FORMULATION OF DEVELOPMENT STRATEGY AND ACTION PLAN OF A NEW TOWN – GLOBAL CITY ON NH-8 IN RAJASTHAN SUB-REGION

EXECUTIVE SUMMARY

E.1. BACKGROUND

1. The project on developing a global city in Rajasthan sub-region of National Capital Region (NCR) (hereinafter referred to as the project) was first mooted by Government of Rajasthan (GoR) immediately after approval of Regional Plan for National Capital Region (NCR) – 2021. The idea is actively supported by National Capital Region Planning Board (NCRPB) as it would help realizing "settlement development strategies of Regional Plan of National Capital Region (NCR) – 2021".

2. The intention of GoR are: (i) to take advantage of the globalization of the economy; (ii) to attract investment in neighbouring states of Delhi; and (iii) to harness the spread of the development impulses and agglomeration economies generated by Delhi. A consultancy study (the study), therefore was commissioned under the assistance of NCRPB to explore feasibility of developing global city in Rajasthan sub-region of NCR and to evolve "strategies and action plans for developing a global city".

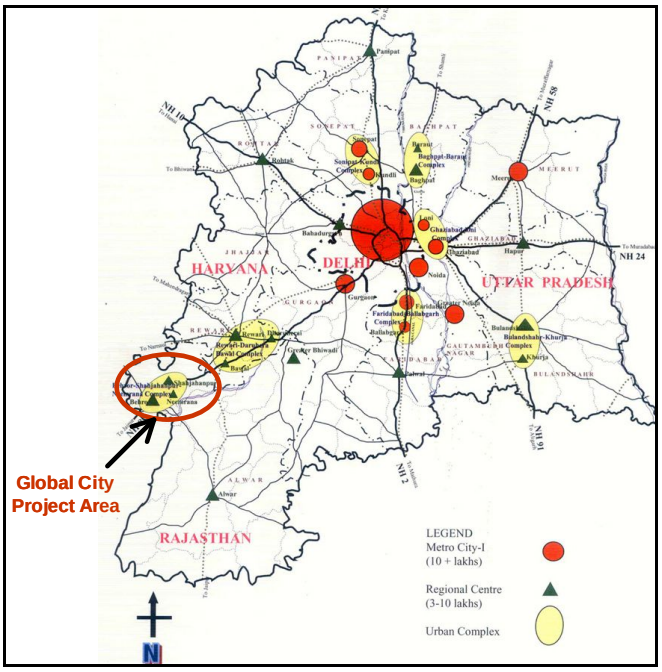

Figure 0-1: NCR- Proposed Settlement Pattern and location of SNB Complex wherein lies Global city Project Area

3. As a first step, upon detailed deliberation, a notified area within the Rajasthan sub-region (u/s 3 of Rajasthan Urban Improvement Act, 1959, vide notification published in Rajasthan Gazette (RAJBIL/2000/1717) on September 30, 2002, covering Shahajanpur-Neemrana-Behror (SNB) complex and 129 villages along NH-8 in Rajasthan sub-region of NCR was identified (by the Government of Rajasthan) as a suitable project area and decided to locate the proposed global city within. The SNB complex[1] (a regional centre

[1] The SNB urban complex has been identified as one of the regional centres in the Regional Plan for NCR for the target year 2021 (RP-2021). The RP-2021 aims at promoting growth and balanced development within its notified area of 33578 sq.km. The RP-2021 has proposed the policy to *"harness the spread of the development impulse and agglomeration economies generated by Delhi for harmonized, balanced and environmentally*

envisaged in Regional Plan for NCR-2021) is located about 120 km from Delhi along NH-8.

4. As a second step, following quality and cost based services (QCBS) method, M/s LEA Associates South Asia (LASA) Pvt. Ltd., New Delhi (hereinafter referred to as consultants) was retained as professional consultants to prepare the study. As a third step, a "core team" (comprising planners from the office of Chief Town Planner, Government of Rajasthan, and NCRPB) was constituted to interact with the consultants and advice throughout the study duration. Further, as a fourth step, a "consultancy review committee (CRC)" under the chairmanship of Member Secretary, NCRPB was constituted to review and monitor the progress of the study.

5. Several meetings of CRC were held and approved three reports submitted so far by the consultants including "inception report" "interim report–cum–feasibility report" and "draft final report". The present report – "final report" is the last report as per the contract and we are honoured to be associated with this study.

E.2. PROJECT OBJECTIVES AND SCOPE OF THE STUDY

E.2.1. THE PROJECT OBJECTIVES

6. The project aims at creating a global city, offering a globally competitive and an enabling environment for attracting investment, where provision for infrastructure to be based on understanding of the following: (a) specialized economic base; (b) urban infrastructure – a facilitator for global investment; (c) an attractive environment for investment; (d) provision for modern infrastructure for mass transport and urban services; (e) specialized economic base developed through cluster cities; (f) meeting the objectives of NCR and Draft Regional Plan 2021 on balance and sustainable development outside NCT-Delhi; and (g) benefiting and uplifting urban economic image of Rajasthan State in global context.

E.2.2. SCOPE OF THE STUDY

7. **The main components of the study are as follows:**

(a) preparation of strategy and action plan for the proposed global city;

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sustainable spatio-economic development of the NCR with effective cooperation of the participating states". Accordingly, the RP-2021 has proposed four policy zones: (1) NCT Delhi; (2) Central NCR; (3) Highway Corridor Zone; and (4) Rest of NCR. To further facilitate the policy, the Plan has proposed 6-tier hierarchical system of settlements including Metro centres, Regional centres, Sub-regional centres, Service centres, Central Villages and Basic villages.

One of the Regional centres proposed in the RP-2021 is **SNB Urban Complex** in Rajasthan Sub-region. The RP-2021 has proposed to develop the said urban complex as a center for advanced industrial and other economic activities and envisaged to have a concentration of higher order service functions, which are expected to exert an increasingly dynamic influence on attraction of investment and creation of conducive living and working environment.

(b) carrying out studies for the new city for its planning, development, financing, phasing, marketing, and management along with institutional and implementation mechanism;

(c) planning of cluster cities with infrastructure, economic base, physical environment, implementation and operation mechanism;

(d) preparation of cost and phasing scheme for global city and cluster city level; and

(e) documentation of the process of consultancy through reports and presentation for Development Strategies and Action Plan for the global city.

E.3. APPROACH AND PLANNING PROCESS

8. The approach consisted of following aspects to structure the master plan for the global city, planning of cluster cities, infrastructure plan, and project implementation components. The section briefly presents the major tasks carried out in the study (see Figure 1.2).

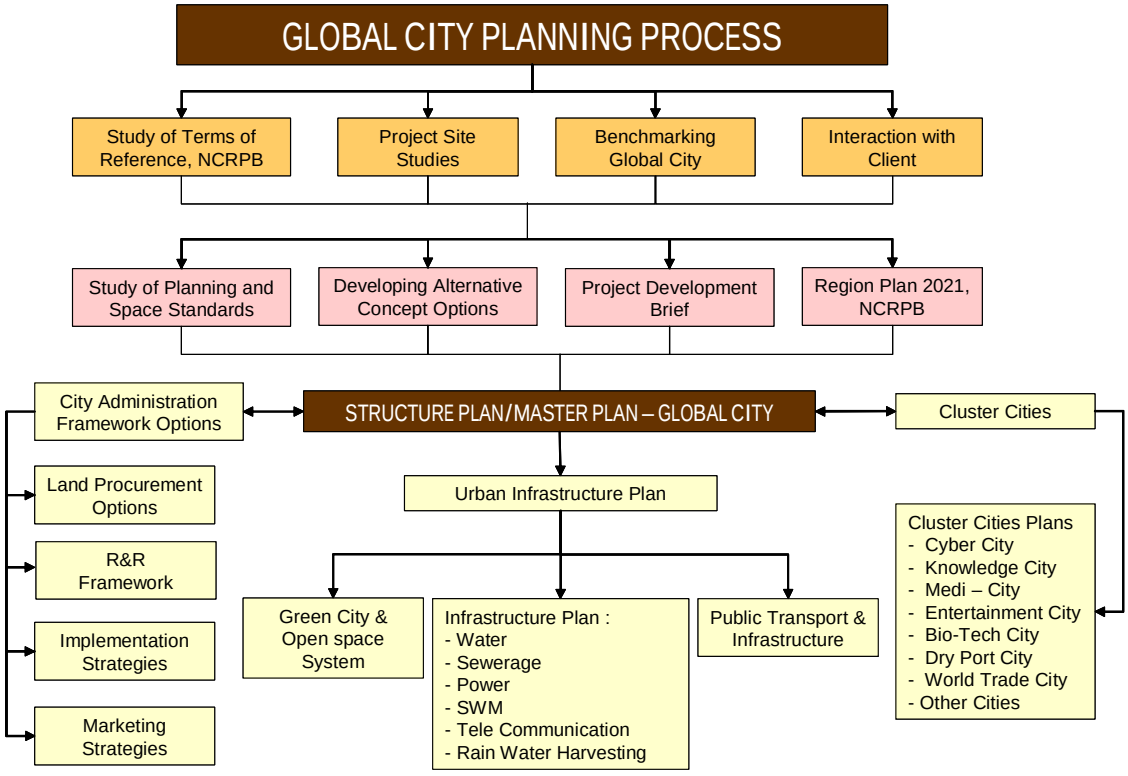


Figure 0-2: Approach

9. **Project Site Studies and Analysis:** A number of visits were conducted by the consultants of the site, and some of site visits were jointly conducted between client and consultants. A detailed site study and analysis were documented of the entire project area of 525 Sq. km to arrive at suitable location of global city. The site study and analysis is documented in this of the report (see Chapter 3).

10. **Benchmarking the Project:** For positioning of SNB complex / global city in the global economic environment, secondary sources based studies were conducted of

important and successful cities of the world. The inception and interim reports presented the documentation of the same. The important case studies examined were Singapore, Dubai, Kuala Lumpur and Putrajaya, Noida, Cyberabad in Hyderabad, New Mumbai, and Zhengdong a new town in China **(see Appendix 1-1).** The development brief and planning of cluster cities were based on inspiration taken from the benchmark studies.

11. **Interaction with Client:** A number of meetings were held of formal and informal nature with NCRPB during the course of the study. Besides formal presentations on Inception, Interim cum feasibility report and draft final report of the study, a series of informal meeting were held with NCRPB and core group, particularly representatives of Government of Rajasthan, in Delhi and Jaipur to streamline the planning process and to resolve related issues of the project. The interaction with client was of significant value to evolve the master plan for the project.

