 farmers (37 organic/biodynamic and 33 conventional) were selected. Data were collected via structured questionnaire administered face-to-face. The questionnaire included sections on demographic information, farming practices, health status, lifestyle behaviours, and self- evaluations. High response rate (100%) was achieved. The Cronbach's alpha was greater than 70% for all the questionnaire sections except for a reliability of less than 70% for the farming practices section which enhanced significantly to 0.87 in the modified version.

In conclusion, this pilot study demonstrates the feasibility of using the developed questionnaire for assessing overall wellbeing of Egyptian farmers.

***Keywords:*** *organic, biodynamic, conventional, agriculture, questionnaire*

# Health Screening, Medical Conditions, and Lifestyle Behaviours among University Students: Evidence from Heliopolis University

Sham, A. K*.[1], Haidy, R. S.[2], Ahmed, I. A.[3,4], Sara, M. E.[1,5], Gehan, F.B.*[1,5,6]

[1] Integrative health centre, Heliopolis University for sustainable development, Cairo 11785, Egypt.

[2]Data analyst at energya steel fabrication elsewedy helal, Egypt.

[3]Biochemistry and Molecular Biology Department, Faculty of Pharmacy (Boys), Al-Azhar University, Nasr City, Cairo 11231, Egypt.

[4]Faculty of Pharmacy, Heliopolis University for sustainable development, Cairo 11785, Egypt.

[5]Department of pharmacy practice, Faculty of pharmacy, Heliopolis University for sustainable development, Cairo 11785, Egypt.

[6] Department of pharmaceutics, Faculty of pharmacy, Zagazig University, Zagazig, Egypt.

*Correspondence email: Gehan.fathy@hu.edu.eg

## Abstract

University students often face a wide range of health challenges, which may affect their academic performance and future productivity. Understanding the prevalence of medical conditions, medication use, and lifestyle behaviours in this population is essential for developing effective interventions. A cross-sectional study was conducted among 1,120 students from five faculties at Heliopolis University. Data were collected using a validated, self-administered questionnaire under supervision. Information included medical history, medication use, dietary patterns, physical activity, sleep, smoking, and subjective well-being. Descriptive statistics and chi-square tests were used to compare health outcomes across faculties.

The overall prevalence of medical conditions was 92.05%, with anaemia (37.32%), gastrointestinal disorders (13.48%), asthma (8.18%), chronic pain (7.70%) and mental health disorders (7.14%), and being the most frequently reported. Regular medication use was reported by 30–35% of students, mainly analgesics (10%) and gastrointestinal medications (7.1%). Lifestyle habits showed notable variations: with average 33% achieved adequate sleep (8-9 hours), average 34.5 reported skipping breakfasts; and daily fruit and vegetable intake remained low with average (25%) and (33.4%), respectively with significant differences between groups. Smoking prevalence showed average (4.2%) that relatively low with compared to global reports. Despite these health concerns, students generally reported positive well-being and strong social support.

The study demonstrates a high prevalence of health conditions among university students; faculty-specific holistic health programs are warranted. On the other hand, Medication use and lifestyle behaviours were generally at better levels than global estimates, highlighting the impact of protective measures within Heliopolis student population.

***Key words:*** *Health screening, Heliopolis University, Students, wellbeing*

# Unlocking the multifaceted roles of GLP-1: Physiological functions and therapeutic potential

M. AL-Noshokaty, T. M. [1], Abdelhamid, R. [1], Abdelmaksoud, N. M. [1], Khaled, A. [1], Hossam, M [1], Ahmed, R [1], Saber, T. [1], Khaled, S. [1], Elshaer, S. S. [1 2], Abulsoud, A. I. [3 4]

[1] Department of Biochemistry, Faculty of Pharmacy, Heliopolis University, Cairo 11785, Egypt

[2] Biochemistry and Molecular Biology Department, Faculty of Pharmacy (Girls), Al-Azhar University, Nasr City, Cairo, Egypt

[3] Biochemistry and Molecular Biology Department, Faculty of Pharmacy (Boys), Al-Azhar University, Nasr City, Cairo 11231, Egypt

