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MALAYSIA & REGIONAL LANDSCAPE ARCHITECTURE INDUSTRY UPDATES

PORTFOLIO

Greening the
Green Infrastructure

Empowering Designers
In Climate Decisions

Sungai Segget
Rejuvenation

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PERSONALITY

Kashino Naohiro
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RESEARCH

Greening the Grey

Green Infrastructure:
Human, Nature
and Functions

TECHNOLOGY

Environmental Rating Tool

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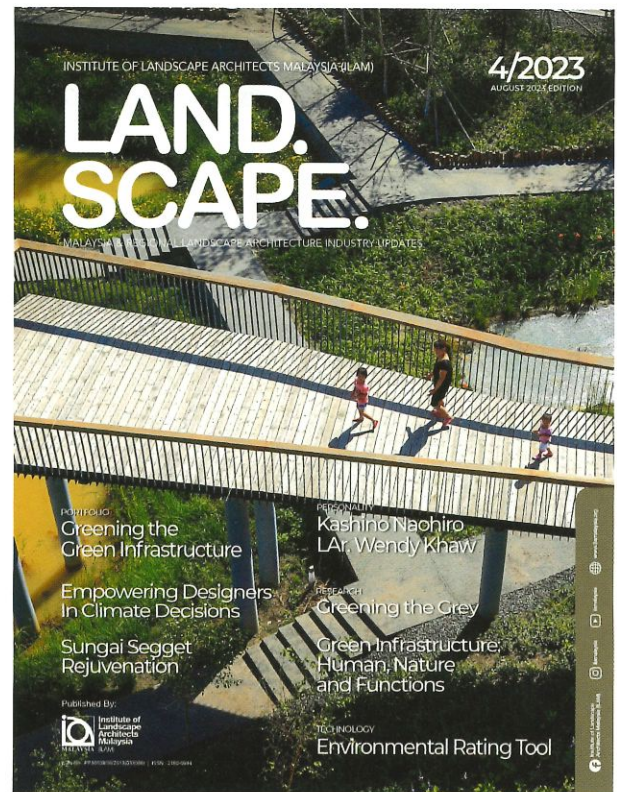
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ON THE COVER

A Solution for Stormwater Management

Qunli Stormwater Wetland Park, China that is surrounded on four sides by roads and dense development was facilitated to design a nature-based infrastructure development.

Photo Credit: Turenscape, PR China

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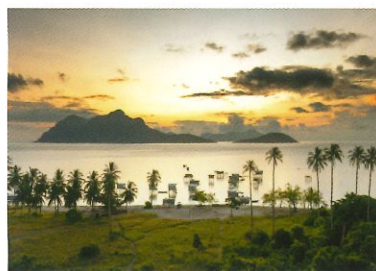
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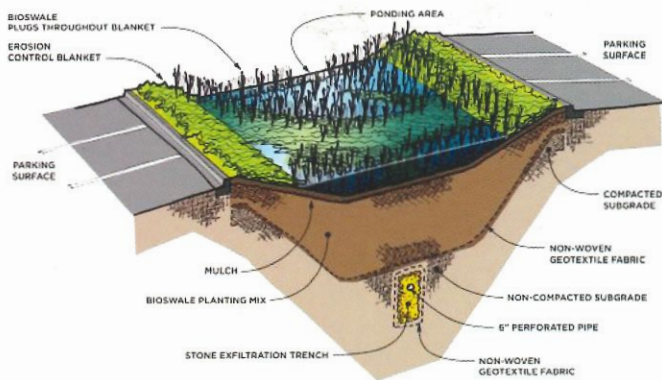
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GREEN INFRASTRUCTURE: HUMAN, NATURE AND FUNCTIONS

Written by Dr. Wan Saiful Nizam bin Wan Mohamad



TOP Implementation of bioswale design at the roadside of Grange Avenue in Greendale, Wisconsin (Source: Volkering, 2010)

ABOVE Illustration of Bioswale Design by New York City Urban Green Council (Source: Gartz, 2022)

THE UNDERSTANDING

The debates on green space lead to various responses. The issue is what greenery means to us. Every profession views green space differently whether it gives benefits to our lifestyles or natural resources that need to be preserved. Meanwhile, there is also an understanding that the potential monetary value in transforming the green space into development in either a neighborhood or a business area. However, green infrastructure is suggested to be an alternative for the functioning elements and at the same time provide ecosystem services that both benefit a human being. As such, green infrastructure diversifies in landscape planning and indicates sustainable approaches to development. Thus, the rigorous greenery planning showed the contribution of landscape architecture discipline is to make the green space functional as well as preserve the natural environment.



As discussed by Mell (2016), green infrastructure is the integration of nature and technology which functions in the built environment design. This means the functional elements in the built environment such as drainage for water removal which is then designed accordingly with the natural elements such as plants and boulders indicate the sustainability of the bioswale design. Another example of green infrastructure is the implementation of a green roof system where the shading functions integrated with plants provide cooling effects to the environment which resulted in the decrease of the global warming issue. With the integration, the design ideas and concepts such as green cities, the city in the garden, green buildings, greenways, and green linkages are used in the development to promote livability and sustainability. Accordingly, the design attracts public views and preferences in development to offer a better approach to improving our environment.

