

Eco-cities: Strategies of Rebuilding Communities for Resilient and Sustainable development in Egypt with Particular Emphasis on Aswan

A. Elnokaly* and A. Elseragy²

¹ School of Architecture and Design; University of Lincoln; Lincoln; LN6 7TS; UK

² Architectural Engineering and Environmental Design Department;
Arab Academy of Science and Technology; 21913; Alexandria; Egypt.

* Corresponding author: E-mail: aelnokaly@lincoln.ac.uk; Tel +44 7912883745

Abstract

Today, the term sustainability manages to embed itself in all aspects of contemporary life. In Egypt, following the 2011 revolution, there is governmental pressure for rebuilding communities and providing long-term strategies for resilient and sustainable development. The paper presents a framework for resilient communities through identifying and integrating appropriate successful social, cultural and environmental sustainability global practices, policies and technologies for adoption in Egypt with particular emphasis on Aswan as appropriate. This framework/road map will identify strategies for improving the biotic, abiotic and social aspects of Aswan city life and will have a positive impact on the economic development and social welfare of the citizens benefitting the poor & vulnerable populations in Egypt. The paper concludes by a set of strategies enhancing the liveability of Egyptian cities and improving the social aspects of city life with reference to Aswan.

Keywords: resilient cities; sustainable strategies; rebuilding communities; eco-cities; Aswan

1. INTRODUCTION

Regeneration clearly does not happen overnight, but setting clear agendas for sustainable development and designing development frameworks and roadmaps can reinforce a sense of community, make an important contribution to the local economy and act as a catalyst for change and improvements to the wider area and region. Societies flourish when their living spaces allow continued development and progress. The paper is an output of an international research-funded project by the British Council Newton Musharafa Researcher Link Fund 2015/2016.

While, the term sustainability manages to embed itself in all aspects of our life. However, sustainability in the built environment requires special attention. Instilling social sustainability and the ethos of social justice in the society is a significant method of encouraging and supporting building resilient communities, sustainable development (SD) and regeneration in practice [1,2]. The paper undertakes a critical analysis of 'sustainability strategies,' focusing on social, cultural and environmental sustainability for adoption by the Egyptian society with particular focus on the Nile city of Aswan. Research that address social aspects has focused on the role that sustainable regeneration plays in social cohesion, cultural identity, and community development [3]. Inevitably, sustainable development approaches aimed at social purposes are essential for the liveability of cities [4]. Chiesura [5] states that “developing sustainable cities is not just about improving the abiotic and biotic aspects of urban life, it is also about the social aspects of city life...” This is of utmost importance when considering the

contradiction and difficulties of embracing sustainable urban development in Egyptian societies whose cultural fabric does not encourage sustainable growth. The study aims at identifying strategies of rebuilding communities for resilient and sustainable development in Aswan. The researchers benchmarked the indicators used for Aswan against the UN categories/indicators for sustainable development [6,7] depicted in Figure 2. Due to the timeframe of this study five key indicators that are most relevant to Aswan were identified for further research being: affordable and safe housing; clean public transport; greenery and biodiversity; safeguarding all heritage sites and improving urban and rural links. Although these were the key ones identified the aim was to embed into each of these strategies and recommendations for green and clean energy supply; ensuring good air quality; implementing sustainable policies that are key for sustainable development and lastly planning and disaster management that is vital for a resilient city. These are presented in Figure 2 (a and b)

