

IDENTIFYING REQUIRED SOCIAL CHANGES TO AVOID GAPS IN THE DEVELOPMENT OF A REGENERATIVE BUILT ENVIRONMENT

Ferhat Bejtullahu¹

¹*Faculty of Architecture and Spatial Planning, UBT College, 10000 Prishtina, Kosova*

^{*}*Corresponding author e-mail: ferhat.bejtullahu@ubt-uni.net*

Abstract

The paper argues the need for changes in the social aspect as the main factor in developing a regenerative built environment. The social aspect is overlooked in discussing all scales and dimensions of a regenerative environment. This paper focuses on systems thinking for social change at the local and global levels that will have an impact on creating a regenerative built environment (RBE). Although climate crises occur due to both internal and external factors people need to think and act locally and globally to reduce the negative impact of internal factors. The assumption about overlooked social aspects and hypotheses about social changes that will change architecture to an example of the de-carbonization of our economy are confirmed thru the literature review. Rapid changes and paradigm shift towards new concepts will impact social and environmental changes toward regenerative architecture solutions. Social changes impacted by new clean technologies serve as answers to the question of which rapid changes are required in process of de-carbonization.

Keywords: Regenerative built environment, social changes, gaps, de-carbonization.

1 Introduction

Globally more people are becoming aware of the consequences of climate change, and the speed at which biodiversity is diminishing is far beyond human imagination. The climate change goals being adopted by national and sub-national jurisdictions around the world imply the need for substantial reductions in energy use in the building sector (De Wilde, P.; Coley, D, 2012). Historically, the built environment - architecture had a central meaning for society. Traces of built environment of many cultures confirm that architecture played an important role in the social, economic, and environmental life, however, analysis of the last century reveals that the impact of architecture leans towards reduced influence while other forms of influence such as the political, economic, technological, media had increased impact and affect our social culture. Looking today to the gaps in the development of the regenerative built environment (RBE) for planning and design of sustainable built environment including, carbon emissions, climate change, human health, water problems, biodiversity, scarcity of resources, depletion of fossil fuel, population growth and urbanization sustainable architecture will play a key role for the sustainable development of society. Architecture on a micro and macro scale can be seen as a possible testing ground for models of the spatial, environmental, and economic regeneration of society.

The spatial aspect in the built environment usually is associated with physical features but, the built environment often highlights the connection between physical space and social consequences (Galster, George; Sharkey, 2017). It has been calculated that the Earth's current orbital configuration is like that of the warm interglacial period of 400 000 years ago, probably signifying that we may be in the early stage of an interglacial episode. Yet, the next large reduction in northern summer insulation is not expected before 30 000 years (Figure 1) (IPCC, 2007a).

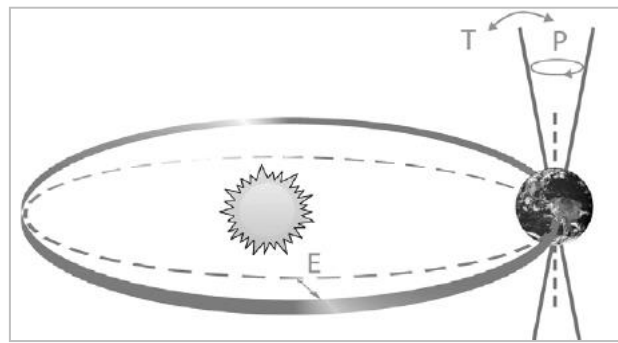


Figure 1. Schematic of the Earth's orbital changes. Source: (IPCC, 2007a)

'T' denotes changes in the tilt of the Earth's axis (which takes 42 000 to run its course), 'E' denotes changes in the eccentricity of the orbit (whose shape changes on a 100 000-year cycle), and 'P' denotes precession, i.e., changes in the direction of the axial tilt (22 000-year cycles).