[4] Faculty of Pharmacy, Heliopolis University, Cairo 11785, Egypt

## Abstract

Glucagon (GCG) like peptide 1 (GLP-1) has emerged as a powerful player in regulating metabolism and a promising therapeutic target for various chronic diseases. This review delves into the physiological roles of GLP-1, exploring its impact on glucose homeostasis, insulin secretion, and satiety. We examine the compelling evidence supporting GLP-1 receptor agonists (GLP-1RAs) in managing type 2 diabetes (T2D), obesity, and other diseases. The intricate molecular mechanisms underlying GLP-1RAs are explored, including their interactions with pathways like extracellular signal-regulated kinase 1/2 (ERK1/2), activated protein kinase (AMPK), cyclic adenine monophosphate (cAMP), mitogen-activated protein kinase (MAPK), and protein kinase C (PKC). Expanding our understanding, the review investigates the potential role of GLP-1 in cancers. Also, microribonucleic acid (RNA) (miRNAs), critical regulators of gene expression, are introduced as potential modulators of GLP-1 signaling. We delve into the link between miRNAs and T2D obesity and explore specific miRNA examples influencing GLP-1R function. Finally, the review explores the rationale for seeking alternatives to GLP-1RAs and highlights natural products with promising GLP-1 modulatory effects.

# The Role of Corticosteroids in Community-Acquired Pneumonia: A Lifesaving Adjunct or An Unnecessary Risk?

Hassan, W. Y. [1], Roshdy, A. [2], Mohamed, S. S. [3], Abdelkawi, N. [3], Abdallah, N. K. [3], Hassan, M. H. [4]*

[1] Department of Clinical Pharmacy, Faculty of Pharmacy, Heliopolis University, Cairo, Egypt.

[2] Department of Clinical Pharmacy, Cairo Fatemic Hospital, Cairo, Egypt.

[3] Graduate of Faculty of Pharmacy, British university, Cairo, Egypt.

[4] Department of Pharmacology and Toxicology, Faculty of Pharmacy, Heliopolis University, Cairo, Egypt.

*Correspondence email: Menna.mahmoud@hu.edu.eg

## Abstract

Pneumonia is one of the globally leading causes of morbidity and mortality, mostly among, children, the elderly and immunocompromised patients. Despite advances in antibiotic treatments and supportive care, pneumonia remains one of the top 10 causes of death worldwide. Community-acquired pneumonia is a type of pneumonia occurred mainly by a bacterial or respiratory viral infection of the lung parenchyma. Pathogen replication, the production of virulence factors, and the host immune response resulted in inflammation and damage of the lung parenchyma, causing pneumonia. Several experimental and clinical studies were conducted to investigate the role of corticosteroid therapy in community-acquired pneumonia as an adjunct therapy to antibiotics for regulating the immune response and alleviating inflammation. However, their role remains controversial due to concerns about probable side effects such as hyperglycemia, secondary infections, adrenal suppression or even exacerbating the existing infection. In this review, we were interested in providing an insight into the possible experimental mechanism and the clinical role of corticosteroids in the management of community-acquired pneumonia, weighing benefits versus risks of corticosteroids effect in different patient clinical status, their effect on the hospitalized mortality rate, discussing the optimal dosing regimen and proposing the most suitable criteria that may optimize its use in community-acquired pneumonia for maximizing the benefits and minimizing the risks. The data of this review were based on review articles, books, and original articles obtained from PubMed, Google Scholar, and Elsevier.

***Keywords:*** *Community- acquired pneumonia, Corticosteroids, Inflammation, Immune response, Corticosteroids-dosing.*

# Inflammation Mediated Responses in the Progression of Alzheimer's Disease

Elshaer, S. S.[1 2], Fahmy M. I.[3], Abdallah, M. W.[1], Mostafa, M. F.[1], Foad, R. A.[1], Mohamed, D. G., Salman, S. A.[1], Mohamed, M. Y.[1], Abdelhamed, S. A.[1]*, Khalaf, S. S.[1]

[1] Department of Biochemistry, Faculty of Pharmacy, Heliopolis University, Cairo 11785, Egypt. b [2] Department of Biochemistry and Molecular Biology, Faculty of Pharmacy (Girls), Al-Azhar University, Nasr city, Cairo 11754, Egypt.