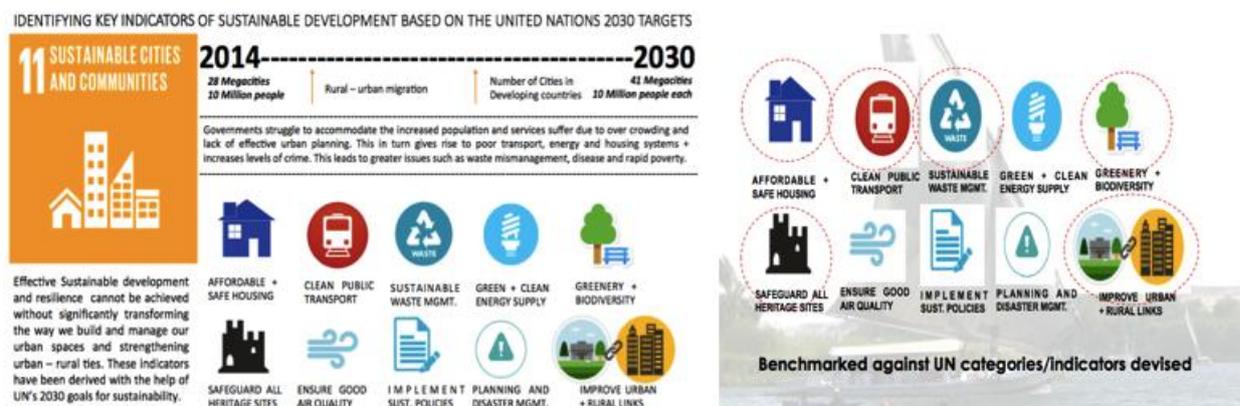


Figure 1. UNDP SDG for sustainable cities and communities [6,7]

This paper discusses three of these indicators that are safeguarding all heritage sites, greenery and biodiversity and clean public transportation.

2. Why Ecological Cities Now

Global acknowledgement towards the need for environmental protection and ecological sustainability has drawn urgency for mitigation of climatic damage [8]. Today, there is a pressing need for enhanced resiliency of our built environment and cities nationally and globally. This is becoming a key component to economic, societal, and environmental viability. A disaster risk reduction United Nations report in 2011 [9] identified that losses from disasters are rising faster than gains made through economic growth across all regions, threatening the economies of low and middle income countries as well as overtaking wealth gains across many of the world's more affluent nations. Impacts of recent major natural disasters on national and global economies have heightened awareness and hastened activity to improve the resilience of the built environment [10]

The ushering of technological advancements give sight to various responses that are witnessed in everyday life, from battery powered cars to energy efficient light bulbs. These responses are constructs of the urban environment. The sprawl to cities is vast and consuming [11], with the global urban population advancing past the global rural in 2007 for the first and

only time [12,13]. The projection of our global population sees two thirds joining urbanity by 2050 [13], whose consumption and emissions will follow suit. This major shift suggests an exponentially growing need for new urban-scale developments. In response came a concept taking sustainability on an urban scale, called “eco-cities”. Statements relating to the concept had floated around the media and eventually captured global attention with their bold promises [14] such as ‘world’s first zero-carbon; zero-waste city amongst others [15], arguably the boldest one. One may ask whether this utopianesque construct is actually plausible. The migrations of rural communities to cities are projected to show an incline in growth [16]. It can be said then, that the demand for new urban developments will grow, however, the construction and operations of conventional buildings still generate significant greenhouse gas emissions [17, 18]. Eco-cities may possess the solution to sustainable living. There have been a lot of attempts to design eco-cities around the world such as Tianjin Eco-City, China [19-20], Dongtan Eco-City, China [21-23].

These factors identified the need to rethinking the future of our cities. The level of resilience of our cities depend on the quality and performance of an overall integrated system and not solely on the climate change adaptation of single element and hence this study aims at putting together such strategies and indicators for resilience on the city of Aswan.

3. The Nile City of Aswan

Aswan is Egypt’s southern gate to Africa. It lies on the eastern bank of the River Nile that smoothly flows in splendor through the granite rocks around the Emerald Islands [24]. It is covered with palm trees and tropical plants, which gives it a great view on the Nile and makes it a perfect starting point for Nile cruises. Lake Nasser the largest man made lake runs through Aswan in the work 55km and 35 km wide. It is abundant in some 94 kinds of plants [24].

