Sustainable Urban Development: Bioregionalistic Vision for Small Towns

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Abstract

Cities and towns are the social constructs in regional settings. They physically manifest and exist as power centres through various layers of culture, economy, politics, and religion. There was a symbiotic relationship between the 'setting' and the 'construct' in the past. With time and advent of technology, haphazard developments led to degradation of ecological systems and have become a confronted affair. Global warming, its adverse effects and the constant references to the words 'sustainability' and 'resilience' pose questions on the existing planning models. Small towns experiencing a tremendous pressure of urbanisation and rich in natural resources, coherence and identity are fast changing. An indispensable change in the planning models is necessary to mitigate this existential crisis and condition the emerging urbanism in small towns sustainably. This paper unearths the role and possibilities of bioregional planning as a sustainable urban development paradigm and suggests few indicative parameters for envisioning bioregionalism in small towns.

1. Introduction

The region in its geographical domain coexists with the unique natural elements and is continuously evolving and shaping the cultural landscape within it, irrespective of its scale from local to global (Vidal de La Blache, 1926, Passi, 1991; Keating, 2001; MacLeod & Jones, 2001; Murphy, 1991). The relationship between the natural regional features sustaining life, the physical/built features ensuring health and safety and the cultural features propagating tradition were strong, cohesive, and interdependent in ancient settlements. "A region becomes established when it is identified in social practices and regional consciousness, both inside and outside the region – it has an 'identity" (Paasi, 1991). We lost the classic concept of the region as a sustainable setting and identity with the dawn of industrialization, new technological advancements in planning, transportation, materials, and networking. The studies on the world's population projection trends inform that 68 percent of the total global population will live in urban areas by 2050 compared to 54 percent in 2016 (data retrieved from UN World Urbanization prospects). These overwhelming trends of urbanization, globalization, consumerism, and networking have led to a condition which totally cuts off humans from the rooted ground. The focus is on global values, which resulted in stereotype projects and few major accepted trends in all fields. The urban pattern spreads out haphazardly without respecting the natural systems and cultural landscape pertaining to the region. These "natural processes are the foundation of every region's sustainability and are essential to all life and human settlements" (Daniel, 2007).

"By 2030, the world is projected to have 43 megacities with more than 10 million inhabitants, most of them in developing regions" (UN World Urbanization Prospects, 2018). This expected development will mostly happen in small towns; "they are towns where ordinary residents experience the vagaries of the global economy and the impacts of global climate changes. They are places that often play a pivotal role within regional economies, that lend character and distinctiveness to their regional landscapes, and that collectively account for a significant fraction of population in many regions" (Knox & Mayer, 2009). In view of the aspirations of small towns and the fast pace of urbanization; it is right to intervene and condition the emerging urbanity sensibly respecting the various layers of plurality that exist in an urban environment. This will make our developing towns more livable and add to the quality of life. What is needed is not a curtailment of urban space planning and design because we cannot afford to do it by means adopted in the past, but recognition of natural factors as determinants of urban land use and reorientation of our planning and design policies towards solutions based on management policies which harness the economic forces of nature (Laurie, 1979). Newer development perspectives should be adopted for integrated growth between urban, nature and cultural landscape. This should consider the carrying capacity, land suitability, and feasibility of functions introduced in a region. The urbanity of a region should be molded locally with a holistic and sustainable urban development paradigm as portrayed by the philosophy of bioregionalism, eco urbanism, eco polis, biophilia etc. "One another approach gaining increasing attention in this context is ecosystem-based adaptation (EbA), explicitly bringing ecological principles and ecosystem conservation together with climate change adaptation; it may be linked to community-based adaptation (CBA), which may be a fruitful way forward in urban contexts" (Simon, 2016). "Transforming our world: the 2030 agenda for sustainable development" (coined by UN, Department of Economic and Social Affairs) reiterates the role of ecology in accomplishing the sustainable development goals and the "SDG, Goal 11: Make cities and human settlements inclusive, safe, resilient and sustainable" (coined by UN, Department of Economic and Social Affairs). "An environmentally led approach suggested a return to a more symbiotic relationship between built culture and natural systems, a return with far-reaching spatial implications" (Hagan, 2015).

In this view, "Bioregionalism is a new process of thinking and is one such option. It is a way of making a new social construct through territories with different entrances, where we will have to work with concepts like consciousness of place and global archaeology and formulate new proposals and test them on the ground" (Prost, 2017). The paper tries to establish bioregional planning, an inclusive doctrine which integrates ecology and social constructs to build up a sustainable development framework for small towns.

1.1. Research questions and Objectives

R1. What are the common threads/relations between these philosophies/theories - sustainable urban development, bioregionalism and small town urbanism?

Objective 1: Investigating each theory/philosophy through a critical analysis of literature available and deciphering common underlying principles.

R2. Can bioregionalism be an alternate development paradigm for achieving sustainable urban development in small towns?

Objective 2: Detailing out the possibilities of bioregional planning by further analysing based on common underlying principles.

R3. What are those few indicative parameters to be looked in to mould a bioregionalistic vision for small towns?

Objective 3: Summarising the study by arriving at indicative parameters for designing small towns.

