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SUSTAINABILITY AT NEIGHBORHOOD LEVEL; PROMOTING SUSTAINABLE NEIGHBORHOODS IN AFGHAN CITIES

Osama Hidayat[1], Yoshitaka Kajita[2]
Dept. of Civil Engineering
Tokai University
Hiratsuka, Japan
[1]Osama.hidayat@gmail.com
[2]Yokaji@tokai-u.jp

Abstract— **A sustainable neighborhood is a form of real traditional neighborhood, which meets those same needs for housing, work places, shopping, civic functions but in format that are compact, complete and connected, and ultimately more sustainable and satisfying. This paper identify the problems and the conflicting interests, defines the key terms of the sustainability, exposes the whole concept of neighborhood and examines unsustainability of current development trends. In this paper effort has been made to develop theories and principles of neighborhood planning, systematically reviews the reasons for wanting neighborhoods, drawing on social arguments to do with health and community as well as environmental arguments. These principles serve as indicators to sustainable development; they should be used to define inherent qualities, carrying capacities and required ecological footprints of place.**

Index Terms— **Neighborhoods, Communities, Sustainable Development, Ecological footprints, tradition, design of neighborhood.**

I. INTRODUCTION

The decade-long war in Afghanistan not only resulted in the tragic loss of more than a million lives, but even more tragic was the complete destruction of its built environment, like many other countries in the region Afghanistan also need to devote much attention to reconstruction and creating townscapes with significant features. Sustainable and efficient townscape can protect living environment, facilitate residential, commercial and other business activities, thus, a cities' economic performance is tied to the quality of neighborhood design.

Sustainable neighborhood design is the process of long term prediction of demands to provide affordable housing and better choices in transportation, attract business and decrease transportation budget. The process is complicated due to involvement of various variables such as population, employment, economic growth and government policies. The sustainable neighborhood design becomes critical while the cities are growing faster and becomes metropolitan and mega cities. Kabul is one of the fast growing cities in the region since 2002 with the establishment of new government. The unemployment and poor quality of life in rural area forces people to migrate to Kabul city and there is no such city in the country offering employment opportunities and quality of life. The population has grown from 2 million to almost more than 4 million in 2012. However, there is not as sufficient neighborhood provide a healthy built environment. Keeping in view these problems this paper present and explain the development of a framework of sustainable behaviors that can be enabled through the design of neighborhood-scale development.

II. NEIGHBOURHOOD DESIGN STRATEGIES

The neighborhood is the fundamental increment for designing and understanding villages, towns, and cities. Neighborhood is generally defined spatially as a specific geographic area and functionally as a set of social networks, in my opinion sustainable neighborhood is an urban planning theory that concentrate growth to satisfy the ordinary daily needs within walking distance, include full range of housing and facilitate mixed use dwellings, workplace and civic buildings.

Firstly this paper draws distinctions between the two concepts 'neighbourhood' and 'community' examining their professional and academic resonance, following by the introduction to the equally slippery term sustainable development, and that leads naturally to the question of what might constitute a sustainable neighbourhood or community.

A. Neighbourhood and Community

Basically the idea of 'neighborhood' has been introduced by Ebenezer Howard and Raymond Unwin early in the 20th century and subsequently gelled by the first generation British new towns. And later the neighborhood is discreet residential area with a population of 4-6000, supporting a primary school, and a local center.

In this paper 'neighborhood' is defined as a residential or mixed use area around which people can conveniently walk. Its scale is geared to pedestrian access and it is essentially a spatial construct, a place. It may or may not have clear edges. It is not

necessarily centered on local facilities, but it does have an identity which local people recognize and value. 'Community' is quite different, it is a social term which does not necessarily imply local, it means a network of people with common interests and the expectation of mutual recognition, support and friendship. Distinguishing the different facets of neighborhood as, the neighborhood is base for home life, educational and employment activities, and another perspective is that the neighborhood as a locus for community made by people.

B. Sustainable Development

The concept of sustainable development covers not only environmental goals, but also social aspects such as greater equality and active public participation in decision-making. Sustainable development is also recognized as connecting local and global perspectives, providing a focus on protection of both the physical environment and human population, serving the goals of gender equity, and providing ways to integrate social and economic development (Gamble and Weil, 1997).

