

# Assessment of Socio-Cultural Sustainability: A Comparative Analysis of Two Neighborhoods in Kolkata Metropolitan Area

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## I. INTRODUCTION

**Abstract**—To transform a space into a better livable and sustainable zone, United Nations Summit in New York 2015, has decided upon 17 sustainable development goals (SDGs) that approach directly to achieve inclusive, people-centric, sustainable developments. Though sustainability has been majorly constructed by four pillars, namely, Ecological, Economic, Social and Cultural, but it is essentially reduced to economic and ecological consideration in the context of developing countries. Therefore, in most cases planning has reduced its ambit to concentrate around the tangible infrastructure, ignoring the fundamentals of socio-cultural heritage. With the accentuating hype of infrastructural augmentation, lack of emphasis of traditional concerns like ethnicity and social connection have further diluted the situation, disintegrating cultural continuity. As cultural continuity lacks its cohesion, it's growing absence increasingly acts as a catalyst to degrade the heritage structures, spaces around and linking these structures, and the ability of stakeholders in identifying themselves rooted in that particular space. Hence, this paper will argue that sustainability depends on the people and their interaction with their surroundings, their culture and livelihood. The interaction between people and their surroundings strengthen community building and social interaction that abides by stakeholders reverting back to their roots. To assess the socio-cultural sustainability of the city of Kolkata, two study areas are selected, namely, an old settlement from the northern part of the city of Kolkata (KMA), imbued with social connection, age-old cultural and ethnic bonding and, another cluster of new high-rises coming up in the Newtown area having portions of planned city extension on the eastern side of the city itself. Whereas, Newtown prioritizes the surging post-industrial trends of economic aspiration and ecological aspects of urban sustainability; the former settlements of northern Kolkata still continue to represent the earliest community settlement of the British-colonial-cum native era and even the pre-colonial era, permeated with socio-cultural reciprocation. Thus, to compare and assess the inlaid organizational structure of both the spaces in the two cases, selected areas have been surveyed to portray their current imageability. The argument of this paper is structured in 5 parts. First, an introduction of the idea has been forwarded, Secondly, a literature review has been conducted to ground the proposed ideas, Thirdly, methodology has been discussed and appropriate case study areas have been selected, Fourthly, surveys and analyses has been forwarded and lastly, the paper has arrived at a set of conclusions by suggesting a threefold development to create happy, healthy and sustainable community.

**Keywords**—Art innovation, current scenario assessment, heritage, imageability, socio-cultural sustainability.

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CULTURAL Heritage with a social bent can be addressed as an expression of the ways of living developed by a community and passed through generations, including customs, practices, places, objects, artistic expressions, norms, rites and values. Cultural Heritage is often expressed as either Intangible or Tangible based on the nature and attributes [1].

The cultural heritage of a nation or region is not solely composed of monuments and museum collections, which is the tangible forms of heritage but also of living intangible expressions inherited from our ancestors and passed on to our descendants. Built Environment (Buildings, Townscapes, Archaeological remains), Natural Environment (Rural landscapes, Coasts and shorelines, Agricultural heritage), Artefacts (Books & Documents, Objects, Pictures) [2] creates the list of tangibility. Intangible cultural heritage (ICH) is made up of traditions through generations, oral traditions, performing arts, social practices, rituals and festive events, knowledge and practices concerning nature and the universe, and traditional craftsmanship knowledge and techniques [3]. The sphere of social and cultural heritage includes one's race, gender, and class, encompassing both social and cultural values and practices over many generations. It includes the habits, attitudes, values, and ideas that you learned growing up. Socio-cultural heritage is passed from generation to generation by parents, religion, education, friends, books, radio, television, and movies, among others [4].

Therefore, continuity and sustainability of the socio-cultural phenomenon of a society and particularly of a city place depend on the design and constant efforts of a community system towards building an inclusive, sustainable and resilience. To achieve a sustainable development, it is crucial to harmonize three core elements of sustainability prescribed by UNDP in Sustainable Development Goals (SDGs) in the year 2015, i.e. economic growth, social inclusion and environmental protection. According to SDGs, economic growth, social inclusion and environmental protection are interconnected and all are crucial for the well-being of individuals and societies [5].

## II. LITERATURE REVIEW

To understand the impact of the socio-cultural indicators in making sustainable community systems and neighborhoods, a literature review has been done on the contemporary agenda and context of sustainability. The review discloses that, though Economic, Ecologic, social and cultural domains are prescribed to be considered together to achieve the sustainability, but in most of the cases in developing countries, the concern has been limited to economic and ecologic factors. Therefore, a brief review has been done on the socio-cultural heritage factors and their impact on community building.

Study of the basic physical indicators, indicate economic and ecologic sustainability, and the need and impact of socio-cultural heritage have created the base for further exploration of Imageability, that deals with peoples' conception and perception about a place. Hence a literature study has been done to augment the imageability, through enhancing propensity towards community interaction and value system. The value system added to any heritage (Physical, Socio-cultural or Normative) induce acceptability of a space amongst stakeholders. It also aided to make the place equally attractive and embracing for different age groups. Thus, in this section a brief review of literature has been done to understand and assess the need to socio-cultural indicators for sustainability.

### A. Sustainability Goals

The concept of sustainability emerged during 1960s as a global agenda in response to concern about environmental degradation resulting from poor resource management. Sustainable development was defined as the key to maintain the essential ecological processes and life support systems, including those of humans [6]. The United Nations Commission on Environment and Development (UNCED) was founded in the late 1980s. UNCED's report "Our common future" (1987) contains a definition of sustainable development (known as the Brundtland definition) which has current widespread influence: 'Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs' [7].

Sustainability as the global concern needs to get specified alterations, to set according to the situational policies of different countries across the world. As "...the meanings, practices and policies of sustainable development continue to be informed by colonial thought, resulting in the disempowerment of the majority of the world's populations, especially rural populations in the Third World... there is a danger of marginalizing or co-opting traditional knowledges to the detriment of communities who depend on the land for their survival." [8]. Therefore, the primary agenda of sustainable development need to get altered as per the conditions of the developed, developing and underdeveloped countries. In Phillip Sutton's words, 'sustainability is not "about" the integration of ecological, social and economic issues, nor is it "about" widespread consultation nor is it "about" improving quality of life. It's about maintaining or sustaining something. To understand the concept ... you need to identify the focus of ... concern' [9].

Therefore, concerning the developing countries like India, sustainability should refer the understanding of the society and concentrating on the interrelationship between the environmental, social and economic aspects of sustainability.