2. Methodology

An extensive literature review on these three theories (sustainable urban development, bioregionalism and small town urbanism) is used as a methodological tool to analyse critically and correlate the common pronicples among them. This will help to establish that all three are interelated and work together for fostering sustainable habitats. Further, the possibility of bioregional planning is explored based on these common principles for suggesting indicative parameters for envisioning bioregionalism in designing
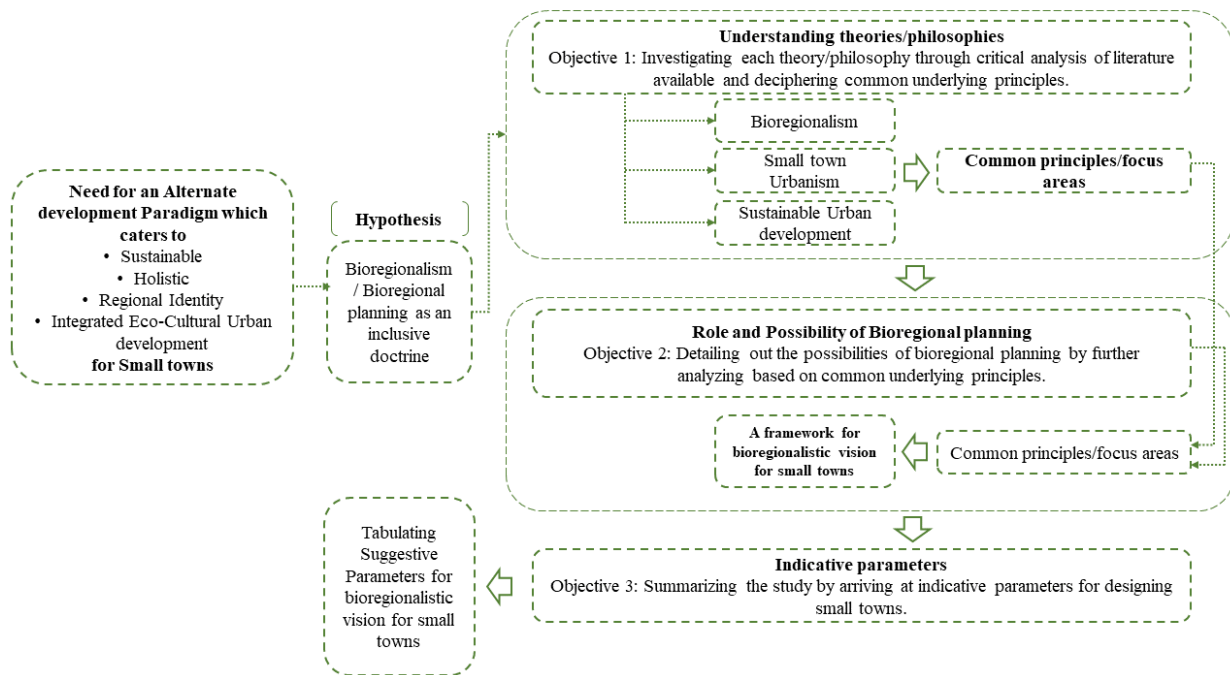
sustainable small towns. Figure 1 shows the methodology of the paper.

Methodology. Source:Author.

3. Literature Review: Core concepts of theories/philosophies

The following section will look at each theory individually to decipher its core concepts, values, and attributes.

3.1. Bioregionalism as an 'eco-cultural' centric theory

"Bioregionalism is a body of thought and related practice that has evolved in response to the challenge of reconnecting socially just human cultures in a sustainable manner to the region-scale ecosystems in which they are irrevocably embedded" (Aberly, 2005). It originated as a social activist campaign in North America in the early 1970s. Peter Berg's and Gary Snyder's writings in the 1960s rooted the initial concept of bioregionalism and they strongly believed to take cues from the traditional wisdom of our ancestors and identify ecosystem as a place for a successful life ahead. He emphasizes the importance of a healthy and just population with individual and cultural identities, marked by natural boundaries rather than political administrative boundaries (Aberly, 2005). *"Bioregionalism is a technical process of identifying biogeographically interpreted culture areas called bioregions" (Van Newkirk, 1975). "Within these territories, resident human populations would restore plant and animal diversity, aid in the conservation and restoration of wild eco-systems, and discover regional models for new and relatively non-arbitrary scales of human activity in relation to the biological realities of the natural landscape" (Aberly, 2005).*

"Bioregions are resource-rich regions such as a common watershed, biota, landform, and biogeography (Snyder 1990, 1995; McTaggart 1993; Robertson 1996; Foster 1997; House 1999; McGinnis 1999) which forms a life place and gives a unique identity and value to a particular region. Identifying such bioregions will help in creating sustainable cultural built forms which can strengthen the natural landscape and add to coexistence and resilience. The final boundaries of a bioregion are best described by the people who have lived within it, through human recognition of the realities of Living-in-place" (Berg & Dasmann 1977). In their writings, they emphasized the importance of a decentralised, bottom up approach of governance and identification of boundaries based on culture and ecology; questioning the arbitrary political and administrative boundaries of governance. It rejects the phenomenons of industrial, consumerist and globalised stereotypes and desires to flourish a localised, resilient and cyclic economy in a symbiotic identifiable cultural landscape. Kirkpatrick Sale proposed "bioregionalism as an alternate development paradigm by based upon principles including":

Division of the earth into nested scales of natural regions.

Development of localized and self-sufficient economies.

Adoption of a decentralized structure of governance that promotes autonomy, subsidiarity, and diversity.

Integration of urban, rural and wild environments (Sale, 1985).

Bioregional planning addresses the conflicts existing between civilisation and nature; issues of development and the need for conservation; adapting to vernacular and experimenting the new; bring revolutionary change and achieving stability; balancing the economy, market forces and protecting the ecology. So, it is an eco-cultural and place centric theory which advocates sustainable habitats for all life forms on earth. Place, ecology and governance become the foundational base for bioregionalistic vision. Bioregionalism can be envisaged as a continuing and evolving process and requires adaptation with its context at every point of time for fostering sustainable future. Figure 2 shows the summary of the theoretical understanding of bioregionalism.
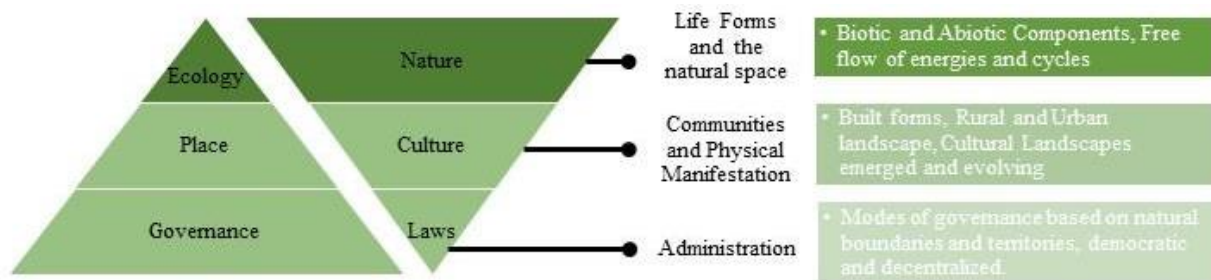

Figure 2 Diagrammatic representation of the summary of the theory of bioregionalism. Source:Author.

