

RETHINKING COMMUNAL DEVELOPMENT THROUGH SUSTAINABLE KALEIDOSCOPE.

Sub-theme: Goal 11- Sustainable Cities and Communities

^aProf. Kalyani Amol Salvi

^a Professor, CTES College Of Architecture, Mumbai University, Chembur,
Mumbai, India.

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Abstract

Skyline is changing with the change of development control rules of 2034. Citizens are satisfied getting redeveloped projects free of FSI. Architects are accepting challenges to fulfill the proposed floor space index to its extent. It is developing countries and accommodating more and more population to a given inch of land parcel. Skyline is changing to pencil pencil-shaped slender silhouette. It gives citizens a feeling of development and rising in the sky. Like other developed countries New York, Singapore, and Bangkok where super slender towers are defining city development?

Zero carbon, air quality index, water pollution, noise pollution, mental health, psychological upbringing, breathing space, green spaces, heating islands, floods, scarcity of water, and ecosystem are words to include in sustainable city development to complete a kaleidoscope to live in the green city which shows sustainability.

These encroachment slender towers are missing breathing spaces, community spaces, garden spaces, artisan development, and public spaces. In Indian culture festivals and celebrations are human inhalation to live life. Spaces are not designated for community gatherings and celebrations. Services are not extended to make cities capable of natural calamities like heavy rains, earthquakes, and manmade disasters like fire, terrorist attacks, and now pandemics. We are fitting more and more people into available land parcels through new development by keeping them in square feet spaces without checking scenarios for a sustainable kaleidoscope. Cities need to grow with culture, heritage, and green city initiatives which may crawl outside their limits instead of growing vertically.

This research intends to include all the vocabulary of sustainable development to see an imaginary picture of a kaleidoscopic view.

Keywords

Sustainable development, public spaces, slender buildings, Human senses, kaleidoscope, Natural elements, roads.

1. Introduction

A kaleidoscope is an instrument that shows changes in color and shape when you turn it every time. Ekistics is a science explaining the human settlement in city areas. It has nature as one of the elements which is to be equally maintained as a part of development. Migrated/ displaced/ refuted people start their settlement in nature. Nature changes its seasons, skies, flora and fauna, bird enclosure and chattering, earth's strata, air and wind, light and shadow, temperature, and humidity in any fraction of time when you observe. Humans are observing continuous natural changes of nature's kaleidoscope through their eyes as a window. It is consistently changing. Humans evolved their psychology with this changing kaleidoscope of



nature. He has evolved with this journey of nature. All festivals and religions are based on this change of nature. Festivals are times when humans take a break to observe and pay gratitude to Mother Nature. This unseen evolution was part of any settlement. This kaleidoscopic change of nature has always been a part of human habitat. Any development rules shall take care of the most important part of natural destruction caused due to human intervention. Each floor space equally needs to be divided with the percentage of natural elements available on the land and the number of occupied humans. It should be developed and retained.

Case studies of newly developed city roads are taken, and their studies reveal the need for concrete sustainable measures to be taken while designing development control rules to foster the retrofitting.

2. Background Study

Updated rules of the city are changing its skyline. It is fulfilling the needs of the growing population by adding different residential schemes for their habitat. This is serving business and economic growth. The settlement of people was initially pulled to the areas where the availability of natural resources was. The developed stage of civilization started farming and hunting. Farming is primitive and necessary although in the 21st century, rules couldn't justify farmers improving their lifestyle. In India, since the British era, laws at the state legislative level and the central level couldn't justify farmers and landowners to improve their facilities and standard of living. Ill-literacy about the application of laws to get benefits is also one of the reasons. For development, the Land Acquisition Act tried to justify landowners in terms of money. This would have given growth to farming instead. There were many reasons to migrate people for earnings and to fulfill the basic needs of water, shelter, and food in city areas.

