

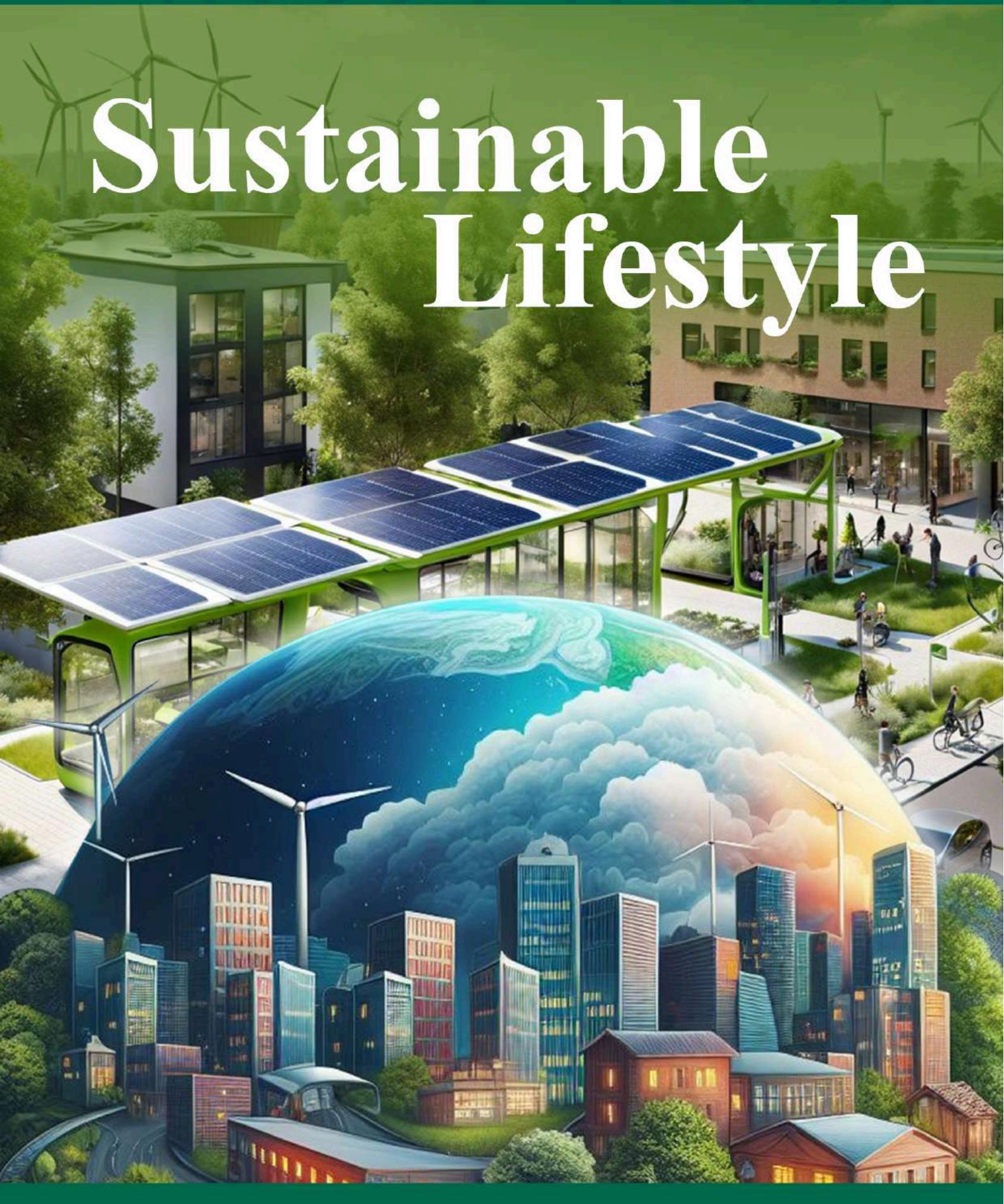


# THE GREEN GUARDIAN

NEWSLETTER OF THE GREEN BUILDING COUNCIL OF SRI LANKA

Vol. 06 | Issue 01

# Sustainable Lifestyle



# ANNUAL GREEN BUILDING AWARDS - 2023



# EMBRACING SUSTAINABILITY IN OUR DAILY LIVES



In today's world, the significance of adopting sustainable practices cannot be overstated. As we witness the increasing impact of climate change and environmental degradation, it is imperative that we embrace sustainability not merely as a trend, but as a way of life. The theme of this edition, "Sustainable Lifestyle," strikes at the heart of our mission. From the products we purchase to the habits we cultivate, every choice we make has the power to either contribute to the degradation of our environment or to its restoration. Fortunately, Sri Lanka has made strides in practicing sustainability aligned with the United Nations SDGs, particularly in renewable energy and sustainable agriculture. However, more can be done, and government intervention is vital in enhancing sustainable practices.

Sustainability is about finding creative solutions to the challenges we face, whether it be through renewable energy sources, eco-friendly transportation options, or mindful consumption habits. In Sri Lanka, where environmental challenges and biodiversity are significant, prioritizing sustainability becomes imperative, requiring the protection of resources, climate change mitigation, and addressing socio-economic disparities. Sustainable living in Sri Lanka thus entails maintaining a harmonious equilibrium among environmental, social, and economic dimensions.

By making conscious decisions in our daily lives, we can reduce our carbon footprint and pave the way for a more sustainable future. Specifically, Government policies are very crucial for promoting sustainability. We suggest the government strengthen waste management, conservation, and sustainable agriculture, incentivizing eco-friendly practices, regulating industries, and investing in renewable energy infrastructure.

Sustainable living faces challenges like deforestation, pollution, and resource depletion. Innovative solutions including community-led conservation, green technology, and sustainable urban planning can be applied to address these challenges. In this issue, we will find a wealth of insights, ideas, and success stories from individuals and communities around the world who are leading the charge toward a more sustainable lifestyle. From tips on reducing waste and conserving energy to profiles of eco-conscious businesses and initiatives, our goal is to empower you to take meaningful action in your own life and inspire others to do the same. Measuring the progress is another important aspect considering environmental, social, and economic indicators, with metrics such as carbon footprint reduction and biodiversity conservation.

As the pioneer organization in promoting green concepts and sustainable development in Sri Lanka, the Green Building Council of Sri Lanka (GBCSL) is ready to navigate the complexities of the modern world. Let us remember that we hold the power to effect positive change. GBCSL's initiative of promoting a sustainable lifestyle integrated and unprecedented 10-year plan "Greening Sri Lanka 2021 '30". This campaign is designed to facilitate sustainable economic development in Sri Lanka by providing home-grown and cost-effective green solutions to make the built environment sustainable. Together, we can build a future where sustainability is not an option, but a necessity. Let us seize this opportunity to embrace a lifestyle that nurtures both our planet and ourselves.

**Arct. Jayantha Perera**

Chairman

Green Building Council of Sri Lanka

# EDITORIAL

## Sustainable Living: It starts with you!

The scientific consensus is clear: human activities are the primary drivers of climate change. The impacts of climate change are profound and far-reaching, affecting communities and ecosystems across the globe. Alarmingly, recent studies indicate that approximately 85% of the world's population is already experiencing the effects of climate change in various forms. The burning of fossil fuels, deforestation, and unsustainable agricultural practices have led to increased greenhouse gas emissions, causing global temperatures to rise. So, if we do not change our ways, the consequences for the planet and future generations will be dire. The urgency of embracing a sustainable lifestyle lies in its potential to mitigate these crises and build a more resilient, equitable future for all.

In today's world, the concept of a sustainable lifestyle has emerged as a crucial response to the pressing environmental challenges facing our planet. Sustainable living encompasses many practices aimed at reducing our ecological footprint and promoting harmony with the Planet. Every small action contributes to a more sustainable way of life, from conserving energy and water to minimizing waste and embracing eco-friendly transportation options. Also, these actions lead to lower greenhouse gas emissions, reduced pollution, and conservation of natural resources, all of which are crucial in the fight against climate change. Adopting a sustainable lifestyle offers profound benefits, not just for the environment, but also for personal health and well-being, creating a win-win situation for individuals and the environment.

Sustainable living starts with each of us. When multiplied by millions, every small action can lead to significant positive changes. By adopting sustainable practices daily, we contribute to a more sustainable future and play a crucial role in combating climate change. It's a collective journey towards a healthier, more resilient, and equitable world.

Finally, sustainable living is not just a choice; it's a responsibility we owe to ourselves, our communities, and the Planet!

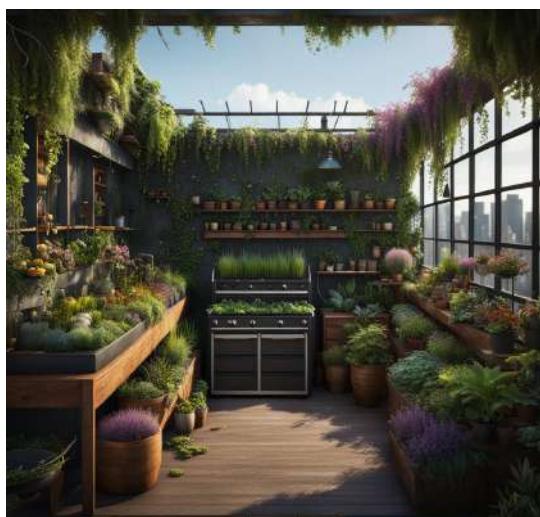


**Kasuni Eranthi**  
Editor, The Green Guardian



# Greening Our Cities: Embracing Sustainable Living through Urban Gardening

In the heart of our bustling cities, amidst the concrete and steel, lies the untapped potential for a greener, more sustainable future through urban gardening. We need to evaluate how urban gardening can be a cornerstone of sustainable living. This article explores the transformative power of urban gardening, not just as a means to beautify our cities but as a vital strategy in promoting environmental stewardship, community engagement, and personal well-being. Amidst burgeoning urbanization and escalating environmental concerns, urban gardening emerges as a beacon of sustainability and resilience. From rooftop gardens to repurposed urban lots, the cultivation of flora within city limits serves as a transformative force, mitigating pollution, enhancing biodiversity, and promoting food security. Let's delve into this verdant tapestry, reimagining cities as thriving, interconnected ecosystems.



## The Roots of Urban Gardening

Urban gardening encompasses a wide range of practices, from balcony and rooftop gardens to community and vertical gardens. These green spaces are more than just aesthetic enhancements; they are functional ecosystems that contribute to biodiversity, reduce urban heat islands, and improve air and water quality. By integrating nature into urban landscapes, urban gardening offers a direct path to sustainability, accessible to anyone willing to get their hands dirty.

## Environmental Benefits

These green spaces act as natural air purifiers by absorbing carbon dioxide and releasing oxygen, vital for mitigating pollution in polluted city atmospheres. Additionally, they moderate temperatures in densely built areas, countering the urban heat island effect. Rain gardens and permeable surfaces within urban gardening setups effectively manage stormwater runoff, decreasing the risk of flooding and water pollution. By converting barren urban spaces into green havens, these gardens act as natural filters, absorbing pollutants from the air and soil, further enhancing air quality. Moreover, by providing shade and cooling effects, urban gardens help mitigate the urban heat island effect, consequently reducing energy demands for air conditioning and emissions associated with energy production. Through these mechanisms, urban gardening fosters the creation of sustainable urban ecosystems that promote both human and environmental health.

## Enhancing biodiversity

Urban gardening contributes significantly to enhancing biodiversity within city environments. By introducing diverse plant species and creating habitat niches, these gardens provide essential resources for a wide range of wildlife, including birds, insects, and small mammals. The presence of flowering plants attracts pollinators such as bees and butterflies, essential for the reproduction of many plant species. Additionally, diverse plantings support a variety of insect species, which in turn attract insectivorous birds and other predators, thus creating a balanced ecosystem. Furthermore, urban gardens can serve as stepping stones or corridors for wildlife movement, facilitating gene flow and maintaining healthy populations. By promoting biodiversity within urban landscapes, these gardens contribute to ecological resilience, fostering a more sustainable coexistence between humans and wildlife in our cities.

## Social and Community Well-being

Urban gardening goes beyond environmental benefits, fostering a sense of community and belonging among city dwellers. Community gardens, in particular, serve as gathering spaces, promoting social interaction and cohesion. These gardens can become hubs of cultural exchange and mutual learning, where diverse groups come together to share knowledge, resources, and the fruits of their labor. By engaging residents in the cultivation of their environment, urban gardening strengthens community ties and empowers individuals to contribute actively to their local ecosystem.



## Enhancing Food Security and Nutrition

One of the most tangible benefits of urban gardening is its contribution to food security and Nutrition in urban communities. Through cultivating fruits, vegetables, and herbs locally, urban gardens alleviate dependence on distant food sources, thereby bolstering resilience to disruptions in the global food supply chain. This localized food production not only ensures a consistent supply of fresh, nutritious produce but also educates urban populations about the value of food, fostering sustainable consumption patterns from seed to plate. Moreover, community gardens serve as platforms for knowledge sharing and skills development related to food cultivation, empowering individuals and communities to take control of their food production and consumption. By seamlessly integrating food production into urban landscapes, urban gardening emerges as a vital catalyst for promoting food security, resilience, and nutritional well-being within cities.

## Mental and Physical Health Advantages

Engaging in the practice of gardening not only involves physical labor but also offers a multitude of both mental and physical health benefits. The activity of gardening serves as a form of exercise, aids in reducing stress levels, and contributes to an enhanced mood, primarily by fostering a connection with nature and basking in natural sunlight. Particularly for individuals residing in urban areas, the presence of urban gardens serves as a tranquil escape from the chaotic pace of city life, presenting them with an opportunity to immerse themselves in nature and cultivate mindfulness.