3.2. Other Supportive regionalist theories

The former works of Frederick Jackson Turner, Howard Odum, Lewis Mumford and Patrick Geddes contributed substantially to regionalism. Geddes' theory of *'Place, work and folks'* and Gedessian Valley section reinforces the quest for the sustainable development at the regional level. "Geddes called for the 'systematic planning of entire regions', and insisted on the importance of 'survey before plan', a survey of local and regional conditions - social, historical and physical - before proposing any interventions. This was important not only in geographical terms, but in temporal ones: the past informs the present informs strategies for the future - or should" (Hagan, 2015). "This integration of settlements and modes of production and consumption into the context and conditions of their natural region, roughly delineated by the local watershed, later formed the conceptual basis of bioregionalism" (W. Stephen, 2004). Another important proponent of ecologically conscious planning and who devised a method of mapping for the same was Ian McHarg. "Ecological Planning is that approach whereby a region is understood as a biophysical and social process comprehensible through the operation of laws and time. This can be reinterpreted as having explicit opportunities and constraints for any particular human use. A survey will reveal the most fit locations and processes" (McHarg, 1997). Lewis Mumford, a disciple of Geddes, focussed on "ecological regionalism that combines planning, design and a biocentric understanding of natural processes within a politically grounded and civic-minded environmentalism" (Critchley, 2004). Thus, many theories have developed over time, which reinforce the need for an eco-cultural urban development.

3.3. Small towns, small town urbanism and the need for an alternate development paradigm

"Small towns can be extraordinary places, towns that have their own identity and a sociable and enjoyable way of life for their inhabitants" (Knox & Mayer, 2009). These towns could be resource-rich regions and have a unique cultural landscape. They can be places of environment and pedestrian friendly, encouraging and promoting local crafts, cuisine, traditional wisdom and architecture. "The small town is a context-dependent concept, and should be defined by a variety of indicators comprising material forms, socioeconomic functions, types of administration, and so forth" specific to region and geographic location setting. (Bell & Jayne, 2009). Based on population, small towns are urban agglomerations, having 20000 to 500000 population (UN World Urbanisation Prospects, 2018). Small town urbanism is the emerging condition of urbanity that envisions for a fair, affordable, incremental, grassroot level participatory sustainable urban development. It refers to the way of life, ever developing through migration, integration to built fabric, expressing identity as materiality and society through tangible and intangible elements. The heterogeneous

morphology of small towns with the rural-urban dichotomy adds to the distinctiveness of place. "Different kinds of small towns in different settings have different needs, challenges and opportunities. Their well being is often critical not only to their inhabitants but also to the economic and social cohesion of metropolitan regions and deep rural areas. They can be havens in a fast world, places whose inhabitants think globally and act locally. Yet globalisation undermines the distinctiveness of many smaller urban places and threatens vitality and culture" (Knox & Mayer, 2009). There are chances of small towns getting engulfed within the urbanised areas because of urban sprawl and completely transforming its cultural landscape. They also face the adverse effects of global warming, being less resilient. "The social and cultural forces, associated with globalization, have overwritten local social and cultural practices and globalization has generated a world of restless landscapes, in which the more places change the more they seem to look alike and the less they are able to retain a distinctive sense of place" (Ritzer 2007).

Thus, small towns give immense opportunities to develop as centres of sustainable habitats, respecting the characteristics and uniqueness of the region. It is at this venture that the paper tries to explain bioregional planning as an alternative development paradigm for designing these towns. The paradigm should have context based parameters to build sustainable strategies for environment, social and economic aspects of the town. "Therefore, sustainability in small cities has to ensure that this reformulation is not laborious and does not create imbalances, and that identity of people and places is the main concept of any project to conserve the small cities quality of life" (Ricci, 2007). Small towns could be a model of decentralised self sustainable habitats dispersed amidst lush agricultural hinterlands as polarised growth centres keeping a high-speed connectivity to the urbanised neighbouring city. The carrying capacity of the region and the resources that offer a good quality of life can restrain the growth and extent of small towns. It can also look at nature based solutions for resilience and involve local self governments and participatory planning at grass root level for a bottom up planning. So a guiding development paradigm based on the indicative parameters is a necessity to condition urbanism.

Social

- History, Heritage, Culture and traditional wisdom
- Manmade boundaries and territories
- Communities and ethnic groupings
- Indigenous identity and sense of place
- Inclusivity and Equity in societal order
- Local arts and crafts, cuisines and other cultural parameters
- Physical built form, morphology and architecture
- Public spaces, Work places
- Modes of transport and mobility
- Scale and Enclosure
- Associational Values, Memory and Cognition
- Demographics and density
- Migration
- Shape and size of the town
- Resilience measures and Natural Hazards
- Religious beliefs and tolerances
- Politics and Laws
- Modes of Governance
- Land economics and Land value
- Trends of urbanization and growth pattern.

Environment

- Physiography of the region – geology, hydrology an watersheds etc.
- Natural Boundaries
- Green, blue and brown cover
- Land suitability
- Carrying Capacity
- Values, Attributes and Processes specific to region
- Resource base and natural assets

Economic

- Sources of Income
- Growth opportunities
- Resource based or indigenous craft based economy
- Sectors of economy – commercial, service, dependent economy, industries
- Funds and Partnerships
- Branding for economy – Tourism etc
- Occupation of people
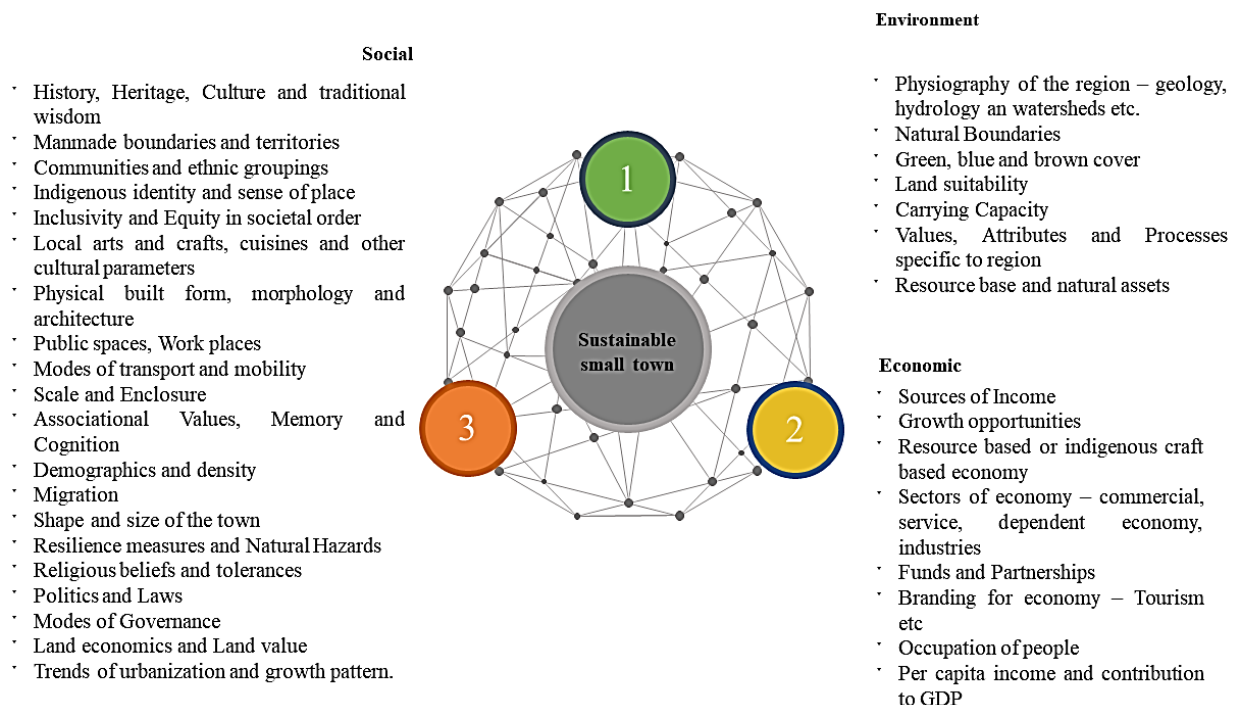- Per capita income and contribution to GDP

