

Green Globalization as an Approach for Sustainable Development in the Developing World

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ABSTRACT: Globalization, viewed as a process of economic integration that embraces governance as well as markets (Boyce 2004), has been dominating the world for prolonged times. Globalization theory has become the province of British and American theorists because of a contiguity that extends back to a propitious model employed to understand postmodernism (Lizardo and Strand 2009). However, in many cases, globalization had negative effects on local cultures and development opportunities. Westernized building types, construction methods, materials, furniture and geometries do not suit all climates and social cultures around the world, especially those of the developing countries which mainly lie in the south and thus have climates and cultures that are very different from those of the western world. This is simply evident, for example, in the use of modern curtain wall glass façades in hot sunny countries, raising the inside room temperature and hence increasing the load on air conditioning systems leading to more energy consumption and environmental damage.

The purpose of this study is to introduce green globalization, defined as the global exchange of green knowledge and experiences for sustainable development around the globe, as a working alternative. Green globalization can help the developing world create sustainable development plans, by creating a global base for green knowledge and experiences that can be exchanged freely between communities, without standardized models that may not be suitable for all cultures or climates. The study attempts to reach this purpose using the descriptive method to illustrate the effects of the current conduct of conventional development, and then discusses the opportunities of linking the green movement in the developing world with that in the developed world through networking and exchanging data between international organizations and initiatives and their local counterparts in the developing world.

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INTRODUCTION

There's a world-wide tendency to replace the negative impacts of globalization on development, especially in the developing world. Green globalization is a relatively new term that stands for sharing knowledge on green development between international organizations and their local counterparts. The following sections illustrate the current situation regarding the environmental impacts of conventional development, and discuss the available opportunities for creating a world-wide green network that benefits green development plans in the developing world.

1. A GREEN PERSPECTIVE FOR COMMUNITY DEVELOPMENT

This section discusses the interaction between green concepts and the community, through analysing the cost of conventional building on the community, and hence knowing the burden that can be elevated off the community, and through the green urbanism approach.

1.1. Cost of conventional building on the community

Conventional building costs a lot of resources. In the United States, for example, conventional buildings account for the following:

- 72% of electricity use
- 39% of energy use
- 38% of all carbon dioxide (CO₂) emissions
- 40% of raw materials use
- 30% of waste output
- 14% of potable water consumption

(*Green Building Overview 2012*)

In developing countries energy consumption inside buildings is also growing. In Egypt, statistics show that 22% of energy is consumed in residential and public buildings. Knowing that some green building techniques initiatives were reported to save up to 70% of energy consumption (*European Commission's Programme to enhance the Energy efficiency in non-residential buildings* 2004), Egypt may be able to save up to 15.4% of its annual energy consumption if green architecture was well-marketed and adopted. In 2007 Egypt's annual energy consumption reached 3.2 quadrillion Btu per year in 2008 (*Egypt Energy, Data and Statistics Analysis* 2011). This means that the cost of the conventional way of building is almost 0.5 quadrillion Btu or 90067934 boe (Barrel of Oil Equivalent). This means that every year 7.83 billion US dollars (1.5% of GDP in 2010, (*CIA – The World Fact Book* 2011)) can be saved and used in many ways to help the people of Egypt to live better.

1.2. Green urbanism and the local community

Green building science helps us reduce energy use, water use, and produce other benefits, such as improving indoor air quality and supporting the use of local materials. However, if used solely, it does not provide a total urban development system. A program launched by the USGBC called *LEED for Neighbourhood Development (LEED-ND)* suggests a rating system for neighbourhoods that can help create smart urban growth of neighbourhoods that combines green building concepts and new urbanism. The suggested system does not exert pressure on citizens nor resources. The program describes the principles for designing the hoped-for neighbourhood of tomorrow to be;

- Compact, walkable neighbourhoods
- Sufficient density
- Highly connected street networks
- Building designs that emphasize human scale
- Integration of green infra-structure

(USGBC: *LEED for Neighbourhood Development* 2011)

In developing countries, there's a crucial need for neighbourhood development. For example, many