## Urban Gardening in Policy and Planning

To promote the proliferation of urban gardening, it is imperative to have supportive policies and effective urban planning in place. Municipalities can play a pivotal role in promoting urban gardening by enacting zoning regulations that facilitate the creation of green spaces, offering resources and backing for community gardening initiatives, and integrating green infrastructure into urban development schemes. By giving precedence to urban gardening in the realm of city planning, governments and urban planners can imbue sustainable practices into the fabric of urban environments, thereby making eco-friendly living an indispensable component of urban landscapes.

## Conclusion

Urban gardening represents a powerful tool in the quest for sustainable living, offering a multifaceted solution to environmental, social, and health challenges in our cities. Embracing urban gardening emerges as a practical and transformative approach to greening our cities from the ground up. By cultivating green spaces within our urban environments, we not only enhance our cities' resilience and beauty but also take meaningful steps towards a sustainable future for all.



**Mr. Narendran Srikumaran**  
GREEN SL®AccP

# Changing Personal Thinking and Behaviors to Live Sustainably at Home

In the quiet corners of our homes, among the routines of daily life, lies an extraordinary potential for change. "Changing Personal Thinking and Behaviors to Live Sustainably at Home" isn't just a call to action; it's an invitation to embark on a journey that starts at our doorsteps. Beyond the grand gestures and global initiatives, the heart of sustainability beats within the walls of our homes. This article explores the profound impact of altering personal thinking and behaviors, revealing how these small yet intentional changes can collectively create a ripple effect of positive transformation. Here, I am trying to explore the transformative power of changing personal thinking and behaviors to live sustainably, focusing on practical examples drawn from my own experiences. From cultivating vegetables in abandoned land to designing eco-friendly solutions for a heat-prone home, the journey towards sustainability unfolds within the walls of our homes.

## Cultivating abandoned land in home garden

Cultivating abandoned land within our homes contributes to sustainable living by fostering local food production and minimizing our environmental footprint. Utilizing neglected spaces for growing vegetables not only promotes self-sufficiency and reduces reliance on commercially produced goods but also conserves resources by repurposing underutilized land. This practice minimizes the need for the transportation of food, lowering associated carbon emissions. Additionally, cultivating abandoned land provides an opportunity to enhance biodiversity, create a sense of community engagement, and instill a deeper understanding of sustainable practices, all within the confines of our homes. Overall, this approach embodies a practical and impactful way to live sustainably on an individual and community level. Therefore, one of the first steps toward sustainability in my household was to transform an abandoned piece of land into a blooming vegetable garden. With the support of



family members, we turned neglected soil into a source of fresh produce. Not only did this initiative provide wholesome vegetables for our family, but the surplus yield was sold to the local market, creating a small but impactful contribution to the community.

## Eco-friendly solutions for a heat-prone home

Transforming heat-prone slabs and walls in our homes into thriving spaces for cultivating vegetables and covering them with ornamental crops and vines is a sustainable practice with multiple benefits. By cultivating vegetables on heat-absorbing slabs, we not only utilize previously unused areas but also mitigate the heat island effect, making our living spaces more comfortable without relying heavily on energy-consuming cooling systems. The vertical cultivation of ornamental cover crops on walls serves a dual purpose – it reduces heat absorption and enhances aesthetic appeal. This green cover acts as a natural insulator, reducing the need for excessive air conditioning, and contributing to improved indoor air quality. Additionally, the cultivation of both edible and ornamental plants in these spaces promotes self-sufficiency, reduces the carbon footprint associated with food transportation, and adds a touch of nature to our homes. In essence, repurposing heat-prone slabs and walls for cultivation represents a sustainable and creative approach, enhancing both environmental and personal well-being within our living spaces.

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### Revitalizing a heat-prone rock to a green space

Revitalizing a heat-prone rock into a green space or vegetable garden within our home is a key aspect of living sustainably. By repurposing this challenging terrain, we address environmental concerns related to the heat island effect and rainwater runoff. The creation of a vegetable garden on the inclined rock not only transforms an unused space into a productive one but also reduces the rock's heat-absorbing properties. This, in turn, contributes to lowering overall temperatures in the surrounding area. Additionally, the cultivation of vegetables on stair-like structures minimizes rainwater runoff during periods of precipitation, preventing soil erosion and promoting water conservation. Overall, transforming a heat-prone rock into a green haven aligns with sustainable living principles by optimizing challenging spaces, fostering local food production, mitigating environmental impacts, and creating a harmonious coexistence between nature and our living spaces.



These personal endeavors serve as evidence of the profound impact that changing personal thinking and behaviors can have on fostering sustainability, and they highlight the fundamental truth that the journey begins right within the heart of our homes. Through cultivating abandoned land, transforming a heat-prone home with eco-friendly solutions, and revitalizing a problematic rock into a flourishing green space, I've experienced firsthand the transformative power of how sustainable practices work. It's more than just an act of environmental consciousness; it's an active contribution to the collective effort toward a greener, healthier future. Every small change, from repurposing forgotten spaces to embracing eco-friendly solutions, plays a crucial role in this collective journey towards sustainability. As we make our homes better, we see that these changes don't just stay in our houses. They connect with the bigger effort to take care of our Earth. It's like a reminder that making our future more sustainable begins right in our homes. Every little step we take, like using less energy or growing our own food, helps the whole planet be healthier. It shows that what we do at home can have a good impact on the Earth overall.

Start these simple sustainable practices at your home today for a better future:

- Identify unused spaces for potential cultivation.
- Explore eco-friendly solutions for common household challenges.
- Repurpose materials for sustainable projects.
- Collaborate with family members to make sustainable changes.
- Share your experiences with others to inspire wider change.



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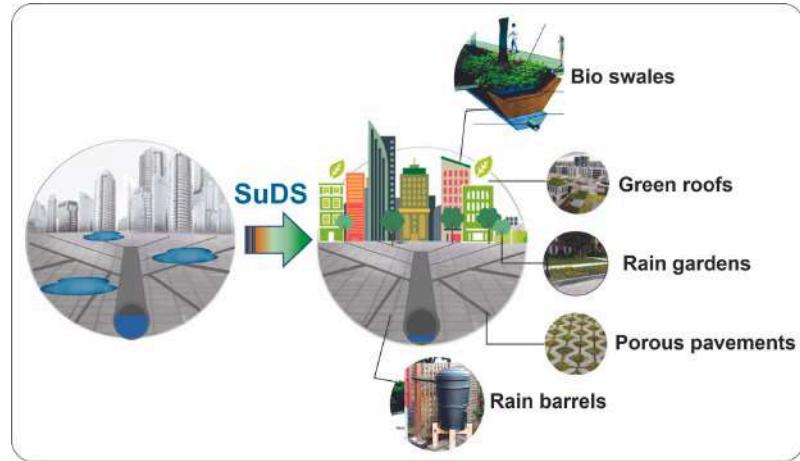


# Embracing SuDS: A Lifestyle Shift towards Water Conservation and Urban Flood Protection

Sustainability has become increasingly interconnected with our daily lives in today's rapidly changing world. From the products we buy to the energy we consume, every decision we make can impact the environment and shape the future of our planet. One often-overlooked aspect of sustainability is water conservation and flood protection, and it is here that the integration of Sustainable Drainage Systems (SuDS) plays a pivotal role in transforming not just our infrastructure but also our lifestyles.

## What is a SuDS?

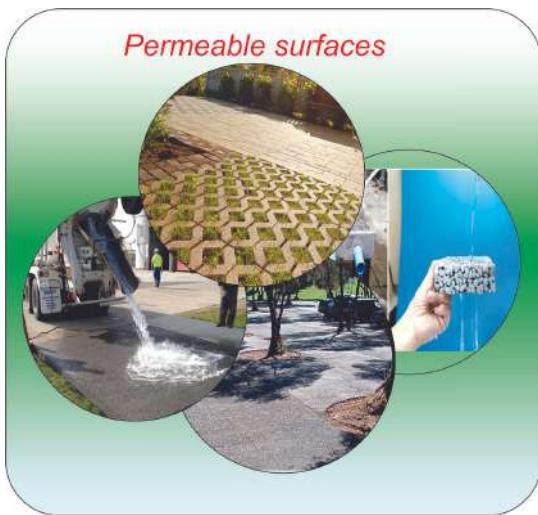
SuDS is a system designed to manage surface water runoff more sustainably and environmentally friendly than traditional drainage systems. SuDS aims to mimic natural drainage processes by slowing water flow, reducing flooding, and improving water quality. SuDS provides comprehensive solutions for managing urban stormwater runoff while addressing hazards such as urban flooding, water source pollution, and other environmental risks. SuDS mitigates flooding by slowing, storing, and infiltrating stormwater by incorporating green infrastructure and natural processes into urban landscapes. They also control water pollution by removing pollutants and sediments before they reach water bodies, improving overall water quality and safeguarding ecosystems. Furthermore, SuDS helps mitigate hazards like erosion, habitat loss, and heat island effects, promoting environmental resilience and creating healthier, safer urban environments. Enhancing SuDS with sustainable lifestyles involves integrating water conservation practices into our daily routines, promoting awareness and education about SuDS benefits, and fostering community engagement to support their implementation and maintenance.



Here are several ways to enhance SuDS with sustainable lifestyles:

## Rainwater Harvesting

In an era where environmental sustainability is paramount, rainwater harvesting emerges as a simple yet impactful solution for households to contribute to water conservation efforts. Residents can harness nature's bounty for outdoor activities like watering gardens or washing cars by installing rain barrels or cisterns to collect rainwater from rooftops. However, the benefits extend beyond mere convenience. Educating residents about the advantages of rainwater harvesting and guiding setup and maintenance empowers individuals and fosters a deeper connection to environmental stewardship. More than just a practical measure, rainwater harvesting embodies a sustainable lifestyle choice that reduces reliance on strained municipal water supplies and conserves precious resources for future generations. It's a small step towards a greener, more sustainable future, demonstrating that even the most straightforward actions can significantly preserve our planet's natural beauty.



### Permeable Landscaping and Paving

As urbanisation continues to reshape our landscapes, the importance of sustainable practices in mitigating environmental impacts has never been more evident. Encouraging permeable landscaping practices represents a proactive approach towards addressing stormwater runoff and promoting groundwater recharge. By incorporating native plants and mulch, homeowners and developers can create vibrant, eco-friendly landscapes that enhance aesthetics and play a crucial role in water management. Moreover, designing driveways, walkways, and parking lots with permeable paving materials allows rainwater to infiltrate the ground, reducing the risk of flooding and minimising the burden on drainage systems.

Through education initiatives, homeowners and developers can better understand the multifaceted benefits of permeable landscaping and paving, including improved water quality and enhanced biodiversity. By embracing these sustainable practices, we can pave the way towards greener, more resilient communities that thrive harmoniously with nature.

### Green Infrastructure integration

Green infrastructure integration is a forward-thinking approach to urban development, emphasising incorporating natural and sustainable elements to address environmental challenges and bolster overall resilience. Advocating for the integration of green infrastructure elements such as green roofs, rain gardens, and bioswales into urban planning and development projects is crucial. These features beautify urban landscapes and serve practical purposes, such as managing stormwater, enhancing biodiversity, and improving air and water quality.

Engaging local communities in designing and implementing green infrastructure projects is essential to ensure they align with residents' needs and preferences. By involving community members in decision-making, planners can garner valuable insights, foster a sense of ownership, and enhance project acceptance and success. This participatory approach promotes social cohesion and empowers residents to shape their neighbourhoods.

Highlighting the myriad benefits of green infrastructure is critical to encouraging adoption and garnering stakeholder support. Improved air quality, reduced flood risk, enhanced habitat creation, and urban beautification are some advantages of green infrastructure. By showcasing these benefits through educational campaigns, demonstrations, and case studies, communities can inspire broader adoption of green infrastructure practices and policies.

### Actions to promote SuDS

As elaborated below, implementing various measures is essential to advocate for SuDS alongside sustainable lifestyles.

- **Education and Awareness:** Comprehensive education programs and public awareness campaigns are crucial for highlighting the importance of SuDS and their practical implementation strategies. Through workshops, seminars, and school curriculum integration, these initiatives target stakeholders, including residents, homeowners, developers, and local officials.

**Guidelines and Regulations:** Clear guidelines and regulations are essential to provide direction and incentives for SuDS implementation. Municipalities should establish design, implementation, and maintenance standards within development regulations. Incentive programs and streamlined permitting processes can further encourage broader adoption of SuDS practices.

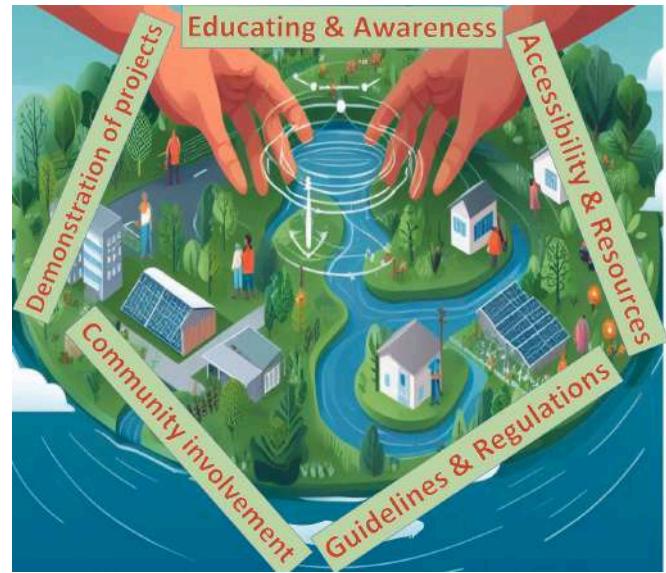
**Community Involvement:** Active community involvement is paramount for the success of SuDS initiatives. Stakeholder engagement ensures alignment with local needs and preferences, while participatory design processes empower residents to contribute to planning and decision-making.

Volunteer programs mobilise community members for SuDS maintenance activities, fostering ownership and stewardship.

**Demonstration Projects:** Demonstration projects are tangible examples of SuDS effectiveness, showcasing different design options and generating community interest and support. Pilot projects and demonstration sites allow residents to observe SuDS features in action and gain hands-on experience with installation and maintenance practices.