Figure 3 shows the indicative parameters for the assessment of small town urbanism based on the three major aspects of sustainable urban development. Indicative parameters for the assessment of small town urbanism. Source:Author

3.4. Sustainable development bioregionalism and small town urbanism

"The development of a vision for a sustainable city means setting up goals that depend on the needs of the community, the environmental, social and economic values. It is not a defined static state, but a process that changes with the changes in the society, the institutions and culture of living" (Sofeska, 2016). "The small town sustainable development is a combination of economic development, social and cultural progress and environmental protection with full respect for all human rights and fundamental freedoms, including the right to development, while achieving

stability and peace throughout the world" (UN-Habitat, United Nations Human Settlements Programme, 2019). Bioregionalism and small town urbanism summarises on ecological bonding; indigenous cultural coherence; democratic decentralised governance; and region reliant and dependent economy. Both these concepts envisions sustainable development. "Furthermore, in the sustainable development philosophy, the notion of *Think Global, act local* tends to favour local actions and thus small localities are places where such experimentations can take place" (Mainet, 2015). "A true shift toward sustainability ultimately will require what I call green regions: spatial units that mix urban settlements with surrounding hinterlands and ecosystems and that together yield compact, sustainable cities and settlement patterns" (Beatley, 2011).

3.5. Common principles and focus areas deciphered out of literature review

From the critical analysis of the theories/philosophies, it could be concluded that bioregional planning of small towns can condition the small-town urbanism envisioning sustainable urban development. Figure 2.3 shows the grouping of the major keywords associated with each theory governed by four major focus areas – Place, Ecology, Governance and Economy. Table 1 shows the comprehensive relational framework of the theories based on Place, ecology, governance and economy as the common principles/focus areas.
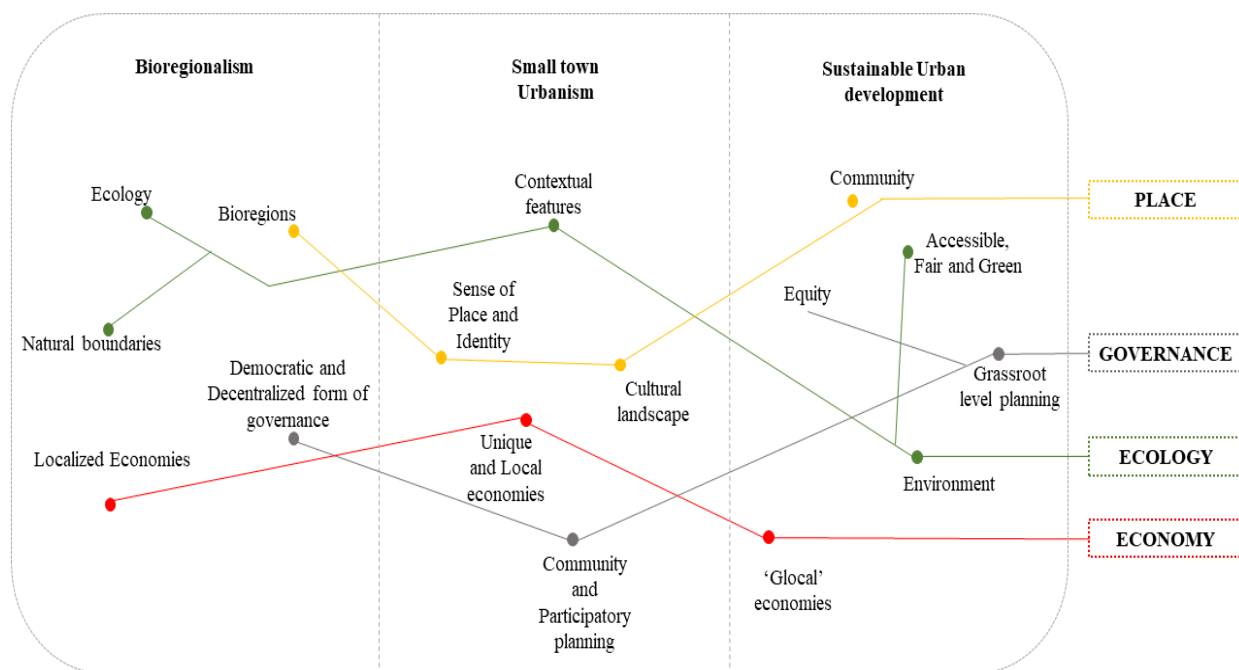

Figure 4 Keywords narrowed down to four major focus areas. Source:Author

Table 1. Comprehensive relational framework of the theories. Source:Author.

