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Analysis of Interrelation between Spatial Planning and Greenfield Development

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Abstract – *This paper is about the interrelation between spatial planning and Greenfield development which has been illustrated through case study of Bangalore and Raipur .In which analysis of both spatial planning and Greenfield development has been done. The case studies have conclusion of case specific and also have stated the impact of the implemented strategies. The paper has been concluded with the positive and negative factor of both type of development as obtained through the case studies, and also stated the cons & pros by adopting these strategies.*

Key Words: Spatial Planning, Spatial Integration, Greenfield Development, Urban Fringe, Town Development Scheme (TDS)

1. SPATIAL PLANNING

"Spatial planning gives geographical expression to the economic, social, cultural and ecological policies of society. It is at the same time a scientific discipline, an administrative technique and a policy developed as an interdisciplinary and comprehensive approach directed towards a balanced regional development and the physical organisation of space according to an overall strategy."(Definition by European Regional/Spatial Planning Charter)

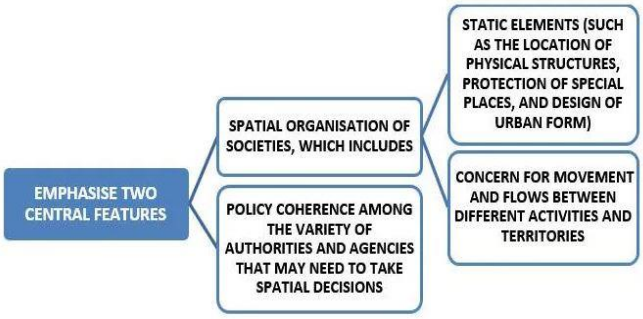

Fig -1: Spatial planning factors

Spatial planning objective is to have optimal location of people, goods and services in a certain region. It focuses on organization, arrangement and infrastructure of certain region with aim to have better living standards.
Spatial planning can be a bridge between micro/local level planning and macro level planning.

The major aim of spatial planning is to evolve a functionally coherent hierarchical spatial strategy to locate places and people where they can be used or act most effectively to achieve certain objectives.

1.1 Spatial Planning in India

Spatial planning was introduced in India in the late 19 century. It came through the similar process when sanitary commissions were appointed.
Spatial planning as such, as a state subject by now, every state has Town and Country Planning Departments (TCPD'S) with exception of few, most of the states have legislative support for preparing plans primarily for urban areas.

1.2 Objective of Spatial Planning

The main objective of Spatial Planning is to achieve a process of development which:

- Helps in optimizing utilization of resources,
- Reduces regional, spatial and economic imbalances,
- Strengthens urban and rural relationships,
- Sustainable and maintains an ecological balance.

1.3 Spatial Integration & its need

The integration of multiple entities linked to planning, such as land uses, planning institutions, and stakeholders, is referred to as spatial integration. It may represent the desire to collaborate by indicating the opportunities for and amount of engagement within and between areas.
Because of the fragmentation and diversity of governmental structures and institutions, it is critical to address the issue of policy and development plan integration, as well as the integration of institutions operating at the local level.
The following are some of the reasons why spatial integration is necessary:

- Development plans at all levels, including national, state, region, sub-region, district, block, village, and urban regions, must be integrated.
- Any development plan must be prepared and implemented in a certain order, starting with the description of objectives and ending with monitoring and feedback. Integration of one stage into the next is required.

2. GREENFIELD DEVELOPMENT

Greenfield development refers to the potential of developing Greenfield land, or land that has never been utilised previously for various sorts of enterprises. Greenfield development occurs whenever a fresh parcel of land that has never been utilised before is created as the city grows.
Greenfield development is an unavoidable part of human society, yet many people are opposed to it if it is not done in a sustainable manner.
The Indian government has established 100 smart cities. For e-governance and the Digital India project, these smart cities will use innovation and technology. Development of city challenges through (MOUD, 2015):
• Retrofitting – more than 500 acres
• Redevelopment – over 50 acres and
• Green-field development – more than 250 acres-Greenfield developments could be located either within the limits of the ULB or within the limits of the local Urban Development Authority (UDA).