12. **Review of Regional Plan 2021, NCRPB and Policy initiatives of Rajasthan Government:** A review of the RP-2021 was done with respect to SNB Urban Complex, as this project would help realizing strategies balanced development in NCR as envisaged in the Plan **(see Appendix 1-2).** It helped to understand the Plan proposals for "Highway Corridor Zone" and densities for planning of new cities/towns in NCR. Further, a review of development initiatives of Rajasthan state and specially for the SNB complex has also been carried out. This exercise also helped in understanding ongoing and committed projects around SNB complex along NH-8 **(see Appendix 1-2)**.

13. **Review of Norms and Planning Standards:** Planning Standards for urban infrastructure and development brief for cluster cities of Global City were evolved based on the case studies carried out for the benchmarking, and as laid down by the Central Public Health Engineering and Environment Organization (CPHEEO), GoI (especially for water demand and waste water treatment), and Urban Development Plan Formulation and Implementation (UDPFI) for space standards on physical and social infrastructure.

14. **Structure Plan:** Four concept alternatives for developing master plan were conceived and evaluated. They include (i) a **linear city** along national highway NH-8; (ii) a **chance city**, where development and cluster cities were independently located; (iii) a **romantic city**; and (iv) a **compact city** placed closer to rail and highway network for high accessibility. Subsequent to deliberation, concept of **"compact city"** was approved by CRC for developing the structure plan. The details are given in Chapter 4 of this report.

15. The plan for global city incorporated the following salient features:

(a) **Public Transport Led City:** It is the mandate of the project to plan a city, which is urban infrastructure led. The global city is planned based public transport led urban structure. A bus based public transport system is proposed within the

city, which can be developed in a phased manner. The RoWs of roads have accordingly planned for accommodating BRTS.

(b) **Green City:** The project site provides opportunity to create a green urban structure for the city. An open space system is evolved for the city, which includes hillocks, Sahibi river, and urban forestry. The green system of city also works as ground water recharge zone, open space system of city's recreational use, and creating a green image for city.

(c) **Concept of Compact City:** A compact city idea is being used for planning of Global City, which is part of the traditional practice in urban history in Rajasthan. Compact city is more energy efficient as compared to other city forms or lower densities cities.

16. The other tasks completed in the study include the following:

(a) **Innovative City Administration:** Options are suggested with recommendations for desirable institutional arrangement for modern city administration (see Chapter 11).

(b) **Land Procurement:** Options are suggested for land procurements with necessary recommendations (see Chapter 11).

(c) **Resettlement and Rehabilitation Framework:** A comprehensive framework on R&R is developed for the project (see Chapter 10).

(d) **Marketing Strategies:** Marketing strategies are recommended for attraction of financial resources to implement the city (see Chapter 11).

(e) **Implementation Strategies:** Critical to success of the city is its implementation strategies. In principle, it is suggested a flexible framework is desirable where a soft environment can be created for bringing in private sector investment without destroying the very purpose and scheme for the city (see Chapter 11).

E.4. Surveys and analysis

17. The following surveys and analysis have been undertaken to establish project-planning parameters (for details, see Chapter 1).

(a) **Competitiveness Analysis:** To establish the city and cluster competitiveness

(b) **Review of Cluster Case Studies:** To benchmark clusters proposed in the Global city

(c) **Review of Delhi Mumbai Industrial Corridor (DMIC):** To understand its implications on proposed Global city.

(d) **Review of Norms & Standards:** To benchmark norms and standards to be followed in the project planning process

(e) **Environmental Baseline Study:** To appreciate the project area environmental and social characteristics

(f) **Land suitability Analysis:** To guide the program and physical development guidelines

(g) **Review of Institutional Models:** To assess alternative institutional models for the city

(h) **Review of Land Management Models:** To assess alternative land management models for the city

(i) **Review of Transportation Models:** To assess viable alternative transportation systems for the city

E.5. Project area analysis

18. The project area includes 52,500 hectare in Mandawar and Behror Tehsils of Alwar district. The project area encompasses 129 settlements including Behror municipality. The total population as per the Census 2001 was 0.227 million.

The site for global city is located within the Project area. An approximately area of 85.88 Sq km in north-east part of the project area is recommended as the "site of proposed Global City".

19. The Project area study included key aspects, which are important in the planning of Global City. The main aspects that were documented studied from primary and secondary sources include natural features - hillocks, water bodies, protected and reserve forest areas, geology and soil, agriculture precincts and irrigation, cropping pattern, connectivity, and settlement pattern.

A typical view of Project area

20. The analysis was conducted for entire project area of 525 Sq.km. The following aspects were considered during analyses (fro details, see Chapter 3)..

21. **Slope:** Majority of project area fall between 0 to 2% slope, which is considered a flatter area and hence suitable for "area development" or "buildings". There are few hillocks in project area with slope above 5%, hence are not desirable for building activities.

22. **Soil and Geology:** Project area is known for its old alluvial plain with fractured hard rock ridge dissecting the area. Alluvial soil is very good for water recharge and hence with soil bearing capacity above 5 tons/sq.m, suitable for building activities.

23. **Irrigated Areas:** The census data reveals that majority of project area with less than 50% irrigation activities. However, the field surveys revealed that ground water depth in the project area varies between 70 to 90m. The project area has many irrigation tube wells. There is a link between high irrigated land and higher financial power of landowners.

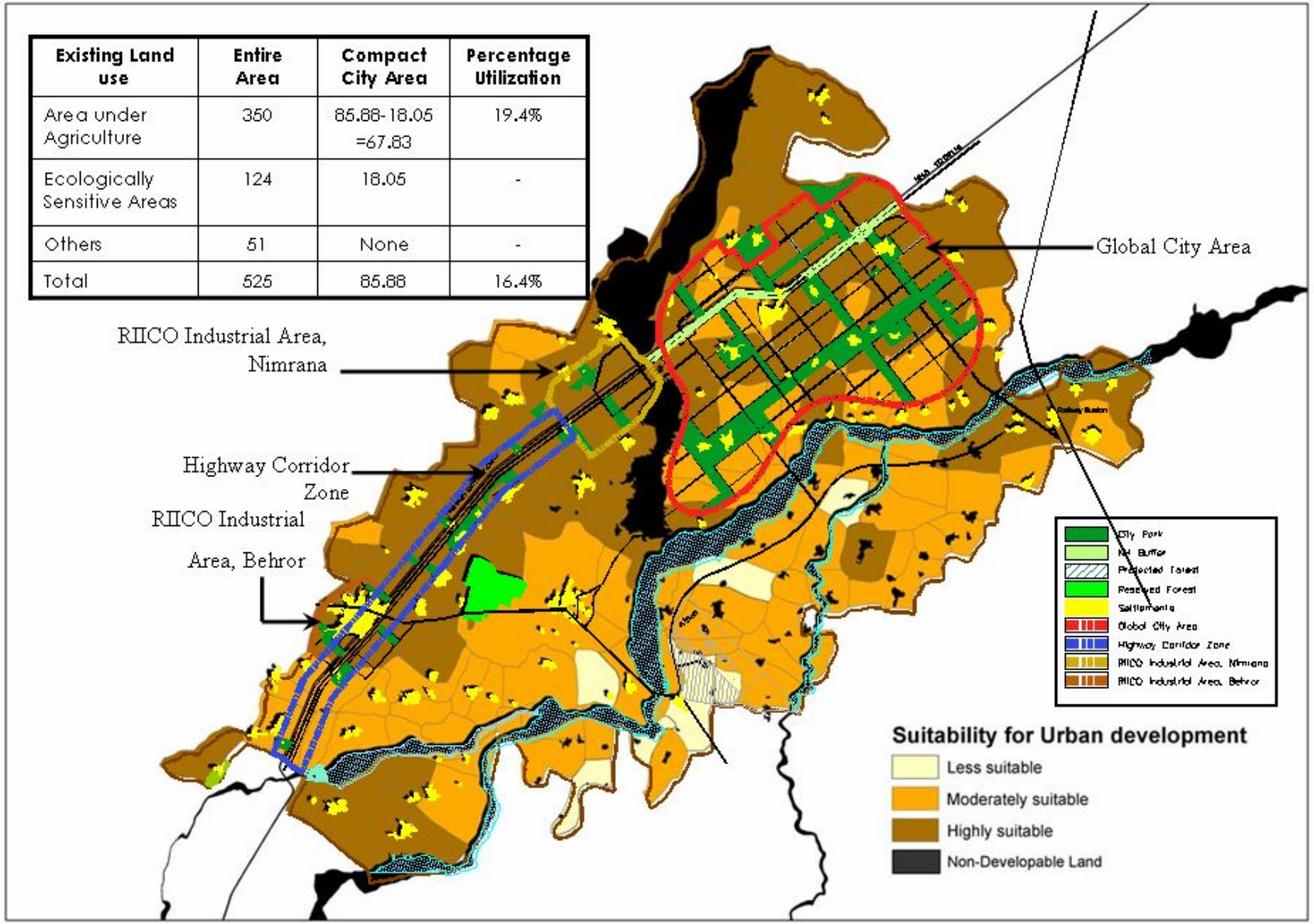
24. **Accessibility:** This was one of the important factors in arriving at a site for Global City in the project area, as accessibility is highest and of national importance along NH-8 and near railway line passing through the project area on north eastern part. Other significant link passing through the project area is SH-14, which connects Behror and Alwar and is of regional importance.

25. **Cropping Pattern:** Project area is known for its double cropping pattern (during Kharif and Ravi seasons). Cherry, Wheat, and Mustard are main crops cultivated in the project area. The data for Tehsils of Mandwar and Behror indicates a very little difference between the areas cultivated in two seasons. However, the field observations indicate a micro-level small variation in the cropping pattern based on the irrigation pattern, which reflects the financial strength of landowners.

26. **Non-Developable Areas:** Project area has many environmentally and culturally sensitive features. The features include hillocks, Sahibi river bed, protected and reserve forests, village and urban settlements including industrial belts. These areas were viewed as "non-developable" areas, hence were excluded for site selection for Global City.