	Bioregionalism	Small town Urbanism	Sustainable Urban development
ECOLOGY	Eco-cultural centric	Place-people centric	Ecology, Social and Economic sustainability.
	Mega-Meso-Micro scale Bioregion-Ecoregion-Watershed	Micro scale Town - Architecture	Mega-Meso-Micro scale Regional-Metropolitan-Town-Architecture
	Natural features as shared commons	Unique features of the town as shared commons	Common and fair stake of resources

Table 1 Continued

PLACE	Decentralized growth centres as urban hubs amidst natural landscape depending on the carrying capacity of the bioregion.	Compact city development, concentrated growth poles connected by high-speed networks to other small towns or megacities in the region, polycentric development.	Holistic spatial development of balanced growth in rural and urban areas and reducing concentration at centres and distributing in satellite parts.
	Natural features, boundaries as extend and assets, symbiotic relationship with cultural landscape for character and identity.	Unique features of the town (ecology, culture, tradition, heritage, local arts, crafts, economy) and its natural assets as a base to establish a sense of place and identity.	Focus on cultural landscape and local identity for the sustenance of the region.
GOVERNANCE	Decentralized governance pattern vested on local self governments informed by people.	Participatory planning, community level stewardships and local governing bodies.	Grassroot level and bottom top planning approach.
ECONOMY	Development of localized and self-sufficient economies	Localised Economies for surviving indigenous communities	Global based local economies for sustaining the region

4. Exploring the possibilities of Bioregional Planning in small towns

The place dynamics and the aspirations of small towns urge for a framework to support a guided growth pattern in order to curtail the urban transformation likely to happen in the future. The core principle to base upon will be a shift in the approach of planning to a 'Place and People centric sustainable habitat' approach. Therefore, the setting and the communities are always in the forefront and all the allied layers of physical, economy, politics etc act as supporting background systems to achieve sustainability. This section of the paper tries to analyse and detail out the possibilities of bioregional planning in small towns based on common underlying principles/focus areas identified. Each subsection will discuss the planning and design strategies for envisioning bioregionalism in small town development.

4.1. Ecology

Bioregionalism is grounded in environmental ethics as nature forms the base for sustenance of life. The first strategy would be to reify the ecological layer as the determinant for the growth of town to mold the cultural landscape and providing food, water, energy, shelter, and resilience. It is extremely important to recognize the function of the environment, its attributes, and resources as shared commons. Bioregionalism urges making resources as shared commons on a fair base. The concept of boundaries and territorial demarcation advocated by bioregional planning relies more on natural boundaries like watersheds rather than administrative or political boundaries. Watershed planning from a regional perspective would be enabled by the second strategy. The prime step involved in creating a bioregional plan is to do mapping of the existing resources and patterns (shared commons) in the region. (Wahl, 2017). So, mapping of the covers – 'blue, green and brown' of the region becomes the third strategy to comprehend unique bioregional patterns and resource base of the region for formulating action plans and councils for protecting watersheds. "Once identified, these ecological patterns and spatial resources are logical form determinants – they suggest the spatial form to guide plans toward sustainability" (Silbernagel, 2005). "Bioregionalists view the local watershed as an appropriate scale for decentralized, community-based environmental learning and self-governance. They visualize federations of watershed communities united at the level of the larger region" (Nelson & Weschler, 2001). The watershed-based planning approach is fairer encompassing bottom top approach, inclusive, participatory,

holistic regional development, preserving/conserving the sensitive areas and fosters sustainability (Foster,1985; Slocombe, 1993; Johnson et al., 1998).

"An environmentally sensitive approach to land use planning and urban development is key to successful sustainability efforts in small towns" (Knox & Mayer, 2009). This must be conceived and implemented at two levels – spatially and regulatory. Reducing ecological footprint and encouraging compact developments will help to contain spatial growth within the carrying capacity of the region. At a macro-level, several small towns can form polycentric dispersed growth centres with high-speed transit systems at a regional level for networking and movement. Within the small town, a compact city ensuring adequate natural open spaces as lungs for leisure and resilience. Decentralized approaches in terms of physical development and governance are yet another trait of bioregionalism; small town urbanism can also work at its best adopting a decentralized model. Small towns could have an adaptive cyclic model based on carrying capacity and apportioning of resource base for current and future needs. "The adaptive cycle model suggests a tendency (rather than a deterministic relationship) for systems to pass through phases of growth (seizing opportunity), conservation (accumulation and specialism), release or creative destruction (collapse and uncertainty) and reorganization (innovation and restructuring)" (Powe, 2020).

In a nutshell, the focus of bioregional planning for small towns should be on an eco-place centric approach concentrating on 'place', 'setting', 'context', 'ecology' and 'environment'. The bioregional patterns need to be understood from a regional scale and not in piecemeal project basis. The scales can vary from macro-meso-micro to efficient knowledge of the unique systems referring to the region/small town. "To bring about real change, environmental sustainability efforts must be integrated into the social and economic fabric of small towns" (Knox & Mayer, 2009).

4.2. Place

"Thayer (2003) uses the term life-place synonymously with bioregion. The study of life-place connects natural place, sacred place, identity, local arts, practices, food, and wisdom into a holistic knowledge set. The bioregion, a unique area defined by natural boundaries and supporting distinct living communities, is emerging as a meaningful geographic framework for understanding place and designing long-term sustainable communities. Bioregional patterns are regionally unique and fit with geomorphic, climatic, biotic, and cultural influences of a place" (Silbernagel, 2005). Thus, the social components of a region shape the cultural landscape and will be physically manifesting as built forms or as tangible, and intangible elements. Theory of bioregionalism tries to unearth these elements to allow for future developments sensibly and gives identity to the small town. The first strategy is to identify these elements which form the spatial metaphors for placemaking and place marking in small towns. Further, they are enhanced by natural cues of the region such as green belts, agricultural fields, and hinterlands, green and blue corridors in determining the growth and extend of the small town, formulating development regulation guidelines and techniques of land development including setback regulations, minimum lot sizes, zoning, and controlled land uses. Sustainable methods of construction with indigenous resources and materials become the second strategy for bioregionalistic vision and can also help in lowering the carbon footprint. The combined effort of vernacular wisdom and experimental efforts in modern construction can reduce embodied energy and bringing in new vocabulary and identity to the small town. Bioregionalism theory advocates the natural energy cycles which are close ended in a loop. Circularity in resource consumption and 'cradle to cradle' practices in a small town make it a sustainable entity. Third, well derived policies supporting sustainable regional growth patterns add to the aspirations of small-town development. "Policies for small towns need to build on the assumptions about the relations between people and place, activities, locational dimensions, resonance with material experiences and cultural imageries" (Healey, 2007).

The place making and landscaping of small towns should be conversant through bioregional patterns and should be appropriate to give an inclusive character and dynamism. The space within the town becomes compact settings to enhance social interaction and place identity (Powe et al., 2017; Daniel, 1999; Tolbert et al., 2002; Hanna et al. 2009). The sense of place, the associational value of people, and place attachment nurtures through bioregional planning. Apart from this, mixed-use developments, walkable neighborhoods and Transit Oriented developments, sustainable modes of transport including cycling and public transport, passive solar designs, greening, inclusive and universal design, waste management and sustainable resource production and consumption for food, water, energy, promoting

local arts and crafts are all ways of incorporating bioregional vision at the place level. Small towns that pursue sustainable measures augment community development, place identity, and mobilize resources. (Friedman, 2014; Dale et al., 2008).