**Accessible Resources:** Providing accessible information and resources supports SuDS implementation. Online platforms, printed materials, and expert consultation services guide and assist individuals and organisations undertaking SuDS projects.

By combining education, guidelines, community involvement, demonstration projects, and resources, communities can effectively promote the integration of SuDS, fostering improved water management, environmental sustainability, and resilience to climate change impacts.



**Dr. R.M.L.D Rathnayake**

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# Enhancing Sustainability: Implementing Educational Programs to Promote Sustainable Lifestyles

Since resource depletion and environmental issues must be addressed immediately, sustainability has become a critical factor in today's world, and the idea of sustainable living, in which people adopt habits that lessen their influence on the environment, is at the core of this global movement. This essay explores the processes of behavior change, the potential transformative impact on communities, and the critical role that educational programs play in promoting sustainable lifestyles. It's becoming more and more clear as we negotiate the challenges of the twenty-first century that educational programs are essential to creating a more sustainable future.

## **Understanding Sustainable Lifestyles:**

A sustainable lifestyle is more than simply forming environmentally conscious habits; it's a way of living that takes consideration of the social, economic, and environmental effects of every decision we make, which involves making conscious decisions that promote responsible consumption, conserving energy, and minimizing carbon footprints. Living sustainably refers to achieving a balance between personal demands and the overall well-being of the environment. Those who understand the importance of a sustainable lifestyle take on the role of environmental ambassadors by considering their choices have an impact on the planet's health.

## **Challenges to Sustainable Living:**

Though the principles of sustainable living are outstanding, some people may find it extremely challenging to adopt this way of life because of deeply rooted behavioral patterns, financial constraints, and cultural norms that often obstruct the adoption of sustainable practices. To get beyond these challenges, targeted educational programs that specifically focus on these barriers are essential, as is an extensive comprehension of the socioeconomic environment. Repelling misconceptions and creating opportunities for sustainable decision-making necessitate awareness campaigns as well as instructional programs.

## **The Role of Education in Promoting Sustainability:**

Education may influence behavior and shape attitudes, which makes it a powerful change catalyst where we can foster a feeling of accountability and environmental responsibility in children from a young age by integrating sustainability into both official and informal school programs. Schools, colleges, and universities serve as venues for sharing information about sustainable practices, forming a generation of citizens who are knowledgeable and capable of making decisions that will not negatively impact the environment. By including sustainability in the curriculum, future professionals are guaranteed to have the information and abilities needed to promote sustainable practices in their fields.



**Figure: Eco-School Program Logo**

Resource:

<https://web.facebook.com/ecoschools.global>

## **Case Studies: Successful Educational Programs:**

To verify the success of educational programs in encouraging sustainable living, it is critical to look at actual cases that resulted in measurable outcomes. Among a variety of programs that focus on promoting sustainable lifestyles, the "Eco-Schools" program, which has been launched in several nations worldwide, is a shining example of success. Through the incorporation of sustainability into the core curriculum, this

program involves students in hands-on projects that tackle local environmental challenges. Increased environmental awareness of students, reduced energy consumption, and upcycling of waste are among the visible outcomes. Additionally, corporate sustainability training initiatives have demonstrated positive effects in the business domain, as staff members integrate sustainable practices in both their personal and professional lives. These case studies highlight how educational efforts can be expanded following a wide range of situations.



**Figure: Eco-School Themes**

(Resource: <https://www.cestint.com/eco-schools-ghana/eco-schools-themes/>)

### The Impact on Communities:

Educational programs have a profound effect that goes far beyond the individual since they penetrate communities and cultivate a shared sense of sustainability among the people. One such example is the "Green Communities" project, in which educational institutions and municipalities work together to

establish sustainable habits at the local level. There's a noticeable movement toward eco-friendly practices, local biodiversity preservation, and community-driven environmental efforts as residents gain insight into sustainable living and the overall quality of living in these communities is improved by the social cohesiveness that results from common sustainability objectives. The correlation between education and its influence on the community highlights how important it is for citizens to be educated to lead the community toward a more sustainable future.



**Figure: Responsible Citizenship in a Green Community**

(Resource: <https://ourgoodbrands.com/ways-inspire-community-go-green/>)

### Championing Sustainability in Sri Lanka:

With its diverse ecosystem and rich heritage of culture, Sri Lanka is at a turning point in its quest for sustainability. Even if the whole nation has made progress in protecting the environment, more must be done to promote sustainability among the citizens. The "Greening Sri Lanka" project was started in partnership with governmental and educational organizations to incorporate sustainable practices into a range of businesses. The effort aims to raise a generation of environmentally conscious Sri Lankans by integrating environmental education into both the curriculum of schools as well as university degree programs. At the same time, national policies supporting nature conservation, waste management, and renewable energy reflect the government's commitment to advancing sustainability.

### Conclusion:

To sum up, the transition to sustainable living demands a paradigm change in our society, supported by awareness and education. The case examples highlight the transformative potential of educational initiatives and demonstrate how knowledgeable people may act as catalysts for long-lasting change. It is essential to understand how our decisions influence the health of the earth as we promote sustainability in Sri Lanka and beyond. Communities are impacted in ways that show the far-reaching effects of individual choices, supporting the idea that sustainable living is a shared responsibility. Thus, let us join arms as academics, businesspeople, and law-abiding individuals to promote sustainability and make our contribution to a sustainable future where every decision, no matter how small, has a beneficial impact on our communities and the wider globe by supporting educational initiatives and getting involved in them.

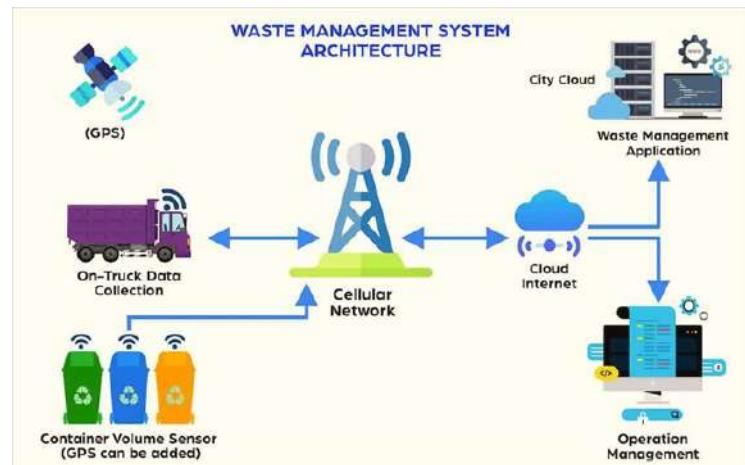


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# Revolutionizing Household Waste Management: A New Era for Recycling and Reutilization

Since resource depletion and environmental issues must be addressed immediately, sustainability has become a critical factor in today's world, and the idea of sustainable living, in which people adopt habits that lessen their influence on the environment, is at the core of this global movement. This essay explores the processes of behavior change, the potential transformative impact on communities, and the critical role that educational programs play in promoting sustainable lifestyles. It's becoming more and more clear as we negotiate the challenges of the twenty-first century that educational programs are essential to creating a more sustainable future.



## Rethinking Recycling: Beyond the Bin

Even though recycling has been celebrated as a core component of sustainable waste management, the well-established method. Although the well-established approach is recycling, which is bound to be in distinct bins for various materials it comes with its drawbacks. Challenges such as contamination and inefficiencies

frequently affect recycling systems, leading to suboptimal results. To overcome these challenges there should be innovative solutions that would allow exploration of unconventional ways to streamline the recycling process and boost participation.

In one of these methods or approaches involved in sorting technologies , automated sorting systems equipped with artificial intelligence and robotics could identify accurately and also could separate recyclable materials, cutting down on manual labor and reducing contamination. Automated systems are evolving not only to enhance the efficiency of recycling facilities but also to improve the quality of recycled materials, enhancing their value in the marketplace.

It is becoming increasingly popular about the concept of source separation which

DIGITAL TECHNOLOGIES		GENERATION	CLEANING	TEMPORARY STORAGE	COLLECTION	RECOVERY RECYCLING	FINAL DISPOSAL
WHAT FOR?	Generate communication channels between service providers and customers	More efficient systems and optimization of resources	More efficient systems and optimization of resources	More efficient systems and optimization of resources, lower environmental impact	More efficient systems and optimization of resources	Systems for monitoring and control	
HOW?	<ul style="list-style-type: none"> <li>Define collection days.</li> <li>Remote waste separation service.</li> <li>Billing service.</li> <li>Reports generation.</li> </ul>	<ul style="list-style-type: none"> <li>Autonomous and self-directed sweepers.</li> <li>Optimal design of collection routes.</li> </ul>	<ul style="list-style-type: none"> <li>Smart bins.</li> <li>Route efficiency.</li> <li>Increased useful life of vehicles.</li> <li>Operations control.</li> </ul>	<ul style="list-style-type: none"> <li>Waste type identification.</li> <li>Waste classification incineration plants.</li> <li>Data analysis for recycling industry.</li> </ul>	<ul style="list-style-type: none"> <li>Identification of possible areas to implement sanitary landfills.</li> <li>Control of final disposal points (formal and informal).</li> </ul>		
EXAMPLES OF USES OF DIGITAL TECHNOLOGIES	<ul style="list-style-type: none"> <li>Separation at source.</li> <li>Push notifications.</li> </ul>	<ul style="list-style-type: none"> <li>Robot Driven Sweepers.</li> <li>Autonomous sweepers.</li> </ul>	<ul style="list-style-type: none"> <li>Sensors for weight, volume.</li> <li>RFID tags for location and bin data.</li> <li>Waste identification.</li> </ul>	<ul style="list-style-type: none"> <li>Optimal route design.</li> <li>Vehicle operation monitoring.</li> <li>Tracking of the location of the vehicle (telematics).</li> </ul>	<ul style="list-style-type: none"> <li>Identify and recyclable waste.</li> </ul>	<ul style="list-style-type: none"> <li>Collection of data from landfills (drones).</li> </ul>	
COMMUNICATION TECHNOLOGY	<ul style="list-style-type: none"> <li>Custom billing.</li> <li>Scheduled collection.</li> <li>Customer service.</li> </ul>	<ul style="list-style-type: none"> <li>Identification of illegal waste disposal.</li> </ul>	<ul style="list-style-type: none"> <li>Bin management.</li> <li>Bin planning and maintenance.</li> </ul>	<ul style="list-style-type: none"> <li>Bin identification.</li> <li>Waste weighing.</li> </ul>	<ul style="list-style-type: none"> <li>Sensor data acquisition for automated sorting plants.</li> <li>Blockchain and market platforms.</li> </ul>	<ul style="list-style-type: none"> <li>Identification of informal or clandestine dumps.</li> </ul>	
ROBOTICS							
ARTIFICIAL INTELLIGENCE (AI)							
INTERNET OF THINGS(IOT)							
DATA ANALYSIS							
CLOUD COMPUTING							

motivates the households to separate waste at the waste drop-off location or waste collection site. The aim and objective behind this source separation is to increase the purity of recyclables and to make it simpler in terms of processing and it also needs to be user friendly to sort in proper mechanisms like utilizing smart bins with inbuilt sensors and also including digital interfaces.

## Transforming Waste into Resources: Embracing the Circular Economy

Recycling is crucial for reducing landfill waste, true sustainability involves shifting towards a circular economy, where resources are preserved and repurposed in a closed-loop system. In the context of managing household waste, this entails reconceptualizing waste as a valuable resource with the opportunity for reuse.

An innovative strategy is ensuring to upcycle, which involves in repurposing waste materials into products of increased value or functionality. From transforming plastic bottles into eco-friendly clothing to converting food scraps into nutrient-rich compost, upcycling initiatives provide creative solutions to reduce waste while yielding economic and environmental advantages. Collaborations between designers, entrepreneurs, and waste management organizations have resulted in the creation of upcycled products that align with the growing consumer demand for sustainable alternatives.

Furthermore, the emergence of the sharing economy has facilitated the development of inventive reutilization models that promote resource sharing and collaborative consumption. Platforms that enable the exchange, rental, or resale of second-hand goods empower individuals to optimize product usage and decrease waste production. Whether through renting out infrequently used household items or engaging in clothing swaps, these initiatives encourage a departure from a disposable culture towards a more sustainable consumption mindset.

## Leveraging Technology for Waste Prevention

Minimizing waste at its origin constitutes the most efficient tactic for sustainable waste management. Intelligent appliances featuring energy-conserving capabilities and water-efficient designs aid in decreasing resource utilization and limiting waste generation. Moreover, mobile apps and internet portals equip consumers with useful resources including zero-waste recipes, sustainable purchasing guidelines, and recycling directories, thereby empowering them to adopt ecologically sound behaviors in their everyday routines.

Moreover, advances in data analytics and machine learning enable predictive modeling of waste generation patterns, allowing municipalities and businesses to implement targeted interventions for waste reduction. By analyzing historical data and identifying trends, decision-makers can optimize waste collection routes, implement demand-driven production strategies, and tailor educational campaigns to promote behavior change effectively.

## Conclusion

Innovations in household waste management are multifaceted and involve technological advancements, collaboration across sectors, circular economy principles, and community engagement. Technological advancements in waste management include smart waste management technologies such as recycling robots, pneumatic waste pipes, and solar-powered trash compactors. Collaboration across sectors is essential to integrate sustainable practices into the waste management industry. Circular economy principles, such as eliminating waste and pollution and circulating products and materials, are key to creating a resilient system that is good for business, people, and the environment. Community engagement is critical to environmental justice progress and can help create efficient, sustainable waste management systems. By embracing these innovations and principles and fostering collaboration across sectors, we can transition toward a more sustainable and resource-efficient future where waste is minimized, resources are maximized, and our planet thrives for generations to come.