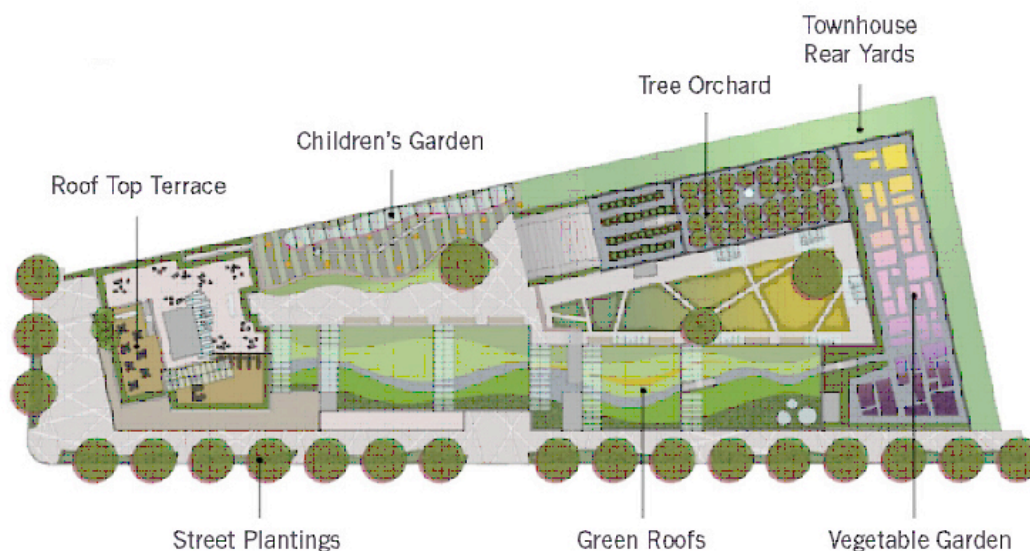


Figure 1: Via Verde, a proposed 18-story, 202-unit, working-class apartment complex, Bronx, NY, U.S., an example for green infrastructure as part of neighbourhood amenities.

Source: (USGBC et al. 2011)

neighbourhoods in Cairo, Egypt still fall under the definition of unplanned or informal settlements, and many of them are in the heart of Cairo like Mansheyet Nasser and El-Deweiqa. Around 18-20 million citizens live in informal settlements (El-Kouedi & Madbouly 2007). It is an important part of marketing green architecture to emphasize that green architecture focuses on local neighbourhoods and the quality of life inside them.

Provision of infrastructure, paved roads, walking areas, greeneries, painting of building facades, and introduction of green roofs can dramatically transform those neighbourhoods into healthy and liveable ones. The responsibility of carrying out this part of marketing green architecture lies on the government and community bodies such as community societies, preservation societies, charity organizations and local NGOs working on community development.

2. CARBON FOOTPRINT

Carbon footprint is the total set of greenhouse gas (GHG) emissions caused by an organization, event, product or person (*Carbon Footprinting* 2007). The footprint considers all six of the Kyoto Protocol greenhouse gases: Carbon dioxide (CO₂), Methane (CH₄), Nitrous oxide (N₂O), Hydro fluorocarbons (HFCs), Perfluorocarbons (PFCs) and Sulphur hexafluoride (SF₆). A carbon footprint is measured in tons of carbon dioxide equivalent (tCO₂e). Carbon footprint measurement is a broader indicator for the environmental performance of the building,

including energy efficiency. Since 2009, the LEED rating system gave more credit weight to carbon footprint of buildings (*LEED 2009: Technical Advancements to the LEED Rating System 2009*). The carbon footprint of a building usually depends on the elements expressed in Figure 2. The Life cycle assessment method (LCA) used here is a method used for measuring the comprehensive environmental effects of objects and actions. Besides the direct environmental effects, LCA also measures the indirect effects beginning at the acquisition of raw materials and ending at the disposal of the product (Säynäjoki et al. 2011). The EIO-LCA method is the economic Input/Out LCA method developed by Carnegie-Melon University based on the IO-LCA method invented by the 1970 Nobel Prize laureate Wassily Leontief who used national economy wide input-output matrices to calculate direct and indirect environmental impacts for each monetary investment (*Ibid.*).