Many migrants have settled initially in city areas without paying a penny to occupy the land. Later to manage this migrant inflow and to run the city, government-sanctioned schemes for economically weaker sections, slum occupants, and low-income group classes to settle these migrants in the city. Their schemes, development rules, and town planning regulations are accommodating the population crowd. No effort could be seen to relocate these migrants to their native places. Development control and promotion regulations for any state fulfill all stakeholders to accommodate the demands of society. Based on demands land is encroaching, crawling, and suffocating.

Environmental laws are managing the effects of civilization. There are monitoring systems to check water, air, and noise pollution and precautions to control. Waste management, awareness, surveys, and different index data, workshops are actively conducted by different systems. These systems are in existence to care for precautionary interventions with the environment.

3. Communal Development as a part of a sustainable city

The new DCPR is based on the water system, sanitation, population, literacy ratio, working population, income distribution, and other surveys conducted till 2011. These surveys are the outcome of urban villages demanding more urbanization in the future. New DCPR offers better accommodation by offering physical infrastructure in the city areas. It is offering more reservations and demands for medical services, educational amenities, social amenities, and public facilities. Demanding more transport in terms of railways, metros, and subways. Attracting more villages to urban villages. Urban villages to urbanization. Ultimately to manage environmental impacts of the urbanization. There shall be more infrastructure management and additional FSI in villages and urban crawl to stop the suffocation of cities. It is to fulfill



housing floor space area demand in 2034. Instead, it is time to increase the demand for environmental preservation in the cities. More provisions to control inflow into the cities. More perks to offer at village level giving better quality life to them. It will sustain a natural Kaleidoscope at the village level.

The study of sustainable kaleidoscope will be inclusive of the development of human connection with nature. Human connection with nature is enhanced through the five senses. In village areas, humans are living in a home. People connect nature with the surroundings by trees, skies, horizon, flora, fauna, birds, and animals. These are keeping continuous lively changes happening around through what they see. The proportion of environmental changes with the square meter occupancy of humans is higher. People as a part of nature. In urban cities, it is missing and turning nature as a part into humans. Humans feel nature by opening a window by looking at a planted pot. Humans must go to public spaces to occupy with environment and see a sustainable kaleidoscope of nature in urban cities.

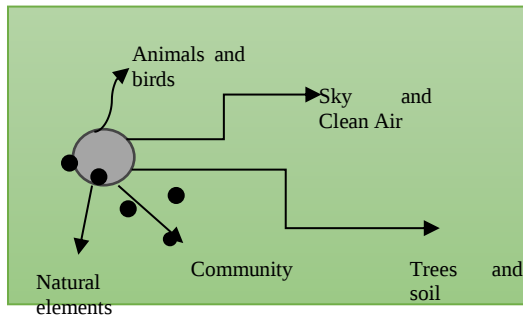


Illustration I – Human in Nature

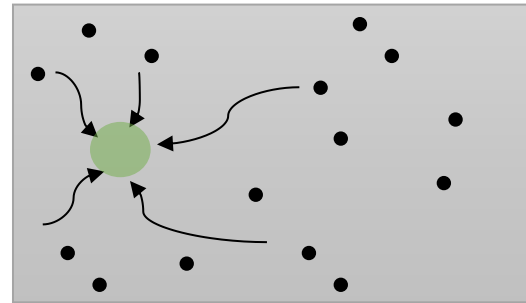


Illustration II – Nature surrounding Humans.

The above illustrations show the conceptual development idea of a sustainable kaleidoscope. Illustration 1 shows black dots representing humans. In villages, humans are effortlessly enjoying the live play of elements with natural elements through their senses. Community is always an extension of his family, a part of his family. Home is part of the huge environment outside to see a change in the natural environment. In villages and old cities, these five elements were part of a sustainable kaleidoscope. In urban villages and urban cities, illustration II shows the scenario. The green circle is an earth parcel allotted to the number of humans available in concrete. If they need to breathe fresh air, must walk towards open space. Public spaces and communities will be part of events and not a daily part of life. Natural elements, trees, landscape, and sky can be felt when they walk to the allotted land parcel. Animals and birds are very few and not part of the community. To see every day's sustainable kaleidoscope of natural elements, developed cities need to reserve more land parcels for the natural elements. More reservations, rules, and studies to preserve natural elements.