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# Sustainable Economic and Financial Solutions to Climate Change

The term "climate finance" describes the financial mechanisms and resources utilised to support climate change action (UNDP, 2023). Using Nationally Determined Contributions (NDC), National Adaptation Plans (NAP), and Long-term Climate Strategies, nations have set high goals to lower greenhouse gas (GHG) emissions and strengthen their defences against the effects of climate change. Nonetheless, a recent UNDP analysis demonstrates that funding continues to be a major obstacle to developing nations' efforts to accelerate climate action. Investments in climate change must be substantial, and many lower- and middle-income countries are also altering multiple crises and financial problems simultaneously (UNDP, 2023).

The phrase "loss and damage" refers to the financial assistance provided to developing nations following a significant climate-related calamity. A fund was decided upon at the 2022 COP27, and US\$700 million has since been committed. Even though this is good news for COP 28, the US\$400 billion is truly required (World Economic Forum, 2023). In addition, it has been decided that the World Bank will manage the fund despite objections to a negotiated charge of 24%, which implies that one out of every promised dollar will ever reach the underprivileged nations. Overall, it's yet unclear how the fund will operate because climate financing was not addressed at COP28, and this matter has been postponed until COP29 in November 2024 (World Economic Forum, 2023).

Economic growth generates the resources required to provide enough energy, food, education, and infrastructure that are essential for human well-being. Growth, especially in developing countries, denotes the upgrading and adaptability of institutions, infrastructure, and economic capacities for long-term development. Despite being a widely used indicator of economic growth, Gross Domestic Product (GDP) provides only a partial picture of the whole state of the economy (European Union, 2012). GDP is a useful and straightforward metric, but it does not provide a complete picture of a nation's economy. Economic expansion is made possible by environmental sustainability, which keeps it inside the physical bounds that support human existence.

The NDCs of Sri Lanka (SL), which were adopted in 2016, committed to a 30% reduction in GHG emissions between 2021 and 2030. The adoption of carbon pricing mechanisms, investments towards green infrastructure, promotion of financial incentives for sustainable initiatives, and the setting up of circular economy practices are all necessary steps towards facilitating the transition towards achieving carbon neutrality and sustainability. A carbon price contributes to returning the responsibility of repairing the harm to those who cause it and have the ability to do that. Carbon pricing comes in two main forms: Carbon taxes and emissions trading systems (ETS). An ETS, also known as a cap-and-trade system, sets a maximum amount for greenhouse gas emissions overall and enables low-emitting companies to sell their excess credits to higher emitters. A market price for GHGs is established by an ETS through the creation of supply and demand for emissions allowances. Establishing a Carbon tax rate directly places a price on the Carbon content of GHGs or burning fossil fuels. The trading platforms where carbon credits are bought and sold are known as carbon markets. By buying carbon credits from organisations that eliminate or significantly reduce GHG emissions, businesses and individuals can use the carbon market to make up for their GHG emissions. The Carbon Crediting Scheme was created in SL as a national offset programme to assist regional renewable energy initiatives that aim to reduce GHGs emissions to get benefits from climate finance. In addition to balancing the amount of emissions into the atmosphere, it thereby indirectly supports the continuation of the reduction initiative and promotes the sustainable development of underprivileged communities.

A range of GHG reduction initiatives could be employed to generate credits and offsets with the fastest growth of forestry projects. As part of the Paris Agreement, nations adopted the "REDD+" (Reducing Emissions from Deforestation and Forest Degradation) framework for forest protection. Through these programmes, SL can earn carbon credits and support international efforts to reduce the effects of climate change. International markets allow for the purchase and sale of carbon credits. SL can sell carbon credits it earns from sustainable projects to nations or businesses that surpass their emission targets (Bulathsinghala, 2023).

Renewable energy sources like wind farms, biomass energy, and methane digesters are another investment. Initiatives like landfill methane capture and energy-saving measures like the installation of efficient cookstoves are further methods for reaching carbon neutrality. In addition, a major part of reducing carbon emissions is the application of zero-emission technology including geological carbon storage, carbonated building materials, and biochar (a type of charcoal). Financial institutions can promote sustainability through loans, grants, and investment opportunities similar to green bonds as another solution to climate change.

Green bonds function similarly to regular bonds but all investor funds are allocated entirely to financing environmentally beneficial initiatives like green buildings and renewable energy. As part of the action plan outlined in the Roadmap for Sustainable Finance in SL, the Central Bank of SL released the Green Finance Taxonomy in 2022. Investments are categorised using a green taxonomy based on their sustainability and depth of alignment with the sustainability objectives of a given jurisdiction. Its goal is to give financial market participants the ability to raise money for environmentally friendly projects on both domestic and global markets. Economic activities are categorised in the Taxonomy into three categories, mitigating climate change, adapting to climate change, and other environmentally friendly goals.

To sum up, finding sustainable financial and economic solutions is crucial to mitigating climate change. Important actions include switching to renewable energy, putting carbon pricing mechanisms in place, and making investments in green infrastructure. Important tactics also include encouraging corporate responsibility, supporting underdeveloped nations, and advancing a circular economy. Furthermore, implementing sustainable solutions depends critically on improving stakeholder engagement, effective communication, and climate literacy among children. Fostering comprehension, effective communication, and cooperation amongst stakeholders will enable us to create value networks and robust supply chains that will advance our transition to a more resilient and sustainable future.



**Eng. Dulanji Perera**



# Advancing Sustainable Living through Landscape Architectural Practices

We are currently at a critical juncture in human history, where the very landscapes we inhabit are undergoing rapid changes, exacting a toll on the health of our planet. Recent research has highlighted the alarming extent of these changes, with essential life-supporting processes surpassing safe thresholds. Urban areas, in particular, face significant environmental risks, as their relentless expansion encroaches upon natural habitats, disrupts ecosystems, and intensifies climate-related challenges like water runoff and urban heat islands. With over half of the global population residing in cities, safeguarding our urban environments from these risks is imperative for the well-being of both people and the planet.

In confronting these multifaceted challenges, sustainable living has emerged as a crucial requirement. Among the key stakeholders in this endeavor, landscape architects play a critical role, embodying a narrative characterized by innovation, creativity, and stewardship. Sustainable landscape practices proactively mitigate human activities' adverse effects on delicate natural systems. This article delves into some key landscape architectural strategies, including the creation and preservation of urban green spaces, implementation of sustainable transportation networks, integration of native plants for biodiversity, and adoption of water management and conservation strategies. Together, these strategies form a holistic approach to sustainability, encompassing environmental, social, and economic dimensions, and contribute to a harmonious coexistence between human activities and the natural world.

- **Urban green spaces:**

One of the fundamental aspects of sustainable urban living is the creation and preservation of green spaces such as **parks, gardens and forests, road/street side planting, engineered green roofs, rain gardens** etc. They provide crucial ecosystem services like pollution reduction and biodiversity support. By **purifying the air** and **mitigating noise pollution**, they create healthier and more serene urban environments. Economically, they contribute to **energy efficiency** and **enhance city aesthetics, driving up property values**. Yet, their most profound impact lies in promoting the well-being of city dwellers, both mentally and physically, making them invaluable assets in our quest for sustainable urban living.

Cities worldwide are embracing nature-centric approaches to urban planning, enhancing the well-being of their inhabitants. Copenhagen for instance, is actively integrating greenery into their expanding urban fabric. The combined climate adaptation and urban space project Sankt Kjelds Square and Bryggervangen is considered to be Copenhagen's largest and greenest cloudburst adaptation project to date. Shifting from conventional gray to sustainable blue-green infrastructure, it has boosted climate resilience and cultivated a biodiverse, aesthetically pleasing urban setting, fostering community ties. Similarly, New York City's Central Park stands as a testament to massive landscape architectural greening efforts, featuring vast green spaces, water bodies, and a plethora of trees. The project has now become an archetype for cities aiming to encourage urban revitalization, considering its overall impact on the environment, as well as socially and economically.



a



b



c

Figure 1: (a), (b): Project Sankt Kjelds Square and Bryggervangen (c): Central Park, NYC

- Sustainable Transportation Networks

Promoting sustainable modes of transportation is paramount for mitigating carbon emissions and alleviating traffic congestion. Landscape architects play a crucial role in this endeavor by designing regions, cities, and neighborhoods that encourage the use of low-emission transportation options. Incorporating biking, walking, and public transit into urban landscapes is essential, with practices like transit-oriented development (TOD) facilitating convenient access to basic necessities for city inhabitants without relying on cars. Such developments can also address climate change uncertainties by providing resilient transportation systems capable of withstanding rising temperatures and extreme weather events. While enhancing physical fitness and mental well-being, multiple modes of sustainable transport options also prioritize ecological concerns. Landscape architects are continuously integrating green infrastructure into transportation networks, such as storm water management systems and pollinator habitats, to support and protect biodiversity while minimizing conflicts between humans and wildlife.



Figure 2: Sustainable Transport Developments Worldwide (a): Cycling as a major Transportation Mode in Copenhagen, (b): Designed Cycling Pathways in Singapore, (c): Green Walkway Development initiatives in Singapore

- Native Planting and Biodiversity

Native planting and biodiversity play crucial roles in sustainable landscape architectural practices, providing numerous benefits for both the environment and human well-being. One of the most significant advantages of using native plants in landscaping is their capacity to **support local biodiversity**. According to the National Wildlife Federation, native plants provide up to four times more food and habitat for wildlife compared to non-native plants. Additionally, native species have evolved to thrive in local environments, **requiring less water, fewer fertilizers, and minimal pesticides** in contrast to exotic plants. Their roots effectively **stabilize soil, preventing erosion and maintaining landscape integrity**. Moreover, native plants contribute to **environmental conservation** by decreasing the reliance on pesticides, thereby curbing runoff into water supplies and reducing air pollution.

Numerous localities worldwide have initiated programs to promote the adoption of native plants, with governments distributing native seeds and backing planting endeavors. For example, the creators of New York's renowned High Line Project endeavored to "Keep it wild" by establishing sustainable, resilient, and pollinator-friendly landscapes featuring a profusion of native plants. At the neighborhood level, governments can encourage residents to incorporate native plants on their properties, fostering opportunities for local insects, pollinators, and birds to flourish.



Figure 4: (a): Bioswale (b): Typical Cross Section of a Bioswale

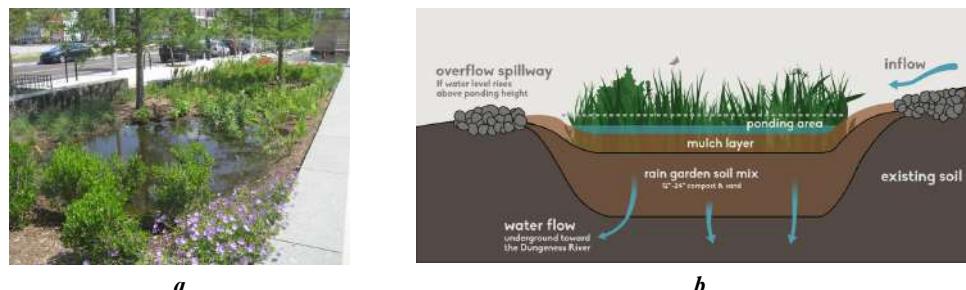


Figure 5: (c): Bioswale (d): Typical Cross Section of a Bioswale

In conclusion, landscape architectural practices are instrumental in fostering sustainable living in urban environments. By integrating the discussed practices and many more, landscape architects are reshaping cities into vibrant, resilient, and eco-friendly habitats as holistic solutions for a sustainable future.



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## The Applications of Green Technology in Sri Lanka: Potential Practices, Challenges & Future Prospects

'Green technology' is a concept which upgrades the environmental performances in comparison to other technologies and concentrated with sustainability concepts involving the government and cooperation sectors. The conservation of natural environment is marked significant under the higher management reviews. Sudden industrial accidents occurred in India (1984), oil crisis occurred in 1970 to 1980, nuclear related disaster in Chernobyl (1986) caused in developing the hole of the ozone layer and clearing of the rainforests like incidents directly induced the human concentration on the concept of global environmental sustainability. Landscape management, green building concepts, green manufacturing, green publishing, biodiversity management, management of waste, water and energy are the sustainable practices which can be adopted under Sri Lankan conditions. Designing and implementing the new technology-specific sustainability strategies (Green Industrial Policies) are becoming challengeable and necessitate the existence of some innovations. Both state and private sector organizations with proper policy planning, while exploring of constraints and opportunities are important in the context of adopting green technologies. The article consists of major parts under which potential applications of green technology in Sri Lanka, challenges and future prospects.

The paper has three main objectives to deal with. This gives an idea on the application of green technology in Sri Lanka while reducing the negative environmental impacts. The second objective is the understanding the challenges behind the application of the green concept and the third objective is directed on the idea of future prospects of green management.

Green technology has the minimal effect on the environment. Zero gas emission coupled with sustainability is one of the characteristics of an ideal technology. This ideal technology can further be identified as green technology. It fulfills the needs of the future generations while satisfying the needs of the current generation and conserving the environment without any risks. Launching of technology-specific sustainability policies are challengeable and approach to the Institutional and organizational research and innovation towards the revised policy implementation are needed.

### Potential Practices

Sustainable landscape management, green building technology, manufacturing of green products, green publishing, green bio diversity management, energy, waste and water management under the green strategies are more practicable for many developing countries and more advantageous under Sri Lankan conditions.



*Green Building Concept in Sri Lanka*

Level of the environmental air temperature is rapidly increasing as a result of population growth on the roads and inside the buildings, directs for an urban heat island. Diminution of the forests should be avoided and encouragement of vegetation in the urban area is mandatory.

The green buildings are designed owing to the water, energy and material conservation and gradually raised with public environmental protection concepts made on sustainability development fundamentals. Environmental pollution is a timeline problem and green manufacturing practices under the sustainability ISO standards will minimize the industrial pollution. Further, Electronic publications are saved the energy cost by lowering the demanding of papers by indirectly conserving the forests. Sustainable development can be achieved at city and urban planning while reducing the negative impact on natural habitats. Minimized fossil energy can be replaced with renewable energy sources of sustainability. Generation of Greenhouses gases, can be minimized through the proper waste management practices. The improvement of surface and ground water health can be fulfilled through the sustainable water management practices.