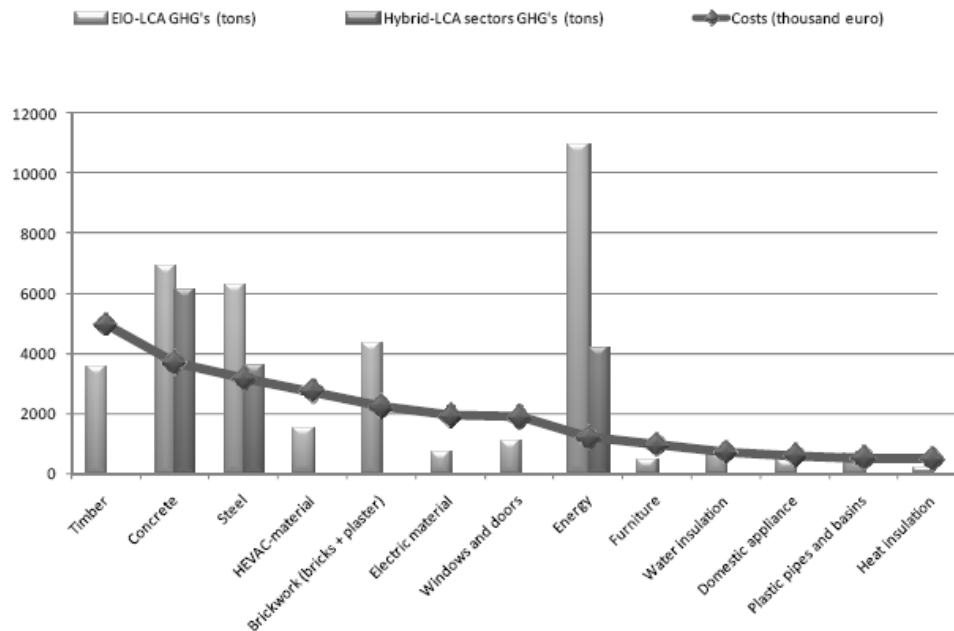


Figure 2: Cost and emissions of the most significant construction materials/processes.

Source: (Säynäjoki et al. 2011)

However, in the 2009 update of the LEED rating system, carbon emissions resulting from the transportation of users to and from the building were also added to buildings footprint. Thus an indicator of building proximity to public transportation has been introduced.

Developing countries usually have increasing populations that are stressing resources and contributing to pollution. Egypt is one of developing countries which are likely to be a drain on the Earth's dwindling resources and contribute to environmental degradation (Motavallo 2005). This is due to its massive population growth and economic development. It is part of marketing green architecture to re-introduce the carbon footprint calculation system for the construction processes and materials used in construction. Building materials can be labelled with their carbon footprint per unit. Incentives for projects with low total carbon footprint can be given in forms of tax holidays and financial support. Carbon footprint calculation is also to be one of the requirements for acquiring building licenses, with a certain limit for footprint determined by the national plan to be announced by the Ministry of Environmental Affairs and the Egyptian Green Building Council (EGBC).

3. WORLD METERS

The world meters are running fast on consumption, pollution and population expansion. Every year the world consumes 30.2 billion barrels of oil (Egypt's share is 0.249 billion barrels/year, i.e. 0.82%) as of 2009 (*CIA – The World Fact Book 2011*), 17780 billion kWh of electricity (Egypt's share is 104.1 billion kWh, i.e. 0.58%) as of 2009 (*Ibid.*), and 14000 trillion liter/year of freshwater (*Water Resources 2008*), while Egypt's share is 68.3 trillion liter/year, i.e. 0.48% as of 2009 (*CIA – The World Fact Book 2011*). This tells us that the world is moving fast towards poverty, hunger and lack of resources, if it does not revise its consumption strategies. Although Egypt's shares are less than its share in population (1.1% of world population, (*Ibid.*)), but Egypt's consumption is challenging with respect to its own resources and rapidly increasing population.

Meters also tell us that Earth receives solar radiation around 6500-7500 times the world needs of power (*World Meters 2012*), which means that the opportunity is there to harvest more resources in a sustainable way. Knowing that the developing world lies mainly in sunny territories, there's a good opportunity for developing countries to make a lot out of solar energy.

4. INTERNATIONAL ORGANIZATIONS

There are international organizations that are doing efforts to spread the word and resources about green architecture. It is very important for organizations dealing with architecture and development in the developing world to collaborate with these bodies in order to broaden their knowledge database in green building and carry out mutual projects that will facilitate spreading green concepts in the developing world. Networking with these organizations is a very important part of green globalization for developing countries.