In use of the concept there has generally been a recognition of three aspects of sustainable development:

- **Economic:** an economically sustainable neighborhood must provide affordable housing, attract business and create employment opportunity and facilitate better choices in transportation to decrease transportation budget.
- **Environmental:** and environmentally sustainable neighborhood must maintain a stable resource base and protect living environment to provide healthy life for the residence.
- **Social:** a socially sustainable neighborhood must achieve social equity and create symbiotic relationship between community and land development.

Clearly, these three elements of sustainability introduce many potential complications to the original simple definition. The goals expressed or implied are multidimensional, raising the issue of how to balance objectives and how to judge success or failure. The ingredient and technique for actively involving local people and businesses are to involve all stakeholders who are affected by a neighborhood plan together in a guided debate which informs and helps to shape the decisions of the designers, developers and local authorities and essentially the effective collaboration between government, public, private and community sectors.

A goal of my current research is to ensure that all important facets of sustainability have been duly considered some checklists have to use;

TABLE I. A sustainability checklist, applied to neighborhoods.

Ecology	
Climate stability	• Location that minimize trip lengths, are well served by public transport • Design that foster walking and cycling and discourage car reliance
Energy in transport	• Energy efficient built form and layout • Development of community renewable energy
Energy in building	
Natural resources	
Air quality	• Traffic reduction and air quality management
water	• Local surface water/sewage treatment, aquifer recharge
Land and soil	• Higher densities to reduce urban land rake
Local environment	
Image and heritage	• Design reflecting distinctive landscape and cultural heritage
Social Provision	
Access to facilities	• Accessible, good quality health, educational and retailing facilities
Built space	• Affordable good quality and different choices of housing • Mixed use commercial and institutional spaces
Open space	• Accessible, parks/playgrounds and playing fields
infrastructure	• Easily maintained road and utility networks
Economic	
Employment opportunity	• Diverse and accessible job opportunities
Social sustainability	
Health	• Facilitate pollution-free environment
Community safety	• Safe traffic-calmed streets with good visual surveillance • Neighborhood social balance and continuity
Equity and choice	• Access to housing for all social groups • All facilities easily accessed by foot or public transport with special attention to needs of children and the disabled.

III. Unsustainable Land Use Trends

In order to examine why current trends in planning settlements are unsustainable and the lessons that can be drawn if they are

to be planned more sustainable in the future, two main planning trends are examined: the dispersal of population and activities and the centralization of services and facilities;

- The result of studies and research shows a continuing decline in population in rural areas and increase in urban areas. 'The urban population growth, in kabul city has tripled in size since late 2001, to approximately 4.5 million people, making it perhaps the world's fastest-growing city in the last eight years. Rapid growth has not been confined to Kabul, however; in 2002, only 22% of Afghanistan's population lived in urban areas. By 2009, the figure had increased to at least 30%, indicating unprecedented urban growth countrywide, a trend that will continue for the foreseeable future. Estimates indicate that roughly 60% of national population growth during the 2002–2009 period occurred in Afghanistan's cities.
- Many different types of services and facilities have been centralized, where fewer, larger services and facilities have replaced a large number of small-scaled one. Examples include shops, schools and hospitals.

Informal settlements form a huge challenge for urban planning at all stages, not only because cities are growing in an uncontrolled fashion that usually does not provide the necessary infrastructure, but also because of the land issues that arise from such settlements. And has led to a number of impacts on transport and the environment. These unsustainable trends needs action to reverse, this requires action at all level, including local level decision about the planning of neighborhoods. A package of land use planning measures has the potential to begin to reverse the unsustainable trends and improve quality of life in neighborhoods. One such package contains measures that address issues of development density, accessibility to public transport, the provision local employment, services and facilities, access to open space and parking restraints, which together form a strategy for concentrating development in transport corridors and nodes. The measures may reduce the need to travel and decrease the reliance on the car, whilst at the same time may contribute the improvements in environmental quality, making local neighborhoods more attractive places in which to live, work, study and spend leisure time.