In short, a symbiotic relationship between culture and ecology can promote a reduced ecological footprint. The social construct of small town depends on the history and legacy associated with it. Bioregionalism offers a platform for analyzing these *life forms* and incorporating them into future developments. Undoubtedly, the quality of living and the livability index will be thoroughly enhanced with this alternate development paradigm.

4.3. Governance

"Bioregionalism is a daringly inclusive doctrine of fundamental social change that evolves best at the level of decentralized practice. Although none of the tenets of bioregionalism are etched in stone, these tenets stake claim to a dynamic, grass-roots approach to conceptualizing and achieving transformative social change" (Aberly, 2005). Environmentally sensitive land use planning regulations as part of the governance and laws should be implemented for mainstreaming bioregionalistic vision. The power of taking decisions shall be vested upon the local governing bodies for more inclusive, fair and informed planning. The regional resources and patterns can be best identified and conserved by the residents or communities of the region or a town. Bioregionalistic vision for small towns advocates a democratic mode of governance in its strictest sense. Some common decentralized approaches to governance which can be adopted includes collaborative environmental planning (Wondolleck and Yaffee, 2000), community based environmental management (Agrawal and Gibson, 1999), institutionalized participation (Ribot, 2002), and an enhanced role for civil society (Friedmann, 1998). The local level decision making strengthens communities and the bonding with nature; helps in efficient implementation of policies; monitoring the resources and for better resilience.

4.4. Economic

According to urban theorist Jane Jacobs (1961) "cities are settlements that generate economic growth from their own local economy". The word 'local' needs to be stressed here as it suggests rootedness and living in place, core concepts of bioregionalism and small-town urbanism. Economic sustainability is yet another dimension to achieve an integrated urban development perspective. "The goal of economic activity is to achieve the highest possible level of cooperative self-reliance in bioregionalism" (Aberly, 2005). Projecting and paving a way for economies of localization forms a major strategy. Localized economies based on the identified assets of the small towns, along with revitalization efforts for declining sectors to bring in newer job perspectives and products with experiments and exploration through networking and globalization, can reinforce the place economics. Small town urbanism, since it is based on local character, place identity; the urban form and morphology can contribute to economic sustainability through responsible tourism initiatives. As the town itself becomes an artefact for enjoyment, responsible tourism initiatives will have fewer negative effects on the socio-cultural and environmental context and generate economic benefits for local people and is participatory, interdependent in all tourism related activities. "Providing desirable places to live in and visit, where a combination of heritage buildings and desirable locations near natural amenities, encourages business to set up to supply the emerging local economy and/or niche manufacturing which may have a wider market" (Powe & Hart, 2017). Local crafts, arts, heritage, food, indigenous resources, architecture etc. becomes central for achieving a unique economic model prevailing to the region/town. These can become self-expressive for maintaining the cultural landscape and to bring in conviviality and hospitality. "An asset-based approach developed by John Kretzmann and John McKnight in the early 1990s helped sell their Unique selling points (USP's) in a global world and found a niche. The homogenization that results from globalization may even allow small town economies to be distinct and to draw economic success from being different" (Knox & Mayer, 2009).

So, these localized economies become as much as part of the global economy and contribute to the GDP of the nation. This further strengthens the spatial dynamics and interdependence of a 'Mega city and a neighboring small town' or 'urban and rural' or 'city and the suburb' relationship. With small towns, they can become primary centres of manufacturing activity too, providing employment opportunities and parasitic small business growth. The proximity of living and working places advantages the economic setups combined with the space/time compression of a globalized world. Being indigenous and rooted to place help in building 'Eco-economics' for the community. *"Eco-*

economics means bioregionally-scaled economies designed based on ecological principles. It means running an economy the way nature runs a forest. Ecological principles mandate decentralization, deconcentration, and regionalization of our economic systems. As much as possible, there must be local production, consumption, and full-scale recycling, drawing from local resources. It further mandates that no economic activity be allowed that is destructive or compromising to the ecological integrity of the region within which it takes place" (Haenke, 1996).

5. A framework for a bioregionalistic vision for sustainable small town

There is a lot of possibility for the betterment of small towns in planning, advocacy and the approach attributed to creating sustainable habitats within them. The paper has elaborately discussed the need for being visionary and flexible to adapt to newer paradigms – bioregionalism in particular. Also the relational bonding of various layers of urban and their correlation within the three theories/philosophies of Bioregionalism, Small town Urbanism and Sustainable urban development has been thoroughly deliberated. The thrust areas of these three theories/philosophy are evidently interrelated and could be summarised as Ecology, Place, Governance, and Economics. Figure 4.1 shows the summarised thrust areas of the theories/philosophies discussed and ultimately leading to sustainability. A detailed approach for incorporating the bioregionalistic vision is discussed in the next subsection.
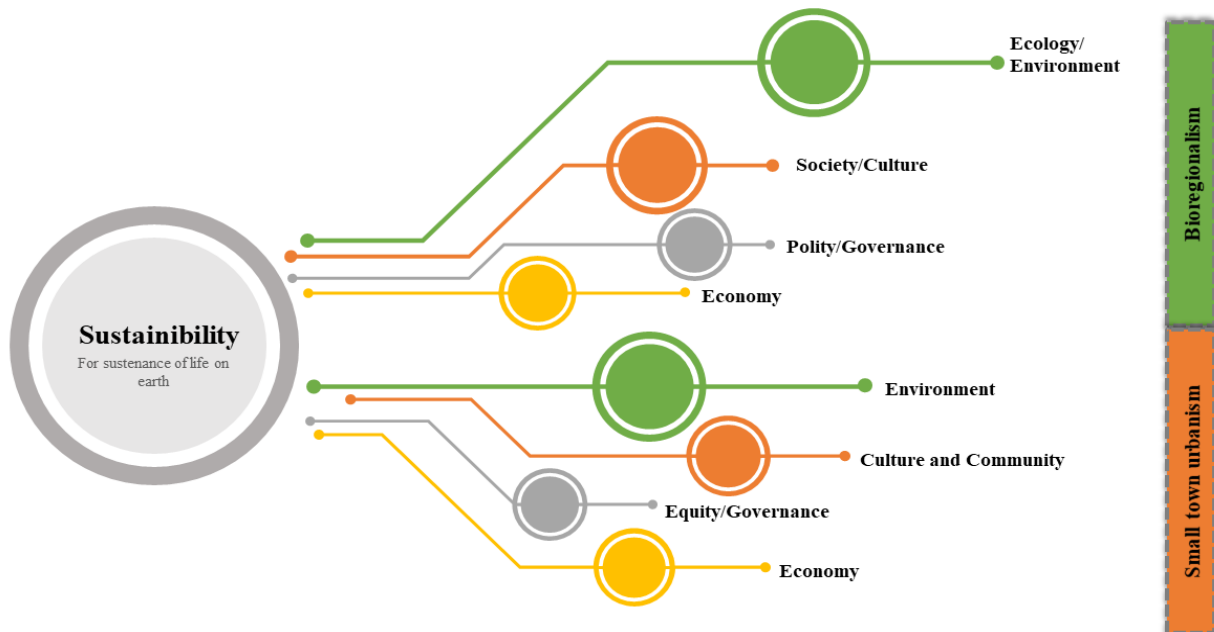

Figure 5 Summarised thrust areas of the theories/philosophies discussed leading to sustainability. Source:Author.