27. Based on the above aspects final site for locating the Global city was selected. The proposed site for Global City is desirable from aspects of highest accessibility in the project area, slope criteria, climate as majority of summer and dusty winds/storms come from west and north west (as the site for Global City is protected by Aravalli hillocks), high quality visual experience, soil and Geology, and comparatively lower irrigated areas. As a desirable "city form", "compact city form" is found to be the most desirable option and hence the same was approved by the CRC. **As a summary, approximately 85.88 sq.km area in north-east part of the project area is recommended for the site of proposed Global City.**

Existing Land use	Entire Area	Compact City Area	Percentage Utilization
Area under Agriculture	350	85.88-18.05 =67.83	19.4%
Ecologically Sensitive Areas	124	18.05	-
Others	51	None	-
Total	525	85.88	16.4%



E.6. Vision STATEMENT AND DEVELOPMENT STRATEGIES

VISION STATEMENT

28. The project on global city in Rajasthan sub-region of NCR was envisioned by Government of Rajasthan (GoR) with three pronged objectives. (i) leverage its location advantage in NCR and utilize spill over economic and investment opportunity from Delhi and Haryana; (ii) respond to fast changing regional and sub-regional global economic competitiveness through creation of green field, state-f-art, global city, a one-stop location for private investment in specialised and competitive economic activities; (iii) help realizing envisaged settlement development strategies of NCR Regional Plan-2021- developing a regional centre in each sub-regions of NCR.

29. The proposed site for the global city is located within SNB urban complex. The site has several merits for making it successful. Its proximity to Delhi and Haryana is the first advantage. It is about 120 km from Delhi along NH-8 and adjacent to the border of Haryana. The accessibility and connectivity to the global city is the second advantage. NH-8 (Delhi-Jaipur section) passes through the site enabling immense opportunities to attract potential investment. Its connectivity to other urban centres in the region by road and rail is yet another advantage for easy passenger and good movement.

30. The proximity to existing industrial areas of Rajasthan and Haryana without adequate nearby residential and other support infrastructure is third major advantage. The RIICO Industrial areas of Bhiwadi, Shahjahanpur, Neemrana and Behror in Rajasthan are devoid of such opportunities. Similarly, many industrial areas in the near vicinity of Haryana also lack such facilities. Absence of such facilities in the near vicinity warrants for more planned development, which global city shall offer. The proposed, Global City shall be a first major attempt to promote planned urban development along the highway corridor in State of Rajasthan.

31. Global City shall be an "infrastructure-led scheme", where quality urban services for public transport, telecommunication and IT connectivity, water supply, sewerage and waste water recycling, power, and solid waste management shall be provided for. Essentially, majority of these urban services shall be networked and compliment the urban form and structure with emphasis on energy and environmental conservation. Availability of relatively cheap land value compared to Haryana is yet another unique selling point for the global city site for attracting potential investors.

32. Given the enormous merits, the global city is envisaged to accommodate many economic clusters such as knowledge city, world trade city, IT city, bio-tech city, dry port city and so forth. By and large, the idea is inherently knowledge led, complimenting and interdependent. Hence, it is desirable to promote a form of a city which promotes an idea of interdependency while having distinct image for each of the cluster cities.

Vision Statement: Being a green field project a Global City on NH-8 in Rajasthan Sub-Region of NCR raises unique opportunity to create new urbanism, which is knowledge and urban infrastructure led, carries potential to position Rajasthan State in a global economic platform, and become a new gateway to bring regional economic prosperity.

33. To position this new city for international economic competitive environment the approach emphasizes on following economic and environmental paradigms:

(a) To be a city of international repute by providing quality and cutting edge urban infrastructure in terms of public transport, IT, high speed regional connectivity including an airport facility, recycling of waste products, promoting alternative technologies for energy needs, and high quality social infrastructure;

(b) To evolve her economic base around futuristic and specialized cluster cities to achieve a sustainable economic base in a growing competitive international environment to cater for global and regional needs;

(c) To energize regional economy and human resource development especially in reference to tourism and culture, bio-technology in arid ecology and agriculture, health sector, and of all important area for providing quality education of international standards;

(d) To create a built environment, which emerges with respect to ecology and limited resources of the site;

(e) To create an urban image and form that is global but at the same time rooted in local urban traditions of the place to create a vibrant city;

(f) To meet objectives of Regional Plan -2021 for National Capital Region Planning Board (NCRPB) with a central idea of balanced development in the NCR; AND

(g) To evolve an urban management setup which can promote private sector investment and high quality social infrastructure to meet needs of a value based future urban society.

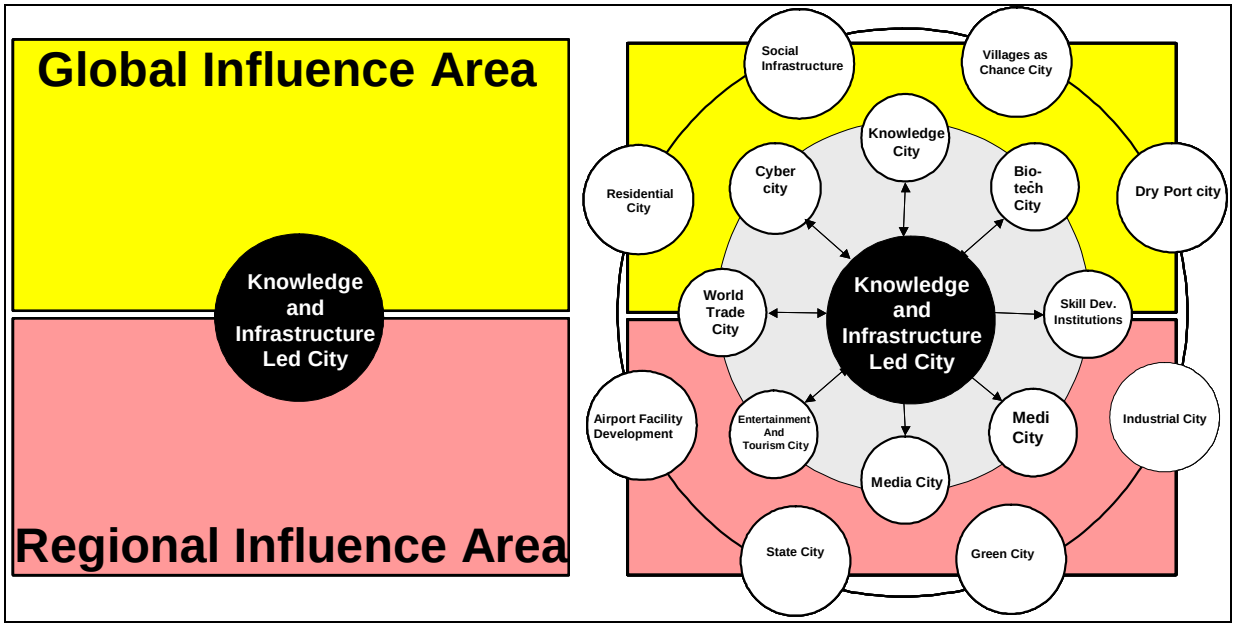


Figure 0-3: Role of Cluster Cities and Support Urban Infrastructure

DEVELOPMENT STRATEGIES

34. The development strategies for the Global City are based on following aspects and these are intrinsic to achieve vision and objectives outlined for the project.

(a) It is **knowledge and modern urban infrastructure** led city to create a clean and enriching urban experience to work, live, and leisure.

(b) The concept or main idea of the Global City evolves around the idea of **knowledge city** where human resource development and creativity is central interests of a knowledge led society. The knowledge society will be formed around the economic core created by cluster cities such as cyber city, medi city, knowledge city (educational and research infrastructure), bio-tech city, media city, and entertainment city. the economic core of the city is supported by other cluster cities such as world trade city, residential city, industrial city (which is being developed by RIICO), dry port city, airport facility, and green city (see Figure 5.1).

(c) The Global City is a conglomerate or ensemble of various economic clusters or cluster cities. Hence, it is important that these cluster cities are networked and made interdependent rather than promoted as walled urban estates. The city level common infrastructure will be shared by all cluster cities to support the idea of a compact city and to encourage interdependence and energy conservation.

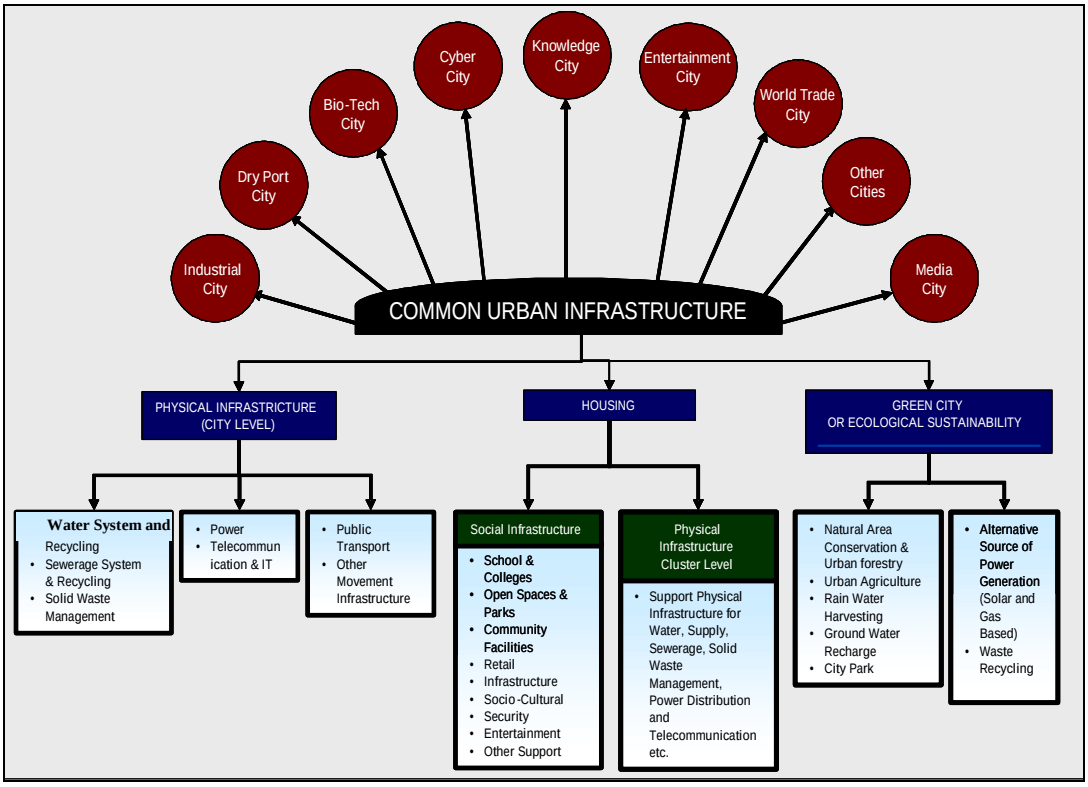


Figure 0-4: Urban Structure Components of Global City

(d) The major role anticipated for the Global City is to bring global and national level capital investments to improve revenue for Government of Rajasthan. However, it is aimed at Global City playing role in improving regional economy as well to balance out its global and regional representation.