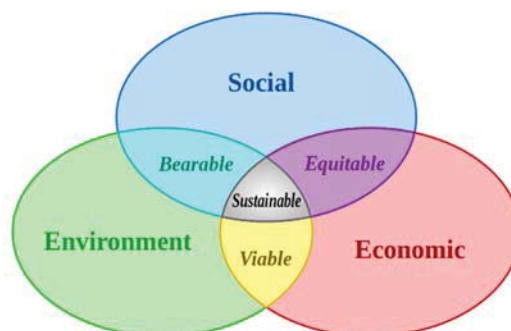


Fig. 1 Interconnections and overlapping ideas of Social, Environment and Economic Sustainability

Following the context of sustainability in Indian cities, Elkington's expression crystalized the increasingly widespread view that 'we need to bear in mind that it is not possible to achieve a desired level of ecological or social or economic sustainability (separately), without achieving at least a basic level of all three forms of sustainability, simultaneously'.

### B. Socio Cultural Heritage

Socio-cultural heritage is an important part of societal and community well-being. Increasingly, government recognizes the contribution that cultural heritage makes to the social well-being of different groups living within increasingly cosmopolitan towns and cities. Presently, heritage is seen as a major component to secure quality of life, creating a sense of place and strengthening the community bonding. Tangible heritages are easy to identify and protect, as listing of built heritage, individual monuments, buildings and designation of conservation areas but complications emerge with inability to deal with less tangible features of townscape, such as street patterns, community culture and ethnicity [10]. Social Heritage are significant because they reaffirm the identity of those who practice them as a group or a society and, whether performed in public or private, are closely linked to important events. They are closely linked to a community's worldview and perception of its own history and memory and therefore strengthen community activity, communication and march towards a socially sustained livelihood. Social solidarity encompasses objects and structures, such as historical remains and habitat for people, and values such as sense of place, local culture, and traditions.

The contemporary approach to heritage was very closely linked to the development of nations and nation-states, since heritage played an important role in the consolidation and harmonization of the identities of states and nationalities [11]. It could be said that specifying a common cultural heritage formed one of the bases for the development of nation-states. Thus, approaches to heritage can be conceptually divided into three groups:

- heritage as a set of valuable objects;

- heritage as a part of the environment;
- heritage as a socio-cultural construct.

Social practices shape everyday life. Distinctive social practices that are especially relevant to a community and help reinforce a sense of identity and continuity with the past are given priority in the 2003 Convention (meeting in Paris at the 32<sup>nd</sup> session of UNESCO from 29 September to 17 October 2003). The agenda of ensuring intangible socio-cultural heritage reaffirms their identity and link to the community's traditions. Ensuring the continuity of social practices, rituals or festive events often requires the mobilization of large numbers of individuals and the social, political and legal institutions and mechanisms of a society. [12]

The utilization of heritage primarily for the creation of national and communal identities, for state and transnational ones, inevitably connects it to questions related to politics and power. The management of cultural heritage cannot be an undertaking that is separate from contemporary societal processes. It is unavoidably related to other cultural, economic and political processes in society [13].

The 20<sup>th</sup> and 21<sup>st</sup> century society is definitely characterized by the extremely rapid development of science, technology and social systems, but also by a desire to consciously preserve the valuable part of our past and present for future generations. Heritage issues related to the development of society have become increasingly important. Heritage has always existed, but people are now aware of its existence, it is being researched and attempts are being made to start consciously shaping it. In September 2002, World Tourism Organization executive Luigi Cabrini told a gathering in Belgium that "cultural tourism is growing faster than most other tourism segments and at a higher rate than tourism worldwide [14]." Strategically spotlighting the arts, culture, history and heritage to attract tourists is nothing new, particularly in Europe and because travelers were becoming more and more interested in opportunities to learn about places through their art and history, cultural tourism consistently grows. Since tourism is nowadays used to stimulate regional development, cultural heritage tourism is used for, both preservation of regions as well as economic development of the regions [15].

### C. Imageability

Socio-cultural heritage is an important element to abide the citizens to their roots and build the imageability of the space. "As an artificial world, the city should be so in the best sense: made by art, shaped for human purposes", advocating that heritage in urban design is "a temporal form of art" [17], helps to assess and identify the legibility of spaces and their key components, potentiality for rejuvenation and mode of alteration. The visual quality of environment or imageability serves a distinct purpose of assigning its character and locational attractiveness quotient.

Human beings naturally simplify and categorize the excess of sensory input that they continuously experience. This allows us to take the visual/auditory/olfactory/etc. information, make it symbolically legible, and build coherent thought processes. In other words, we mentally structure our environment by

simplification. We understand something (i.e. produce a mental image of it) only through a process of symbolic classification.

According to Kevin Lynch, "imageability" of a city is directly related to the success of its urban plan and its consideration of physical and cultural heritage. Lynch argues that the ease in which one can recognize the patterns and meanings of their environment, the more pleasure and utility they will extract from it. Imageability connects legibility of a city's composition to its success as a place. Without legibility, confusion sets in, which is the ultimate failure of an urban environment. Confusion robs of emotional security of its stakeholders. A strongly structured image of the city, however, establishes a harmonious relationship between city and user and build a sense of security. It creates a distinction between Perception and Image (collective of individuals creates an image based on the unspoken consensus of aligned perception). And the unspoken consciousness draws upon social and cultural heritage, traditions, practice and inclinations of the respective urban spaces and its stakeholders.

### D. Propensity of Community Interaction, Community Participation and Ethnicity

The value system related to both the tangible and intangible form of social and cultural heritage actually work as an intermediate connection between communities, their history, pride and practice. There is always a value (reason) in each heritage. According to S. Idilfitri, there are significant value system added to each attributes of socio-cultural heritage that indulges a sense of place, ownership and participation.

- Age and rarity value - each period brings up different and concrete identity.
- Architectural value - the design, the proportion and the contribution that the architecture of a building has made to the quality of the everyday experiences
- Artistic value - can clearly see on the quality of craftsmanship or directly to artwork.
- Associative value - picture by building or places has with an event or personality in history.
- Cultural value - historic building we can see a lot of thing such as lifestyles, use of material, crafts and technique of the past used in construction.
- Economic value – tourism is one of sector that brings huge impact to the economy.
- Educational value – historic site and building help us to learn about period of history, past way of life, social relations or construction technique.
- Emotional value – some people may feel emotional attach to the place or feel some sense of wonder n respect from the history especially the craftsmanship.
- Historic value – it not only the physical evidence from past, but it contains important event to individual, local, and nation.
- Landscape value - not only building with the post-era architecture but some space or landscape that creates by man.
- Political value
- Public value - sometimes also regard as politic or history



value.