*Green Manufacturing Plants*



*Waste Water-Management*

### **Challenges**

The implementation of new technology is cost effective. In addition to this, lack of information, shortages of eco-friendly chemicals, raw material and inputs as same as alternative process technology, and

uncertainty about the performance, minimum human resources can be identified as the direct circumstances of effective green management.

### **Future prospects**

Sri Lanka as a developing country in which both public and private organizations are responsible for the national development. It is general that, there exists an obligation on the side of public and private sectors to launch large scale green technology projects through significant research findings, via the policy making. Standardized renewable energy management approaches, energy certificate issuing, activation of tariff procedures and public procument under the green concepts are noteworthy and it can be activated while exploring the constraints and opportunities.

'Green technology' and the strategies of adopting green management are prominent ways to achieve the sustainability of a country. This is common to a developing country like Sri Lanka as well. The adoption of environmentally friendly means (e.g.: renewable sources of energy, green building, green manufacturing etc.) in the ventures of development are highly appropriate. However, there are challenges to face in the context of implementation of such technologies. Despite all the impediments on implementing green technologies, both the public and private sectors in the country have an obligation to reach the national development through constant research and policy making.



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# Sustainable Lifestyle Strategies for achieving Carbon Neutrality and Transition to a Climate-resilient future

**“Global Warming is one of the greatest threats to us”**

Global warming is an emergent and more unrelenting issue as time goes on. Our environment and atmosphere is impaired depending on the choices we make. Exchanging daily tasks and products for more sustainable or eco-friendly alternatives can lessen the effect we have on the environment. From what we consume to how many children we decide to have; there is a lot we can do to cut our carbon footprint, as our individual actions matter –but we cannot do it on our own.

The case for moving to carbon neutrality by practicing elements of that such as emission reductions, carbon off-setting, regular monitoring and reporting of GreenHouse Gas (GHG) emissions, stakeholder engagement i.e engaging stakeholders such as employees, customers, investors and the community is undeniable. It presents a supreme opportunity to safeguard our planet, protect human health, drive economic prosperity and secure a sustainable future for generations to come. We must collectively commit to this imperative, talking bold and taking action to transition to a climate resilient future by achieving carbon neutrality.

We can avoid the dangerous consequences of global warming and thus individual carbon footprint, if we can change our fashionable lifestyles to sustainable and eco-friendly alternatives such as the following.

1. **Save water-** Cutting down water usage not only reduces our effect on the environment but also we are saving money. Having a water butt in which collected rain water in your house permits you to water the garden without using water from the tap. We can also reuse water after cooking to water plants to decrease our water usage.
2. **Reduce energy usage-** Using high amounts of energy increases carbon emissions and also expedites climate change. Using less energy consumption initiatives such as turning off lights where unnecessary, turning unneeded plug off, switching to non-electric alternative appliances such as electric blender to mortar and pestle would be the simplest methods that we can adopt. In addition, we can install solar panels to switch to renewable energy sources.
3. **Practicing Reduce/Recycle/Reuse (3R concept)-** Practicing 3R concept in our daily routine, ensures that our waste will not end up in landfills which does not affect the environment. When we recycle; they do repurpose as well as strain off the amount of raw materials that need to be harvested.
4. **Drive less, drive green-** Fossil fueled transportation emissions create GHG, smog, soot etc. But if we can change our driving habits dramatically reduce our carbon footprint. Walking, riding on a bicycle or e-bike, carpooling, and use of public transportation can immensely cut down our individual carbon emissions. It is important to keep our motor vehicles in shape with regular tune ups and tire inflations as it can increase motor vehicle fuel efficiency.
5. **Go Paperless-** Paper manufacturing has a big influence on the environment and climate change. When paper is disposed of and begins to decompose, it emits carbon dioxide which is a GHG. As such we can cut off the paper usage by switching to online applications, sending emails instead of letters and reading books through an online source.

6. **Eat less meat-** Take extinction off your plate-Meat production is one of the most environmentally damaging industries on the planet, as it is accountable for massive volumes of water usage, pollution, GHG emissions and habitat destruction. When we choose to eat more plant-based food thus reduce our meat consumption and thereby lessen our individual carbon footprint. The industry also has a large effect on landscapes because of the land plots needed for animal husbandry.

7. **Choose organic-** Grow your own produce-Most produce imported to supermarkets increases fossil fuel usage. Hence, growing our own vegetables saves money and it decreases the effect on the environment. If we can grow our own veggies at home, it avoids pesticides by growing organically. When we choose organic, we avoid harmful pesticides out of our land and water thus protecting farm workers, vulnerable communities, wildlife and our family also.

8. **Simplify the holidays-** Holidays, birthdays, weddings etc are habitually overly wasteful. All the fossil fuels, trees and other natural resources that are used in producing gifts, decors, single used dine ware and wrapping papers make our celebrations dreary for wildlife and the habitat. But if we can redefine our celebrations by replacing plastic decors with foraged plants, giving homemade or second hand gifts and serving plant-based meals with reusable dine ware would be the ideal way for celebrations.

9. **Ditch fast fashion and animal-** based textiles-Sell and donate unwanted items-Fast fashion is a growing industry. The number of new garments made per year is increasing and as such our global consumption of fashion is also increasing. Animal based textiles such as wool are responsible for water pollution and harms wildlife. If we can repair our clothes when possible, shop for second hand clothes, sell and donate unwanted or unused clothes and items we can cut off the carbon emissions significantly through fast fashion.

10. **Think twice before shopping-** Sustainable grocery shopping-Grocery shopping makes a lot of waste due to packaging which is usually non –recyclable at your home. This packaging usually ends up in landfills. Most supermarkets sell imported products which increase the carbon emissions. You can bring your own containers for foods and locally sourced materials as well as purchasing fair trade or organic matters in supermarkets as a solution for this.



Figure 3: Tips for sustainable life style at Home  
Source: <https://fostercapital.com/startup-topic/Sustainable-lifestyle.html>

Carbon neutrality is simply the goal of reducing and offsetting the amount of Carbon dioxide released into the atmosphere by a company, event, person or institution and has been identified as an important step in the fight against climate change. In that context, sustainable lifestyle strategies such as above play a vital role in achieving carbon neutrality and transition into a climate resilient future.



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# Greening Our Cities: Cultivating Sustainable Urban Spaces In Sri Lanka

In the wake of rapid urbanization sweeping across Sri Lanka, the urgency for sustainable development has grown exponentially. As our cities expand due to population influx and infrastructural expansions, the imperative to infuse green spaces and ecofriendly practices into the urban fabric becomes increasingly pressing. In this narrative, we explore the transformative potential of urban gardening as a catalyst for nurturing sustainable urban ecosystems throughout Sri Lanka.

Urban gardening extends beyond mere planting; it embodies a holistic approach to urban rejuvenation, grounded in environmental stewardship, community empowerment, and social resilience. Envision the urban landscape adorned with lush rooftop gardens, verdant vertical landscapes, and communal green patches—a sanctuary amidst the urban hustle, nurturing biodiversity and ecological balance.

Architects, urban planners, and policymakers are increasingly acknowledging the inherent value of integrating green infrastructure into urban landscapes. Green building innovations such as vegetated roofs, living walls, and permeable pavements are not just aesthetic enhancements; they serve as critical ecological assets, mitigating air and water pollution, conserving energy, and enhancing the urban living experience.



*Chicago City Hall Green Roof*

(Image Source: National Geographic)

The commitment of Sri Lanka to sustainable urban development is palpable through initiatives like the 'Greening Colombo' project. This transformative endeavor aims to revitalize neglected urban spaces, transforming them into vibrant green havens that

foster environmental consciousness and community pride. Through strategic land-use planning and participatory design processes, Sri Lanka is reshaping its urban landscape into a dynamic tapestry of green corridors and communal gardens.



*Figure 2: The High Line Transformation*

(Image Source: Zipear)

At the core of urban gardening lies the ethos of community engagement—a collective effort to co-create livable and inclusive urban environments. Community gardening initiatives serve as platforms for knowledge exchange, skill-sharing, and social cohesion, empowering citizens to reclaim ownership of their urban spaces and forge resilient communities. Moreover, urban gardening yields multifaceted benefits beyond ecological sustainability. It fosters urban agriculture, enhancing food security and dietary diversity among urban populations. Additionally, it serves as an economic engine, generating green jobs, nurturing local entrepreneurship, and stimulating tourism through vibrant green spaces and agritourism ventures.



*Figure 3: The Gary Comer Youth Center Roof Garden*

(Image Source: American Society of Landscape Architects (ASLA))

In addition to its environmental and economic benefits, urban gardening holds immense potential for enhancing public health and well-being. Access to green spaces has been linked to improved mental health, reduced stress levels, and increased physical activity, contributing to the overall quality of life for urban dwellers. Moreover, community gardening fosters social connections and a sense of belonging, particularly among marginalized and underserved communities, promoting social equity and inclusion in urban environments.



**Figure 4: Skylawn at POST Houston**

Image Source: Post HTX - Skylawn

Expanding upon these ideas, it's crucial to recognize the role of education and awareness in promoting urban gardening initiatives. Implementing educational programs in schools and communities can instill a sense of environmental responsibility from an early age, encouraging individuals to actively participate in sustainable practices. Additionally, leveraging technology and digital platforms can facilitate knowledge sharing and community engagement, connecting urban gardeners across different regions and promoting innovation in green urban spaces. Furthermore, integrating indigenous knowledge and traditional agricultural practices into urban gardening projects can enhance their sustainability and resilience to local environmental conditions. By valuing and preserving traditional ecological knowledge, urban communities can develop more harmonious relationships with their surrounding ecosystems, fostering a deeper connection to nature and promoting cultural diversity. Another aspect to consider is the importance of policy support and incentives for urban gardening initiatives.

Governments and local authorities can play a crucial role in providing financial assistance, regulatory frameworks, and incentives such as tax breaks or subsidies to encourage the establishment of community gardens, green roofs, and other green infrastructure projects. By aligning policies with sustainability goals and investing in green infrastructure, policymakers can create an enabling environment for sustainable urban development. Additionally, fostering partnerships between government agencies, private sector organizations, NGOs, and community groups can facilitate the implementation of large-scale urban gardening projects. Collaborative efforts can leverage diverse expertise, resources, and networks to address complex urban challenges and maximize the impact of sustainable initiatives. By fostering a culture of collaboration and shared responsibility, stakeholders can work together to create more resilient, inclusive, and vibrant urban spaces. In summation, urban gardening emerges as a potent instrument for fostering sustainable urban development in Sri Lanka. By embracing this holistic paradigm of city planning, we can cultivate urban environments that are not only ecologically resilient but socially cohesive, economically vibrant, and culturally enriched. As we navigate the complexities of urbanization, let us harness the transformative power of urban gardening to cultivate greener, healthier, and more equitable cities for present and future generations.



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# Advancing Sustainable Living through Architectural and Urban Planning Practices

## "Transcending Inequalities: Inclusive Design Transforming the Built Environment for Sustainability"

Imagine a world where everyone feels welcome and included, regardless of their age, ability, or background. This is the vision behind inclusive design, a movement that is transforming the built environment to create spaces that work for everyone. In the world of architecture, inclusivity is not just a buzzword; it is a fundamental concept guiding the transformation of the built environment towards sustainability. As Frank Chimero aptly puts it, "People ignore design that ignores people.". In the quest for sustainability, embracing inclusivity becomes not just a moral imperative but a practical necessity. So, this article focuses to delve into the intricate interplay between inclusive design and sustainability, exploring how it shapes our cities, communities, and individual lives.

At its core, inclusivity in architecture embodies the ethos of fairness and equality, celebrating the diversity of human experiences. It transcends mere accessibility, striving to create spaces where everyone feels a sense of belonging and recognition. Inclusive design is not about fitting everyone into a predefined mold; it is about embracing the unique needs and identities of each individual. By fostering a sense of belonging, inclusive spaces empower people to thrive, ultimately leading to more sustainable and harmonious communities.

### Beyond Universality: Embracing Inclusivity

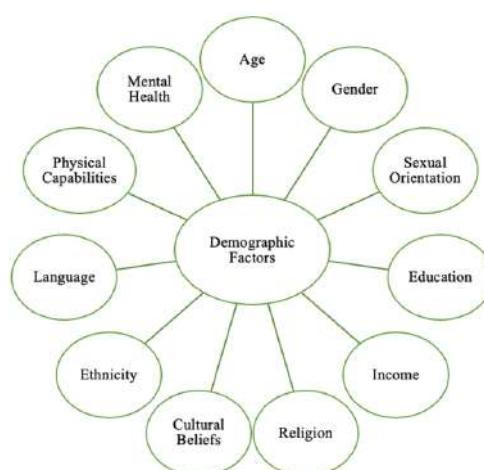
However, it is essential to distinguish between inclusivity and universality within the built environment. While universality advocates for a one-size-fits-all approach, inclusivity celebrates diversity and acknowledges that one size does not fit all. Inclusive design recognizes that people have different needs, experiences, and abilities, and strives to accommodate and celebrate these differences.

### As a cornerstone of Sustainability

When it comes to sustainability, inclusivity plays a pivotal role in achieving key United Nations Sustainable Development Goals, particularly Goal 10: Reduced Inequalities and Goal 11: Sustainable Cities and Communities. By ensuring that everyone has equal access to and can participate in the built environment, inclusive design fosters social justice and promotes a more equitable society.