3.1 History and Importance

In Ancient Egypt, Aswan was known as “Sono”; or the market, as it then being a commercial centre for the convoys coming from and going to Nubia. During the Ptolemaic era, it was named “Syene”, and then the Nubians called it “Lipa Swan”. [25] It was regarded a great treasure and hence, was also known as the Land of Gold; being a cemetery for the Nubian kings who lived there for thousands of years [25]. Before the Nubians migration, Aswan used to extend from Isna to the east towards the borders with the Sudan to the south.

It also shelters more than 60 species of rare and extinctable birds; some of them was recorded in the monuments of the ancient Egyptians, such as ibis, eagles and purple water hen that helps clean the environment from pests and carrion [25].

Aswan is one of Egypt’s best tourist destinations from all over the globe, characterized by several tourist distinctive features, especially in winter. It has a moderate and dry climate due to its location on the Nile east bank. Aswan is considered an international winter resort and also one of the best open museums for many archaeological landmarks that date back to various ages and spread all over the city.

4. The Resilient Eco-cities project

This is an on-going research project designed through dialogue between researchers in both UK and Egypt to develop a framework for SD through identifying and integrating

appropriate social, cultural and environmental sustainability practices, policies and technologies for adoption in specific contexts in Aswan City in Egypt as appropriate. It acts as an awareness hub amongst all key stakeholders, benefiting poor and vulnerable societies in Egypt's.

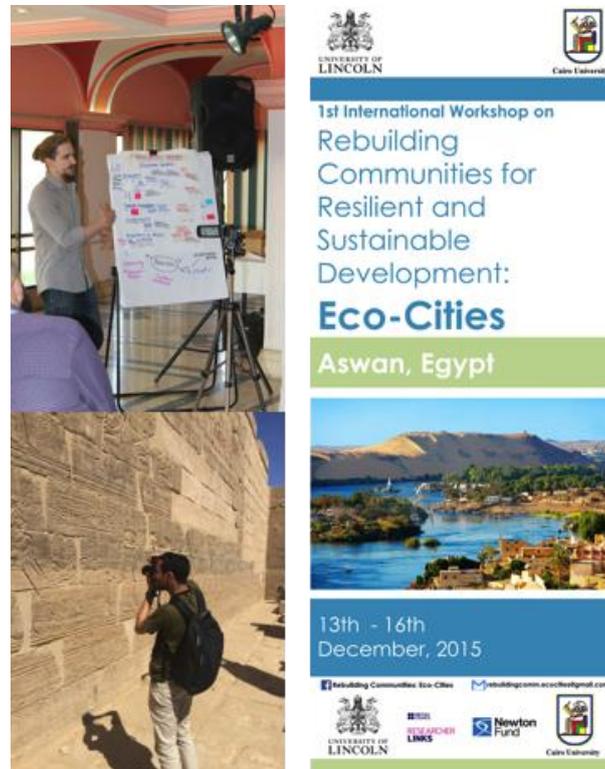


Figure 2. Images of Workshops, Field trips and the poster of the Eco cities workshop in 2015

The project supports research areas much needed in the developing world more generally & in Egypt more specifically with the changes of the political agenda and the aspirations of the country to ‘Rebuilding communities through a strategic sustainable development plan’. The workshop themes and objectives are relevant to the economic development, social welfare and SD in Egypt.

For us a sustainable world is one which is based on ultimate justice in which the economy is vibrant, the social order is just, and the natural systems of the environment are protected for the future. Finding solutions to sustainability challenges like global climate change, the endemic nature of poverty, water scarcity, and the diminishing natural resources is incredibly difficult. Sustainability challenges like these are not easily isolatable problems, but are intertwined with all sectors of society and its environment, they are of the highest importance and extremely urgent, yet they are not amenable to simple solutions or to optimal trade-offs. Moreover, the world is rapidly changing; becoming more complex and harder to predict and hence sustainability challenges are not easily understood using traditional frameworks or methods of investigation [26].