The purpose of engagement for RBE is to improve the quality of air and water, use healthy materials, increase biodiversity, enable cultural and social diversity, enable functionality and mobility, and increase the environmental values of a site that will regenerate nature and will impact future social changes. Identifying and selecting the appropriate regenerative architectural or technical design elements and integrating them into the design is essential to ensure the beneficial impact of an architectural project. The main gaps identified were gaps experienced by organizations and inadequacy of national and international standards and legislation to address regenerative policies. Networking activities should be organized outside of city boundaries at local, regional, national, and international levels. The importance of establishing global networks for the promotion of collaborations between cities is gaining increasing attention. Such networks can bolster urban resilience by providing mutual support and creating a platform for sharing knowledge and experience, and facilitating peer-to-peer learning, even in the absence of action at the higher levels of government (Lu P.; Stead, D., 2013). Using green materials such as hemp can be an alternative path (Attia, 2016).

The concept of urban resilience also brings to light emerging societal tensions between "continuity" (the capacity to maintain the performance of roles and functions within a society), "change" (societal evolution), and inclusion and exclusion within a given society (Mulligan, M.; Steele, W.; Rickards, L.; Fünfgeld, 2016). Regeneration and resilience reduce the possibilities for conceptual misunderstandings. Furthermore, additional clarification is needed to establish how urban resilience relates to other key concepts such as adaptation, recovery, and sustainability to maximize synergies and minimize trade-offs among them (Chelleri, Waters, Olazabal, & Minucci, 2015). With urban regeneration can be improved the physical, economic, social, and environmental state of an area (Jagxhiu, B., & Kovács-Andor, K., 2018). The goal of the built environment and the developmental processes related to it then becomes to support and enable 'the continual evolution of culture in relationship to the evolution of life' (Mang, P. and Reed, B., 2012).

On the technical side, strategies of buffering, redundancy, rapid feedback, decentralization, integrating of ecosystem services, and taking into consideration a site's path of least resistance are effective design tools to increase resilience (Watson, D. & M. Adams, 2011). Social aspects of community participation, codes, and integrated project delivery processes influence changes that avoid gaps in the development of a regenerative and resilient environment. The process still encounters basic gaps that increase the complexity of their priority on implementation. The list of gaps varies from country to country. Additional gaps are faced such as awareness, political, economic, legislative, governance system, missing collaboration among undeveloped and developing and developed countries, and most of all the cultural approach. Furthermore, considering the complexity of the application of regenerative processes in all scales and dimensions of built environments overcoming the technological and regulatory gaps would not

be sufficient without an essential upgrade of business models and crucial elevation of stakeholders' behaviors and attitudes.

The goals of this research are to:

- Explore and identify the social changes needed to avoid gaps in developing an RBE and
- Argue the necessity of paradigm shifts toward new concepts.

2 Methodology

Analysis, comparison, and identifying trends in local and global contexts are methods used to detect required social changes and avoid gaps in developing a regenerative built environment.

2.1 *Relevance of changes:*

Architecture is crucial to society, the economy, and the environment.

2.1.1 *Social relevance:*

Architecture and construction are the first activities that humankind developed, and it continues to impact our lives in unique ways. Almost all other activities depend on the architecture. Providing and maintaining accommodations, plants, and infrastructure are crucial factors for living. Architecture and the built environment heavily influence the quality of life. People, on average, spend between 80% and 90% of their time indoors. Environment, buildings, and the materials used in, and around architectural structures have a social relevance for their occupants and visitors. Changing the negative impact of architecture and the built environment at all levels increases the relevance of social changes toward the regenerative architecture that takes place because of social change. Regenerative architecture and increased social relevance help society to become better.