The idea of a living mechanism integrated with a system requires ecological consideration. The ecosystem that works in a biotic and abiotic relationship makes the green infrastructure a multi-disciplinary approach that requires more understanding of the integration of structure and ecology. Austin (2014) suggested the necessary understanding of the variables and ecological conditions to make sure the ecosystem functions. Planning on biophysical in ecologies such as plants, water, soil, and other natural elements is the basic consideration that leads to the six measurements of a healthy ecosystem which are (i) habitat and species diversity, (ii) water quality, (iii) air quality, (iv) energy and material cycling, (v) soil structure, and (vi) ecosystem resilience. Concurrently, the established and sustained ecosystem in development provides physical, chemical, and biological natural processes such as primary production, water purification, nutrient cycling, carbon sequestration, decomposition, and carbon cycling benefits to human wellbeing. Hence, the beauty of green infrastructure is the ecological process, as well as the functional structure, works together in providing sustainable services to human needs.

Green infrastructure is a new idea and adapting well to landscape planning. Mell (2016) describes the green infrastructure concepts progressing in three periods, namely (i) exploration, (ii) expansion, and (iii) consolidation. From 1995 to 2005, the idea of green infrastructure was explored parallel with the issue of limited green space. As such, the landscape elements should be considered as the green infrastructure was highlighted. The exploration continued to the extent of ecological aspects, design principles, benefits to human wellbeing, as well as the gaps found in the national planning and policies. The expansion of the green infrastructure concept continued from 2005 to 2010. This phase demonstrated that the knowledge of green infrastructure was being discussed by academics, practitioners, and governments. These lead to the implementation, integration, and development of green infrastructure in research, national physical plan, and policies. The issues such as flooding, global warming, air pollution, etc. lead to the idea of stormwater harvesting, carbon sequestration, and thermal comfort offered in the landscape elements. Then, 2010 onwards presents how green infrastructure is up to the mainstream. The practitioners started to examine landscape elements as the green infrastructure that needs to be considered. Sustainable Development Goals by United Nations set the blueprints of green infrastructure for the countries to solve the environmental issue. Thus, most developments especially in urban areas map green infrastructure as the urban fabrics that offer ecological functions for a better quality of life.

TOP Green infrastructure planning at Pantai 2 Sewage Treatment Plant, Kuala Lumpur (Source: China Construction Corporation Ltd., 2016)



GREEN INFRASTRUCTURE CONCEPTS

Greenways provide environmental movements through landscape features in an urban area. The idea offers connectivity for both humans and nature; transportation movement and biological movement. Transportation movement allows people to connect between places and biological movement creates ecological connectivity within the green area. Mell (2016) suggested that greenway features include boulevards, parkways, riparian corridors, recreational greenways, ecological corridors, scenic and historic routes, and comprehensive green networks. Functional in providing interaction with the landscape, greenways contribute to the increase of urban accessibility to nature. Hence, people experience a better urban environment and feel leisurely during travel. Accordingly, the investment in developing the greenways in an urban area potentially provides a better opportunity in increasing the local socio-economic scene.

Cities are limited and complex, people are looking for places to exercise, air and water require remediations from pollution, noises need to be buffered, and business should be in order and well developed. Accordingly, the concept of green cities is highlighted from the issues of socio-economic, public health and wellbeing. The principles of green cities should be within the urban development policy. The significant need for a place for social equity especially in the urban center to achieve greater livability and multi-functionality. Howard (2009) explored green cities concepts purposely in linking the people, place, and landscape to achieve health and wellbeing in human and environment relationship. The strategy of green space should be close to housing and office areas to encourage people to spend more time in the natural environment. The connection of green patches within a city is used to promote more outdoor living, social interaction, and natural engagement. Therefore, the strategies indirectly increase the positive views of these green multi-functional urban spaces and become a better alternative for solving issues in an urban environment.



LEFT PAGE Green roof design system at PKNS Building, Shah Alam.

LEFT The ecological movement of 16km riparian corridor, Puyangjiang River Corridor, China (Source: FuturArc, 2018)

BELOW ParkRoyal Hotel, Singapore represents the green city image. (Source: ArchDaily, 2022)





After the Second World War, the United Kingdom launched the 'green belt' to protect the green area from being developed. Greenfield and agricultural land are protected within the green belt policies together in the designated cities such as Oxford, Cambridge, and Birmingham, as well as the green corridor of Liverpool-Manchester-Leeds. The protection of the green by the UK government indicates a significant contribution of green infrastructure to the future image of a city. Protecting the large area of green is the key to the green belt concepts. This concept increases the nature and human relationship in a city. There are views discussed that the large green land is the pool that is full of money. The land is potentially able to become a residential area as well as a new township. Maximizing the profit, the unhealthy practices indicate big trees can be replaced with small trees which for sure are not equal. The green belt is used to prevent these unhealthy practices from becoming uncontrolled and to balance between green and gray areas as well as solid and void areas.