- Religious and spiritual values
- Scientific, research and knowledge value - not only learn about the design but also a lot of thing such as building technique, material used.
- Social value - social values of historic places are a part of social interchange to local community.
- Symbolic value – monument is the best symbolic value in historic place.
- Technical value - technology system that used in the construction of the past will contribute to advancing today technology.
- Townscapes value – not only for one historic building, it also contributes to a group of buildings, street, and townscape [18].

Any value system imbued to the heritage promotes socio-cultural sustainability and reinvigorates sense of rootedness to the place.

#### *E. Acceptability and Walkability of the City Space*

“We have to stop building cities as if everyone is 30 years-old and athletic” says Penelosa [19]. Along with the study and inclusion of physical and cultural heritage, social stability of the community is important. Social stability deals with the consideration of citizens of all ages by welcoming the concept of the ‘cities for all, of Gil Penelosa. As per the study of the age friendly cities (2009), Ontario Professional Planners Institute recommended that governments collaborate to develop community “hubs” that can house a range of services under one roof. The OPPI (Ontario Professional Planners Institute) also urged government agencies to intentionally integrate, rather than segregate, in conserving socio-cultural heritage along with the age-friendly approach of the city. The parks commissioner in Bogotá, Gil Penelosa helped trigger a quality of urban life revolution of sorts by promoting car-free Sundays – “ciclovias” -- on hundreds of kilometers of the streets around the Colombian capital, which actually promotes gathering, community involvement and participation.

In so doing, they boosted both their enjoyment of the city and their own fitness levels, thus creating a lively, reciprocal, low-emission community for people. Therefore, in ageing society’s public spaces make a good ratio to be more age-friendly [20]. World Health Organization, which in recent years has established an information-sharing network for age-friendly cities, as well an 82-page guide on a wide array of issues and potential solutions [20].

Designing and retrofitting cities to promote active lifestyles could therefore have significant repercussions for the health of urban populations. Dr. Chinmoy Sarkar opined, “*Well-designed cities of today will be healthy cities of tomorrow* [21]” because walkability “*depends on the underlying design of the city*”. Thus, to augment the intangible assets along with the social sustainability through healthy public spaces, promoting social heritage can innovate in creating welcoming, interactive, lively space.

### III. METHODOLOGY

Importance of socio-cultural heritage in creating sustainable community is undeniable. Hence, to assess the socio-cultural sustainability of the city of Kolkata and its peripheral establishments, two study areas have been selected. To identify the inherent inlay of the old Kolkata area, which is of 350 years old, an urban space has been selected from the area of North Kolkata, i.e. Hatibagan area. The Hatibagan area housed a community system of almost 350 years old. The place imbues with inlay of socio-cultural connection, community participation, interaction, shares homogeneous ethnicity within the community and therefore, has an integral connection or rootedness to generate a sense of place that is sustainable.

On the contrary, newly emerged, fully planned high rises in new town area exemplifies more economic and ecologic considerations to some extent along with modern amenities. Such urban spaces show heterogeneous ethnic backgrounds, even differentiation in economic and socio-cultural rootedness.

Thus, to assess the organizational structure of both the communities, two specific area have been chosen for surveys. To find extent of sustainability of the two independent and bipolar places of the same city, current imageability of these places have been thoroughly surveyed based on,

- a. Physical indicators
- b. Socio-cultural indicators

#### *A. Case Study Area Selection*

Based on the land use, population density, activity concentration of majority of the stakeholders, different types of urban nodes can be identified, namely, commercial zones, manufacturing zones, administrative areas, industrial areas, business districts, ecologically sensitive areas, religious areas, recreational areas, transit oriented urban nodes etc. Two areas, i.e. Hatibagan and Newtown DLF area has been selected. These two areas demonstrate totally different scenario regarding the planning, development, community system, imageability and socio-cultural structures. Different types of urban spaces exemplify different set of challenges regarding its imageability.

Both the areas come under Kolkata Metropolitan Area.

Kolkata Municipal Corporation represents the core city of Kolkata, the largest city in Eastern India. KMC consists of 141 wards, covers an area of 185 sq. Km., with 4.48 million population (approximately) and population density of 24000 persons / sq. Km. The two locations as identified for the study are well known activity centers and majority of the urban dwellers have visited these locations and are well informed about them to offer opinions [22].

New Town, is a fast-growing planned satellite city (Figure no. 2) and a neighborhood of Kolkata (earlier, Calcutta). New Town is located at 22.5894°N 88.4748°E. This township covers an area of 28 km<sup>2</sup> (11 sq. mi) [23], and is located partly in Barasat Sadar subdivision of North 24 Parganas district and partly in South 24 Parganas district.

The New Town (Rajarhat) has been also declared as a Solar City by the previous UPA government at the Centre and now the initiatives are being taken to declare this city as Smart Green City. This new information technology and residential hub is

being developed on the north-eastern fringes of Kolkata.

The New Town Kolkata was enabled with 10.5 km of Wi-Fi Zone connecting the Main Arterial Road to the airport to Sector

V, which also make it India's first Wi-Fi road connectivity. The stretch has already been declared as a green corridor [24].

TABLE I  
 COMPARISON BETWEEN IDENTIFIED LOCATIONS BASED ON ACTIVITY PATTERNS

Location	Description	Major Land use	Major activity pattern
DLF area of Newtown	New Town is located at 22.5894°N 88.4748°E. covers an area of 28 km <sup>2</sup> (11 sq mi) and is located partly in Barasat Sadar subdivision of North 24 Parganas district and partly in South 24 Parganas district.	Residential, Commercial, Recreational	Newly emerged satellite city proposed to be a smart city. The area housed major residential high rises, commercial activity of the area
Hatibagan	Hatibagan is a neighborhood in north Kolkata (formerly Calcutta). The area is under Shyampukur & Burtalla police stations. It is situated next to the five-point crossing of Shyambazar	Residential, Commercial, Recreational	Hatibagan area housed major commercial activities ranges from small individual shops to malls and brands. The area is majorly residential and one of the oldest commercial area in Kolkata