(e) **State of the art urban management system** is being envisaged, which can create soft environment for private sector investments.

(f) The **flexible urban structure** is important in the context of the Global City, which is to be promoted through public and private sector partnerships; hence it can evolve in space and time to meet the needs of fast changing human environment and market economy. By and large, the structure of the city is guided by urban infrastructure networks, green system, public transport, and idea of flexible and growth oriented plan for the cluster cities.

(g) **Conservation of natural areas** is central in planning process of Global City. As a result, Aravalli hillocks, riverbed of Sahibi, protected and reserve forests, ground water recharge zones, and green buffers are integral part of the structure plan for the Global City. The conservation of these areas is part of the development strategy to evolve the urban form of the Global City.

(h) **Retaining existing village settlements** located within the Global City are protected, hence causing least displacement to the associated communities. Integrating them into urban economy through a process of skill upgradation and other economic opportunities and as recommended as part of economic rehabilitation and resettlement framework is part of the planning process of the project.

(i) The idea is to promote a **compact city** with medium to high densities. This will help retaining substantial part of the project area of SNB complex as agriculture area undisturbed.

(j) **Clean and green image** is to be achieved by promoting green and park system (concept of urban forestry and agriculture is recommended for green system of the city), wireless streetscape by inducting service ducts for basic urban services, landscape treatment of open spaces, and connecting natural and green areas into a usable network. The quality image of the city is proposed through integrated and design of open space system, streetscape, skyline of the city, urban edges, landmarks, and positive visual integration with natural areas and hillocks. This phenomenon can lead to an unparalleled built environment of very high urban imageability.

E.7. PHYSICAL CONCEPT PLANS

35. Four alternative concepts plans were conceived considering the overall vision and objectives formulated for developing global city. They include linear city, compact city, romantic city and chance city.

36. In comparision, the Compact City model fares best amongst all the concept development options. It combines qualities of linear city along NH-8, enriching experience of the romantic city next to Aravalis hillocks, and gives medium to high density urban form suitable for public transport and urban infrastructure development. Its clean and green environment, ground water recharge potentials, modular nature facilitates phased growth hence it a good option to be used for master planning of the Global City. It is a flexible and modular urban structure, capable of generating strong urban image and living environment, and conducive for quality urban infrastructure development.

E.8. PROJECT DEVELOPMENT BRIEF

37. The project development brief is given in **Table 0-1.** However, it is only a guideline and may be modified depending on the response of private sector led investments. The project development brief is proposed to be implemented in four phases with each phase leading to the next phases of the city to acquire its final form.

(a) **Phase 1** will be initiated through promotion of Knowledge-led cluster cities such as educational and research institutions, IT-led corporates and MNCs, health services and educational facilities, media centres, and entertainment facilities, which are located closer to NH-8 due to high accessibility and visibility. Minimum support residential infrastructure and commercial facilities are likely to come for the proposed knowledge led cluster cities for the Phase 1. Existing industrial nodes being developed by RIICO at Shahjahanpur and Neemrana will be networked with the Phase 1.

(b) **Phase 2** comprises expansion of Phase 1 and new cluster cities. The new cluster cities, which will be added in Phase 2 shall be bio-tech city, world trade city,

state city and so forth. The Global City, while it expands horizontally and will also intensify through further development in the existing pockets of Phase 1.

(c) **Phase 3** will continue with the expansion of Phase 2 and add few more new cluster cities in form of dry port, airport facility, and majority of residential city. Majority of urban infrastructure will be in place for the Global City by end of Phase 3 and city will acquire its final urban form.

(d) **Phase 4** will be the remaining part of cluster cities and remaining residential development which will be initiated in the first three phases. Final phase brings together the visualized form and structure of the city, which is sustainable on environmental and economic grounds. The fourth and final phase is proposed to be in place in 2031.

Table 0-1: Project Development Brief (sq.km)

Sl No	Clusters	Site Area				Total
		Phase I	Phase II	Phase III	Phase IV	
1	Knowledge City	1.73	3.01	2.05	4.53	11.32
2	Cyber City	2.11	1.36	0	0	3.47
3	World Trade City	2.343	0.91	1.33	2.14	6.723
4	Entertainment City	1.7	3.16	0	0	4.86
5	Media City	1.26	1.26	0	0	2.52
6	Industrial City	1.2	0	0	0	1.2
7	Medi City	1.72	0.49	0	0	2.21
8	Dry Port City	0.93	1.39	0.82	0	3.14
9	State City	0.57	0.46	0	0	1.03
10	Biotech City	0	1.53	0	0	1.53
11	**Common Infrastructure**					
11a	Housing	2.155	6.375	5.12	4.69	18.34
11b	ISBT	0.57	0	0	0	0.57
11c	Parks	5.54	2.14	8.06	3.01	18.75
11d	Mixed Use	0.68	1.12	1.27	0.77	3.84
11e	Socio-cultural	0.00	0.45	1.64	0	2.09
	Total	**22.508**	**23.655**	**20.29**	**15.14**	**81.593**

E.9. POPULATION PROJECTION AND EMPLOYMENT

38. The proposed population for the Global City is based on projected development brief for cluster cities and related space standards. It is expected that the Global City will be a knowledge-led society and will have higher rate of workforce participation (approximately 40%) and average size of families will be smaller as compared to current average trends of 4 to 5 persons per family.

39. Population projection is also based on water resource availability and planning of four phases of Global City. Phase 1 is planned for approximately for 0.15 million population, which is based on the ground water availability, and as recommended by NCRPB. The water demand for Phase 1 is worked out based on standards

recommended by CPHEEO of 135 lpcd for urban areas. **Table 0-2** and **Table E-3** present employment and population projections.

Table 0-2: Projected Employment in the Global City

Employment	Phase I (2006-2011)	Phase II (2011-2016)	Phase III (2016-2021)	Phase IV (2021-2031)	Total
Basic Employment	75,062	52,240	16,852	26,105	170,259
Service Employment	24,174	64,700	54,488	48,058	191,421
Employment in Villages	30,342	4,833	5,602	14,024	54,800
Total	**129,578**	**121,773**	**76,942**	**88,187**	**416,480**

Source: Projected, LASA

Table 0-3: Projected Population of the Global City

Sl No.	Clusters	Phase I	Phase II	Phase III	Phase IV	Total
A	**Cluster Population**					
1	Knowledge City	24220	42140	28700	63420	158480
2	Cyber City	16880	10880	0	0	27760
3	World Trade City	0	0	0	0	0
4	Entertainment City	6412	11918	0	0	18330
5	Media City	5040	5040	0	0	10080
6	Industrial City	4638	0	0	0	4638
7	Medi City	9339	2661	0	0	12000
8	Dry Port City	1860	6317	-	0	8177
9	State City	4427	2780	1640	0	8847
10	Biotech	0	3573	0	0	3573
11	Airport				6000	6000
	Total	**72816**	**85309**	**30340**	**69420**	**257885**
B	**Population within Common Residential Infrastructure**					
	Residential City	79622	210501	179467	153347	622937
C	**Village Population**					
	Village Population	55274	8804	10206	25547	99831
	TOTAL (A+B+C)	**207712**	**304614**	**220012**	**248314**	**980653**

Source: Projected, LASA

E.10. STRUCTURE PLAN DEVELOPMENT

E.10.1. APPROACH

40. As discussed earlier, after evaluation of four alternative concept development options explored for Global City, Compact City option was recommended by the CRC and advised the consultants to prepare a structure plan for Global City based on this option. The infrastructure network plan is also worked out in reference to the compact city option.

41. The compact city model is likely to be more energy efficient, its location close to important national transport network will be the key reasons for its success, and its contiguous and compact form will encourage high interdependence between cluster cities and guide their urban growth.

Other strategies to formulate the structure plan for Global City are as follows:

(a) The Global City is evolved with an idea that it is a modern infrastructure led city, where its urban structure is evolved around flexible and modular in character.

(b) The framework for urban structure, which will be the mandatory to follow trunk urban services networks, public transport system, green and park system, disposition of cluster cities and critical urban nodes. However, the internal layout of cluster cities will have flexibility, which can be evolved with respect to space and time, needs of the city, and priorities of private sector promoting the investments.

(c) To support an idea of new generation of cities, the Global City will be based on creative human resources and a knowledge led society, which will be supported with cutting edge information and research technologies.

(d) Ground water resources are limited in project area hence recycling waste water, ground water recharge, and rain water harvesting is of immense importance. Hence, open space or park system of the city is structured with an idea to act as ground water recharge zone. It is recommended that every plot area for all land uses of above 500 sq.m to have independent rainwater harvesting system.

(e) The very idea of promoting a compact city is to make it energy efficient. In this context, following aspects are important in creating an energy efficient urban structure for the Global City: The green system or urban forestry and agriculture programme, ground water recharge and rainwater harvesting, built form, which is low to medium height with majority built form hugging the ground, drainage system with respect to slopes of the site, introduction of public transport system in form of bus based rapid transit system (BRTS), and majority of public space lighting based on solar energy are integral part of the proposal to create an energy efficient new city.

(f) Existing village settlements of project area are to be respected and integrated in the city in a graceful manner without causing economic and social distress to inhabitants. The structure plan is worked out with an idea to cause least displacement to inhabitants and majority of village settlement are part of green system, which is recommended for urban forestry and agriculture.

(g) It is proposed to have a guided built form of the city. Perception and experience from the highway while driving and views from Aravalli hillocks, green system as contiguous and connected network for recreational use, pedestrians and cyclists movement network, and making walking on the streets safer at night by promoting street oriented built form will create enriching urban experience of the city.

E.10.2. DISPOSITION OF CLUSTER CITIES

42. By and large, the urban structure of the Global City is a conglomerate of cluster cities, which are complimenting and interdependent in nature. Distinct areas have been

allocated for each cluster cities to give them functional independence and image while integrating them with city level urban infrastructure network and city park system.

43. The disposition of cluster cities is based their requirement for nature of access, likely to be developed in Phase 1 because of high demand, desirable areas for development of the site in Phase 1, land values of the site, and interdependence between cluster cities. As a case, most knowledge-led clusters cities are located close to hills or green buffers, which require green image, comparatively lower land value site area, and high degree of interdependence between educational infrastructure and related employment industry. Cluster cities, which require high access and will have high commercial value are placed closer to the highway (NH-8) and sites having higher land values.

44. Modular grid, grid-iron plan, is adopted for urban structure of the city with a size of 1.0 km by 1.6 km. The unit area of a grid is 1.6 sq. km, which carries potential of housing a smaller cluster city or parts of large ones, hence providing flexibility of growth and structuring of cluster cities.