From other points of view, public participation or community involvement plays a significant role in the idea of green infrastructure. Community involvement in urban farming is a trending subject nowadays. Urban farming offers better views

of a city such as a productive environment, future food security, jobs opportunity, and environmentally friendly, and healthy urban lifestyles. Green infrastructure become the main component of urban farming. Space with a water harvesting system, a medium for planting, and interactions in the urban society are the attributes to develop the urban farming community. The innovation with technology now growing to offer side income for the community involved. Artificial intelligence as well as automatic and remote system bring urban farming to another level which is smart farming. Accordingly, these indicate that green infrastructure may grow together with the technology which expands the boundary of landscape architecture.

TOP *Biophilia design of Changi Airport, Singapore (Source: Tomorrow.City, 2021)*

ABOVE LEFT *Public participation in urban farming activities (Source: ArchDaily, 2022)*

ABOVE RIGHT *Biophilia design at the new PARAMIT factory in Penang, Malaysia*

References

1. Austin, G. (2014). *Green Infrastructure for Landscape Planning: Integrating human and natural systems*. Abingdon: Routledge.
2. Howard, E. (2009). *Garden Cities of To-Morrow*. Gloucester: Dodo Press.
3. Mell, I. (2016). *Global Green Infrastructure: Lessons for successful policy-making, investment and management*. Abingdon: Routledge.

Biophilia develops from the principles of green urbanism which is the interaction of human and nature activities within the urban fabrics. Biophilia serves a better understanding of the ecological perspective in landscape planning. The integration of building and ecological resources as presented in Changi Airport, Singapore extends the perceptions of green infrastructure from a human and natural perspective. The remarkable garden design in Changi Airport increases the emotional affiliation of humans towards nature outside the boundary of airport functions. The concepts are used to reconnect the human mind from unnatural thinking to the natural remedy that brings peace of mind. Research in biophilic discusses the influence of nature on human cognitive and mental health such as the feeling of freshness, safety, amazement, comfort, authenticity, energy, joy, peace, and relaxation. Therefore, these suggested that the concept of biophilic, the exposure of humans to nature can transform negative feelings into positive ones.

Water is an important element in our life which sometimes discussed potentially give problems to a development. The high maintenance issue to the clients makes the designer prefer to avoid design with water elements rather than make it the functional part in development. With this, the role of water is silently debated in the green infrastructure concept which becomes the gap that needs to be revisited. Water-sensitive design approaches do have a role in the water resource management of green infrastructure. River of Life project, Kuala Lumpur indicates the significant role of the Klang River in the center of Kuala Lumpur to save from water pollution. Accordingly, the river cleaning and beautification project is believed to give a high impact on transforming the ecosystem in the city center as well as reconnecting people with nature. The functional value of water to the different land use types as the water resources for supply, quality, and maintenance do contribute to the natural environments. The re-establishment of green-blue infrastructure in small or big-scale projects by considering water resources for natural elements balances the condition of the landscape strategies. Therefore, the appropriate management plan of water-sensitive design stabilizes the development by providing long-term sustainability of urban green space.

THE CHALLENGES

The developing country of Malaysia does have a lot of potential and opportunity in the planning of green infrastructure. Policy-makers, practitioners, researchers, and the public play an important role in the sustainability of green infrastructure to be well functioned. According to the PDCA cycle model, four key assessments are to be strategized. Firstly, at the national or local level, the planning stage is where the sustainable planning of green infrastructure starts. Related acts and policies, for example, become the key to achieving the goal of better green infrastructure planning. The establishment of the acts can re-enforce and strengthen the quality of landscape development to benefit human wellbeing and increase the quality of life. Secondly, the practitioner needs to follow the development

guidelines accordingly. The practice of “how to do” and “do it correctly” increase the function of green infrastructure in development. Besides, the practitioner suggested always updating with the latest knowledge, innovation, and technology so that the profession, as well as the proposed design, will be always reliable for landscape development. Then, the researcher and public are responsible to assess the green infrastructure and whether it contributes to humans, nature, and functions. The research needs to align with the improvements in facing the upcoming issues. Lastly, the review and revisit of the acts and policies by the stakeholders require highlighting and debating the relevancy of the act to work within the current and future situations. As suggested by Mell (2016), four key components of maintaining continuity include:

1. ***The policy environment influences green infrastructure development.***
2. ***The actors and/or stakeholders engaged with the development of green infrastructure policy and practice.***
3. ***Assessments of the scalar differences in green infrastructure investment in each location and the influence this has on the spatial distribution of resources.***
4. ***Evaluations of the temporal changes in the production of green infrastructure policy and its subsequent delivery.***

The illustration of green infrastructure provides a positive impact especially in facing the unlimited issues in the cities. Nature is a promising solution for human needs but yet requires better knowledge and understanding to be reasonable. Besides, the existing knowledge of green infrastructure, further understanding will be always required to increase the potential as well as to prevent unknown constraints. Improvement of human health, wellbeing, and quality of life is the goal to achieve in landscape planning which needs to be considered by all stakeholders.

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