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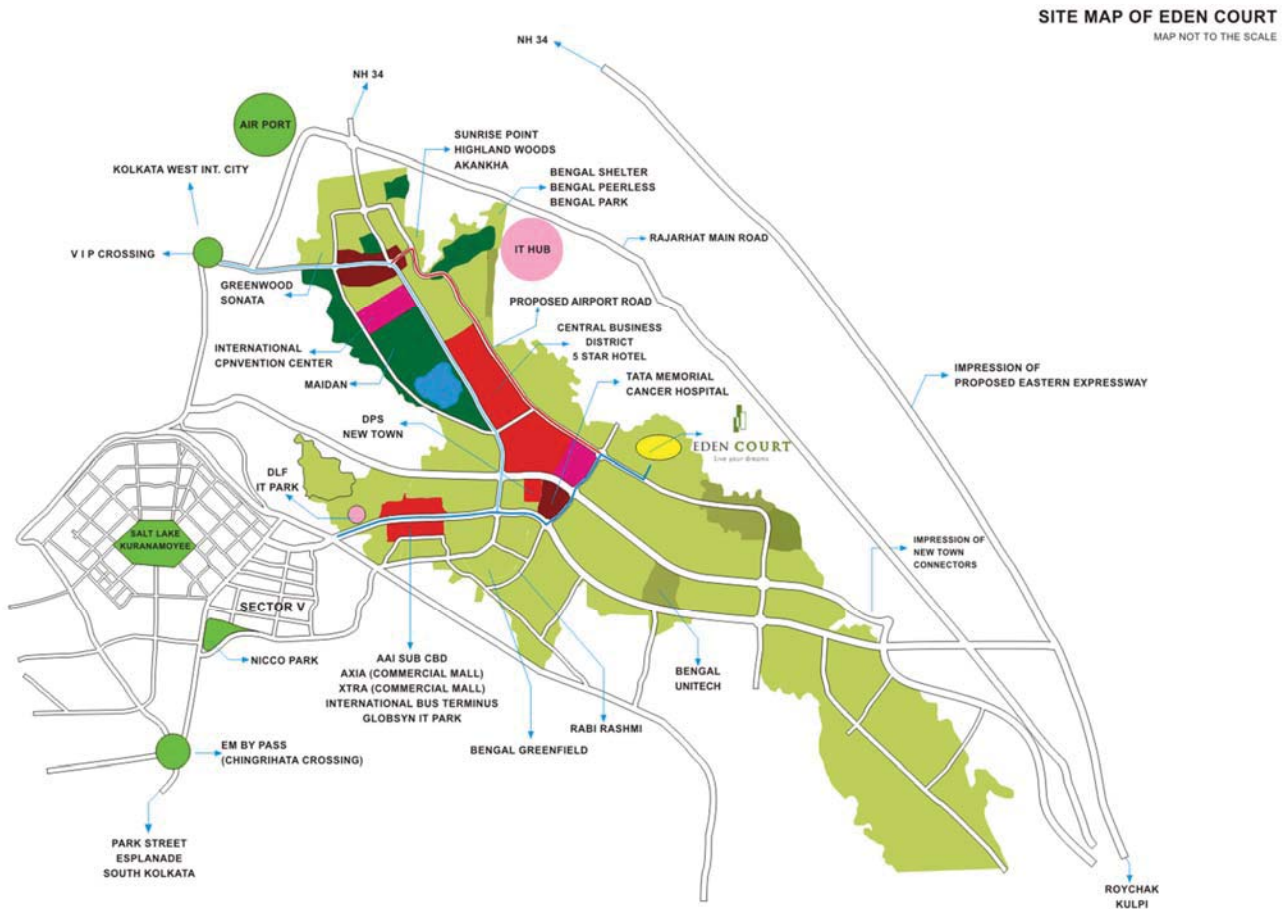


Fig. 2 Detailed map of Rajarhat Newtown area

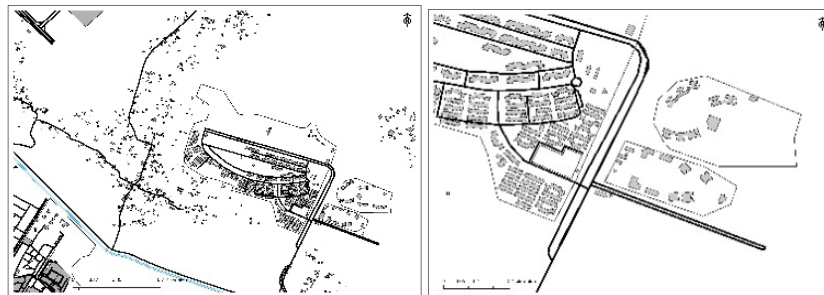


Fig. 3 The mixed land use area of DLF, Newtown, showing fully planned land-use pattern

It is part of the Kolkata Metropolitan Area. The city is planned for a population of 10 lakhs, however, as of December



2016, the residential population of New Town is estimated to be around 30,000 [25].



Fig. 4 Newtown residential complexes

As evident from Fig. 4, Newtown is a well-planned extension of Kolkata with high rise residential communities, loaded with all physical amenities. Ample green open spaces, pools, broad transportation corridors are the basic facilities of the area. Concept of coupling residential places with in house market complexes, community centers, playgrounds are the key features.



Fig. 5 Glimpses of Newtown satellite city area

Fig. 5 shows the glimpses of Newtown area and its regular life. From the above cluster of pictures, it is evident that it is less populated, and thus having less numbers of cars and hence less traffic. Broad corridors are running through the area to connect it to different parts of Kolkata Metropolitan area. Therefore, it is clearly visible that the area is well equipped with all sorts of physical, economic and ecological indicators that suggests a better livelihood.

Hatibagan is one of the oldest settlement in Kolkata, organically developed over time. The area housed major commercial activities ranges from small individual shops to malls and brands. The area is majorly residential and one of the oldest commercial area in Kolkata.

Hatibagan is a neighborhood in north Kolkata. The area is under Shyampukur & Burtalla police stations. It is next to Shyambazar. Hatibagan is one of the oldest traditional markets in Kolkata city, almost 108 years old. Two major roads those cross through Hatibagan are Bidhan Sarani & Aurobinda Sarani formerly known as Grey Street. The landuse plan of Hatibagan as can be seen in figure no 6 is thoroughly congested clearly

shows the marks of organic development of the area. Glimpses of the area illustrate its age-old narrow lanes and alleys, houses, and the welcoming character of the footpath market and of the neighborhoods.