### From Regulations to Reality

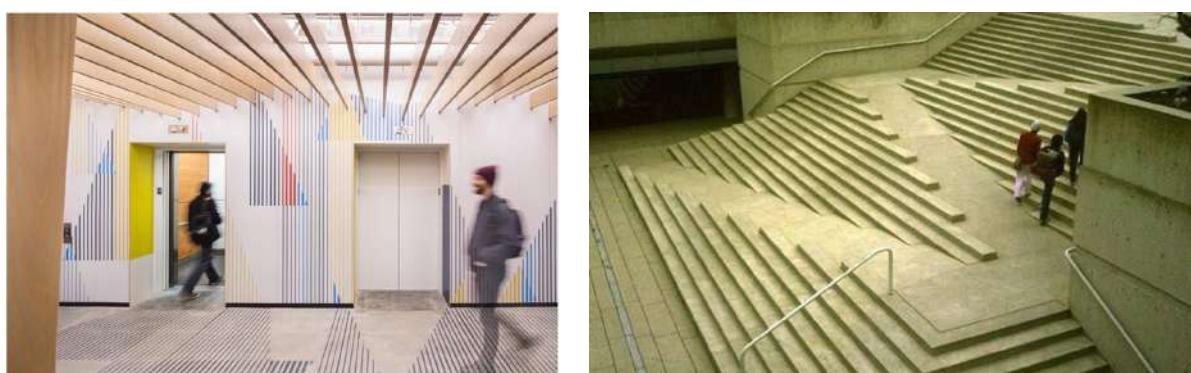
Many countries have recognized the importance of inclusive design and have mandated requirements to ensure accessibility and inclusivity in the built environment. For example, Technical Handbooks of Scotland and British Standard 8300 outline specific guidelines for inclusive design. In Sri Lanka, the Urban Development Authority Law and relevant development plans set Development Authority Law and relevant development plans set minimum standards to ensure inclusivity, particularly for people with disabilities. However, ensuring inclusivity goes beyond adhering to regulations. It requires a deeper understanding of the diverse needs and experiences of different user groups. HMC Architects identify eleven key dimensions of diversity, including age, gender, sexual orientation, education, income, religion, culture, ethnicity, language, physical capabilities, and mental health. Recognizing and addressing these diverse needs is crucial for creating truly inclusive spaces. Inclusive design benefits not only those who directly use the spaces but also owners, investors, and society at large.



Creating inclusive environments involves adhering to key principles, such as empowering and building sustainable communities, appreciating differences, using multiple solutions when universal design falls short, and providing flexibility to adapt to changing needs. The World Green Building Council emphasizes the importance of identifying diverse users, designing universal, safe, and healthy spaces, and adopting a participatory approach to involve end-users in the design process.

### Examples in Action

Inclusive design principles translate into tangible features that empower individuals. Hearing loops, ramps with gentle slopes, clear signage, and universally designed facilities are just a few examples of how built environments can be made more inclusive for people with disabilities. However, inclusivity is not just about disability. It is about fostering a sense of belonging for everyone. Cultural diversity can be incorporated through design elements such as incorporating traditional architectural styles or colors specific to a region. Mixed-use developments that cater to different age groups and flexible spaces that can adapt to changing needs are other ways to promote inclusivity.



## Challenges and the Road Ahead

Despite the benefits of inclusive design, there are significant challenges, including high costs, misconceptions about profitability and aesthetics, lack of resources, and conflicts of interest. Architects often feel constrained by legislation and face pressure to meet minimum requirements rather than striving for true inclusivity. Small firms, in particular, struggle to implement inclusive designs due to limited funding and time pressures.



Moving forward, it is crucial to address these challenges head-on. By fostering collaboration, raising awareness, and dismantling harmful misconceptions, we can create a future where inclusive design becomes the norm, not the exception. As Judith Heumann reminds us, "there are two types of people in the world: people with disabilities and people who will have disabilities in the future." By embracing inclusive design principles today, we are building a more equitable and sustainable world for everyone, tomorrow.



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# DURRA the innovative Building Panel which helps fight global warming and improve Sri Lankas Carbon foot print

## The environment pollution problem.

Farming is an integral part of human habitat and over the years with the explosion of the population it has made a huge impact on the forest cover of Sri Lanka, as more and more forest is cleared to grow cash crops in agriculture to meet the demand for paddy harvest or for animal grazing, it has aid in depleting the glorious forest cover which help Sri Lanka counter the negative effect of agricultural economy and have a cleaner and safer environment. In 2010 Sri Lanka had a 3.51 Mha of natural forest extending over 54% of its land area. In 2023 it lost 11.5kha of natural forest, equivalent to consumption of 4.64 Mt of CO<sub>2</sub> emissions. More we clear the forest for farming increasing deforestation giving a ripple effect by burning farm waste after each harvest further releasing CO<sub>2</sub> and a mix of bad substance to our environment.

## The extent of the problem in Sri Lanka,

Rice production is one of the main productions or harvest as it is the main staple of the Sri Lankans and is grown in every district of Sri Lanka during the three monsoon seasons. It is estimated that about 708,000.00 ha (1,750,000 acres) of land is used for this cash crop cultivation. It produces 2,830,758 tons of paddy straw waste per year. While majority is used as fertilizer and animal feed open burning of the rice straw in the paddock is the common practice. Which would result in an average GHG emission of 92 kg of CO<sub>2</sub> and other harmful emissions, these are CH<sub>4</sub> (Methane) 0.7-4.1g per Kg, N<sub>2</sub> (Nitrous Oxide) 0.019- 0.057g per Kg, SO<sub>2</sub>, NOX, HCl, 0.015g per Kg, Coarse dust particles (Fine particulate matter) FM 10 9.4+-3.5g, per kg Fine partials (Fine particulate matter) 8.3+-2.7g per Kg FM 2.5 which are harmful to the environment.

Application of rice straw into soil as an organic fertilizer is also an inefficient practice, as the natural process of composting takes a time, but with three “kanna” of harvest Yala, Maha, and Mada being harvested in 3 months a part leaving inadequate time for the process framers use excessive urea fertilizer to compost them causing another environmental catastrophe and financial burden to Sri Lanka as fertilizer is import and distributed by GOSL to the framers at a concessionary rate.

## Innovative solution from the construction industry for the construction industry,

Paddy straw waste is an abundantly available very low commercial value waste which is causing a environmental concern. It is by product that comes from commercial harvest of the main staple of the country which is rice, therefore it is a 100% local and a regional product. And straw is a resource which is produce in very three months for Yala, Maha, and Mada seasons, which is a rapidly renewable. Straw contains a lot of natural polymers and cellulose and is non hazardous to the human. What if this low commercial value paddy straw could be value engineered and converted into a very high commercial value building material. The Construction sector has traditionally been one of the most import industries and indicator of a countries development. Yet it is considered as one of the worst pollutant industries which consumes 50% of all-natural resource of the earth along with a 40% of energy and generates 50% of all waste. DURRA panel is one of the innovative solutions which provide very positive solution to the above paddy straw waste problem and a solution to produce an alternative building material using an available resource in abundance which will not run dry like the natural resources.

**Very sustainable and environmentally friendly product.**

Durra Panel is produced by a unique dry-extrusion process which uses a combination of heat and pressure to form the product. During this manufacturing process, a natural plant polymer extruded from the straw fuses the fibres together to form the dense core of the panels. The panels are finished with recycled Kraft paper liner which is bonded to the core with water based PVA glue. The result is zero toxic waste.

Our unique dry-extrusion process locks this carbon away in the form of a highly fire-resistant building material with exceptionally low embodied energy. The environmental benefits of specifying the use of Durra Panel in your project are well documented. Durra Panel is a clean, green, environmentally friendly product with a proven track record throughout Australia and around the world, suitable for commercial, industrial and residential applications.

**Volatile Organic Compounds (VOCs)**

A major issue in the building industry is the impact that emissions of Volatile Organic Compounds (VOCs) have on indoor air quality. VOCs are emitted from glues, paints, binders (eg formaldehyde) and plastics. Durra Panel contains no formaldehyde or additional chemical binders and instead uses water-based glue to bond the Kraft paper liner to the panel core. The use of water-based glue eliminates potential VOC emissions.

**Re-Use and Waste Disposal**

Waste off-cuts from Durra Panels will biodegrade rapidly and can be safely disposed of to landfill. It may also be used as mulch. Depending on design and installation, these robust and durable panels can be reused.

**Embodied Energy**

By virtue, if the natural fibre content and efficient manufacturing process, Durra Panels have low embodied energy in comparison to alternative building materials. Embodied Energy is the energy consumed by all of the processes associated with the manufacture and delivery of the product to site. The result of an analysis of embodied energy shows that a wall constructed from Durra Panel has an embodied energy content of 12.6MJ/m<sup>2</sup> which is only one twelfth (or 8%) that of the typical plasterboard stud wall alternative.

**The range of DURRA SBU's**

With this unique multipurpose DURRA panel comes a range of products which provides great alternatives to their expensive counter parts. ICC DURRA panel is used in providing flowing unique products and solutions.

1. DURRA Dry wall single and double skin,
2. DURRA Acoustic walls,
3. DURRA Fire Rated Doors,
4. DURRA Acoustic Doors,
5. DURRA Floor Decks,
6. DURRA Raised Floors,
7. DURRA Collapsible walls,
8. DURRA Kit House,
9. DURRA Chalets and Cabanas,
10. DURRA Work stations etc.



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# How Can We Make Sustainable Mobility the Most Convenient Option Through Sustainable Urban Mobility Planning?

## What's mobility and why does it matter?

Mobility, the ability to move from place to place, is integral to our daily lives. This includes our daily commutes, shopping, and leisure activities, etc., which consumes a significant portion of our time and income.

However, transportation choices impact not only the individual concerned, but also the wider society and the environment. For example, vehicle travel is a major source of air and noise pollution in Sri Lanka. Additionally, extensive road networks and parking lots consume valuable urban space, reducing potential for housing, businesses, recreational spaces, and green areas.

## How built environment and transportation options shape our everyday mobility choices?

Naturally, humans are inclined towards the most convenient options. For instance, we can't fault someone for choosing a car commute over an excessively crowded bus. Similarly, individuals might avoid buses if the journey entails a long, uncomfortable, and unsafe walk to and from the bus stops. Therefore, making sustainable mobility more convenient and attractive is the only way to attract more people to use them.

## Freedom to Roam

When you get outside your gate, how far can you walk comfortably? Is it tempting to take an afternoon stroll in the area where you live or work? Mobility is more than a mere utilitarian need. It determines how you spend your time, how you manage your budget, and ultimately your physical and mental wellbeing.

Examining cities around the world, we observe a trend: the most walkable and public transit-oriented cities tend to be the most livable. According to multiple surveys, cities like Vienna, Amsterdam, Munich, Zurich, and others consistently rank among the most livable in the world. Conversely, all these cities prioritize pedestrians, cycling, and public transportation through clear policies and planning frameworks. In fact, most of these cities ban individual motor vehicles from historic centers, except for those with mobility impairments.

## How to plan our built environment to make this a reality?

The most prevalent modes of transportation include walking, cycling, buses, trains, personal motor vehicles, Tuk-Tuks and motorcycles. However, their efficiency and sustainability vary significantly. Some modes, like walking and cycling, require minimal road space and emit no pollutants, while others, like cars and SUVs, have a larger spatial footprint and contribute to air and noise pollution.

Urban planning experts like Todd Litman emphasize the importance of setting performance targets that prioritize efficient and sustainable mobility modes. Existing metrics like Level of Service (LOS), vehicle speed, and congestion delays favor inefficient modes by focusing on vehicle movement, instead of people. They neglect that public transit, for example, can move many individuals while occupying significantly less space per person. This per-person impact is crucial for sustainability and efficiency. While mass transit occupies more space, it transports significantly more people, unlike SUVs, which consume less space but typically only transport 1-2 individuals. Therefore, measuring per-rider impact reveals public transportation to be highly efficient and sustainable compared to individual vehicles.

The following table (Table 1), by the Victoria Transport Policy Institute lists the most common planning distortions that overlook the benefit of sustainable transportation modes, and how to reform them.

Distortion	Effects	Reforms
Undercounting non-auto travel demands, including latent demands.	Undervalues non-auto travel demands and improvements to non-auto modes.	More comprehensive travel data, including latent demands. Recognize data biases.
Incomplete analysis. Little consideration of affordability, social equity, safety, public health, and environmental protection goals.	Favors automobiles over more affordable, inclusive and resource-efficient modes, and higher speed roadways over complete streets.	More comprehensive analysis, more multimodal planning, and additional performance targets (affordability, health, etc.).
Mobility-based performance indicators (e.g., roadway level-of-service and travel time index).	Favors faster modes, higher roadway design speeds, and sprawl over compact development.	Consider other planning goals beside speed. Apply accessibility-based planning.
Overvaluing travel time savings.	Favors faster over slower modes, and higher roadway design speeds over complete streets.	Use realistic travel time values. Account for the costs higher traffic speeds.
Ignoring induced vehicle travel.	Overinvests in roadway expansions and underinvests in alternatives.	Account for induced vehicle traffic impacts.
Dedicated funds for roads and parking facilities, but not non-auto modes.	Favors automobile infrastructure over investments in other modes.	Least-cost transportation planning. Multimodal planning.
Automobile underpricing (unpriced roads, parking, risk, pollution, etc.)	Increases automobile travel and reduces non-auto travel demands.	More efficient pricing and more investments in non-auto modes.
Sprawl-oriented development policies, such as density restrictions and parking minimums.	Creates dispersed communities that provide poor non-auto access.	Smart Growth policies that create more compact, multimodal communities.
Elite bias (decision-makers have little experience with non-auto modes).	Favors automobile improvements over other modes, and sprawl over compact development.	Better information on non-auto travel demands, and more multimodal planning.

*Many common transportation planning distortions favor automobile travel and sprawl over more affordable, inclusive and efficient modes, and sprawl over compact, multimodal development.*

Through comprehensive impact assessment researchers have developed a hierarchy of sustainable mobility shown in figure 1.