4.1 Ecocities

For the purpose of this study ‘Eco-cities’ is defined as: the scientific analysis and study of interactions among organisms and their environment. It is an interdisciplinary field that includes biology and Earth science [27]. Ecology includes the study of interactions organisms have with each other, other organisms, and with abiotic components of their environment. Hence, an Eco-city is an ecologically healthy city and because each city is unique, there is no one-size-fits-all Eco-city model or just one way to get there from where we are now. Specially when dealing with an extremely sensitive city with an indigenous character and distinct architecture features and social hierarchy.

4.2 Resilient Ecocities

Resilience: the capacity of cities to function so that the people living and working in cities – particularly the poor and vulnerable – can survive and thrive no matter what stresses and shocks they encounter [28]. In addition to its ecological features, it is the ability of a system, community or society exposed to hazards to resist [or avoid], absorb; accommodate and recover (from the effects of a hazard in a “timely and efficient manner”).

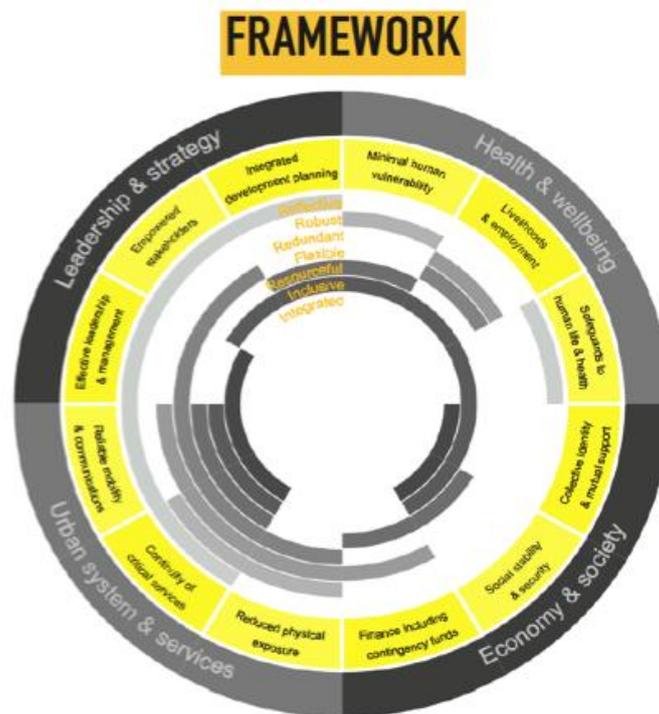


Figure 3. A resilient city framework developed by Arup

In addition to the UN sustainable development indicators the study incorporated Arup’s framework for resilience of cities that relies on four key dimensions. These include people; organisation; place and knowledge. In the framework the health and well being of all citizens are considered. The economic and social systems are well organised. The city itself, where the quality of infrastructure and ecosystems is high and well maintained. Finally, leadership and knowledge that is the capacity to learn from the past and take appropriate action based on informed, inclusive, integrated and iterative decision making in our cities.

Critical investigation over five days took place between an interdisciplinary team of researchers to articulate urban resilience in a measurable, evidence-based and accessible way that can inform urban planning, practice, and investment patterns which better enable urban communities (e.g. poor and vulnerable, businesses, coastal) to survive and thrive multiple shocks and stresses” in Aswan. The team was able to relate resilience to other properties that one has some means of ascertaining, through observation, following Breen & Andries [29]

5. Overarching strategies | Recommendations for Aswan

Hence, Eco stands for Ecological & Economic. Some key strategies has been identified for rebuilding communities and for achieving an ecological city of Aswan these are:

- Sustain Culture Heritage & increase Public awareness
- Solar power utilised for all forms of industry and in the homes
- Sustainable transportation network integrating rural settlements with Aswan
- Expose folklore
- Respecting local social habits
- Safeguards human life; protects, maintains and enhances assets Facilitates socio- cultural identity and human relationships.
- Promotes education and innovation
- Delivers people basic need, through supporting livelihoods
- Stimulates economic progress
- Promotes Justice and equity, defends rule of law

a. Safeguarding all Heritage Sites

In order to be able to build a Resilient Aswan City: The City Resilience Framework [29] was adopted. The following factors were identified as criteria for Aswan Heritage and Culture.