5.1. Indicative parameters for bioregionalsitic vision for sustainable small towns

Having identified the thrust areas of theories/philosophies which clearly propose an eco-cultural development perspective; certain indicative parameters are devised for formulating the bioregionalistic vision of small towns.

"Bioregionalism is a social movement and action-oriented field of study focused on enabling human communities to live, work, eat, and play sustainably within Earth's dynamic web of life. At the heart of the matter is this core guiding principle: human beings are social animals; if we are to survive as a species, we need healthy relationships and secure attachments in our living arrangements with one another and with the land, waters, habitat, plants, and animals upon which we depend" (Pezzoli & Leiter, 2016).

So **bioregionalism** is essentially an attempt **to bring back nature to daily life for sustenance of life forms** on earth and to create just, safe, resilient and healthy sustainable habitats. "It is at the human-scale of community where sustainability turns from a concept into a lived reality of regenerative cultures adapting to the uniqueness of the life-place they inhabit" (Wahl,2017). A set of indicative parameters and strategies has been identified to ground the theory of bioregionalism spatially and also to aid in adopting a practical approach for designing sustainable small towns. These parameters focus on the three thrust areas of bioregionalism – Ecology, Place and Governance. "A society which practices living-in-place keeps a balance with its region of support through links between human lives, other

living things, and the processes of the planet — seasons, weather, water cycles — as revealed by the place itself" (Berg & Dasmann, 1977). The indicative parameters also look at these large processes at a regional scale (to set a base), to a town and community level (to understand the relevant negotiations shaping a cultural landscape) and to a need and scale of one's own self (to change the behaviour and attitude towards nature). Table 2 shows the indicative parameters and a framework for bioregionalistic vision of small towns.

Table 2. Indicative parameters and a framework for bioregionalistic vision for small towns. Source:Author

Suggestive Parameters of small towns	Indications leading to planning and design strategies for sustainable small towns based on bioregional planning	Research methods for data collection	Thrust areas identified
Boundaries/Extends	Reestablish the boundaries based on natural assets. Setting up of action plan cells based on natural boundaries. Space as watershed.1	Regional Mapping with GIS tools	Ecology, Natural Place
Shared Commons/Terrain and its features/ Territorial domain	Land characteristics as unique features – Blue, green and brown cover. Hydrology, geology, vegetation, cultural landscape. Delineation of bioregion 2 for macro-level spatial planning, recognizing suitable areas for development and marking reserved natural areas. Identifying ecological assets.	Site survey, Mapping with GIS tools, Aerial Photography, Bioregional mapping [3]	Place, Cultural Landscape, Ecology
Resource base	Identifying resources unique to the region and having a symbiotic relationship with its culturally built form for optimum allocation of resources 4 and to find the dependency over neighbouring towns/cities/regions for scarce resources.	Resource inventory through Survey, Mapping	Natural/Cultural Place
Determinants of growth	Determining the geographic, climatic, socio-cultural, political, religious, economic determinants of growth to understand the evolution of the spatial pattern of the town. 5	Documentation, Historiography, On-site interviews, Old repositories.	Natural Place and cultural place
Carrying capacity	Computing calculations based on the study of a region's capacity to hold species without failing the natural system. 6	Carrying capacity evaluation models	Ecology, Natural Place
Disasters and resilience measures	Determining risk prone areas for a resilient spatial development pattern7, type and frequency of disasters, use of "Nature based solutions for mitigation" (Kabisch et.al., 2017) and check on statistical data of global warming and its side effects on towns.	Collaborative and community participatory climate and disaster risk mapping and indexing.	Ecology, Place, Communities

Table 2 Continued

Size, shape and pattern of development	Understanding the existing pattern to identify whether it has followed the geography, outgrowth, and sprawl.	Mapping, Land use maps, Old repositories, Photographs	Ecology, Place
Demographics, Density	Analysing statistical data to project population and migration trends. Density in terms of numbers and spatial density.	Census data	Place
Local and Indigenous traits and USPs	Documenting, analysing local 8 arts, crafts, construction techniques, architecture, settlement patterns, history and heritage, food, modes of transport. Implementing cultural asset based approach for localized economies.	On site documentation and mapping, Videography, Photography, Interviews, Surveys	Place
Community	Identification of community 9 set ups based on ethnicity, ghettos, or any similar cultural trait, religion, caste, etc.	On-site documentation, survey, mapping	Place
Place attachment and Value	Identifying the sense of place 10 for sustaining the character and identity of the town.	Phenomenological study, Cognitive Mapping, visual survey methods and mapping.	Place, Ecology, Cultural Landscape.
Urban Morphology	Analyzing the urban transformation based on – its form, time and resolution and to unearth the forces acting on the physical structures.	On site documentation, survey and mapping	Place, Governance
Mobility	Existing mobility trends and modes of transport and related issues. Identifying potentials of blue cover for alternate transportation systems, rapid transit systems for promoting a compact urban form. Walkability, pedestrian experience, use of non-motorized transports for a sustainable transport network.	On-site documentation, survey and mapping	Place, Governance
Urban systems	Recognizing the underlying systems of waste management, water, power, networks, energy. Suggesting closed - loop systems and making it more sustainable. Use of indigenous regional features for sustainable means of energy production, recycling, upcycling, etc.	On-site documentation, survey and mapping, interviews, Videography, Photography	Place, Ecology, Governance
Establishments of power	Identifying religious and political scenarios, tolerance levels. To find out how leadership could help in bringing awareness at community level for a more decentralized and grassroot level system.	Survey and documentation	Place, Governance

Table 2 Continued

Governance	Recognizing the Rules and regulations pertaining to the community, conduct, administration and construction. Analysing and programming to a democratic system, bottom-top planning approach, inclusive and participatory, community level grassroot planning, decentralized governance. 11	Documentation, Interviews, Survey	Place, Governance
Policies, programs and self stewardship	Deriving policies at various scales of town structure from municipal to neighborhood to one's own self. Informing using workshops, behavioral and attitude change of one's own. Creating awareness among the inhabitants through environmental stewardship. 12	Interviews	Place, Governance

"Space as watershed, Watersheds, as models that delineate local natural communities, are thought to provide the organizational basis for mediating relations between cultures and local environments" (Ryan, 2012). "Bioregions are geographical provinces of marked ecological and often cultural unity, its subdivisions...often delimited by watersheds, or water divides of major streams" (Berg, 1985). "The term 'bioregionalism' names a social movement advocating the formation of environmental policy within the natural boundaries of a bioregion rather than the artificial boundaries of existing states or other political jurisdictions" (McGinnis,1999).