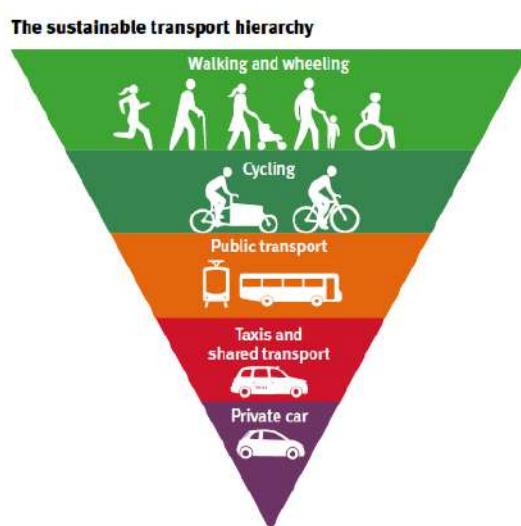


Figure 1: Sustainable Transportation Hierarchy

When it comes to mobility, the built environment goes hand in hand. For example, the decision one makes on whether to drive or walk to a given destination depends on multiple factors, which may include, the distance to the destination, availability of sidewalks, shading, etc.

Internationally, there are multiple standards that are geared towards transforming the building environment to facilitate sustainable mobility. The most prominent include Smart Growth, New Urbanism, and Transit Oriented Development. However, all these concepts advocate similar planning and design strategies. Those include,

1. Increasing the development density to create compact neighborhoods with diverse uses, minimizing long distance travel.
2. Increasing road network connectivity to make walking and cycling more convenient.
3. Create human scale and well-designed streets and public spaces, which increase comfort and attractiveness for walking and cycling.
4. Increase development density around public transit stations, which gives more people access to mass transit within short distances.
5. Provide enough public transportation capacity, increase reliability, and passenger comfort.

### It's high time for a change

Cities and towns around the world are transforming themselves to be pedestrian and bicycle friendly, and to give center stage to public transportation. For example, Vienna, Austria, has a well-defined target for its transport mode split, aiming for an "80:20" split between sustainable modes and car traffic by 2025. 80% represents the desired share of trips made by sustainable modes of transportation, including, walking, cycling, and public transportation. 20% represent individual modes of transportation such as cars. Similar targets have been established by most cities in Europe. However, unfortunately in Sri Lanka, this transformation has not gained momentum so far.

### You can be a part of the change

To transform our built environment, we all have an important role to play, regardless of our background. Examining successful transformations in other countries reveals a common thread: concerned individuals demanding more space and resources for sustainable transportation options like walking, cycling, and public transit. Significant public demand for change ultimately translates into concrete actions. This can empower real transformations, shaping our built environment to prioritize people over vehicles. Change starts with educating ourselves, spreading the word, and actively demanding action.



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## Implementing Agroecological Practices: Cultivating a Sustainable Lifestyle through Regenerative Agriculture

In the face of growing environmental challenges, agroecology and regenerative agriculture stand out as key solutions for creating a sustainable way of life. Agroecology, which considers the relationships between farming and nature, focuses on building resilient farming systems with minimal environmental harm. Regenerative agriculture, on the other hand, emphasizes restoring ecosystems by enhancing soil health, biodiversity, and water conservation, as well as reducing carbon emissions. This article explores the core concepts of these practices and practical ways to apply them. By adopting agroecological and regenerative methods, we not only tackle urgent environmental issues but also foster vibrant communities and economies. Together, these approaches offer a path towards embracing a sustainable lifestyle, where agriculture and nature work together to support a healthier planet.

Agroecology intertwines the science of ecology with agricultural practices, emphasizing biodiversity, natural resource conservation, and equitable farming systems. By leveraging the principles of ecology, agroecology aims to create farming methods that work in harmony with natural ecosystems, reducing reliance on synthetic inputs and promoting sustainable food production. Regenerative agriculture, a subset of these principles, takes this a step further by focusing on restoring soil health, drawing down carbon, and rebuilding natural biodiversity. These practices are revolutionary in their promise to not only mitigate climate change but also enhance food security, water conservation, and rural livelihoods. By mimicking natural processes and fostering biodiversity, agroecology and regenerative agriculture offer a holistic approach to farming that addresses environmental and social challenges while promoting long-term sustainability. Through practices such as crop rotation, agroforestry, and soil regeneration techniques, farmers can enhance ecosystem resilience, improve soil fertility, and mitigate the impacts of climate change. The essence of agroecology and regenerative agriculture lies in recognizing the interconnectedness of ecological systems and harnessing nature's wisdom to cultivate thriving landscapes and communities.

The health of our soil is paramount in the pursuit of sustainability. Regenerative agricultural practices such as cover cropping, no-till farming, and composting are vital. These methods increase soil organic matter, leading to enhanced water retention, nutrient availability, and carbon sequestration. By adopting these practices, farmers and gardeners alike contribute to a sustainable lifestyle that supports the earth's natural carbon cycle, turning agriculture into a solution for climate change.

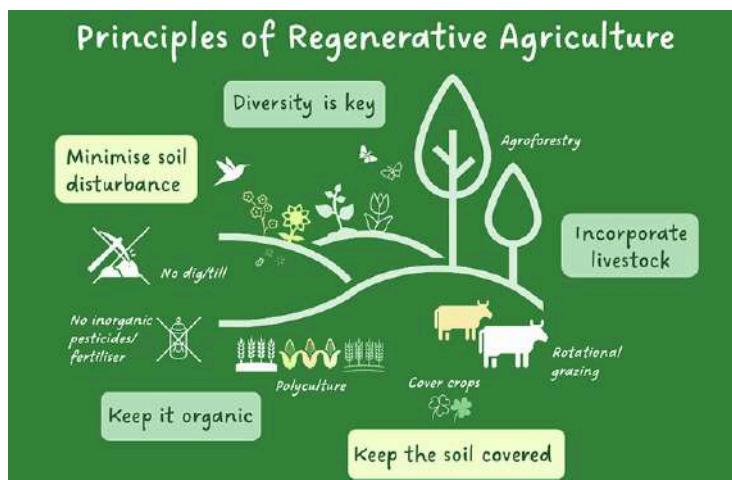
Biodiversity is at the heart of agroecological practices. By diversifying crops and integrating livestock, these systems mimic natural ecosystems, creating habitats for a variety of species. Pest management is achieved through natural predators rather than chemical inputs, reducing the need for synthetic fertilizers and pesticides. This not only conserves biodiversity but also builds resilience against climate change, pests, and diseases, ensuring a stable and diverse food supply.

Agroecology and regenerative agriculture have profound implications for water conservation. Practices like mulching and the construction of swales enhance water infiltration and reduce runoff, minimizing irrigation needs and protecting waterways from pollution. These sustainable farming practices embody a lifestyle that respects and conserves our water resources, making every drop count.

Regenerative agriculture is pivotal in fighting climate change through carbon sequestration. By restoring soil health and integrating perennial crops and trees, carbon is stored in the ground, mitigating greenhouse gas emissions. This approach enhances soil fertility, improves water retention, and bolsters resilience to extreme weather events. Moreover, it fosters diverse ecosystems and sustainable food systems. Embracing regenerative agriculture is a proactive step towards building climate resilience and ensuring a healthier planet for future generations.



Through this holistic approach, we not only combat the impacts of climate change but also promote ecological balance and food security. It's a collective responsibility to adopt practices that regenerate our environment and safeguard our future. the the ground, mitigating greenhouse gas emissions. This approach enhances soil fertility, improves water retention, and bolsters resilience to extreme weather events. Moreover, it fosters diverse ecosystems and sustainable food systems. Embracing regenerative agriculture is a proactive step towards building climate resilience and ensuring a healthier planet for future generations. Through this holistic approach, we not only combat the impacts of climate change but also promote ecological balance and food security. It's a collective responsibility to adopt practices that regenerate our environment and safeguard our future.



Beyond environmental benefits, agroecological practices foster strong communities and economies. Local food systems supported by these practices are more resilient to global shocks, provide local jobs, and keep profits within communities. By choosing locally produced, agroecologically grown food, consumers can drive demand for sustainable practices, supporting a lifestyle that values community well-being and economic resilience.

Embracing a sustainable lifestyle through agroecology extends beyond simple eco-friendly choices; it embodies a commitment to nurturing a system that regenerates and sustains itself. Agroecological practices serve as the cornerstone of this ethos, fostering a profound connection between individuals and the natural world. Beyond cultivating the land, agroecology cultivates a way of life that reveres biodiversity, conserves resources, and prioritizes community well-being. Living sustainably through agroecology encompasses various actions, from supporting local farmers and participating in community gardening projects to advocating for policy changes that incentivize sustainable practices. Such endeavors not only reduce carbon footprints but also foster vibrant local economies and strengthen social ties. Moreover, education and awareness play a vital role in promoting a sustainable lifestyle, as sharing knowledge about agroecological principles and their benefits inspires others to embrace sustainable practices and become stewards of their local ecosystems. Together, these collective actions form the foundation of a sustainable lifestyle rooted in reverence for the earth and a commitment to future generations, contributing to a larger movement towards a healthier, more resilient planet.



sustainable living in the face of environmental challenges, urging us all to act with foresight and compassion. As we look to the future, let us cultivate not just our gardens, but a sustainable ethos that permeates every aspect of our lives. It's time to embrace agroecology and regenerative agriculture as guiding principles for shaping a world where agriculture and nature work in harmony to nourish both people and the planet. Together, let's pave the way for a more resilient, equitable, and sustainable future.



**Ms. G. Thula Siha**

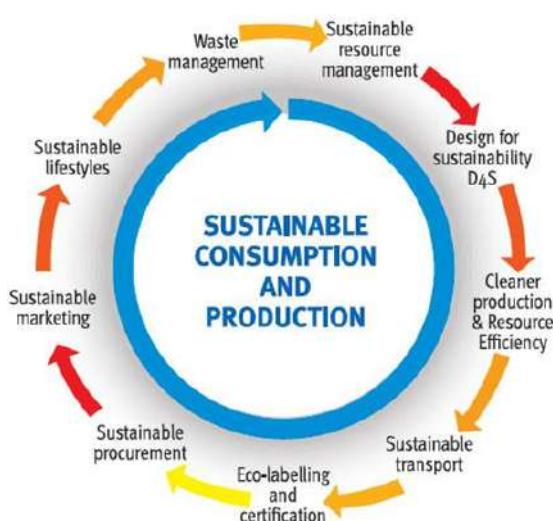


# Doing More with Less: Ensuring Sustainable Consumption and Production

In 2015, the United Nations introduced Sustainable Development Goals (SDGs) to address five critical areas of global importance: people, planet, prosperity, peace and partnership. Among the 17 SDGs, the 12th SDG is on ensuring sustainable consumption and production patterns, which is key to sustaining the livelihoods of current and future generations. It indicates the significance of responsible consumption and production in realizing sustainable development.



Sustainable Consumption and Production (SCP) aims to minimize the negative environmental impacts from consumption and production, considering all life cycle stages of products and services while promoting quality of life for all. It is a broad framework that includes many operational solutions that are key for designing and implementing policies and measures to achieve economic, social and environmental sustainability. These solutions include supply chain management, waste management and re-use, resource efficiency, cleaner production, life cycle thinking, eco-innovation and eco-labelling.



Source: <http://www.unep.org/resourceefficiency/Home/WhatisSCP/tabcid/105574/Default.aspx>

The key principles of SCP are,

- Improving the quality of life without increasing environmental degradation and without compromising the resource needs of future generations.
- Decoupling economic growth from environmental degradation by:
  - Reducing material and energy intensity of current economic activities and reducing emissions and waste from extraction, production, consumption and disposal.
  - Promoting a shift of consumption patterns towards goods and services with lower energy and material intensity without compromising quality of life.

- Applying life cycle thinking which considers the impacts from all life cycle stages of the production and consumption process.
- Guarding against the re-bound effect, where efficiency gains are cancelled out by resulting increases in consumption.

Sustainable consumption and production affect the national development in a number of ways.

## 1. Resource efficiency and economic performance

Resource efficiency is to use less resource input to achieve the same or improved output. It can be achieved by increasing resource productivity or reducing resource intensity. The sustainable use of resources must be considered at all the stages of the value chain, from sourcing and design, manufacturing, transportation and usage to the end of life/re-use. Resource efficiency is integral to the SCP approach.



## 2. Poverty Eradication

The effect of hazardous, inefficient and wasteful consumption and production processes can intensify poverty, damage the health of populations and delay development. For instance, unsustainable patterns of consumption and production have accelerated the rate of Greenhouse gas (GHG) emissions into the atmosphere. This in turn has led to an increase in climate change induced extreme weather events, directly counteracting poverty and hunger eradication efforts.



## 3. Innovations for sustainability

Innovation for sustainability, is a key component of SCP. The shift towards SCP offers an opportunity for innovation with alternative solutions and products that can help gain a competitive advantage for an increasingly aware and dynamic market. As resource scarcity and environmental degradation are presenting growing challenges for business, innovation can help to create sustainable alternatives, and therefore transform these challenges into new market opportunities.