- Relevant heritage = culture and activities, not historical buildings
- Participatory, self-help and supportive approach involving building the capacity of local traders and residents
- Need to make the heritage clearer and more accessible to all in order to emphasise special points

To be able to produce an ecological city in Aswan, some strategies has been identified for Heritage and Culture:

- to set up schemes for Strengthening Heritage and Identity in The Nile/Souk Area of Aswan.
- to adopt a general policy, which will give the cultural and natural heritage of the country a function in the life of the present community.

Associated Actions

- Identify local culture: ask locals and visitors what they value in the souk area of Aswan and what surprises them in good and bad way
- Create positive urban spaces, e.g. create community meeting points, e.g. seating areas, beautiful drinking water stations (sebil)
- Improve walkability and rest spots

- Community parks (small/large) – for daytime and night-time use
- Support traders in making attractive, clean and accessible shops and areas, incl. waste management
- Events, festivals, stories and activities – weekly, monthly, annual
- Display local artwork, dance, music
- Bring local workshops and small factories into the souk area to show production
- Empower women’s role
- Collect stories and history of the souk and Nile area to display and be proud of □ - Documentary
- Provide information on local activities with cultural meaning, e.g. fishing, dates, karkadeh, spices, peanuts, handicrafts, reeds
- Make “beautiful” dustbins and public toilets, e.g. with Nubian or Arabian designs
- Make heritage accessible, e.g. information boards, maps (with heritage and transport), guides, stories, signs
- Ensure food options reflect the richness and quality of Nubian food

b. Greenery And Biodiversity

For this specific indicator the following specific interventions / recommendations are highlighted.

- Protecting and promoting “bird migratory landing places.”
- Ensuring protection of the islands in the Nile (legislations).
- Better protection of flora and fauna in the stretch of the Nile in Aswan.
- Setting up green corridors with local vegetation (re-plant rare species in Aswan).
- Eco-hotels on green corridors based on the Aswan house.
- Eco-market (organic food grown by locals).