2.1.2 *Spatial relevance:*

Architecture and the built environment are expected to grow greatly in the coming years. In overall volume, residential housing accounts for 38% of global construction volume; transport, energy, and water infrastructure for 32%; institutional and commercial buildings for 18%; and industrial sites (from cement to automotive manufacturing) for 13%. Building and shaping these volumes in harmony with nature depends on the quality of shapes identified in places. Spatial quality consists of the interaction between four determinants: (1) views, (2) internal spatiality and spatial arrangements, (3) transition between public and private spaces, and (4) perceived, built, and human densities. (Acre, F., Wyckmans, A., 2014). For communities to enjoy the spatial quality of places, regenerative architecture on all scales and efficient infrastructure is essential.

2.1.3 *Environmental relevance:*

The construction industry is the single largest global consumer of resources and raw materials. Value, therefore, lies in improving the quality of construction and the quality of materials used, contributing to a healthier indoor environment, increasing its sustainability, and reducing its cost. Any endeavor towards this goal will generate benefits, whether for families investing in their private homes or governments embarking on giant infrastructure projects.

2.2 *Social changes, megatrends, and gaps - analysis and comparison*

First and most important change at the global level must be sharing suffering and benefits. Undeveloped and developing countries and people with low income in all countries suffer disproportionately from the hazards associated with the process of globalization, while the people with high income globally take a

greater share of the benefits. Studies in the early 2000s (Mitchell G, Dorling D., 2003) used the term environmental justice to describe spatial patterns in which disadvantage and poor environmental quality coincide. Where income inequality is stronger, not only are the most disadvantaged people most affected, but the overall burden is higher than in more equal societies (Wilkinson R, Pickett K., 2010).

Main factors at the global level (financial markets, trade, and the climate crisis) that lie outside the regulatory power of a country acting alone and require cooperation between the world's countries influence the social elements that operate at the local level through the conditions in which people live their daily lives.

Global cooperation must be established to establish reformed institutions and processes. The global authority must be reformed so that all countries participate fairly and are equitably represented, and equity should become a global development goal.

Developed states have produced policy documents on social responsibility that aim to promote a positive impact on society through business activities. Investing in the promotions of regenerative values and organizing traineeships and preparing participants is crucial for the circular economy.

Political permission and communication must emphasize the importance of political empowerment at all levels of decision-making. Fair representation of individual and community concerns and interests in the processes of decision-making at the local level underpins the development of equity. Many mechanisms for public participation in local decision-making are evident. This need to be radically improved.

Market responsibility – Markets bring great benefits such as new technologies, goods, and services that in many cases improve the conditions of daily life, but they also may have negative effects. Pro-equity policies aim to ensure a more equitable distribution of high-quality services and resources fundamental to health and to ensure effective regulation of products, activities, and conditions that tend to damage health or lead to inequities in health. Much of this action must take place at the national and international levels. However, the local government is responsible for the regulation of the spatial distribution of many goods and services, such as food retailers, licensed premises, recreational amenities and facilities, and education and health facilities.

The built environment and sustainable development – The built environment affect health through the extent to which it helps or hinders access to goods, services, and the natural environment and promotes social cohesion and physical and mental well-being. Good governance at the local level is crucial in improving health and reducing inequities in health. Further, evidence is growing that interventions in the built environment that improve health may have side benefits for the environment by reducing emissions of greenhouse gases.

2.3 Identified gaps in creating a regenerative built environment:

In the social aspect gap is the space between where a community is and where it wants to be by overcoming challenges or constraints. Identified gaps can be overcome with efforts and identify social changes by individuals, organizations, and governments.

2.3.1 Gaps experienced by individuals:

People who have a low personal understanding of the climate crisis will find it difficult to plan for its impacts or even to accept that others should plan to adapt. This may be because they feel that too little is known about climate science, that the science isn't convenient, that there needs to be more certainty about the science than organized activities can start, or people think the threats are minor and activities can be postponed. However, having more knowledge about science does not necessarily lead to action – if people's values, emotions, reasoning, or culture are challenged, then more knowledge is unlikely to make a difference.

2.3.2 *Gaps experienced by organizations:*

Key gaps include a lack of capacity within the organization, inadequate funds for adaptation, and an organizational culture that limits or prevents decision-making on adaptation. These organizational aspects can cause, or reflect, a lack of leadership in adaptation.