Fig. 6 Land use plan of Hatibagan area of North Kolkata



Fig. 7 Glimpses of the major residential areas of Hatibagan



Fig. 8 Glimpses from the daily life of Hatibagan area

### B. Methodological Steps

To find the components of socio-cultural heritage of the place reconnaissance survey has been done. Through primary survey done amongst the stakeholders, physical and socio-cultural indicators present in both the respective areas are tapped. Analysis of the given scores would further clarify the presence of the physical amenities along with the significance and satisfaction level of these elements. The list of the physical indicators consists of,

- Transportation facility
- Drinking water
- Sanitation

- Waste disposal
- Healthcare Facility
- Education facility
- Electricity
- Information center
- Lighting
- Pollution check
- IOT facility

On the other, socio-cultural condition of these places are being tried to tap by the primary level survey of the indicators listed below,

- Ethnicity of the stakeholders
- Presence of Common recreational space
- Open area and green zones
- Presence of heritage structures, its present condition and impact on the neighborhood
- Economic regeneration prospect evolved around the heritage
- Sense of connection to the place
- Community activity and extent of regular interaction

A questionnaire has formulated amongst 40-45 stakeholders and their given scores are collected in 1 to 9-point likert scale, to get their opinion on the physical and socio-cultural heritage of the respective places.

#### IV. SURVEYS AND ANALYSES

Primary questionnaire survey has been done in Newtown and Hatibagan area with 40 stakeholders. Primary survey to these places includes a thorough photographic documentation of the

present imageability and stakeholder's opinion survey.

##### A. Survey of Newtown Area

The accumulated scores assigned by the stakeholders to the physical indicators shows that significance and satisfaction level of the indicators, and are sometimes noticeably differs from each other. Expectedly significance of the indicators always having high scores than of its satisfaction level. Therefore, as shown in table II, difference between the score of each in significance and satisfaction level decides upon the present imageability of the indicators.

Though the highest difference between both the levels found in availability of IOT facility i.e. 3.35, but, its significance level is also the lowest (7.4) that indicates lesser need of IOT facility amongst stakeholders. On the other, Transportation facility has the significance score of 8.57, and only receives 5.6 in the satisfaction level. Therefore, invites attention to improve the transportation facility. Talking to stakeholders disclose that lack of public transport and increasing private transportation has created problems for common people.

Figs. 9 and 10 show the obtained scores of significance and Satisfaction levels of the physical indicators.

TABLE II  
 COMPARISON BETWEEN SIGNIFICANCE AND SATISFACTION OF THE PHYSICAL INDICATORS

	Transportation facility	Drinking Water	Sanitation facility	Waste disposal	Healthcare facility	Education Facility	Electricity	Information center	Proper lighting	Pollution Check	IOT facility
Significance	8.57	8.65	8.33	8.65	8.55	8.3	8.65	7.5	8.2	7.8	7.4
Satisfaction	5.6	6.25	6.45	7.3	5.9	6.225	8.35	6.7	7.85	6.95	4.05
Difference	2.97	2.4	1.88	1.35	2.65	1.07	0.3	0.8	0.35	0.85	3.35