[2] Department of Pharmacology and toxicology, College of Pharmaceutical sciences and drug manufacturing, Misr University for Science and Technology (MUST), P.O. Box 77, Giza, Egypt

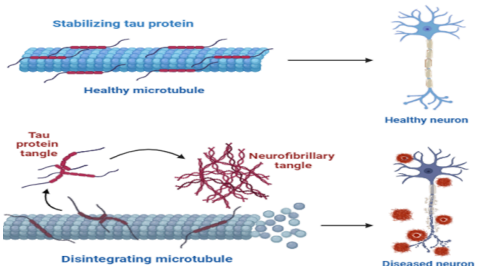
*Correspondence email: sherouk.ali@hu.edu.eg

## Abstract

By 2050, it is expected that the worldwide population of individuals with dementia will increase threefold, reaching around 131 million. More than 80% of dementia cases are caused by Alzheimer's disease (AD), a diverse neurodegenerative condition. The etiology of AD remains ambiguous, and there is no definitive remedy accessible. Its neuropathological characteristics include the presence of extracellular β-amyloid (Aβ) plaques, intracellular hyperphosphorylated tau (p-τ) in neurofibrillary tangles, and the loss of synapses and neurons. Neuroinflammation plays a crucial role in the progression of AD by contributing to amyloid deposition, neuronal damage, tangle growth, and ultimately, cell death. Given the current absence of effective disease-modifying therapies for AD, the financial burden on both society and people is increasing. The process of aging is associated with an elevation in low-grade chronic inflammation, which may contribute to the neurodegenerative progression of AD. Moreover, we propose that infections or metabolic abnormalities that induce widespread inflammation are the primary factors behind the simultaneous occurrence of inflammatory processes, disruption of the blood brain barrier (BBB), and subsequent neurodegeneration observed in AD. Hence, anti-inflammatory agents may represent a fresh strategy for preventing, delaying, or treating AD. This article provides a comprehensive overview of the inflammatory cascade, the fundamental mechanisms of AD development, and the therapeutic interventions and commercially available drugs that possess anti-inflammatory qualities and are now employed for the treatment of A*D*.

***Keywords***: *Alzheimer's disease; Neurodegenerative disease; Neuroinflammation; Dementia; Inflammatory cascade*

*Figure. 3 Molecular player mechanisms in AD*



# Society Pillar

## Session 3: Urban & Rural Development

The *Urban and Rural Development* session examined the spatial and social dimensions of sustainability, emphasizing the need for integrated planning and inclusive governance to shape livable, resilient, and equitable communities. Presentations explored how the relationship between people, place, and policy determines the sustainability of both urban and rural systems, particularly in regions undergoing rapid demographic, economic, and climatic change.

From a **scientific perspective**, research in this field increasingly adopts a systems approach, linking urbanization, rural livelihoods, and ecological processes under the shared framework of territorial sustainability. Studies presented during the session highlighted how rural development cannot be separated from urban policy, as the two are connected by flows of people, goods, energy, and knowledge. Concepts such as **socio-ecological resilience**, **participatory spatial design**, and **integrated landscape management** provided a unifying foundation for discussions. From an **applied perspective**, the session offered empirical examples and field-based models demonstrating how sustainable development strategies can be localized and context-sensitive:

- **Urban regeneration projects** presented innovative models for adaptive reuse of space, emphasizing green infrastructure, walkability, and community-centered design as pathways toward environmental and social well-being.
- Research on **gray-to-green infrastructure transitions** revealed how incorporating ecological systems into urban planning can mitigate heat islands, manage stormwater, and restore biodiversity within cityscapes.
- Studies on **eco-tourism and sustainable housing** demonstrated that economic revitalization in rural regions can align with conservation and cultural heritage preservation.
- The role of **technology and digital innovation**, including GIS-based planning tools and data-driven mapping, was discussed as a means of improving transparency, monitoring, and stakeholder collaboration across planning processes.