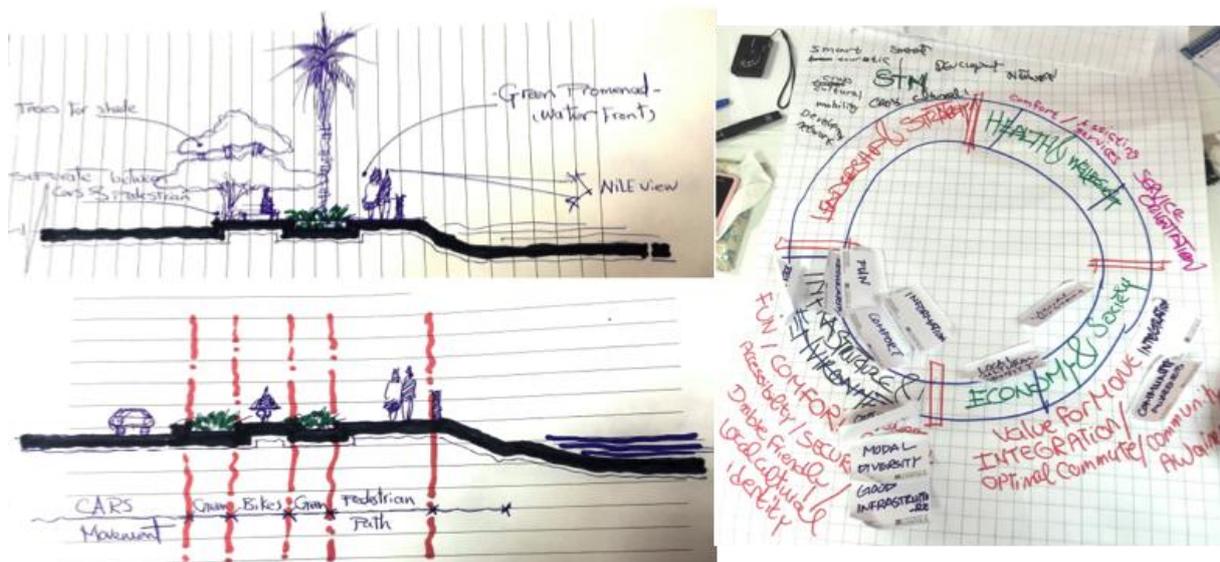


Figure 4. Aswan’s Waterfront green promenades and Resilience Framework (Eco cities workshop)

Awareness & Engagement

- Launch study programs into local eco-systems (Partnering with Local Universities, research centres and school activities).
- Launch awareness programs for the general public about the value of local ecosystems in Aswan.
- An inclusive approach to planning and management through a better involvement and representation of women.

c. Transportation system

The research proposed Aswan Smart Transportation System (ASTS) that is interconnected through the city.

- Enforcing the connections between urban and rural areas to support local industries.
- Benefitting from the existing opportunities and developing existing transportation options such as river taxis and fuluka (small boats) into a full-developed network.
- Connecting between local residential areas and tourist sites to provide accessibility for local workers and guides.