4. Case Studies

Case studies are chosen to compare roadways of developed cities to check the change of scenario. Roads of developed cities before and after show a clear image of degradation. There is the degradation of sustainability in terms of losing sustainable elements. The effects of losing elements are noted to work towards net zero design. Roads are considered as a display tube for noticing these elements. People in the cities are living in artificial enclosures where nature is seen through windows. The density of the population has been encroaching on the environment, laying off its elements. Promontory

steps toward the environment shall be taken to increase the density of natural elements in a sustainable Kaleidoscope. These changes are observed through road pipes of old and new areas in urban cities.

1.1 Senapati Bapat Road, Mumbai

This stretches from Lower Parel to Dadar TT circle connecting old Mumbai. The road was aligned with the Chawl system and old commercial buildings of G+4 height. New developmental rules changed the overall demand for urbanization. It is demanding more high rises which shows degradation of sustainability. 'High-rises on Senapati Bapat Marg chaos on the ground' is the headline in Hindustan Times by Megha Sood.¹ That stretches further to JJ flyover continuing with traffic and effects of extended TDR. Image 1 shows a flyover that continues further from Senapati Bapat road crossing huge population nurturing to concrete urbanization on both sides. The image shows the prior necessity of reservations for green spaces. Full concrete towers are rising along the roadside. It shows urban elements through the Kaleidoscope.

Image I: JJ Hospital flyover road	Image II: AQI in 2016	Image II: Pollution Rise in 2023
		
Reference: https://previews.agenfotostock.com/previewimage/medibigoff/46229d04a19c62bf6fcfca97bd6d9d4/esy-005390389.jpg	Reference: https://www.mid-day.com/mumbai/mumbai-news/article/mumbai-s-air-quality-persistently-moderate-aqi-at-128-23321238	Reference: https://www.mid-day.com/mumbai/mumbai-news/article/mumbai-s-air-quality-persistently-moderate-aqi-at-128-23321238

Image II shows a rise in air pollution levels started in 2016 with AQI levels mentioned. The construction sector and infrastructure sector to accommodate migrated working population in Mumbai. Decreasing in natural elements and increasing in man-made elements. Image III shows a concrete kaleidoscope of development. Effects are worsening in 2023 with smoggy air, imposing sustainable measures to citizens to make it livable. Loss of natural elements continues while imposing sustainable measures and rules.

¹<https://www.hindustantimes.com/mumbai-news/high-rises-on-senapati-bapat-marg-cause-chaos-on-the-ground/story-pa2ewfnLpxRycxbnD3HOiK.html>

1.2 Marin Drive, Mumbai

Image IV shows a Marine drive with a proportionate skyline to enjoy all citizens' change of natural elements. The proportionate scale of the landscape with concrete makes justification for nature and manmade intervention. Sky and sea dominate the drive line. It offered a sea view and sky showing its dominating span. While Image V shows a dominating skyline of concrete high-rises. Citizens are coming to see the sparkling skyline of huge buildings. These are first observed through the kaleidoscopic view of Marin Drive. The kaleidoscope shows the change of scenes with traffic and people surrounded by higher buildings.

Image IV: Marin Drive in 19's	Image V: Marin Drive in 20's
	
https://oldphotosbombay.blogspot.com/2010/05/marine-drive-bombay-1950s.html	https://www.alamy.com/view-of-queens-necklace-marine-drive-mumbai-india-asia-image246618895.html

1.3 Khodadad Circle, Mumbai

Image VI shows an old picture of Khodadad Circle in Mumbai. Open space was secured and sufficient to see a kaleidoscope of natural elements like the Sky, Landscape which is not superintended by man-made settlements. After city development with rules and regulations, priority was given to human settlements to fulfill housing requirements. No care is seen to stop the intervention of concrete. Human intervention is noticed in all directions and the Kaleidoscope shows changes in human activities. No change of natural play is noticeable in Image VII, today's development.