Significance of the physical indicators of Newtown area

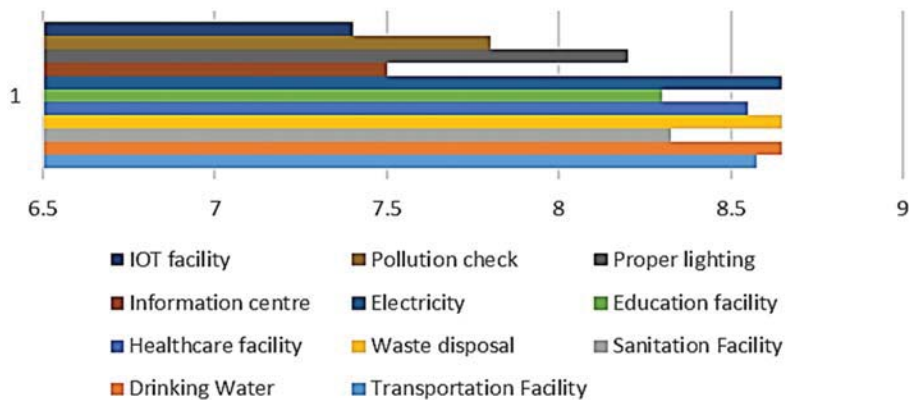


Fig. 9 Significance levels of the physical indicators of Newtown area

### Satisfaction level of the physical indicators of Newtown area

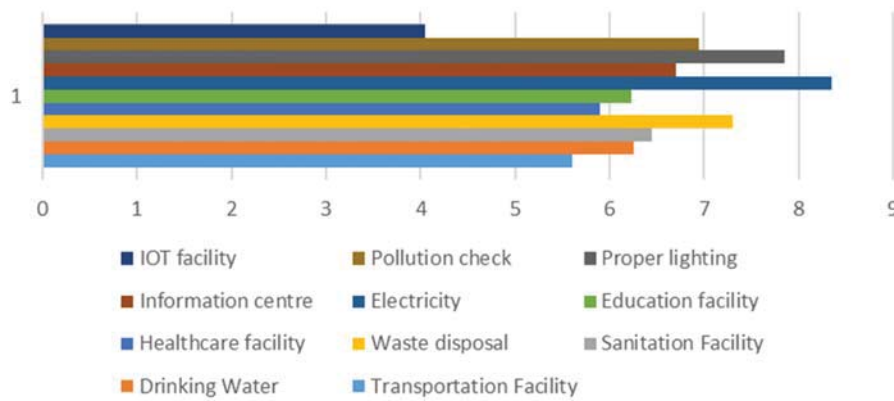


Fig. 10 Satisfaction levels of the physical indicators

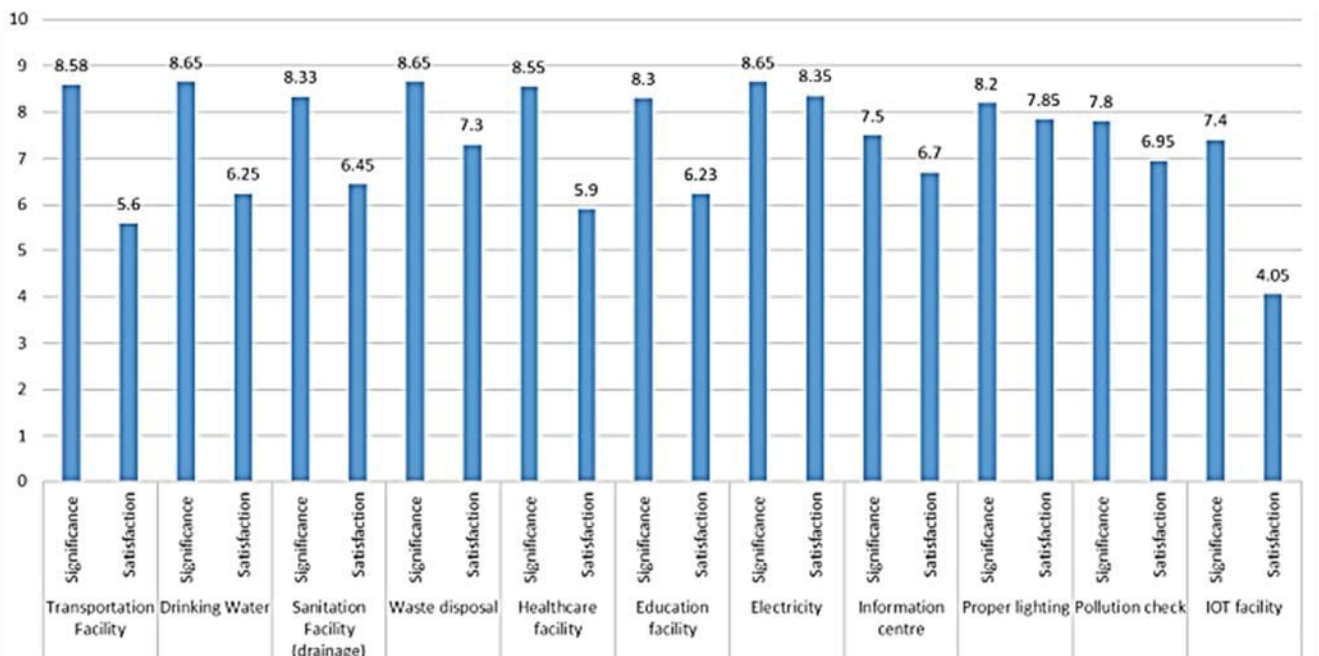


Fig. 11 Comparative analysis of significance and the satisfaction level of the physical indicators of Newtown area

Comparative analysis of the accumulated scores (Fig. 11) of each indicator shows Electricity and Education facility emerge as indicators having best overall scores representing as better services to urban dwellers. Overall scores show the general imageability, which places Newtown as a better and acceptable place to visit as per the physical indicators says, though the

socio-cultural connection to the space is low. Since only one of the satisfaction scores i.e. IOT facility have gone less than 5 in a 9-point scale it indicates that processes may initiated for the betterment of the facility as the area is headed towards accomplishment of the Indian criterions of a smart city.

TABLE III  
 COMPARISON BETWEEN SIGNIFICANCE AND SATISFACTION OF THE SOCIO-CULTURAL INDICATORS OF NEWTOWN

	Common recreational space	Open green space	Heritage structures	Economic regeneration from heritage structures	Ethnicity	Sense of Connection	Community activity and interaction
Significance	7.2	7.75	1	1	3.7	6	6.95
Satisfaction	4.7	7.1	1	1	2.5	2.35	4.1



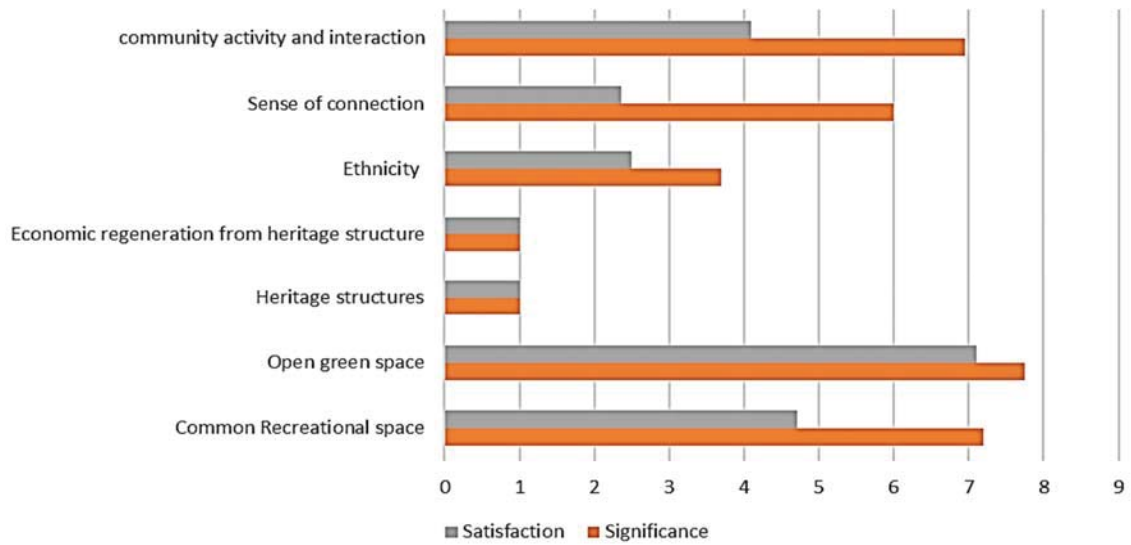


Fig. 12 Comparative analysis of significance and the satisfaction level of the Socio-cultural indicators of Newtown area

Survey on the socio-cultural indicators in the Newtown area clearly shows the huge difference between the significance and satisfaction level of the stakeholders. Absence of heritage structure and lack of common ethnicity acted as a catalyst to

weaken community interaction. Newly emerged high-rise societies though provide visual scape of ample green open space, but failed to provide the sense of connection amongst the stakeholders.

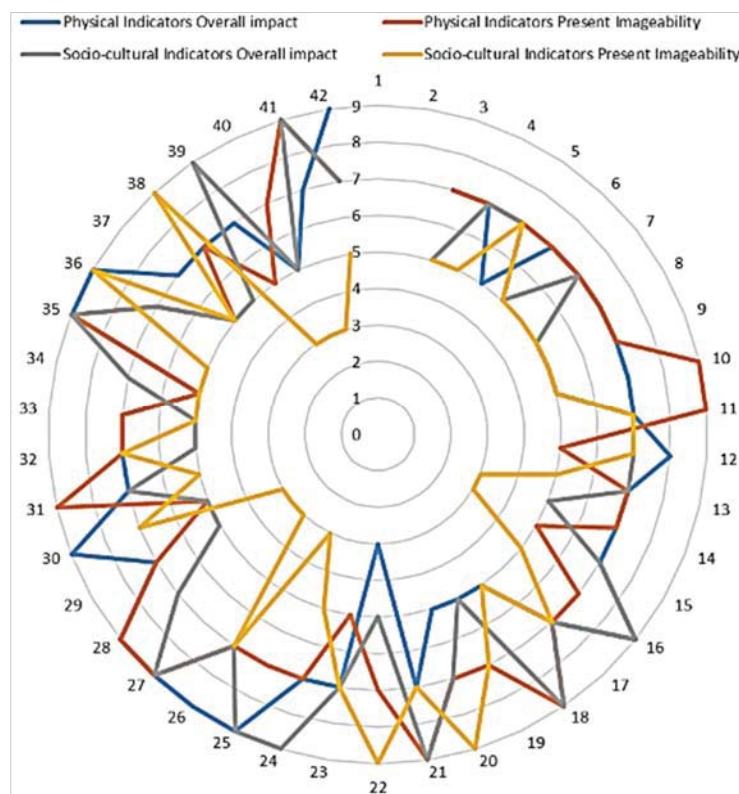


Fig. 13 Comparison between present Imageability and Overall impact of physical and socio-cultural indicators of Newtown area