2.1 Categories of Greenfield land

There can be many types of Greenfield lands based on availability to a potential developer and can be categorized:

- Rural property with a tiny population in the surrounding region and limited access. These properties have a poor value for development.
- Land in the city that has never been used for anything. Developers place a great value on the land.
- Semi-urban property on the edges of towns and cities with decent access and development possibilities.
- Barren lands having few natural resources such as water and plants, as well as harsh weather conditions.
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2.2 Land suitability factors for development in Greenfield land

Developers must consider the following factors when selecting a Greenfield site:

- Accessibility to roads and transportation infrastructure, as well as proximity to other developed regions such as towns and cities.
- When it comes to selecting Greenfield property, the type of project is crucial.
- Drainage and sewage infrastructure studies, as well as soil assessments. Utilities such as power, gas, telecommunications, water, and other services should be provided in the region.
- Permission to develop a Greenfield site must be obtained from local authorities prior to the purchase of a Greenfield property.

2.3 Advantages of Greenfield development

- It provides design flexibility to meet the needs of specific projects
- The land can be owned or leased
- It is usually in excellent condition to begin construction
- All Greenfield development projects are cost-effective
- The cost of land is very low compared to other options
- Better project planning due to the availability of open land

2.4 Disadvantages of Greenfield development

- Environmentalists may oppose this development because it fosters urban expansion.
- It will lead to have air and water pollution.
- New roads, infrastructure, and power will all have to be created from the ground up, adding to the expense of infrastructure development.
- Installation of infrastructure is often necessary
- Mostly away from the facilities and services of the city
- Longer way to commute for the workers and the employees

2.5 Examples of Greenfield development

- Belmont, Arizona: A consortium of investors led by Bill Gates is funding a Greenfield development project in Arizona that will include 80000 houses as well as open and commercial space. The roadways will be built to accommodate self-driving cars.
- Masdar Metropolis, United Arab Emirates: Masdar City is a master-planned city in the United Arab Emirates that places a strong focus on sustainability. Renewable energy and low-carbon-emitting buildings power the entire city.
- Dholera, India: Dholera is India's first long-term Greenfield development project. This project's highlights include smart infrastructure, an international airport, logistics centres, transit, and integrated networks. Dholera will provide homes for over two million people.
- Saudi Arabia's NEOM: NEOM is a $500 billion investment project on the Red Sea's coast. NEOM will be regarded as a carbon-neutral zone. Robots will also be used to complete monotonous jobs.

3. CASE STUDY

To support the paper here are described two case study one representing the development as a result of fusion of spatial planning and greenfield development of Bangalore and the other with TPS as a tool for spatial development of Raipur.

3.1. CASE STUDY -1: FUSION OF SPATIAL PLANNING & GREENFIELD DEVELOPMENT-A CASE OF BANGALORE (1)

Bangalore is the fifth most populous city in India, behind Mumbai, New Delhi, Kolkata, and Chennai. It is located in the state of Karnataka in southern India. Bangalore is regarded as Asia's knowledge hub and the world's fourth biggest technology capital. The city has developed in all directions and along its important highways, from a tiny urban area of 28 sq.km in 1901 (CRRI, 1999), to an area of 565 sq.km by 2003 and 1306 sq.km by 2007 (RMP, 2015).

3.1.1. Various Greenfield completed and ongoing projects at Bangalore

S.No	Projects	Project Detail	Impact on surrounding
1.	Bengaluru International Airport	1st Greenfield airport set up in the Country on PPP Model.	Increased land value
2.	Information Technology Investment Region (ITIR)	which includes SEZ, Industrial Parks, Export oriented units, Freetrade and Warehousing zones.	Made availability of basic infrastructure
3.	Aerospace park, SEZ and hardware park	Aerospace Park, SEZ and Hardware Park are proposed near the BIA in Devahalli	Boast to industrial corridor
4.	Devanahalli business park (DBP)	Business Park along the NH-7	setup residential township called as finance city

Table -1: Various project with their detail and impact

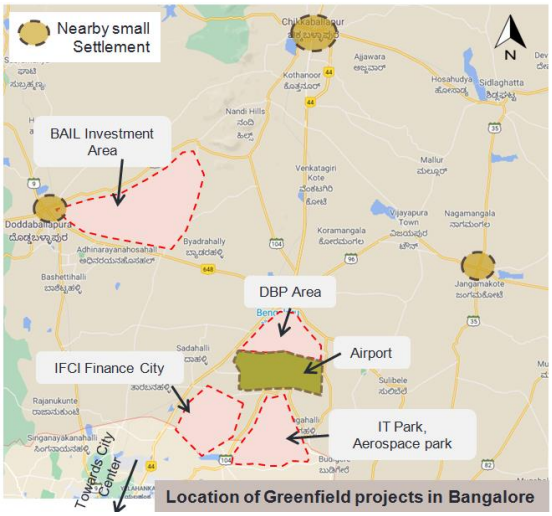

Fig -2: Location of Greenfield project in Bangalore

The Indian government has established six new industrial corridors to boost economic activity. Bangalore was connected by two industrial corridors. They are as follows:

- Chennai- Bangalore Industrial Corridor (CBIC) - The CBIC is the fifth corridor being planned in the country.
- Bangalore-Mumbai Economic Corridor -. The government has envisioned at least four new cities to boost manufacturing activity across the corridor.