Image VI: Khodadad Circle (Old image)	Image VII: Khodadad Circle (New image)
	
https://www.alamy.com/stock-photo-top-angle-of-dadar-tt-circle-also-known-as-khodadad-circle-in-bombay-53126924.html	https://www.alamy.com/view-of-queens-necklace-marine-drive-mumbai-india-asia-image246618895.html

1.4 Asaf Ali Road – transitional space between Old and New Delhi

Another Metro city is observed as Delhi, where each day sustainability is diminishing out of the Kaleidoscope. 3rd August 1935, when Delhi Improvement Trust came into existence. This was to accommodate the population due to the shifting of the British India Capitol from Calcutta to Delhi. An old map of Asaf Ali Road and developed layers of today's Asaf Ali Road are shown below comparative image, after the implication and formation of the Delhi Improvement Trust, Delhi Development Authority, Delhi master plan, Delhi Ajmeri gate scheme, and different policies.

Comparative Chart: I, Change of Kaleidoscope through road.

Figure I – Asaf Ali Road, Delhi past photo early decade	Figure II – Asaf Ali Road, Delhi recent Google Earth
	
https://www.coroflot.com/nooralam90/MArch-Sem-I-Studio-2014-Perception-and-Appreciation-Urban-Precinct-Asaf-Ali-Road-Old-Delhi	Google earth 2D image taken on 28 th October 2023
Old thick walls of old buildings along the roadside	Commercialized structure with more carbon footprint

Built-up spaces less/ more open spaces	More built-up space / reserved open spaces
Facilities like water, and sanitation were not sufficient	Facilities are encroaching on landfills to fulfill requirements.
Road safety is not a concern	Road safety is a worry
Road sections were pedestrian-friendly	Road sections are not to be walked as parking on both sides
Air quality is good, less pollution	Poor air quality with more pollution
Green plantation on the roadside	No space for a plantation, no green
Rainwater runoff was less, so coolant ground	Rainwater runoff is more, so heat islands on the ground
Old buildings with ground structures, representing the cultural heritage of the settlement	Old buildings are occupied with more services without retrofitting and sustainable measures

A new master plan of Delhi. 2021 is not addressing issues faced along this road to reduce the urbanization effect and carbon emissions. The improved road layout shall focus on accommodating more green spaces and retrofitting the old structure. Master plan Delhi 2021: Chapter 5: Trade and Commerce, Asaf Ali Road comes under the 5.5 section for non-hierarchical commercial centers for development under specific schemes. Population and encroachment are beyond its limit, emitting a lot of carbon due to traffic congestion. This land to stop more human intervention and reservations to be given for tree plantation instead of parking lots, parks, and public facilities for better trade and commerce. Development is not to fulfill the demands of urbanization but to accommodate indigenous nature within.

5. Kaleidoscope of sustainability

Sustainability is pure if natural and artificial materials are safe for human beings and the environment. People are comfortably connected to nature. Five human senses can feel nature in different colors and modes. The vision, hearing, touch, smell, and taste shall be changing all the time with the device of sustainability kaleidoscope to preserve the environment. Natural light shall be defined to get into the residential complex where humans can see the continuous play of light and shadow. It was the time when courtyards filtered light as per the sun's path direction. In cities, people barely listen to birds chirping, rather they are very much used to honking and endless movement of vehicles. No sunlight touches human skin, and no natural air plays a pure melody through breathing. Smelling flora fauna is a vocational pleasure. The earthy smell of each season is now a miracle to experience. Tasting pure food is called organic food. It was the time when humans used to taste water and fruits without cost.

Below is a contribution to witnessing the loss of human senses. Residential units, housing development, open plots, different types of buildings, and overall zoning shall be given more reservations to natural elements. These elements



enhance human senses, so sustainability is measured by considering parameters of touch, smell, sight, hearing, and taste. These will be more connected to nature. Kaleidoscope to fill with natural elements instead of manmade elements. More space, and priority and preference to be given which is losing its existence. The attempt has been documented in the chart by collecting experiences of one generation. A generation who has observed change in natural images with urban settlements overruling nature.