45. The cluster cities will be developed within the city urban structure framework for trunk infrastructure. The promoters of cluster cities will have flexibility of restructuring internal layout given in the structure plan. The layouts proposed for cluster cities are advisory in nature and may be modified by promoters of cluster cities in consultation with planning and development agencies of the city. However, it is desirable that green system proposed at city level be further extended within the cluster city to create a contiguous green and urban experience in the city.

46. In principle, majority of the knowledge-led cluster cities are located along green buffers or edges of the city. The entertainment city is located close to NH-8, which is a tourism corridor between Delhi and Jaipur, and closer to Aravalli hillocks. The high-end commercial developments or cluster cities are placed closer to the highway and in the centre of the city. Besides, the regional and national transport nodes are placed closer to NH-8. The airport facility is located near SH-8 as there is desirable space available for development of such a facility.

E.10.3. LAND UTILIZATION

47. The land utilization is governed by an idea of promoting a cluster cities led Global City. Knowledge-led cluster cities form primary economic base of the city and it is supported by other cluster cities and urban infrastructure facilities. Each of the cluster cities has been given an identifiable area while integrating them with urban infrastructure network into a single city/Global City. The important strategies, which govern land utilization of the project area are as follows:

(a) Protection of natural and as much as possible agriculture areas by promoting medium to high densities in the city. The area of the Global City is 93.63 sq.

km[2]. The overall city level density is approximately 125 pph whereas net densities in residential areas will be between 300 to 600 pph. Regional Plan-2021, NCRPB recommends city level density of 125 pph as desirable density for SNB Urban Complex.

(b) The 500 m area on both sides of along NH-8 is a highway corridor zone as per the guidelines given in Regional Plan-2021, NCRPB. Hence, the 500 m area on both sides of NH-8 outside the planned area of the Global City and falling within the SNB Urban Complex is designated as Highway Corridor Zone in the Structure Plan.

(c) Creation of open and city park areas to facilitate ground water recharge as ground water recharge is a critical issue for potential and initial success of the Global City.

(d) Designation of green buffers in the Global City along NH-8 (100 m on both sides), along the hillocks and Sahibi river, and area falling between Global City and Haryana border. The green buffers to act as environmental filters and contain urban growth of the city.

(e) Areas of existing urban and village settlements are integrated within the Global City without causing major displacement. The urban area designated for the Global City is 89.89 sq km, out which, 18.75 sq km for urban forestry, agriculture, green buffers, and city level parks.

(f) Each of the cluster cities would grow in a phased manner hence flexibility exists in structure plan of the city for expansion without loosing contiguity in their functioning.

(g) The Land utilization strategies are taken at two levels. One at overall SNB Urban Complex Level and second at proposed Global City level.

48. See **Table 0-4** for Land Utilization of SNB Urban Complex and Global City.

Table 0-4: Land Utilization of SNB Urban Complex and Global City.

Existing Land use	Entire Area (sq. km)	Compact City Area (sq. km)	Percentage Utilization
Area under Agriculture	350	89.8-18.75= 71.05	20.3%
Ecologically Sensitive Areas	124	18.05	-
Others	51	None	-
Total	**525**	**93.63***	**17.8%**

Sl No	Clusters	Site Area (Sq Km)				Total
		Phase I	Phase II	Phase III	Phase IV	
1	Knowledge City	1.73	3.01	2.05	4.53	11.3
2	Cyber City	2.11	1.36	0	0	3.5
3	World Trade City	2.343	0.91	1.33	2.14	6.7

[2] The area of new city excluding existing settlements & NH-RoW is 98.8 sq.km

Sl No	Clusters	Site Area (Sq Km)				Total
		Phase I	Phase II	Phase III	Phase IV	
4	Entertainment City	1.7	3.16	0	0	4.9
5	Media City	1.26	1.26	0	0	2.5
6	Industrial City	1.2	0	0	0	1.2
7	Medi City	1.72	0.49	0	0	2.2
8	Dry Port City	0.93	1.39	0.82	0	3.1
9	State City	0.57	0.46	0	0	1.0
10	Biotech	0	1.53	0	0	1.5
	Sub-Total	**13.563**	**13.57**	**4.2**	**6.67**	**38.0**
11	**Common Infrastructure**					
11a	Housing	2.155	6.375	5.12	4.69	18.3
11b	ISBT	0.57	0	0	0	0.6
11c	Parks	5.54	2.14	8.06	3.01	18.8
11d	Mixed Use	0.68	1.12	1.27	0.77	3.8
11e	Socio-cultural	0.00	0.45	1.64	0	2.1
11d	Roads	5.30	1.97	0.38	0.60	8.3
	Sub-Total	**14.24**	**12.06**	**16.47**	**9.07**	**51.8**
12	National Highway(ROW)					0.73
13	Existing Settlements					3.06
	Total					**93.63**

E.10.4. URBAN FORM AND IMAGE OF THE CITY

49. The urban form and image of a city is an outcome of the planning and physical development process meant to achieve economic and functional role in a city. Global City, which is based on an idea of a compact city is structure to achieve the following urban form and image.

URBAN IMAGE: A city which is very urban and active, international and modern in character and at the same time rooted in regional compact city trends which are effectively green in character.

The built environment and image of Global City emerges from following urban design determinants:

(a) Global CITY: City is evolved around an idea of compact city form comprising of cluster cities which are bonded together through urban and social infrastructure.

(b) URBAN EDGES of the city create interface with natural edges, river and hillocks, which are important character of the site.

(c) GREEN LUNGS AND IMAGE: Promote green image by protecting natural areas surrounding the site, urban forestry and agriculture, park system within the city which can act as ground water recharge zone, green lung of the city, achieve desirable micro-climate

(d) EXISTING SETTLEMENTS: Protect existing settlements and give them breathing and green open space which can be managed through sustainable ecological concepts by the community.

(e) URBAN IMAGE: Public transport led medium to high density built form which is having street oriented development and active edges, built form generally hugging the ground, a varied skyline, and enriching visual experience from important transport and open space corridors.

(f) VISUAL INTEGRATION OF NATURAL ELEMENTS, Visually integrating hillocks with respect street system and open space system at city and cluster cities level is desirable aspect to be promoted in the city.

(g) URBAN STRUCTURE INTEGRATION: By defining Highway Corridor Zone for regulated development along NH-8, Connecting Industrial Estates through public transport and approach/services roads, protected and enhancing ecological green network of the project area.

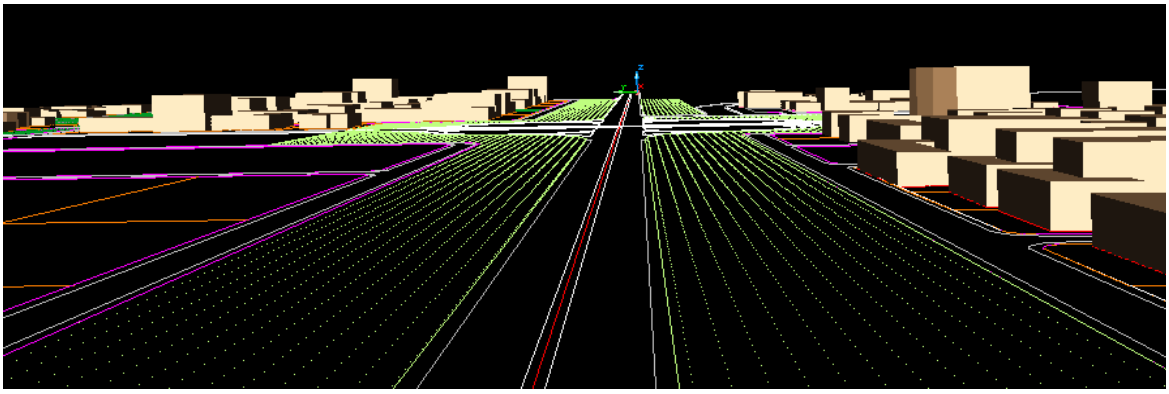


Figure 0-5: View of Global City from National Highway – NH8

50. The genesis of urban form of the compact city is because of the following factors:

(a) Its economic and functional role is based on cluster cities, as each of the cluster cities will create their distinct urban form and image giving greater identity and character to the city as a whole. This process will also lead to greater legibility in the city.

(b) The main structure of Global City is based on Grid-Iron Plan of each grid of 1.0 km by 1.6 km. The other elements which defines the structure of the city is its green space system, movement network and public transport system, and vary idea of compact city form which is generally intended to have built form hugging the ground. There are no height controls recommended but it is recommended to promote street oriented development to achieve active and safe urban built environment.

(c) National highway being located in middle of the city gives an opportunity to experience its skyline while moving between Delhi and Jaipur. Some of the tall and important buildings can be located along NH-8 to create an enriching visual experience and mark the presence of the city on the highway.

(d) Majority of public transit corridor will have denser development and create continuous built edge to make the city more urban in character and enriching in experience.

(e) A major city green and park system is conceived for the city. Buildings or development adjoining the park system will have higher densities, face the city green, have access from the edges of green spaces, and may have taller buildings to give a varying skyline to the city.

(f) Presence of Aravalli hillocks gives an opportunity to experience the city from the high points and visa-versa to experience the skyline of the hillocks. Some of the important and vantage/high points of the hillocks can be made accessible to pedestrians with minimum visitor facilities to experience the city by night and day time.