## 4. Addressing climate change

SCP has a key role in mitigating climate change and the consideration of both consumers and producers gives an integrated picture of the overall impact of economic activities on the environment and climate. It also provides a framework for addressing the inter-relationships between business activities, political decisions, and everyday consumer behavior. SCP further offers the potential tools to help address climate change and create a sustainable low-carbon economy through its life cycle



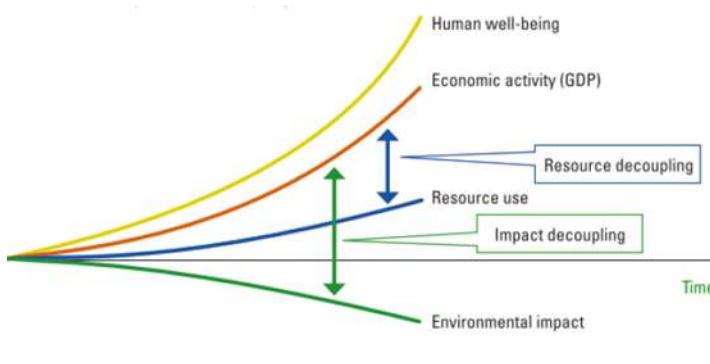
## 5. Human well-being and health

Inadequate waste management and pollution have serious impacts on people's health around the world. Untreated and inadequately disposed of waste is generating a negative impact on ecosystems. In addition, lifestyles and consumption choices also play a role in this increase, such as unhealthy diets which have led to an increase of obesity, especially among youth. SCP measures make an important contribution to better well-being and reduce health risks through promoting access to clean water, improving waste management and reducing exposure to pollution and a wide range of harmful substances



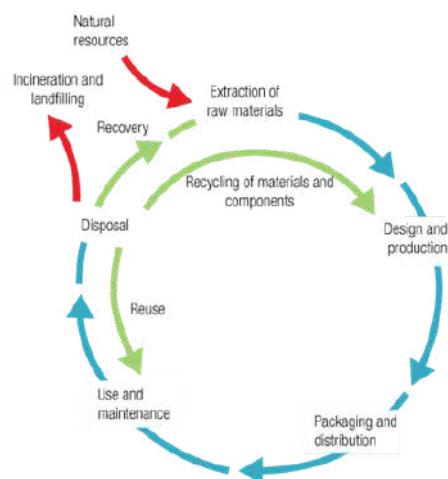
There are a number of important concepts linked with SCP such as decoupling, life cycle approach and circular economy.

## Decoupling



Resource decoupling occurs when resource productivity is improved at a rate that is faster than the economic growth rate. This means that more economic value and a greater level of well-being can be created by using the same amount of, or less, resources (doing more with less). Impact decoupling refers to achieving more well-being and economic growth with fewer negative environmental impacts. Decoupling is a necessary objective for achieving sustainable development.

## Life cycle approach



The life cycle approach considers not only the environmental and socio-economic impacts of the product during its use phase, but also the resource consumption and pollution associated with all product life cycle stages from resource extraction to end-of-life. The key objective of the life cycle approach is to address the risk of burden shifting, which is when a solution to a problem at one stage of the life cycle can lead to negative impact at another stage.

## Circular Economy

The circular economy is a model of production and consumption which involves sharing, leasing, reusing, repairing, refurbishing and recycling existing materials and products as long as possible. In this way, the life cycle of products is extended.



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# Advancing Sustainable Living through Architectural and Urban Planning Practices

## Introduction

Climate change impacts are increasingly affecting animals and humans at present. The primary reason for climate change is the actions of humans; hence, sustainable living is vital to minimizing it. Both architecture and urban planning are critical tools to advance and inspire people to have a sustainable lifestyle. Hence, this paper will examine the present literature to identify principles, technologies, and strategies through which sustainable living can be enhanced, along with their effects and future aspects.

## What is sustainable living?

Sustainable living is a way of living with social behaviors and choices that minimize environmental degradation by means of no or minimum use of natural resources and environmental pollution such as CO<sub>2</sub> emissions and waste while supporting economic development and social equity.

## Importance of architecture and urban planning in sustainability

The rapid and unplanned urban growth in recent times has led to increased pressure on the environment. Urban areas account for 80% of energy consumption, 75% of waste generation, and carbon emissions. Due to the consumption of vast amounts of natural resources, environmental pollution has caused a number of social and irreversible environmental problems, such as the deterioration of the environment. As a result, cities are more vulnerable to the impacts of climate change and natural disasters, which create unfavorable living conditions for both humans and animals.

Therefore, sustainable living as an individual as well as collectively has become the paramount concern in this context. Urban development therein needs to be done with sound urban planning. The decisions of architects and urban planners have far-reaching implications for shaping the future of our cities and influencing people to live a greener life to mitigate these challenges and create sustainable and resilient communities. However, this situation offers an opportunity for innovation and change in architectural and planning practices, where sustainable living practices can be molded into them.

## Key Principles of Sustainable Architecture

Sustainable architecture is designing buildings and services that consider the environmental, financial, social, political, and future impacts. While green architecture focuses solely on the environment, sustainable architecture has a wider scope where it also considers the cost and human aspects with a cradle-to-grave approach other than the environment. The objective of sustainable architecture is to maximize the use of space and resources and reduce the use of natural resources, energy consumption, carbon emissions, and waste in the construction, operation, and maintenance periods of a building. Contrarily, it improves the quality of life of building occupants through good indoor air quality, access to natural light, and acoustic comfort by creating spaces that promote physical and mental well-being. In achieving this goal, the following key principles are applied when designing and building sustainable architecture.

**Energy Efficiency:** A building design can minimize their dependency on mechanical systems for heating, cooling, and lighting by implementing passive design strategies (Figure 01), efficient building envelopes, integrating renewable energy (Figure 02), and energy-efficient systems and technologies that optimize building performance. Passive design techniques consider proper building orientation and thermal mass, passive heating, cooling, lighting, insulation, and materials. Renewable energy sources utilize unlimited, naturally replenished resources, such as the sun, tides, and wind, to produce energy such as solar panels and wind turbines that minimize the carbon footprint of buildings and are cost-effective in the long run.

**Resource Conservation:** Responsible use of resources such as land, materials, and water saves their availability for future use and equitable access. Resource-efficient construction techniques, such as the use of prefabricated buildings and implementing the 3 Rs (reduce, reuse, and recycle), reduce waste. Techniques for careful design in saving the land with less land mass and energy comprise the use of adaptable, flexible, and modular spaces, many of which are made from natural materials that can be easily broken down and reused or recycled; tiny houses, micro-apartments, and other small structures; and alternative housing solutions such as recycled shipping containers and floating structures on waterways in dense coastal areas (Figure 01).

Using locally sourced, renewable, and non-toxic materials such as wood, bamboo, mycelium, hemp, cork, flax, soy, bio-based, recycled, and up-cycled materials, and eco-friendly insulation can replace conventional materials as sustainable alternatives. In addition, concrete can be replaced with hemp Crete (made from hemp, lime, and water) and conventional plastics with innovative bio plastics made from algae. Rainwater collection and gray water recycling are some examples of ways to save water on the planet.

**Biophilic design principles:** incorporating environmental features (plants and nature via living walls, tree-covered residential towers, and green roofing materials to help cool existing buildings and create stress-free, healthy environments for humans); natural shapes and forms; restorative patterns and processes; light and space; place-based relationships that consider the connection to ecology and prominent biogeographic features (mountains, deserts, estuaries, rivers, and plants); and evolved human-nature relationships (Figure 01).

The use of native plants in landscape design provides many benefits. They promote local biodiversity, reduce soil erosion, and require less maintenance because of their familiarity with the environment.



Figure 01: Passive ventilation (Archi-Monarch, 2020); Renewable energy (Hohenadel, 2022); Alternative building solutions and sustainable timber (Hohenadel, 2022); Biophilic design examples (Source: Bochart, 2019)

### Sustainable Urban Planning Approaches

Sustainable urban planning is the action of developing an urban area with consideration of environmental, social, financial, and future aspects. Four key approaches to sustainable planning are discussed below.

Transit-oriented advancement: is centered on eight aspects in designing train-based transportation and community arranging. Quality pedestrian and cycling facilities and transits at nodes connected to the transport network enhance public travel. Buildings that are mixed-use, dense, and compact and located beside these travel facilities allow easy access to them. Shifting the existing buildings and services might also be needed. These strategies promote communities with high-quality pedestrian environments centered on public transportation hubs powered by clean energy. Simultaneously, they reduce the need for fuel engines, traffic issues, and health problems, and improve environmental conditions such as air quality and walkability (Figures 02–03).



Figure 02: Three components of sustainability: Unsustainable and toxic vs. sustainable and green (www.tod.org, n.d.)



*Figure 03: Sustainable transportation (Wordpress.com, 2014): Transit at Washington Metropolitan Area (Metropolitan and Authority, 2017): Innovation and vividly (Adler, 2016)*

**Smart growth principles:** Is a powerful tool for creating sustainable planning. Therefore, the Environmental Protection Agency in the United States has established ten basic principles for smart growth. They are: mixed land use development; compact design; range of housing opportunities and choices; walkable neighborhoods; distinctive and attractive communities with a strong sense of place; preserving open space, farmland, natural beauty, and critical environmental areas; direct development towards existing communities; variety of transportation choices making development decisions predictable, fair, and cost-effective; and encouraging community and stakeholder collaboration in development decisions (Figures 04).



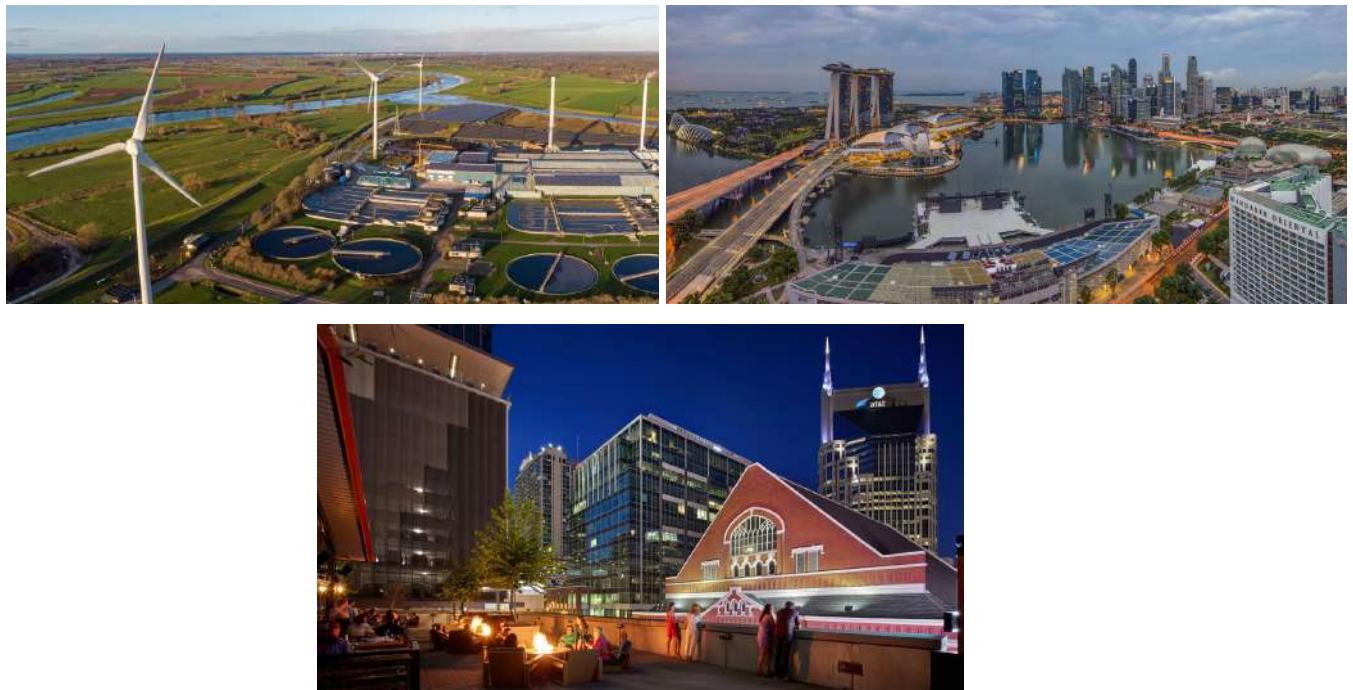
*Figure 4: (www greencitytimes com, 2015): More green space per person (Adler, 2016): Sense of place with pedestrianized pathways in Curitiba (Adler, 2016)*

**Sustainable infrastructure:** considers all the service networks, systems, equipment, and assets in an urban area that fulfill the needs of the community while adhering to social, environmental, and financial requirements. They include transport, power, energy, water, information, communication, sanitation, waste management, and green spaces. These services are interconnected. For example, power generated from clean energy sources such as wind and solar can be utilized for electric light rails and vehicles and sustainable water management with rainwater harvesting and waste water treatment (Figure 5).

**Urban regeneration and revitalization initiatives:** improve the physical conditions of the buildings and living environment, the function of a city, while helping to tackle urban challenges such as underdeveloped settlement issues, haphazard development, congested traffic, inadequate public space, insufficient urban infrastructure delivery, urban decay, and most importantly, social issues like crimes. It is a “metabolic” process of reusing resources and rebuilding the urban environment.

Both terms sound similar, but urban regeneration prevents the decline of a city by improving its physical structure and, more importantly, its economy with social inclusion (Figure 5).

Urban revitalization, on the other hand, brings life back to a dying city by preserving its history and culture. In that, the existing neighborhood character is preserved and the new additions are connected to the story of the city; also, the existing neighborhood vacant pockets are filled in consideration of its history and purpose and the improvement of living conditions in residential districts, with the introduction of cultural and entertainment hubs that remind the identity and improve the image of the city (Figure 5).



*Figure 5: ([www.greencitytimes.com](http://www.greencitytimes.com), 2015): More green space per person (Adler, 2016): Sense of place with pedestrianized pathways in Curitiba (Adler, 2016)*

### The Conclusion

A community that is economically successful, environmentally protected, socially inclusive with equity, and promotes sustainable living must have considered sustainable architecture and urban planning aspects. Even though the topics are widely spoken among the people, their application does not seem adequate around the globe.

However, urban districts designed with biophilic design strategies, use of resources and energy in a responsible manner, and smart growth approach, while at the same time incorporating clean energy, sustainable green transportation, and infrastructure, promote meaningful living. The self-regenerating capacity of these buildings is greatly encouraged in design. Additionally, and most importantly, urban renewal with bring-back-life efforts, including the above-mentioned principals and methods in a holistic manner with equity, is considered the most required at present and in the future.

*"The choice is ours—yours and mine. We can stay with business as usual and preside over an economy that continues to destroy its natural support systems until it destroys itself, or we can adopt Plan B and be the generation that changes direction, moving the world onto a path of sustained progress. The choice will be made by our generation, but it will affect life on earth for all generations to come."*  
-Lester Brown ([www.tod.org](http://www.tod.org), n.d.)



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