The session also addressed key policy and implementation challenges, including disparities in service provision between urban and rural zones, the need for coherent land-use governance, and the importance of multi-level partnerships between government, academia, and local communities. Participants agreed that both urban and rural transformation must be guided by principles of equity, environmental justice, and cultural identity. In the Egyptian and broader MENA context, sustainable urban and rural development represents a critical frontier for achieving the SDGs. It requires not only infrastructure investment but also a **redefinition of progress**—one that prioritizes human and ecological well-being over short-term expansion.

The abstracts that follow explore these intersections through diverse methodologies, from spatial analysis and policy evaluation to participatory design and community-led innovation. Together, they reflect a shared vision of cities and villages as dynamic ecosystems capable of regeneration, inclusion, and harmony with the natural world.

# Designing For Dense Urban Contexts: Cultivating Sustainable Urban Spaces through Layered Patterns

Hafez, N. M.[1]*, Elsheekh, K.[1]

[1]Housing and Building National Research Center, Cairo, Egypt

*Correspondence email:: nahlahafez@gmail.com

## Abstract

A measure of internal relationships that is larger than a single building, but smaller than an entire urban structure is known as the urban fabric. Urban spaces emerge within the context of this fabric, shaped by identities, and characters through user-driven activities and interactive relationships that transform these spaces into meaningful places.

This study examines an urban space located at the intersection of the Mit-Uqba community and the city of Al-Sahafiyeen, characterized by multiple patterns of use within a limited space. Throughout the day, the space supports a variety of activities including craftwork, social interaction, commerce, religious practices, entertainment, and service provision. Activity patterns shift dynamically—from morning food vendors and social gatherings to midday auto repair operations, and evening entertainment cafés filling vacant areas. The space's density further increases with the operation of mosque medical clinics and funeral ceremonies. Fridays exhibit a unique pattern, peaking after Friday prayers when vendors sell fruits and vegetables, intensifying commercial interactions.

This research highlights how layered and temporal patterns of urban activity contribute to the vibrancy and multi-functionality of dense urban contexts, offering insights for sustainable and socially inclusive urban design.

***Keywords:*** *Dense Urban Contexts; Sustainable Urban Spaces; Space Identities; Temporal Activity Patterns*

# From Global AI Practices to Local Implementation: An Adaptive Framework for Sustainable Construction in Data-Scarce Egypt Toward Vision 2030

Ezz-elarab. S. A[1]*

[1] PhD student of architecture engineering, Ain Shams University, Egypt

*Correspondence email: salwa.anees123@gmail.com

## Abstract

In a world of growing awareness about the importance of sustainability, artificial intelligence (AI) is emerging as a driving force for more efficient and environmentally friendly buildings. However, developing countries, particularly Egypt, face a unique challenge, the scarcity of reliable data, which hinders the full potential of these promising technologies. This research aims to bridge this gap by developing an adaptive framework to facilitate the transfer and application of global AI practices to Egypt's sustainable construction sector. It will focus on overcoming data limitations in line with the ambitious Egypt Vision 2030.

The research methodology synthesizes the data collection from a global literature review and a comparative analysis of case studies from developing nations. Furthermore, the framework is informed by a targeted survey of experienced professionals in Egypt, including engineers and policymakers, ensuring its relevance and practical applicability.

This research is expected to provide a practical roadmap for decision-makers and professionals, enabling them to harness the power of artificial intelligence to build a more sustainable and resilient construction future in Egypt, in support of national sustainable development goals.

***Keywords:*** *Artificial Intelligence (AI), Sustainable construction, Data-scarce, Egypt vision 2030.*

**Issuer/Publisher**

Research and Innovation Support Unit, Heliopolis University for Sustainable Development

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**Printing**:

This document is published digitally and will be printed only on demand in order to save paper.

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**Publication Date:**

January 2026

**Contact:**

Heliopolis University for Sustainable Development

3, Cairo-Belbeis Desert Road,

El-Salam City. P.O. Box: 2834 El-Horreya, 11361 Cairo, Egypt

**Tel.**: (+202) 265 88 930

**Mail**: hu@edu.eg | events@hu.edu.eg