As can be seen in the figure no 13 that socio-cultural indicators of the present imageability is quiet low compared to the physical indicators. Satisfaction with the socio-cultural indicators even lowered up to 3. Therefore, overall impact of Newtown as a socio-culturally sustainable place has lower

scores than of the impact of the physical indicators. Figure 12 has clearly exemplified Newtown as an acceptable place with high economic and ecologic indicators but fails to induce sense of place and socio-cultural sustainability amongst the stakeholders.

**B. Survey in Hatibagan Area**

To map the present imageability of Hatibagan area, a questionnaire survey has been formulated to 40 stakeholders. The questionnaire contains physical and socio-cultural indicators to assign scores as per their significance and satisfaction level of the stakeholders. As mentioned in Table IV, the maximum and minimum difference between the

significance and the satisfaction scores assigned successively in IOT facility and Sanitation facility. The scores denote, though implementation of IOT facility has low concentration of significance still that can be considered, as other physical indicators doesn't show any significant difference between significance and satisfaction level.

TABLE IV  
 COMPARISON BETWEEN SIGNIFICANCE AND SATISFACTION OF THE PHYSICAL INDICATORS OF HATIBAGAN

	Transportation facility	Drinking Water	Sanitation facility	Waste disposal	Healthcare facility	Education Facility	Electricity	Information center	Proper lighting	Pollution Check	IOT facility
Significance	8.07	8.17	8.02	8.41	8.46	8.22	8.56	5.34	8.49	8.24	5.54
Satisfaction	7.39	6.6	7.73	7.92	7.29	6.32	7.98	2.37	7.15	6.32	1.78
Difference	0.68	1.57	0.29	0.49	1.17	1.9	0.58	2.97	1.34	1.92	3.76

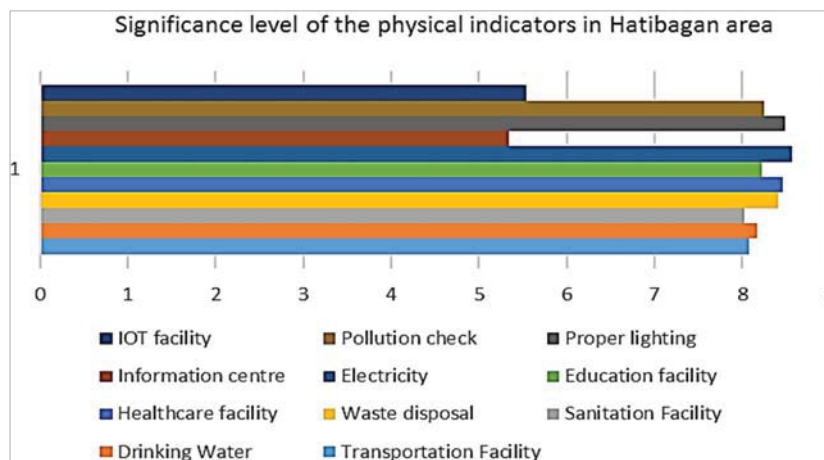


Fig. 14 Significance level of the physical indicators in Hatibagan area

TABLE V  
 COMPARISON BETWEEN SIGNIFICANCE AND SATISFACTION OF THE SOCIO-CULTURAL INDICATORS OF HATIBAGAN

	Common recreational space	Open green space	Heritage structures	Economic regeneration from heritage structures	Ethnicity	Sense of Connection	Community activity and interaction
Significance	7.39	7.34	8.17	7.05	7.73	8.12	7.88
Satisfaction	6.76	5.73	6.76	4.8	6.46	7.34	6.46

Figs. 14 and 15 show visual representation of obtained scores in significance and satisfaction level of the physical indicators. These diagrams represent satisfactory position of the indicators as, transportation, availability of drinking water, waste disposal, sanitation facility, electricity, education facility, proper lighting, pollution check and others. The low satisfaction scores concentrated in availability of information centers and in availability of IOT facilities. Interestingly, low score indicators also received low significance score. Thus, reflects low interest of the citizens towards upgradation of integrated information centers.

Compared to the physical indicators of Hatibagan area, socio-cultural indicators have shown propensity towards a better average score in satisfaction level. The only satisfaction score that goes down up to 4.8 (less than 5) is the possibility of economic regeneration aided by the present heritage structures in Hatibagan area. Stakeholders opines that private ownership of most of the heritage structures actually hinders the integrated development of the community system. Additionally, 108 years

old Hatibagan market is gradually declining to compete against the new trend of multinational giants and showrooms. Therefore, possibilities of economic regeneration are gradually lowering with time that need to take under immediate consideration.

In case of Hatibagan, satisfaction with the socio-cultural indicators are higher than Newtown area. Scores of the indicators are more than 5 and ranges up to 7.34, except the prospect of economic regeneration from heritage structure.

Finally, it is evident from figure no 17 that scores of physical indicators in tapping the present imageability is quite high along with its socio-cultural indicators. The scores given by the stakeholders have been averaged to arrive at final values representing existing level of physical and socio-cultural indicators as well as potential for intervention. These final scores have been used for comparison between the two locations to assess the need of socio-cultural heritage to achieve sustainability as a whole.

Analysis of the given data set manifest lower scores

representing socio-cultural heritage in the Newtown area than expected, hence, pinpoint higher potential for intervention to imbue and promote social-cultural heritage. Gradual degradation of community space, interactions, social

responsibility and public facilities have acted as a catalyst to lower the quality of stakeholders' experience.