4.1. World Green Building Council (WGBC)

Established in 1999, the WGBC is a coalition of national Green Building Councils, making it the largest international organization influencing the green building marketplace (*World Green Building Council – About 2011*). Its mission is to facilitate the global transformation of the building industry towards sustainability through market-driven mechanisms. The council fosters and supports new and emerging Green Building Councils by providing them with the tools and strategies to establish strong organizations and leadership positions in their countries. Unfortunately, many developing countries have not joined the council because they do not have national green building councils. Although the Egyptian Green Building Council has been preparing its file for membership in the WGBC since its establishment in January 2009 (*Brief History of the Egyptian Green Building Council 2009*), it hasn't met the criteria to join to date (*World Green Building Council Directory 2012*). Efforts have to be made in order to finalize Egypt's file for joining the WGBC, in order to benefit from networking with councils and associations of experience in green building market mechanisms, according to the WGBC's mission statement.

4.2. International Union of Architects (UIA)

The International Union of Architects (Union Internationale des Architectes or UIA) was founded in 1948 to unite the architects of all countries in a federation of their national organizations. The UIA now represents some 1,300,000 architects in more than 100 countries (*UIA: About 2012*). The mission of UIA is to represent all architectural organizations and individual architects of different countries, with parallel non-government organizations of other disciplines, and with intergovernmental institutions (*Ibid.*) It is also deeply-involved in the green endeavours. The UIA has programs dedicated to both sustainable architecture and "architecture and renewable energy sources. It also had assigned the theme for the World Architecture Day 2007 for promoting zero CO₂ emissions architecture. The representing body for Egypt at the UIA is the Society of Egyptian Architects (SEA) established in 1917 (*Society of Egyptian Architects: About 2012*). The SEA should invest more efforts to participate in the green initiatives represented by the UIA.

4.3. World Business Council for Sustainable Development (WBCSD)

Founded on in 1992 during Earth Summit held at Rio de Janeiro, Brazil, the World Business Council for Sustainable Development (WBCSD) is a CEO-led, global association of some 200 companies from more than 30 countries dealing exclusively with business and sustainable development (*WBCSD – Overview 2012*). The Council provides a platform for companies to explore sustainable development, share knowledge, experiences and best practices, and to advocate business positions on these issues in a variety of forums, working with governments, non-governmental and intergovernmental organizations (*Ibid.*). Corporations represented include Alcan, Toyota, Royal Dutch Shell, Petrobras, Nokia, 3M, GE, GM, IBM and others (*Ibid.*). Companies from the developing countries, especially those working in the construction field, construction materials or energy, should participate in the network of the WBCSD in order to play their role in world sustainable business strategies. Local business councils for sustainable development must be formed as well in order to share and harmonize their efforts for sustainable development of the developing world marketplaces.

5. GLOBAL GREEN INITIATIVES

There are many initiatives in the world that encourage green living and development. Ties between the leaders of these initiatives and the corresponding bodies in the developing world should be established in order to exchange knowledge about ways to spread green consciousness and awareness in their respective countries. Participation in such initiatives is an essential part of green globalization for developing countries. The following are some of those active movements;

5.1. World architecture day

It is an annual event celebrated the first Monday of October every year by the UIA. Lately the UIA, like many international organizations, began to focus on the importance of environmental design. In choosing the theme for the world architecture day of 2007, *transmitting zero Co₂ emission architecture*, UIA aimed to demonstrate architects' ability to drastically reduce carbon dioxide emissions through ecological design, construction and maintenance of buildings and cities (*UIA: About 2012*).

5.2. Earth Day (Mother Earth Day)

It is an annual global celebration intended to inspire awareness and appreciation for the natural resources and environment of Earth. The day was first celebrated on March 21, 1970, but then changed to April 22 later. In 2009, the United Nations designated April 22 of each year as the International Mother Earth Day.

5.3. Greenbuild Expo and Conference

Greenbuild is an annual conference and exhibition organized by the USGBC. It attracted 13,329 registrants in 2010, with 477 exhibitors and 43 countries represented (*Foreign Policy Association 2010*). The exhibition promotes green building industry, including environmentally responsible materials, sustainable architecture techniques and public policy.

Local green building councils in developing countries, in conjunction with the local societies/syndicates of architects, should be encouraged to host events similar to these ones, in order to invite world professionals to participate in the green experience of the developing world.

CONCLUSION

Green globalization can be a positive working alternative for the negative impacts of globalization on development in the developing world. The three concerns of saving resources, carbon footprint evaluation systems, and global data sharing can greatly help boosting green development in developing countries, and massively help their communities prosper. Networking with international green organizations and participating in green initiatives and events worldwide can also help developing countries stay updated with the cutting-edge trends and technologies in green architecture and urban planning, which can greatly support the endeavours to establish green communities in the developing world.

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