Organizations often have limited financial, technical, and human resources to plan for complex and contested issues such as adapting to the climate crisis. They also may have different priorities and opposite issues that may appear more important. This leaves organizations without sufficient resources to undertake a comprehensive program of adaptation from planning through to implementation. For a business, there may be a lack of resources or adaptation champions for their industry.

Uncertainty about the risks – While there is a broad consensus that the climate is changing, there is uncertainty around the scale of these changes. Scientific knowledge will continue to grow, but we will never have precise forecasts of the magnitude and timing of climate risks as for many other types of risks. It will be important to adopt an approach to planning that acknowledges and can accommodate uncertainty.

Limited local information – A lack of locally relevant and practical information about potential climate impacts may be compounded by a lack of technical expertise to interpret climate change projections for the local area. Some organizations may hire competent consultants to support planning efforts in adapting to the climate crisis; but for many, planning to adapt to the climate crisis can stall and there is no change.

Limited financial resources – Small to medium-sized organizations, including local governments, often have limited funds to spend, and these are often prioritized over more immediate issues. However, developing an adaptation plan will help to identify: low-regret actions that deliver existing as well as future-benefits actions that can be supported and funded through existing programs how adaptation actions can be prioritized – what needs to be done now, and what actions can wait. There may be cost savings in developing partnerships internally, with local businesses, with local community groups, regionally, or with similar organizations in different areas.

Lack of leadership – Leadership shapes the decision-making culture of the organization. This applies to both formal leaders in the organization – and across the locality or sector – and informal leadership where someone champions action. Best leadership inspires creativity and subordinates toward the fulfillment of the organization's goals encouraging strategic thinking, innovation, and action. While bad leadership shows an inability to follow, failure to inspire and encourage team members, lack of strategic thinking, and poor communication.

Decision-making culture of the organization – The culture of an organization may limit effective planning for climate change: for example, if climate change is treated as an environmental problem (rather than something that can affect all aspects of an enterprise) then it may be soloed rather than being mainstreamed across all activities of the organization.

2.3.3 *Gaps specific to local government:*

Regulatory and institutional frameworks - Local government requires strong and clear support from the state government to progress adaptation, and this lack of support is a barrier to action.

Legal uncertainty - The risk of legal liability – and uncertainty about what is legally defensible – has been a strong concern for bodies concerning the issue of climate crisis impact. Some legislative bodies are concerned about the legal implications of allowing development in a vulnerable built environment; other bodies are concerned about litigation arising from restrictions on development, yet others have experienced legal repercussions from rethinking their defenses. Some legal opinion indicates that bodies

will be protected if they can demonstrate that they have used the best available science to inform their actions.

Organizational buy-in and leadership – A board may lack leadership from its elected officials or senior management to adapt to the risks of climate change. Community context, values, beliefs, and aspirations affect how boards operate and influence a board's mandate for action. A board with a highly conservative community might feel it lacks public support to lead or invest (spend ratepayers' money) in planning for climate change.

The AEC industry has vast potential to impact social changes toward RBE, however, thanks to AI, innovative technologies, and new construction techniques. Reflecting the rapid emergence of augmented reality, drones, 3D scanning and printing, Building Information Modeling (BIM), autonomous equipment, and advanced building materials – all of which have now reached market maturity increases the potential of avoiding identified gaps.

Adopting and developing these innovations at all levels will avoid gaps, streamline project management and procedures, and enhance the quality and safety of RBE. Capturing all this potential will require a committed and concerted effort by the industry, companies, and governments across identified components.

Communities can respond by making changes in the time and location of activities, by using different species, developing, or using new technologies, and by organizing themselves internally or in networks.

RBE is crucial to society, the economy, and the environment. The relevance of changes is very high. Building and shaping construction volumes in harmony with nature depend on the quality of shapes identified in places. Changing the negative impact of construction volumes at all levels increases the relevance of social changes.