Kaleidoscopic chart II to sustain environment at micro level planning of residential development –

Focus points	Applicable area	percentage	application	Rating System
Vision parameter focusing sky outside	Windows, openings, terraces, balcony	Min. 10 to 15 % of built-up area	Visibility to sky	Areas > than 15% - Platinum Areas = 11% to 15% - Gold Areas < 10% = Silver Areas below 10% are not permissible
Hearing parameter focusing nearer public terrace for 10 no. of flats / for built up more than 5000 sq. feet	Terrace garden for plantation to invite birds with specific local plantation. Plantation to control the noise level of transit.	A minimum of 10% of total built-up shall be allowed free of FSI* for plantation to control noise levels	Terraces/ podiums/ balconies/ hanging gardens/ landing spaces at different levels	Areas > 10 % - Gold Areas = 10 % - Silver Areas below 10% are not permissible.
Touch parameter of natural air quality monitoring to be done with the installed system to check air sample for each cubic meter area	Each cubic area with installation of a system measuring air quality.	Per 500 cubic meter area Each plot to monitor and control accessible road AQI* for building permission.	At each floor level / each plot / each road-facing project	AQI – 0 to 50 = Platinum AQI – 51 to 100 = Gold AQI – 101 to 200 = Silver AQI < 200 = not permissible
Smell parameter shall be there to ban entry of foul gases, and bad and stinky smells from the building. To raise good aroma for	Installation of a Smell Shoot in each building to minimize foul smell and unpleasant foul gases.	Prevention of dampness. More cleanliness and a better waste management system. Each 500 sq. mt. area	At each floor level	Installation and maintenance of flowering hangers - on four sides of the elevation – Platinum

better social communications and minimizing depression levels.		with 10 local flowering pots to enhance smell and psychology.		Installation and maintenance of flowering hangers on three sides of the elevation – Gold Installation and maintenance of flowering hangers on two sides of the elevation – Silver No installation on either one side of the elevation is not permissible
Taste parameters shall be treated as a part of ground coverage where any of the ten fruit tree types retain soil.	Ground cover/compound wall length / adjacent roadside land Municipal areas to be awarded with permission.	One tree per ten person occupants of the building	Ground level only	> 10 fruit tree variety = platinum = 10 fruit tree varieties - Gold < 10 fruit tree variety = silver Not permissible below 5 tree variety types

*FSI – Floor space index, * AQI – Air Quality Index

These five features shall be implemented at each micro level of plot development. Apart from this any project is retrofitting old buildings to preserve the history and culture of areas, there will be monetary benefits to be offered in the income tax. Rules and regulations to promote the development of culture and local landscape. This Kaleidoscope will show citizens with healthy minds and bodies.

6. Conclusions

Sustainable measures are applied to the micro-unit of the residential plot. These are comprehensive to adopt but stringent in getting passive effect on citizens.

List of sustainable measures to adopt for better livelihood.

1. Measuring sustainable measures by applying psychological parameters to improve the mental and physical health of citizens from micro level to macro level.
2. Development of DCPR shall include psychological upgradation as well by working on psychological reports of citizens from the micro level to the macro level of zoning.



3. Draft a development plan based on the AQI level of city zones to decide on strictly retrofitting zones instead of development zones.
4. Transit draft plan to consider future AQI level and visual upgradation of greenery to sustain flora and fauna.
5. Draft a plan based on the CO2 emission graph while working on future development to control CO2 emission.
6. Sustainable rating shall not be based on corrective measures, but it shall be treated as a scale to upgrade the environment by adding natural elements.
7. More parameters like earthquake zones, earth strata levels, and zones based on soil-bearing capacity are to be considered while denoting development zones.
8. The micro level can be further studied based on educational rate, sex rate, employment rate, and crime rate to treat sustainable elements at different intensities.

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