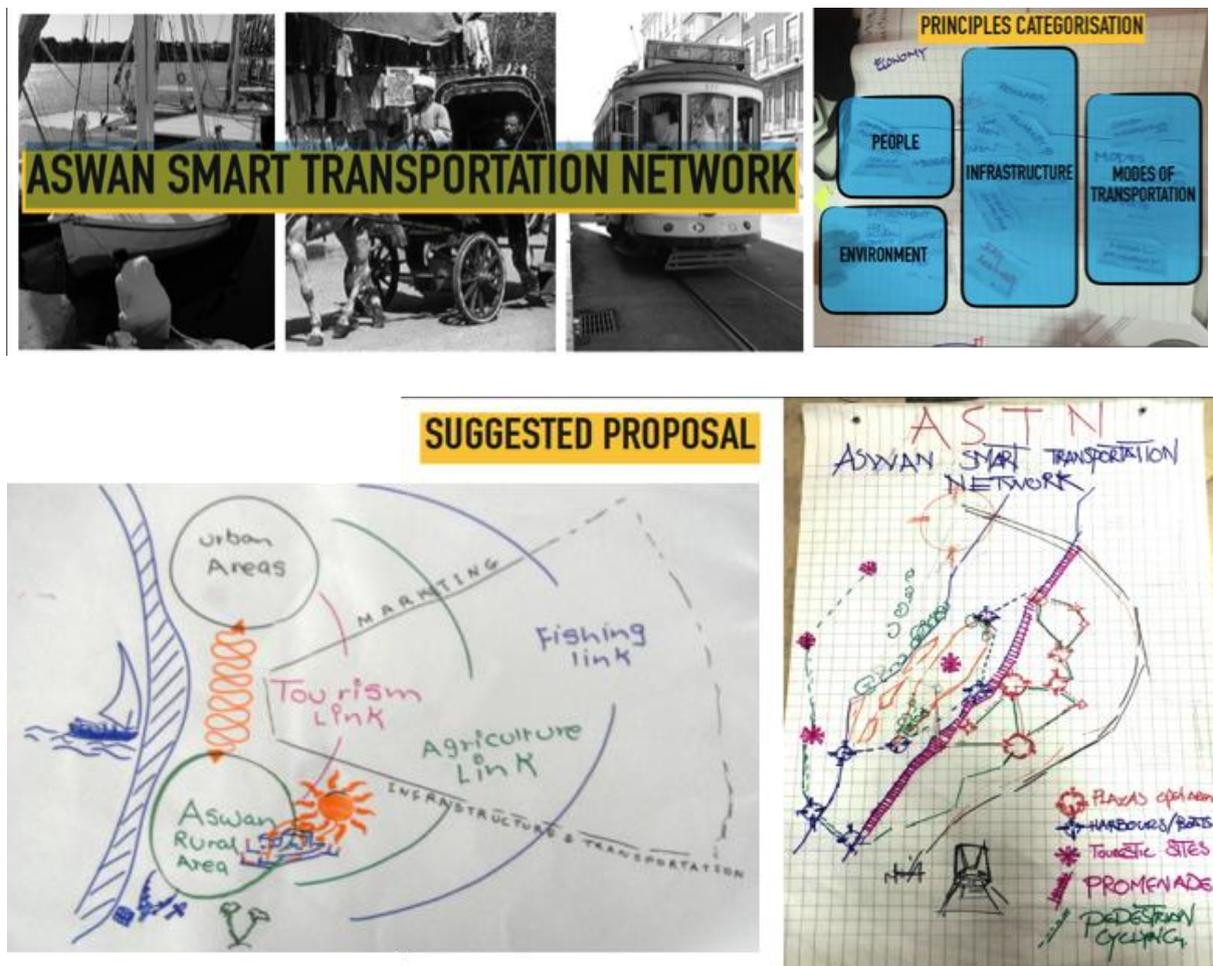


Figure 5. Aswan Smart Transportation System (ASTS)

6. Findings and Discussions

The paper reports on the outcomes of the 1st International Workshop on: Eco- Cities: Rebuilding Communities for Resilient and Sustainable development with reference to Aswan funded by the British Council Newton Musharafa Fund 2015/2016. The workshop was organised and operated through a critical dialogue between researchers from both the United Kingdom and Egypt to develop a framework for SD through identifying and integrating appropriate social, cultural and environmental sustainability practices, policies and technologies for adoption in Egypt. Participants have attended the workshop from 12 UK universities and 11 Egyptian universities.

The workshop outcomes and strategies and recommendations presented in this paper set the basis to create a mutual understanding of the issue and also seeded the catalyst for generating new sustainable design strategies and resilient approaches, that will be of utmost importance to the social welfare of low and middle-income in Egypt. This will benefit poor and vulnerable populations in Aswan, through the integration and sharing of different skills and practices. The study concluded that effective sustainable development and resilience cannot be achieved without significantly transforming the way we build and manage our urban spaces and strengthening urban–rural ties, while developing community cohesion and the social aspect. Strong and inclusive governance was identified as key to be able to develop resilient communities in Aswan. The study identifies Key Performance Indicators (KPI's) of Sustainable Development in Aswan, Egypt based on the United Nations 2030 Targets. These were Affordable and Safe Housing; Clean Public Transport; Greenery and Biodiversity; Safeguarding all Heritage sites and Improving Urban and Rural Links.

7. Conclusions

The study concludes that there is a lack of government regeneration projects or are they the right ones in the city of Aswan? Invasion of external developments on local settings and contexts of various remote societies in Egypt has been evident in many cases, such as that of Aswan. As tourism is the main economic sector in this area, the Nubian community commonly rely on it as the main source of livelihood, thus, finding themselves vulnerable in front of external investors and general recession. This in turn risks a potential loss of distinctive indigenous cultures & identities. Those need special attention by planners, key stakeholders and the government when developing regeneration projects. Urban Planners and professionals and designers concerned with the built environment will need to incorporate strategies that consider future city resilience within their region. In Aswan there is a need for a customised framework and tools for incorporating ecological approaches and resilient strategies in the regeneration of the city. This paper provides the start of key strategies and tools that can be used for ecological resilient city regeneration in Aswan. Concomitantly, effective governance, organisation and knowledge could play an important role in facilitating and development of a greater capacity for cities future resilience. These collectively will ensure taking appropriate action based on informed, inclusive, integrated and iterative decision-making in our cities.

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