Fig. 1. Deh Mazang Kabul, March 29, 2013.

IV. Neighbourhood Planning

Initially the research sets the reasons out in due order that why neighborhood is needed;

- Planning for transport energy-efficiency is a center part of this theory
- Solid waste collection and treatment
- Provision for basic needs, healthy life style and air quality
- Provision of social equity for the low and middle level income residence
- Facilitate employment opportunities.

Neighborhood planning gives communities opportunity to develop a shared vision for their neighborhood and shape the development and growth of their local area. They are able to choose where they want new homes, shops and offices to be built, have their say on what those new buildings should look like and what infrastructure should be provided. Neighborhood planning provides a powerful set of tools for local people to ensure that they get the right types of development for their community where the ambition of the neighborhood is aligned with the strategic needs and priorities of the wider local area.

A policy in a neighborhood plan should be clear and unambiguous. It should be drafted with sufficient clarity that a decision maker can apply it consistently and with confidence when determining planning applications. It should be concise, precise and supported by appropriate evidence. It should be distinct to reflect and respond to the unique characteristics and planning context of the specific neighborhood area for which it has been prepared.

V. Research Agenda for the Design of Neighbourhoods

The design principles for sustainable development of neighborhoods discussed below are organized under four primary variables. They are energy use and conservation, active mobility, land and resource conservation and sustainability framework;

A. Energy Use and Conservation

The new buildings activities should recognize the natural energy systems that are at play in the built environment and spire a symbiotic relationship with it. Learning and improving on the vernacular building principles that provided sustainable solutions to their energy needs for many generations can be a good starting point. In the hot-arid region of south and west Afghanistan, courtyard houses proved to be excellent examples of employing passive cooling strategies. Courtyards played a conscious role in the moderation of the climate in hot summer seasons and provided comfortable living conditions for the families. The central courtyard acts as a light well, as well as, an air shaft, bringing both daylight and air circulation into the rooms around it. Taking advantage of the diurnal range of temperature during the summer, at night the cool air descends into the courtyard and fills the surrounding rooms and spaces with cool air, which stays cool and comfortable throughout the day.

B. Active Mobility

Neighborhood size has been defined throughout planning history. Clarence Perry defines the neighborhood as a component of a town and defines its size based upon a five-minute walking radius. The radius is measured from the center, and the center holds the cultural uses such as a school. A five minute walking distance is approximately 160 acres. Clarence Stein expanded the definition of neighborhood center in 1940 by connecting the neighborhoods together to create towns, more recently the quarter-mile walking radius has been expanded to a half mile with the addition of a transit hub. Traditional neighborhood size works well in the towns, village, and urban city scale.

This paper makes a two-fold contribution to the literature. First, it sheds light on household bicycle ownership, second, make fewer and shorter journeys by fuel efficient modes of transport (particularly by car and public Transport) options to create an accessible, livable community:

- The use of non-motorized modes of transportation, notably walking and bicycling, for undertaking personal travel is an issue of considerable interest to the transportation planning profession. The key motivation behind this interest is that travel by non-motorized modes constitutes an environmentally sustainable and a physically active transportation choice, which both transportation and public health officials are interested in promoting

A significant element of sustainable lifestyle is travel behavior, currently, almost all transport indicators in the country are moving in an unsustainable direction. For example since 2002, in Kabul city there are more than 300,000 passenger cars and 100,000 trucks operating the increase of these mobility caused environmental damage, air pollution from emission has serious health impacts, traffic congestion and damages the economy. For these reasons in neighborhood the total number and length of trips can be reduced by efficient modes of transport (i.e. reducing travel demand, particularly by car). Physical features can enable residents to make fewer and shorter trips vary in scale and type. Therefore the high density development should locate in built-up areas which can enable most people to live near amenities, facilities and employment and thus reduce the need to travel