Figure 0-6: View of Major City Corridor facing urban greens

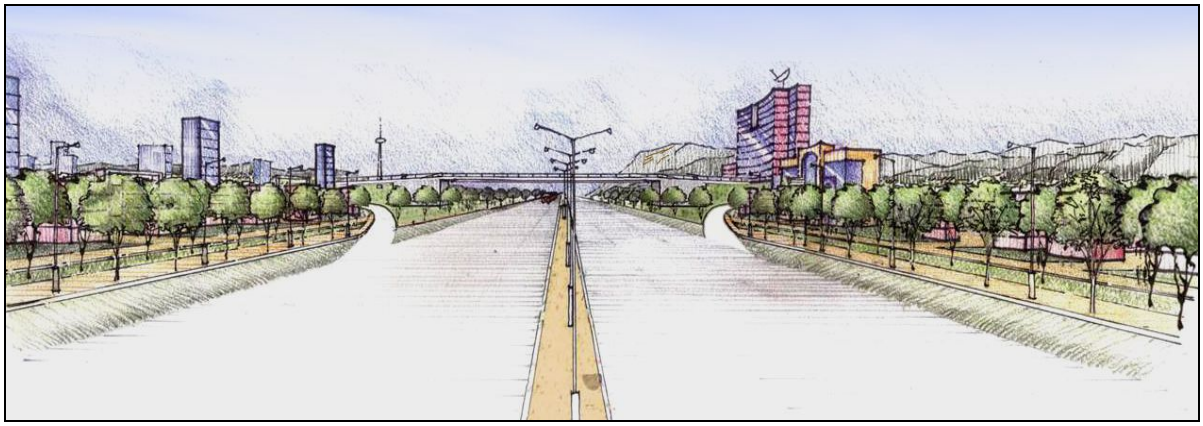


Figure 0-7: View of Skyline of Global City from NH-8. Few vertical towers can be located along the highway to create a skyline along the highway

E.11. URBAN INFRASTRUCTURE PLAN

E.11.1. TRANSPORTATION

Network Development Strategies

51. The scheme for the Global city has been evolved almost on a clean slate, wherein the existing environmental and ecological factors; and the locational positioning of village and the government land holding pattern have been the determining factors in finalizing the layout. As a direct consequence of the above-described urban form defined the road network of the Global city has to naturally take a gridiron pattern. However, the primary consideration has been to rationally determine the criteria, based on which the alignments could be selected. After a detailed study, the following criteria have been identified to determine the road network layout pattern:

(a) Ensuring maximum possible connectivity between NH-8 and Global City as interactions between the cities are expected to grow continuously till such time they do not merge together to form one large urban agglomeration.
(b) Road alignment to follow the ridge sections of the existing contours, thus not impeding the natural drainage pattern of the site.
(c) Road network to pass through the periphery but not intersect existing villages and rural

settlements.

(d) Ensuring maximum accessibility and connectivity to the capital complex, including development of certain ceremonial roads, to further enhance the image and importance of that area.

(e) Ensuring optimum integration with the regional network for faster interactions of the inter-urban traffic.

Hierarchy of Road Network

52. As discussed earlier, the north-south and east-west axes of the global City are envisaged to gain almost equal opportunities and prominence. Hence, the primary network alignments have been conceptualized in almost equitable proportions for both axes. The secondary network has been conceived to run parallel to the primary roads and act as feeder roads to the perpendicular arterials. The tertiary network has been conceptualized to act as collector roads at neighbourhoods levels, and act as prime conduits for ingress/engress of the properties.

Non-Motorised Traffic

53. To promote the usage of cycles to keep up with the image of the city as clean and green, a network of cycle tracks has been proposed connecting the major works centers and residential areas. The cycle tracks proposed follow two patterns:

(a) Track along the arterials and sub-arterials roads;
(b) Exclusive cycle tracks through open spaces with;
(c) Minimum hindrance from motorized traffic; and
(d) Connectivity to sectoral community spaces and educational centers

Public Transport Plan

54. The city is planned to be served by a Bus Rapid Transit System (BRTS) running on dedicated bus-way in the middle of road. All major roads (>=30 m of Row) will have a provision of keeping 2 lane dedicated bus ways to BRTS.

55. The basic features of the proposed bus way are as follows:

(a) The bus way will comprise about 133 km of exclusive "buses only" track with are lane each way and will be fully segregated from other traffic.
(b) The bus way will be constructed in the middle of the road keeping curb-side bus stop (left side)
(c) Design speed of the bus way track will be around 80 kmph where as buses will operate at about 40-50 kmph with headway of about 5 minutes on the most heavily used section.
(d) The bus way track will be 7.0 m wide separated by a 2.5m wide insurmountable strip from both sides which would accommodate bus stops, street light, trees/shrubs and other utilities as necessary.
(e) Stations would be placed "near side" of the intersection as far as possible. If required "mid-block" bus stop/ stations can also be provided.
(f) Since, Global City is being planned in green-field, all efforts will be made from beginning to accommodate bus way track at grade.
(g) The proposed system will have its own image and identity.
(h) Application of Intelligent Transport System (ITS) for information sharing, ticketing and performance monitoring.
(i) BRTS will be implemented in phases as per envisaged phased development of landuse.

Planning for the Fixed Facilities

56. The configuration of the network depends on the loading patterns obtained through the travel demand estimates. The passenger loadings have been converted to passenger car units by each link and the configuration arrived at. The criteria for evolving the cross-sections for road network have been based on the following consideration:

(a) Ability to accommodate the proposed BRT system with minimum conflict to other road traffic.
(b) Ensure adequate and exclusive space for the Non-Motorised Transport (e.g. Cyclists)
(c) Create provision of Service Roads to accommodate flow of local traffic.
(d) Ensure adequate safety for the pedestrians.
(e) Create necessary provision for roadside drainage to protect pavement against deterioration through water logging.
(f) Provide necessary space for roadside landscaping and putting up street furniture and signage.

Bus Stops and Junction Treatments

57. While on the traditional road crossings, the junction treatments are proposed to be undertaken on the basis of standards and specifications of the Indian Road Congress (IRC); the junctions where normal roads intersect the BRTS routes, special treatment at those location would be essential.

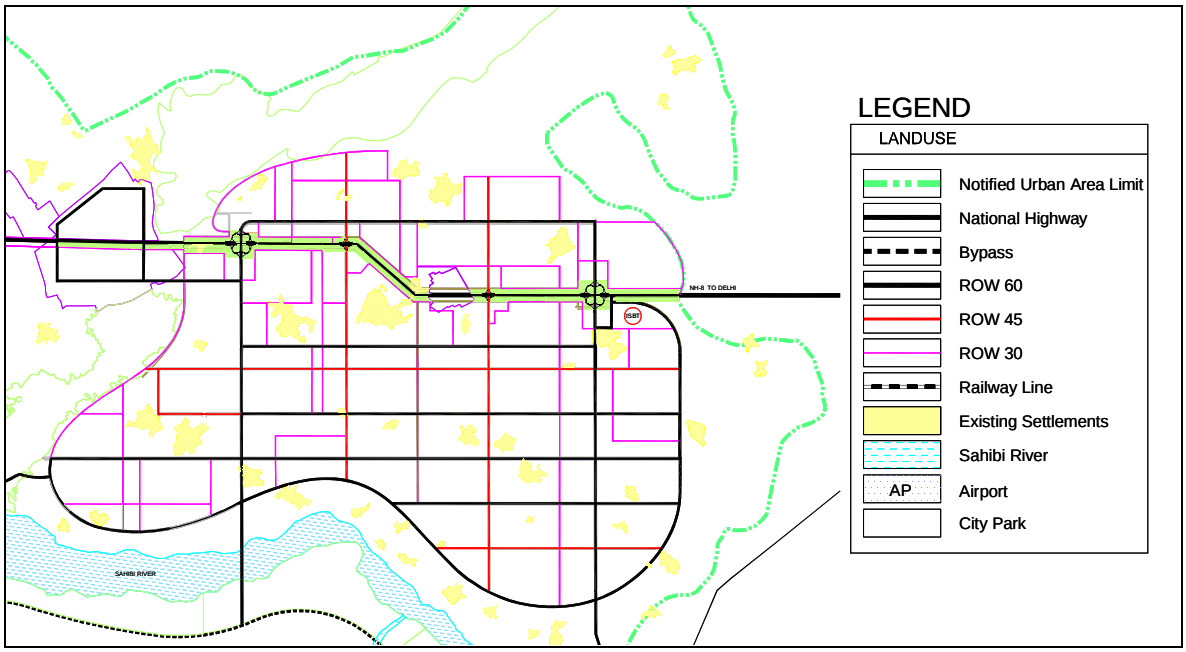


Figure 0-8: Road Network Map

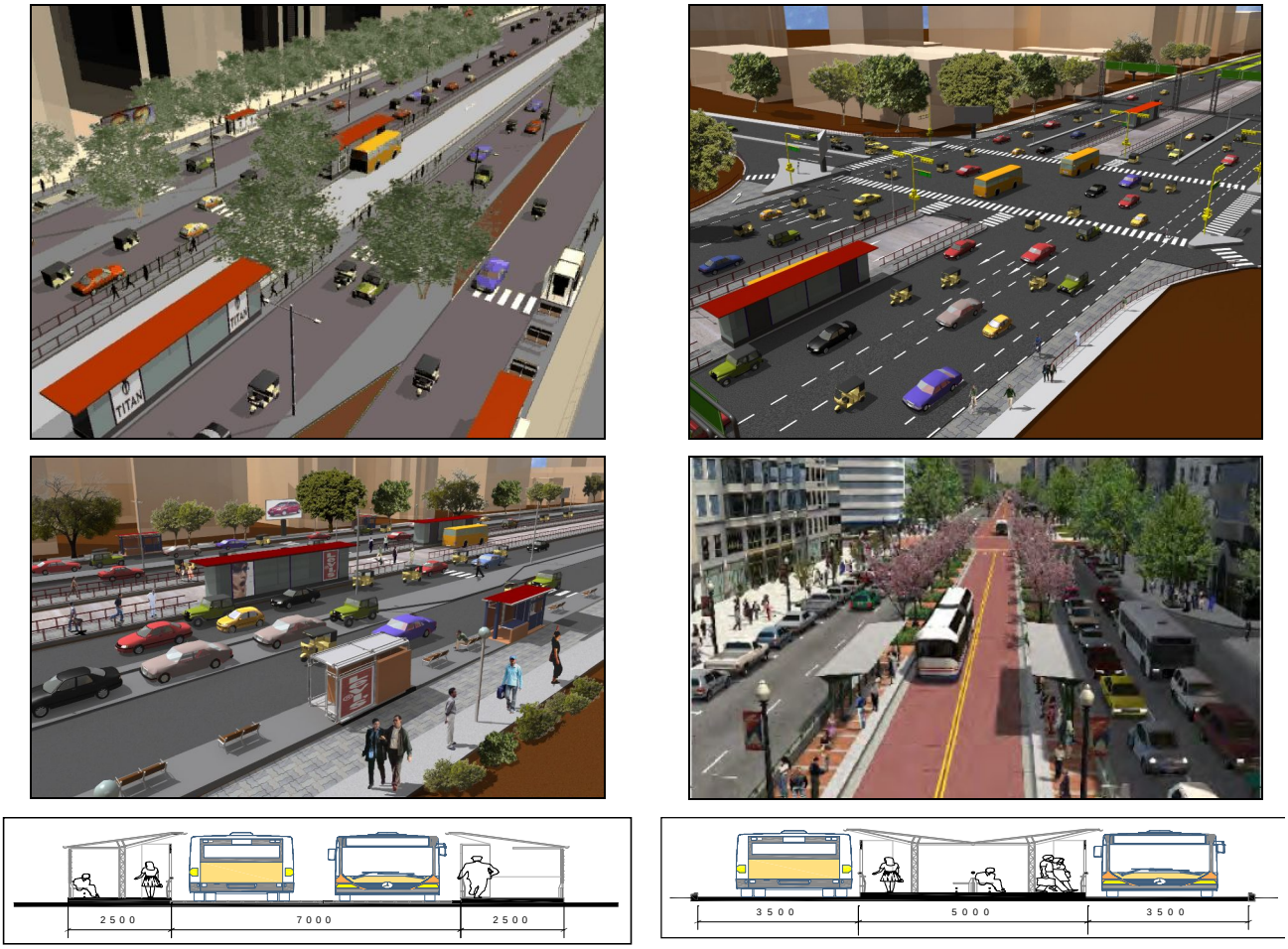


Figure 0-9: Placement of Bus Stops and Junction Treatments

Figure 0-10: Provision of underpasses exclusively for Buses

Strategies for other Regional Transport System

58. **Air Transport -** It is assumed that 4-5% of total intercity travel demand will be met by air transport. Based on estimated demand, strategy to provide an air terminal has been influenced by following factors.