3 Results

The main changes at the global level must be sharing suffering and benefits between developed and developing countries. Other changes consist of maintaining accommodations, plants, and infrastructure as crucial factors for living.

The analysis methodology of the state of art literature review resulted in the conceptual framework that identified social changes needed toward the regenerative built environment (RBE) for different levels and different components. The cooperation between these components will help to avoid gaps at all levels and components of research that utilize a qualitative methodology (Figure 2).

These identified components provide appropriate support to academia with scientific arguments for developing regenerative projects and development of standards for RBE by using advanced technology and strict implementation of transparency and anti-corruption standards.

A conceptual framework illustrates expectations from research. Relevant variables identified as drivers and barriers of the study show how they relate to each other. The visual format is constructed before data collection.

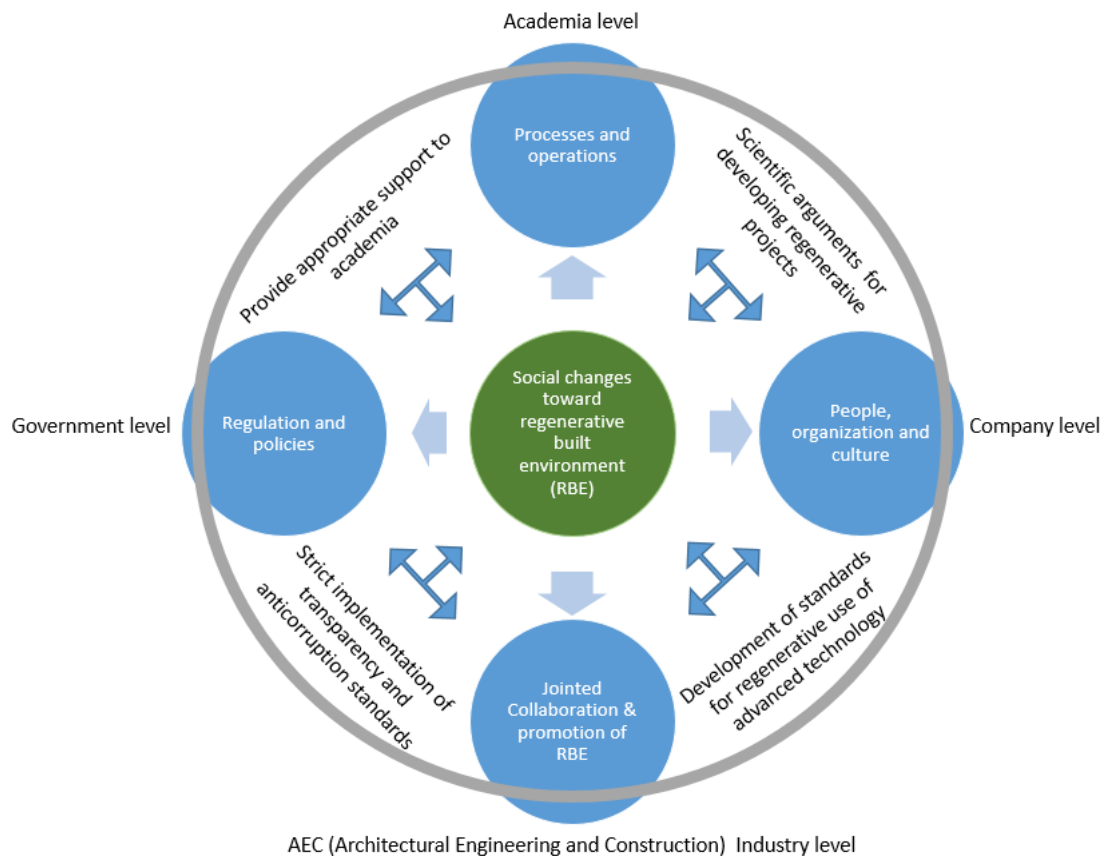


Figure 2. The conceptual framework with all RBE components and interrelations at different levels.
Source: Author

Conclusions

This study presents a theoretical framework for identifying explored gaps and connections between the regulatory systems discussed at all scales and dimensions of a regenerative built environment. In the developed states, RBE becomes the property of the network and can be considered healthy if a flexible generation system is implemented.