Fig. 2 Proposed fuel efficient modes of transportation

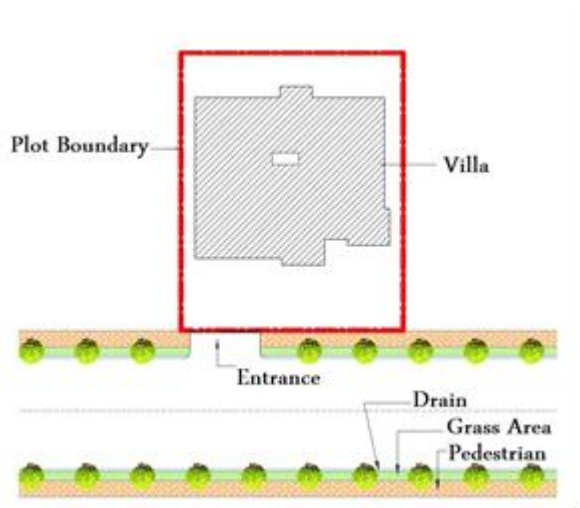
Fig. 3. Road Typical Cross Section

C. Land and Resource Conservation

- *Reuse and recycle:* Provide incentive and facilities to conserve material and monetary resources. In the core of each neighbourhood, provide for a recycling centre and convenient recycling and composting bins in the residential cluster. Recycling is an important strategy of reducing our consumption. Encourage only the purchase of products with recycled or recyclable content by individual. Corporate or community preference or policy.

Fig. 4. Proposed Machinery for Garbage Collection (Hopper Compactors)

Housing Meets the Needs of the Whole Community: A variety of housing provides affordable and attractive choices for all the people who make up a community, including families, empty nesters, single parent families, childless couples, seniors on fixed income, and one-person households of various ages. Housing choices allow residents to live in a community throughout their life, and let people of varying income levels choose to live near their work, schools, and other amenities.



\ FIG. 5. A PROPOSED CLUSTER OF RESIDENTIAL VILLA WITH 500 M2 AREA

D. Sustainability Framework

Based on the sustainability purposes, this part of paper present and explain, the development of a framework of sustainable behaviors that can potentially be enable through the design of neighborhood-scale developments. To be sustainable, such developments need to be technically sustainable (i.e. in terms of materials, construction methods and so on) and to support behavioral sustainability by their residents.

In contrast, behavioral sustainability refers to the sustainable actions of those living, working and enjoying their leisure time in a development. It is argued that some elements of the built environment can enable behavioral sustainability (shown as the area of overlap in Figure 6). For example, providing cycle paths and pedestrian routes can encourage people to walk and cycle rather than drive their cars, and providing neighborhood recycling facilities can encourage people to recycle their household waste. However, these features have no intrinsic value unless used properly. There are also sustainable behaviors that are not reliant on the physical environment and can be carried out in any given setting (an example is ethical investing, in the right-hand section in Figure 6).

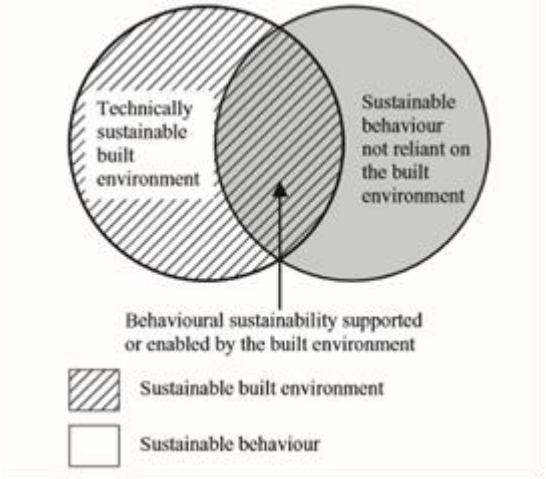


Fig. 6. Technical and Behavioral Sustainability and their Relationship with element of Built Environment

The aim of the framework is to identify the claimed links between sustainable behaviors and design features appropriate at the scale of neighborhood developments, and to present these links in an accessible, understandable form. Taking this principle into consideration, eight sustainable behaviors that could be enabled by design features in neighborhood development are identified in table 2.