(a) The existing nearest airports of Delhi and Jaipur are at least 120 Km away from the Global City hence raising need for another airport in and around the Global City.

(b) It is likely that on a long term basis air passenger demand will be in the range of about 5% trips of the total inter city travel demand, considering majority of city constitute of middle and high income groups working in the Global City.
(c) It is recommended that air travel infrastructure can be developed in third and forth phase of the Global City.
(d) The airport can be modeled on a commercial format to make it a feasible project.

59. **Rail Transport -** It is assumed that about 22.5% of total intercity travel demand will be met by railway system. The strategies to expand rail based transport connectivity to the city are as follows.

(a) To expand rail and passenger facilities within the project area, with a modern railway terminal.
(b) High speed rail connectivity to Global City with respect to important cities in the vicinity (Delhi at Jaipur) is important to achieve desired economic success.
(c) Goods and logistic facilities with respect to rail link are to be developed within the project area.
(d) It is likely that on a long term basis 25% to 30% of the inter city trips can be performed through rail connectivity to Global City.
(e) A desirable site along with existing rail line is recommended in the global city for provision of a world class passenger and good terminal facilities.

60. **RoW Treatment and Street Furniture -** Following strategies are to be adopted for RoWs treatment and street furniture for the Global City.

(a) RoWs for major arterial, sub arterial, and important roads will be used for public transport hence related passenger and pedestrian infrastructure to be developed along them.
(b) Bus stops, pedestrian cross over points, traffic signals, and road geometry of important junctions is to be dealt with international standards.
(c) Street furniture to deal with quality passenger and pedestrian facilities to make them efficient, safe, and legible.
(d) Dedicated bus and public transport lanes are to be reserved which can be developed in a phased manner on major public transport corridors in reference to transport network plan.
(e) All streets are to be given landscape treatment in the form of boulevards to make them climatically comfortable and aesthetically appealing.

61. **Parking and Signage Management -** The strategies for parking are as follows

(a) International and national standards to be reviewed for arriving at parking standards for Global City.
(b) Each of cluster cities to have its special parking standards.
(c) No large parking areas are to be recommended in the city.
(d) Keeping in mind ground areas have significant value for public use in the city hence parking area can be vertically developed.

62. Signage system is primarily meant to make the city legible and provide necessary information system for passenger and people using transport and related urban infrastructure in the city. It is an issue related to information and aesthetic sense of the city hence it must be considered as a special assignment to design the signage system for the city.

E.11.2. WATER SUPPLY

Phase-I proposal for water supply

63. A short-term proposal depended on ground water and a long-term proposal based on surface water is proposed. Water for the former would be sourced from the network of tube wells drilled along River Sahibi where as water for the later would be from River Chambal. The short-term proposal would only be for Phase I of the Project while the long-term one would serve entire Global City for its total water demand.

64. The Sahibi river stretch is comparatively rich in terms of ground water potential. The aquifer comprises of Alluvium, which has good water retaining and recharging capacity. The depth of ground water table along the river varies form 18 m – 30 m. Hence the depths of tube wells were fixed as 35 m considering 5 m draw down during pumping. A matrix of tube wells along River Sahibi is proposed from Behror up to Haryana – Rajasthan boarder. This would suffice up to 2012, with in which a long-term proposal based upon surface water could be implemented. There after the water from these tube wells could act as backup in case of emergency. The tube wells would be recharged with rainwater through the natural drains draining in to Sahibi and its tributaries. In order to enhance the recharge 4 subsurface barriers are proposed along the River Sahibi.

Long term Options

65. It is recommended that Global City use ground water for Phase 1 requirement only and as depleted ground water is a major issue in the project area and its region. Extraction of ground water over a period of time would result in the deterioration in terms of quality and quantity. This necessitate for a dependable long-term source. A water supply system depended upon a surface source such as rivers or lakes would be a suitable option. Under this purview options such as tapping of Yamuna and Chambal waters were considered. Raw water storage reservoirs, conventional water treatment plants are proposed in the Project Area to treat the water. The various surface water source options considered are as follows:

(a) Yamuna water From Okhla barrage in Delhi.
(b) Yamuna water through Western Yamuna canal tapped at Bhiwani in Haryana
(c) Yamuna water through Western Yamuna Canal tapped at Loharu in Haryana.
(d) Chambal Water from Dholpur in Barathpur District of Rajasthan.

66. Finally, after comparative evaluation, Option of drawing water from Chambal was recommended as desirable. River Chambal is a perennial rivers running along Rajasthan-Madhya Pradesh border and is the lifeline for many districts in Rajasthan and Madhya Pradesh. Many important irrigation and hydroelectric projects such as Rana Pratap Sagar, Gandhi Sagar, Kota Barrage, etc., are located across River Chambal. Water supply to Barathpur is from River Chambal. The intake is located at Dholpur near the National Highway Bridge. Water supply to Alwar town and villages around are envisaged from River Chambal in the near future. It's proposed to tap water for Global City from River Chambal at Dholpur. The tentative route would be Dholpur-Barathpur- Nagar Kishangarh- Behror spanning over 250 km with a static lift of over

170 m. This source is highly reliable in terms of quantity and quality when compared to the other sources.

E.11.3. SEWAGE TREATMENT AND WASTER WATER RECYCLING

67. Several processes such as activated sludge process (ASP), bio- tower activated sludge process, extended aeration treatment, trickling filters, anaerobic ponds, aerated lagoons and facultative ponds were studied in detail and their relevance to this site were evaluated. Based on the comparative studies it was decided to suggest the **activated sludge process** as the recommended option.

68. The treatment system would be capable of handling 100 MLD during the project horizon 2032. However, the treatment plants would be provided in different phases in two different locations in the project area depending upon the growth. This would avoid excessive pumping of sewage and minimize the cost on laying and operation of pumping mains. It is proposed to have an STP for Zone 1 of 20 MLD capacity based on the ultimate population of 2032. The Zone II will have STP of 50 MLD. The Zone 3 has an ultimate capacity of STP as 45 MLD.

69. In principle, decentralized sewage treatment system is proposed for Global City. As a whole three STPs are proposed in Global City. The location of these STPs is based on general slope of the Site of Global City area, as it slopes toward north-eastern direction. As part of urban structure for Global City main road network is also oriented with respect to overall slope of the city, hence supporting the sewage, storm water, and other drainage requirement towards north-eastern side while respecting natural slopes of the site. The summary of main reasons for locating STPs is as follows:

(a) Decentralized System for Sewage Treatment for Global City
(b) Predominant wind directions, which is from north-west and west sides.
(c) Using natural slopes of the site, which are towards north-eastern direction
(d) To recycle waste water for urban irrigation and other needs of the city, that is supported by the decentralized sewage treatment system.

70. Three STPs are proposed in Global City in green belt located in north eastern side of Global City by using above criteria. The STPs will be augmented in their capacity in reference phased development proposed for Global City. The land required for sewage treatment works out to be 25 hectares.

Waste Water Recycling

71. There are two types of wastewater created in a home, each of which can be treated and used in various ways. Black water is water that has been mixed with waste from the toilet. Black water requires biological or chemical treatment and disinfection before re-use. Black water should only be re-used outdoors. Grey water is wastewater from non-toilet plumbing fixtures such as showers, basins and taps. Depending on its use, grey water can require less treatment than black water and generally contains fewer pathogens. Treated grey water can be re-used indoors for toilet flushing and clothes washing, both of which are significant consumers of water. Grey water can also be used for garden watering.

72. It is proposed to introduce the concept of recycling at the primary level itself i.e at household level or for a housing apartment as a whole. This will eliminate the requirement of separate networks required for collection of grey water and supply of treated recycle water, there by saving a huge amount of capital investment. To achieve high rate of success a simple treatment method has to be introduced, enhancing easy installation, operation and maintenance.

73. The grey water from kitchen would contain lot of organic matter and water from washing would be loaded heavily with detergents and the treatment of these water would be complex and uneconomical at household level. Hence it is proposed to collect only the grey water from bathrooms and recycle it for flushing and gardening. 30 lpcd of grey water would be recycled and reused for the above-mentioned purposes.

74. The grey water from the bathroom would be collected in a sump through a separate plumbing system and collected in a sump. This would then be allowed to pass through a coarse sand filter to remove the crease and other floating matter. The treated water could be then disinfected by means of chlorination or by any other means and pumped to an overhead tank and conveyed to flushes and for gardening through a separate plumbing system. The success of this system depends upon the implementation in household level or at community level. To ensure effective reuse of grey water these facilities must be made mandatory in each and every housing units failing to do which would not only result in over consumption of treated water but also increase the load on sewage treatment plant.

75. **Dual Piping System:** Waste water recycling is an important part of the water conservation in Global City. The waste water recycling strategies is taken at two levels: (a) Recycling of grey water within cluster cities or community level; and (b) To recycle waste water from Sewage Treatment.

76. The grey water recycling is recommended to be made mandatory in Global City in cluster cities level or at community level. It is expected that approximately 30 lpcd of grey water can recycled for flushing of toilets, gardening and other open space irrigation purpose. The recycling infrastructure for this purpose is to be promoted within the cluster cities and community area level.

77. While recycling of treated sewage at city level from the proposed three STPs is recommended for urban irrigation needs. It is expected that approximately 50% of the sewage can be turned into recycled water and can be used for urban irrigation. Toward achieving this objective a dual pipe system for recycling waste water in form of treated sewage is proposed for recycling in Global City.