"In terms of composition, the bioregion should be delineated with a clear basis in geography and ecology that has an impact on place without determinism" (Ryan, 2012). "Bioregions can be distinguished by particular attributes of flora, fauna, water, climate, soils, and landforms, and by the human settlements and cultures those attributes have given rise to" (Sale, 1985).

"Bioregional mapping is a community and participatory process to create maps that combine ecological and physical information with social and cultural information within a given place, as defined by those living there or the communities most impacted. It is both a tradition that dates back thousands of years, inspired by countless forms of Indigenous Mapping, and also that has emerged as a direct and modern response to the erasure of local cultures in the face of our current ecological, economic and social crises" (Letsinger, 2020) "Bioregionalism involves the process of mapping cultural and biogeographical forces. Maps are important forms of communication and relationship building. Mapping place is an essential first step to self-governance and community-based empowerment" (Aberley 1993; Aberley et al. 1995).

"Bioregionalism is prefaced by an understanding of the land, its geographical features, resource inventory, and carrying capacity" (Sale, 1985)

"The growth of urban systems is also influenced by the scale of urban space, traffic network, and complexity of the terrain" (Fan, Y et al., 2018) (Thapa et al., 2011; Ayazli et al., 2015; Zhang et al., 2013).

"Carrying capacity - the maximum number of a species that can be supported indefinitely by a particular habitat, allowing for seasonal and random changes, without degradation of the environment and without diminishing carrying capacity in the future" (Hardin,1977). "Strong bioregionalist premise (or SBP), which maintains not only that the planetary ecosystem must remain within its carrying capacity (implied by any conception of sustainability),but also that individual bioregions must likewise remain within their carrying capacities" (Vanderheiden, 2008). "Carrying capacity is the limit of growth or development of each and all hierarchical levels of biological integration, beginning with the population, and shaped by processes and interdependent relationships between finite resources and the consumers of those resources" (Monte-Luna et al., 2004).

"Building a resilient city requires detail and careful assessment of its current level of vulnerabilities and resilience" (Parwin et al., 2011). "During such assessment and initiatives it should be remembered that there are large differences in risk and vulnerability within urban areas" (Satterthwaite et al., 2009).

Table 2 Continued

"A contextual knowledge aimed to define planning and design decisions as place-specific bioregional signatures, and also suitable to keep resources use at a regenerative level and avoiding resources drawbacks" (Sale, 1985).

"The system of shared service in a community connects the society to the regional terrain. A bioregional relationship to the landscape is based on the scale at which the region and place is perceived and includes the scale at which one perceives the community's sphere of responsibility and action. Moreover, the map of a landscape can result from the inhabiting of a place by a community" (Aberley et al. 1995). " The ideal of community-as-bioregion is an image of behaving organisms that shape a system of meanings and self~ regulating relationships" (McGinns, 1999)

"Understanding people's sense of place that is, the affective bond[s] or link[s] between people and specific places" (Hidalgo et al., 2001) "Can provide insights into how people interact with and treat both natural and built environments" (Gosling & Williams, 2010). "The findings of sense-of-place research can, for example, inform understandings of pro-environmental behavior (Scannell & Gifford, 2010; Vaske & Kobrin, 2001), place-protective action (Lukacs & Ardoin, 2014), management of regional amenities (Carrus et al., 2005), participatory landscape planning (Manzo & Perkins, 2006), and environmental education initiatives (Kudryavtsev et al., 2012). In short, place matters" (Gifford, 2014). Stedman (2003) observes that "landscape characteristics such as land use, land cover, and population density collectively produce meanings (e.g., solitude, beauty, wilderness) to which people develop affective bonds of attachment".

"Bioregional philosophy posits that communities should be decentralized, governed by self-rule, and distributed within the natural boundaries of a region" (Church, 2014).

"It is through the social practices of neighborhood-oriented stewardship that community identity and place and community attachment can be fostered. Individual actions can be influenced through reflective and transformative learning processes during or following neighborhood-oriented stewardship activities, or by public discourse. Policies that reflect urban bioregionalism would provide opportunities for nature activities through the support or implementation of municipal programs and partnerships in the region" (Church, 2014).

6. Conclusion

Throughout the discourse of this paper, there has been a constant attempt to establish the need for 'going back to our roots' for sustenance of life. Theoretically, the paper argues that with sensible and sensitive planning efforts, both the dimensions of culturally built environment and natural environment can coexist and mutually help each other sustain and mitigate. Bioregionalism is one such paradigm, which could be mainstreamed in planning sustainable small towns. The research can continue taking up each of its thrust areas and elaborating further on the possibilities of achieving it fully. Evaluating relevant case studies for exploring more strategies could be another methodological take away for this research to continue.

It is extremely important to be global but better informed locally. "Bioregionalism developed out of a grass-roots interest in how to bring about social change that would lead people to protect and restore the environment on a local level" (Wahl, 2017). Within the concept of bioregionalism, it is flexible and adaptive based on place parameters. That is how it fosters self-sustaining habitats and maintains distinctive places (small towns) within a region. A revival and retrofitting at various scales are necessary to ground this concept and to make it practical. Thus, geopolitics, fluidic boundaries and local communities and features form the basis of the bioregionalistic vision. It also encompasses self-realization, self-propagation and being responsible in a certain way for being environmental stewards.

"The bioregional principle has important worldwide connotations. It is in line with the vision of Gandhi and Schumacher, who saw a new world order based on small, organic groupings, geared to satisfy all the needs of whole human beings, respecting each other's identities, exchanging surpluses, and cooperating rather than competing with each other" (Hart, 1996).

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