TABLE II. A FRAMEWORK OF SUSTAINABLE BEHAVIORS THAT CAN BE ENABLED THROUGH THE DESIGN OF NEIGHBORHOOD SCALE DEVELOPMENT

Residents' sustainable behavior and explanation of its contribution to sustainability objectives	**Physical feature of neighborhood-scale development that could enable sustainable behavior**
Use less energy	Energy efficient heating

in the home (to reduce consumption of finite resources, reduce pollution and reduce fuel bills and fuel poverty)	system Windows that are accessible and allow for passive ventilation
Use less water in the home (to conserve scarce water resources, limit water abstraction and consequential environmental damage, lower waste water discharge and reduce water cost for households)	Grey water recycling system Rain water recycling system dual flush toilets
Recycle waste (to reduce demand for raw materials and reduce waste and pollution)	Recycling space and/or facilities in the home Recycling facilities in public space Composting facilities in public spaces
Maintain and encourage biodiversity and ecologically important habitats (to benefit the ecosystem, human health, livability and quality of life and to provide biological resources)	Private open space such as gardens, roof terrace, balconies Shared or public open spaces
Make fewer and shorter journeys by fuel inefficient modes of transport (particularly by car) (to reduce fuels, reduce air and noise pollution and reduce congestion which affects the economy, health and quality of life)	High density development sited close to an existing built-up area and/or good transport link Amenities, including health care facility, retail outlets, bank or cash point, play and leisure facilities within 500m, post office, public house, restaurant or café, place of worship or community hall within 1km, shopping center, educational facilities, public park of recreation space, bus or taxi station with 2km (Barton et al., 2003) Live-work units, space in homes for office of teleworking
Make essential journeys by fuel efficient modes of transport such as bicycle, public transport or walking (to reduce consumption of fossil fuels, reduce air and noise pollution, reduce congestion, forest more street activity which contributes to the quality of life, safety and social cohesion, to support viability of public transport services)	All physical features listed in 5 above Transport network that is integrated with the surrounding area (provides a number of points of access into and out of the development); has dedicated, convenient, direct routes for pedestrians and cyclist with clear view and easy orientation; links to public transport interchanges; smooth surfaces; convenient place to park bicycle; traffic calming measures to keep vehicle speeds low; bus stops located appropriately.
Take part in local community groups, local decision making and local formal and informal social activities (to build and maintain social capital, which has benefits including improved quality of life, personal well-being, lower crime rates and empowerment and improved social stability)	Mixed-use development with, or sited close to community facilities, Adoptable and flexible buildings Enlist community participation regularly
Use local services, amenities and	It supports the economic sustainability of local services and businesses

businesses (to contribute to local vitality, support the economic sustainability of local services and businesses, make efficient use of social or public provision of services and use any spare capacity and reduce the need to travel	Contribute to the vitality of the neighborhood Reduce the need to travel to facilities and amenities further away and contribute to reduce travel demand, as well as enabling people to walk, cycle and use public transport.

The production of the framework of sustainable behaviours that can be enabled through the design of neighbourhood-scale development described in the above table is an important exercise in understanding the contribution that design may play in moving towards a more sustainable future.

VI. Conclusion

Although the full discussion is beyond the scope of this paper, issues of selection bias is probably the biggest challenge facing neighborhood-level research. The framework is inherently a powerful research, education and marketing tool for sustainable neighborhood planning and development. It can be used as a guide for developing a comprehensive sustainable urban program. Specific policies and strategies will vary with local conditions, but the methods for demonstrating human-environmental interchanges and benefits are universally applicable to any environment.

It is clear that the significance of 'neighborhood' in people's lives has faded, but the wish to reserve the trend is very widely shared. Technological evaluation, community development programs and exemplary neighborhood projects all suggest there is potential to reinvent locality, but success so far has barely touched the generality of situations. The knowledge/skill base need further development and much wider dissemination, however, the key issue is not knowledge but will. Uncertainties and conflicts of interest can only be resolved by boldly taking steps forward, opening up the neighborhood option. This paper sets out some of the spheres where action appropriate, emphasizing process rather that product: first by empowering local communities an forming partnerships for action; second, by changing the prevailing culture of local decision-makers, professionals and development companies; third, by government policy catching up with its expresses aims, particularly in terms of fiscal priorities and institutional remits.

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