Bangalore's efforts show a gradual shift in the practise of Greenfield development. These are the ones:

- All Greenfield development initiatives have occurred in rural areas, and any conversion of country land to urban uses would eventually alter the character of the area.
- Greenfield development projects are more likely to take place on high-quality soils that are or might be utilised for intensive agriculture.
- Rezoning Greenfield property will create demand for transportation to serve such land.

3.1.2. Conclusion

The main constraints of Greenfield development is to ensure that the development area can be appropriately served with good infrastructure.

Fusion of spatial planning and Greenfield development is the need for today.

- Fusion of spatial planning and Greenfield developments is beneficial for Industrial Corridors as these are connecting various cities and regions.
- This concludes that the Greenfield development directly impact on ecological and biological values and finally, demand for various infrastructure provisions within the spatial planning purview.

3.2. CASE STUDY -2: TPS AS A SPATIAL PLANNING TOOL FOR INFRASTRUCTURE DEVELOPMENT- A CASE OF RAIPUR (2)

Through national policies, comprehensive Master plans, and development plans at the state level, India's spatial planning process attempted to combine land use planning with infrastructure planning. The integration of a development plan with a town planning scheme allows for more fair and inclusive urban development. The town planning scheme focuses on infrastructure and land use planning in great detail. Regulation for TPS preparation falls in state legislation hence process and guideline varies throughout India.Raipur was a significant metropolis in central India even before the creation of the state of Chhattisgarh. It has formerly served as a commercial agricultural and industrial hub. Raipur's rapid expansion has benefited it by increasing infrastructure and amenities. In a short time, Raipur has become a centre for education and other services.
Raipur Development Plan 2021 seeks to provide the city with the required physical and civic facilities for a planned and coordinated expansion. To meet the long-term aim, the RDA has suggested implementing eight town development plans on the current city peripheral.
Beyond safeguarding landowners' rights in land, the land-pooling and land-reconstitution approach employed in the process satisfies the overarching aims of spatial planning by enhancing land economics and real estate market.

3.2.1. Case of Kamal Vihar (TDS 4)

The scheme is one of the country's largest TPS, with a total size of 647.84 ha and a location less than 5 kilometres from the city centre. The project is an attempt to achieve a portion of the Raipur Development Plan's overall aim.

- **Process of development**

The "Chhattisgarh Nagar Tatha Gram Nivesh Adhiniyam, 1973" is used to process Raipur's TDS. Though the method is identical to that of Gujarat's TPS, there are few differences. The general procedure for preparing TDS is outlined below.

- Surveying and establishing the project's overall boundaries
- Cadastral borders are marked and the area of each ownership is tabulated.
- Creating a base map
- Defining the limits of TDS
- Road layout in the planned area
- Final plot sizes are tabulated.
- Plot re-distribution
- The suggested scheme is approved.
- Establishment of a committee
- The committee's hearings and changes
- Work on notification and development