The aim of the theoretical framework is not to try to identify a model for environmental regeneration but rather to discuss a social aspect of environmental challenges from the perspective of it being a matter of the public good at the global level.

The paper opens future opportunities to examine the deployment of regenerative standards beyond their technical objectives by exposing the social aspect and going beyond ecological premises and needs to be examined also from their political and ideological perspectives if a proper connection between science and governance is to be achieved.

Future work is needed to avoid gaps in the ideologies with a tight reflection on how RBE can be deployed. From a social point of view, people are responsible for ensuring equity, fairness, and justice for humans and the environment.

Responsible changes toward RBE depend on social and environmental changes toward regenerative architecture solutions. New clean technologies serve as the answers to the question of which rapid changes are required in process of de-carbonization.

The rapid emergence of AI, augmented reality, drones, 3D scanning and printing, Building Information Modeling (BIM), autonomous equipment, and advanced building materials - increases the potential of avoiding identified gaps.

References

- [1]. Acre, F., Wyckmans, A., 2014. Spatial quality determinants for building renovation: a methodological approach to the development of spatial quality assessment, published online: J. Sustainable Technol. Urban DeSUBURBUS. <http://dx.doi.org/10.1080/2093761X.2014.923793>.
- [2]. Attia, S., 2016. Towards regenerative and positive impact architecture: A comparison of two net-zero energy buildings, *Sustainable Cities and Society*, pp. 26, 393-406, ISSN 2210-6707.
- [3]. Chelleri, L., Waters, J., Olazabal, M. & Minucci, G., 2015. Resilience trade-offs: addressing multiple scales and temporal aspects of urban resilience. *Environment and Urbanization*, pp. 27, 181-198.
- [4]. Jagxhiu, B., & Kovács-Andor, K. (2018). Prizren – Revitalizing the historic water channel system for modern city life, *Pollack Periodica*, 13(1), 157-168. <https://doi.org/10.1556/606.2018.13.1.14>
- [5]. De Wilde, P.; Coley, D, 2012. The implications of a changing climate for buildings. *Build. Environ.*, pp. 55,1-7.
- [6]. Galster, George; Sharkey, 2017. "Spatial Foundations of Inequality: A Conceptual Model and Empirical Overview". RSF: The Russell Sage Foundation Journal of the Social Sciences, p.3(2):1. doi:10.7758/rsf.2017.3.2.01.
- [7]. IPCC, 2007a. Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change [S. Solomon, D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M. Tignor and H.L. Miller, Cambridge: Cambridge University Press.
- [8]. Lu P.; Stead, D., 2013. Understanding the notion of resilience in spatial planning: A case study of Rotterdam, The Netherlands. *Cities*, pp. 35, 200-212.
- [9]. Mang, P. and Reed, B., 2012. Designing from place: a regenerative framework and. *Building Research & Information*, p. 26.
- [10]. Mitchell G, Dorling D., 2003. An environmental justice analysis of British air quality. *Environment and Planning*, pp. 909-929.
- [11]. Mulligan, M.; Steele, W.; Rickards, L.; Fünfgeld, 2016. Keywords in planning: what do we mean by 'community resilience'?. *International Planning Studies Volume 21*, pp. 21, 348-361.
- [12]. Watson, D. & M. Adams, 2011. Design for Flooding: Architecture, Landscape and Urban Design for Resilience to Flooding and Climate Change. Hoboken, N.J.: John Wiley and Sons.
- [13]. Wilkinson R, Pickett K., 2010. The spirit level: why equality is better for everyone. London: Penguin Books.