Satisfaction level of the physical indicators in Hatibagan area

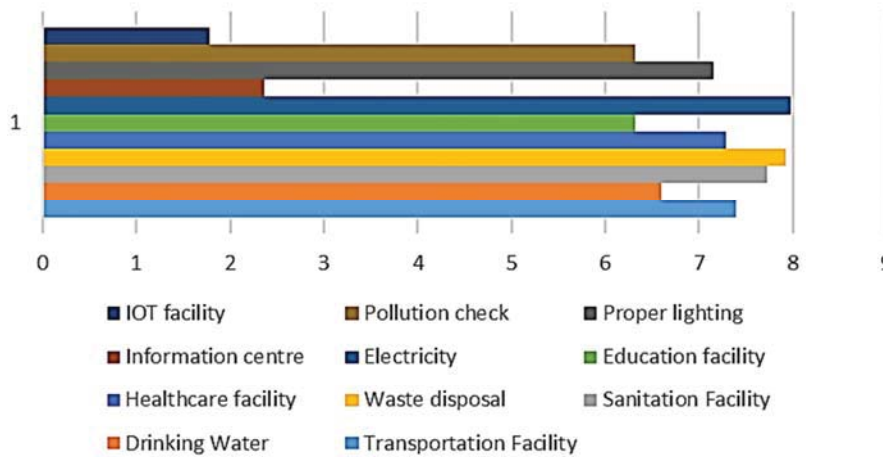


Fig. 15 Satisfaction level of eleven physical indicators in Hatibagan area

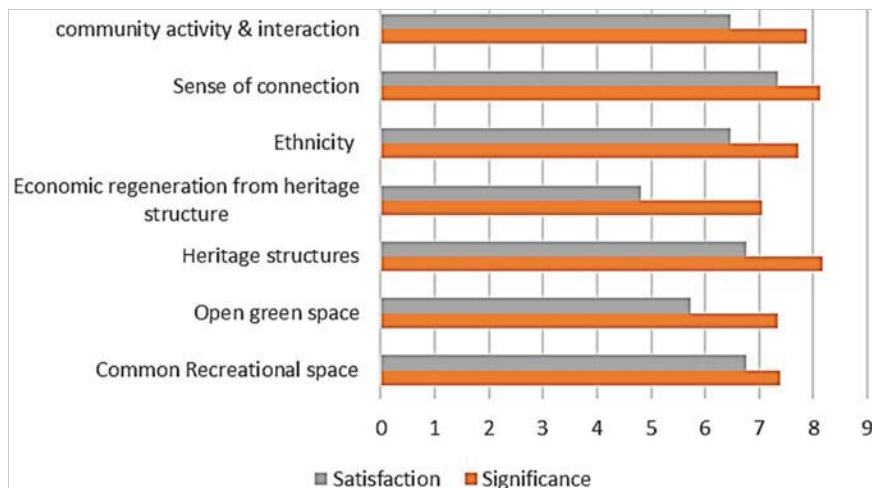


Fig. 16 Comparative analysis of significance and the satisfaction level of the Socio-cultural indicators of Hatibagan area

V.CONCLUSION

Assessing the socio-cultural sustainability of neighborhoods and to transforming the places into a better livable and sustainable zone, Sustainability Development Goals (SDG) are considered. But to attain the best applicability of the goals, contextual analysis of the respective cities and the case of 2 urban spaces need to be enhanced. Beginning with a literature review, the paper initially establishes the background that justifies the need for alterations of the sustainability goals as per the context. Study of the socio-cultural heritage has established the role of human perception or Imageability of a space to enhance the propensity towards community interaction. Interaction further strengthens social bonding and hence alleviate socio-cultural sustainability. Therefore, the paper explores the two neighborhoods of Kolkata Metropolitan Area,

i.e. Newtown DLF area and Hatibagan. The former one is equipped with modern physical amenities and the other one has shown its uniqueness through continuity in traditional activity, participation, and interaction.

After analyzing and comparing the scores of Hatibagan and Newtown area, it can be suggested that active age groups of the population of Hatibagan is broader and all age groups are equally participating in their own terms and limits. They are communicating and participating in all social and cultural happenings, whereas in Newtown the young homogeneous age group is more explicit as active participants. Social interaction in Newtown is noticeably lower than that of Hatibagan. The scores of Hatibagan shows strong community bonding due to common socio-cultural, economic, and ethnic background.



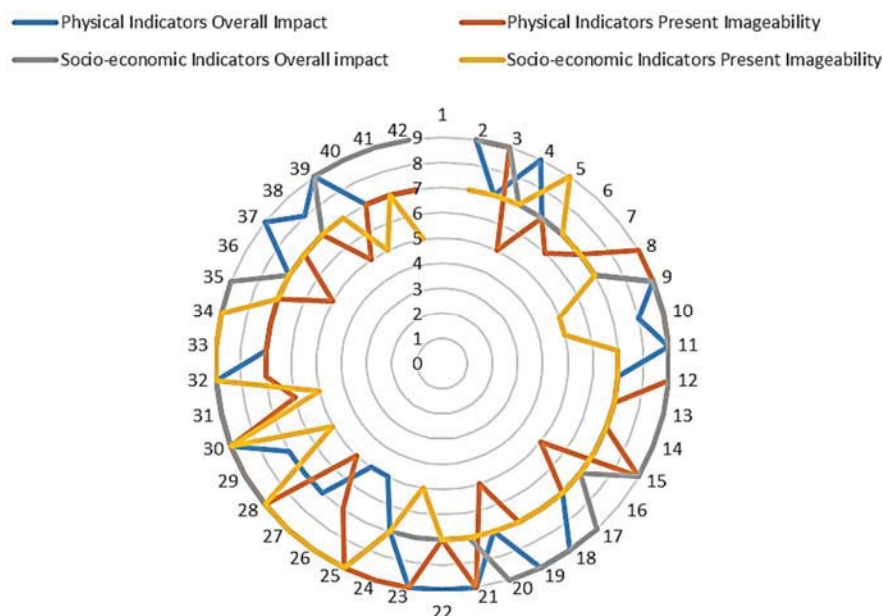


Fig. 17 Comparison between present Imageability and Overall impact of physical and socio-cultural indicators of Hatibagan area

It is, therefore, quite evident from the study that Physical indicators can create a good imageability of a space, but to create a livable, sustainable community system, socio-cultural indicators are equally important to bind the community together. Hence the paper suggests that Sustainable development goals (SDG) should be followed but needs to frame with contextual modification and adaption as per different urban contexts. Thus, in new emerging neighborhoods, aspects of socio-cultural elements are equally important to achieve the basic level of sustainability. Reciprocally, modern amenities can be transplanted to the older settlement areas to augment the imageability through improvement of physical indicators. Finally, the paper concludes by suggesting the necessity of a three-fold (economic, ecologic, socio-cultural) development to create a positive interaction between people and their places for a happy, healthy, sustainable community.

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