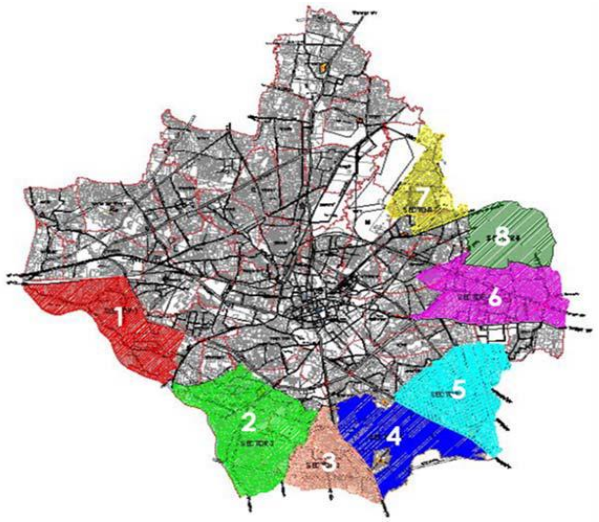

Fig -3: Division of sectors (eight zone) on periphery of Raipur city

- **Salient feature of Kamal Vihar**

Salient Feature	Detail
Housing and social balance	Housing for EWS and LIG
Housing with service	Serviced plots and ready for Operation and hence benefitted with increased value of land .
Urban renewal through cooperative efforts	Greenfield in city periphery is developed in to a planned urban serviced land by sharing land from local land owners.
Provision for social facilities	Educational institutes, community area, recreational parks are planned in shared land
Physical infrastructure	Network with water supply, drainage, electricity, sewage network, sewage treatment plant, electrical infrastructure including solar lighting
Transportation network	Major Ring Roads, footpath, street light, cycle track, service corridor & green corridor. Development plan level road network are implemented.
Linking Development plan and Master plan	Initiative to implement the Objectives suggested by Raipur Development plan 2021.

Table -2: Salient feature of Kamal Vihar (TDS 4)

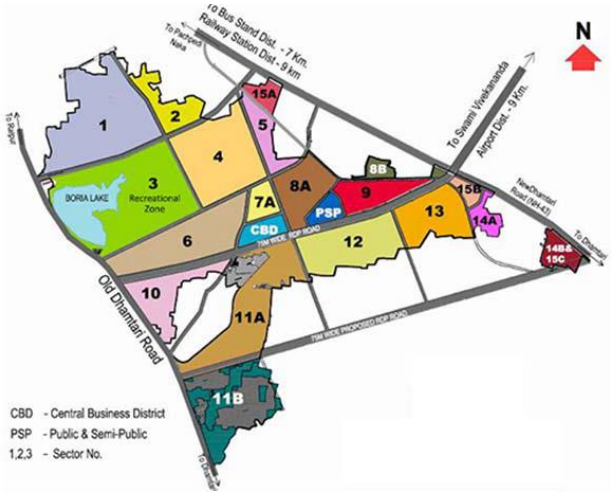

Fig -4: Kamal Vihar sector Layout (TDS 4)

3.2.2. Conclusion

- In Raipur, the case of Kamal Vihar (TDS 4) is a successful example of TDS.
- Infrastructure development and planned community development without kidnapping The community's social balance is maintained by the local landowners. Landowners' rights are protected, and urban regeneration is begun through thorough planning for specific areas while keeping the overall goal in mind.
- As the price of urban land has grown more than four times its initial value, TDS planning has encouraged housing and urban land reform. The inclusion of the LIG and EWS sectors in the planning scheme will help to preserve the urban area's socioeconomic balance.
- Another reason is because TDS uses a land pooling development strategy, which allows government entities to serve as facilitators rather than developers.
- The case study's role of local urban bodies demonstrates the necessity for ULBs to focus on facilitating rather than building urban infrastructure.
- Because TDS is a lengthy and complicated planning process, the case for enough staff at the local level must be thoroughly examined. TDS has been successfully used as a spatial planning technique to supply infrastructure in urban areas in Raipur.
- The key to equitable and efficient development is a planned method to maintaining urban expansion while keeping future goals and community identity in mind. Admitting that TDS has received high praise for its infrastructure improvements in Raipur.

4. CONCLUSIONS

➢ **Case Study-1: Fusion of Spatial Planning & Greenfield Development- A case of Bangalore**

- One of the most difficult aspects of Greenfield development is ensuring that the developing area is well-served by infrastructure.
- This fusion is favourable for the development of industrial corridors and may also be utilized to decentralize a city.

➢ **Case Study-2: TPS as a Spatial Planning Tool for Infrastructure Development- A case of Raipur**

- The function of the local planning authorities may be seen in this example.
- In Indian planning practise, spatial planning is primarily concerned with the allocation and distribution of resources, i.e. The availability of land, funds, and labour, as well as the inclusion of self-help and public engagement in TDS, are all determining elements in the scheme's success.
- Another reason is because TDS uses a land pooling development strategy, which allows government entities to function as facilitators rather than developers.

➢ **Conclusion:**

It is evident from the entire study that this sort of development has both positive and bad aspects.

- **Positive aspect:** Decentralization of a city may be done in a planned manner, and sprawl can be managed if inclusive development and a holistic approach are used.
- **Negative aspect:** Negative influence on nature and the area's greenbelt. In addition, infrastructure must be built from the ground up, which raises the cost.

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