78. Service ducts system are proposed along main road network to place sewer lines and pipe network for recycling waste water. Refer proposed sections for main roads in Section 6.1. A green and open space network is proposed in Global City for urban forestry, open and recreational space requirements.

Waste Water Recycling and Rain Water Harvesting

79. The waste water is recommended to be recycled through the following process.

(a) **Grey water recycling:** Approximately 20-25% of the water supply at building level gets converted into grey water as waste from kitchens, basins, and showers. The recycling of grey water is recommended at household level or at the community level. It is estimated that around 35 MLD of grey water from the total supply of 225 MLD water supply demand for Global city can be recycled for flushing of toilets and urban irrigation or gardening purpose. This is a substantial saving on water resources of the region, project costing, and treatment cost of sewage.

(b) **Rainwater Harvesting:** This is an integral part of the Global city structure plan, where green system is design for ground water recharge through rainwater harvesting. It is also recommended in the guidelines for the Global city that all plot of over 500 sq.m should have compulsory rainwater harvesting within the plot. The harvested water can be used for ground water recharge or domestic use. It is estimated that approximately 40 MLD ground water can be harvested with Global City (91.0 sq km approximately) made available through effective rainwater harvesting keeping in mind that Alwar district receives average annual rainfall of 570 mm. Figure 6.6 presents rain water harvesting and ground water recharge.

E.11.4. SOLID WASTE MANAGEMENT AND RECYCLING

80. The solid waste management system suggested for the Global City at SNB is outlined below. In designing the system, the prevalent norms and standards as prescribed by the Central Public Health and Environmental Engineering Organisation (CPHEEO) and the Ministry of Urban Development and Poverty Alleviation have been referred to. A benchmarking exercise was also carried out to evolve an understanding of the Solid Waste Management System of some prominent cities that are functioning in the global arena.

Temporary Storage of Wastes – Containers for Waste Storage

81. The quantity of waste generation in various horizon years, the capacity requirements of the temporary waste storage points have been estimated. Door to door collection of wastes along with source segregation shall be practiced. For this purpose, each household shall maintain two bins – one for biodegradable and the other for the non-biodegradable fraction. The frequency of collection shall be worked out as alternate day collection of biodegradable fraction and weekly collection of non-biodegradable fraction. The household waste thus collected shall be stored in 1.5cu.m containers. These 1.5 cu.m shall be placed along all major roads. Mechanized containers of size 1.5 cu.m shall also be placed at major commercial centers. Litter bins, either pole-mounted or a hanging one, shall be provided at strategic public spaces and along major roads to minimize littering on roads

Transportation of Wastes

82. The future demand assessment is carried out based on the projected population, quantity of waste generation and extent of containerisation. Containerized wheelbarrows have been proposed for house-to-house waste collection (with source segregation). The wastes thus collected primarily through wheelbarrows shall be

transferred to the 1.5cu.m containers. Waste stored in the metallic containers shall be transported to recycling station/landfilling through mechanized compacter. Improved mechanized system shall be procured, thereby eliminating the chances of manual handling.

Sanitary Land filling

83. This is presently the most common method of waste disposal, which causes problems of subsoil-water contamination and air pollution. True Sanitary Landfills for untreated mixed wastes require impervious soil strata or liners at the bottom, bottom piping for collecting and pumping out leach-ate for treatment and re-circulation, along with piping arrangements to collect, extract and use part of the methane gas generated in such anaerobic conditions. The waste is also to be covered daily by soil or inert material in scientifically managed cells. These precautions are expensive but necessary.

84. With available land for waste disposal becoming more and more scarce with time, efforts must be made to strictly minimize the waste dumped into landfills, by segregating non-biodegradable waste for recycling and by composting biodegradable waste. Land filling should be used only as the last step in the waste-processing chain, not for untreated mixed waste. Once compost plants are set up, only rejects should be land filled, in a scientific manner.

85. The landfill site should be located so as to allow for a buffer zone of 500 mtrs. Around such sites as per Govt. of India (MoUD and MoEF) guidelines. A landfill site is proposed for solid waste disposal of 25 hectare with 500 m buffer in north-west side of Global City. This is desirable location from drainage and wind directions standpoint. At general slopes are towards north-east and predominant winds are from north-west and west side.

Composting

86. Aerobic and anaerobic processes can do composting. The aerobic windrow process can now be completed in 45-60 days, on any scale, even with mixed non-toxic waste, by repeated turning and aeration. Vermin composting is a process in which earthworms consume decayed plant and animal waste with the help of bacteria in their gut, to excrete fine-grained soil-like vermin-castings rich in minerals and microbes. The compost produced is very beneficial to plants and free of germs. The process is well suited to small-scale segregated biodegradable waste at de-centralised locations. **Figure 6.6C** and **Table 6.51** show the composting techniques.

E.11.5. POWER SUPPLY

87. The possible options with respect to identification of power source for Global City are:

(a) To have its own Captive Power Station

(b) To share it with central grid or to have an agreement with NTPC

(c) Augmentation of Existing / Proposed Power Station within Rajasthan

Captive Power Station

88. To have its own captive power station, the initial investment is quite high. To set up a gas based power station, the investment needed would be Rs. 3.25 crore/MW while for thermal it would be around Rs. 4 crore/MW. There is also a need for abundant supply of natural resources like Natural Gas for the Gas Based Station and coal and water for the Thermal Power Station.

89. Therefore, looking at the investment and also the requirement of natural resources a captive power plant in the initial phases may not be feasible. However setting up a captive gas based power plant for Global City can always be explored as a long term option for Phase III and IV.

Power Purchase Agreement with Central Grid / NTPC

90. Alternative to captive power station is to have legally binding power purchase agreement with National Thermal Power Corporation (NTPC) or the National grid. Under this agreement payment can be made to NTPC for the augmentation of its present power station at Badarpur or any other near by power station suiting to NTPC. This option can ensure guaranteed power supply of fixed MW. **The Power Purchase Agreement with Central Grid / NTPC is recommended option for the Global City.**

Augmentation of Existing/ Proposed Power Station within Rajasthan

91. A third alternative would be to augment an existing or proposed Power Station within Rajasthan. In the context of Global City the most suitable place seems to be Barsing Sar project, which is close to Global City.

E.11.6. IT AND TELECOMMUNICATION INFRASTRUCTURE

92. Global city is visualized as knowledge and urban infrastructure led city. Provision of IT and Telecommunication Infrastructure with cutting edge technologies will be the major reason for success of current and future cities in globalizing urban and world's economy. It is proposed to have cutting edge and *state of the art* IT and Telecommunication infrastructure in Global City, which can combine wireless and broadband based technologies. IT and Telecommunication is a very dynamic sector and private sector led service providers are able to provide high quality IT and Telecommunication services currently in India.

93. The areas recommended for management and maintenance of urban infrastructure through use of IT and other technologies are as follows.

a) **Management of Urban Transport:** Especially in the area of traffic management and public transport use of ITS is affectively employed in cities to manage traffic and public transport information to overcome traffic congestion issues, providing effective real time information to users, and creating safe environment for public transport users. It is recommended to use ITS system for bus based public transport system and management of traffic in Global City. Use of GPS and GIS system can be inbuilt in management of city through IT. A detail project study is recommended

while promoting public transport infrastructure including use of ITS and other technologies.

b) **Management of Urban Service:** It is recommended that management and maintenance of urban services especially for water supply network, sewerage system, power supply a combination of technologies be used in Global City. Use of technology in management and maintenance of these urban services will facilitate provision of quality urban services and reduce use of human resource in the city for maintenance and management purpose. The current technologies which are combination of video cameras, sensors, GPS, GIS and other telecommunication technologies can be used for identification of problem areas and addressing issues of maintenance and management.

c) **Urban Surveillance:** Security is an important issue in cities to make cities safer. It is recommended that use of video and other camera based information technologies which can be used in surveillance of traffic, parks, streets, and other public space to make cities safer.

d) **Provision of Telecommunication Infrastructure:** In times of technology led transfer of information for sound, video, data, and other graphic information multiple technologies are available. It is recommended that combination of technologies of wireless and wired can be used to receive and transfer of information in Global City. Private sector is playing a major role of a service provider in this sector to make cities truly IT led human environment. The telecommunication aspects have been further illustrated here to promote IT infrastructure in Global City**.**

94. The footprint of present day telecom facility is extremely small. Public space to be reserved for telecom facilities other than telephone exchanges consist of ducts within the road rights of way for terrestrial optical fibre cable lines, which can be accommodated in the service ducts. These high capacity cables shall carry the entire traffic of data, telephony, television, and etc. to and fro from the consumers. At the consumer end the optical signals from optical fibres shall be converted to electrical signals through a small device and routed to various output and input devices like computers, telephones, televisions, etc through copper wires. For mobile telecom, land requirements are typically limited to 150m^2 to accommodate signal transmission towers and associated operations/maintenance facilities.

E.12. PHASING AND PROJECT COSTING

E.12.1. PHASING

95. **Objectives:** The Global City at SNB Complex is programmed for approximately one million people by 2032. The city is proposed to be built in four phases and will constitute of multi cluster cities based urban economy. The objectives of the phasing for the city are as follows:

(a) To evolve the city in space and time such that city agency/ies can carryout structural adjustments based on human requirement and market forces.

(b) To prioritize development components, in this case cluster cities, which can contribute as the seed economic base for Global City and have spiraling effect on the long term economic sustainability of the city.

(c) To phase out investment costs for urban infrastructure development, land procurement, and land development.

96. To build the city over a period of time based on resource availability (natural and financial), achieve a sustainable community base, and richness in urban human and urban built environment. The first three phases of the city constitutes five year duration each and final phase of Global City consist of ten year period. The four phases of Global City are illustrated below.

(a) **Phase 1:** The idea behind development of Phase 1 is to initiate and establish an infrastructure led city with economic base which will have spiraling effect on the city's economy and create a sustainable economic base on a long term. The cluster cities proposed for Phase 1 are Knowledge City, Cyber City, Entertainment City, Medi City, Media City, and smaller components of World Trade City, State City, and Industrial City.

(b) **Phase 2:** Phase 2 is an expansion of the cluster cities developed in Phase 1. Few new cluster cities will be added in Phase 2 to broaden the economic base of the city. The Phase 2 will be a horizontal expansion of the city and simultaneous intensification of the cluster cities developed in the previous phase. In principle, city as a whole grows in north-south directions on both sides of the highway. The new cluster cities which will be added to Phase 2 are Bio-tech City, Dry Port City, and substantial development of Residential City. The cluster cities of Knowledge City, Cyber City, Medi City, Entertainment City, World Trade City will continue to expand horizontally and in terms of intensification of existing development areas.

(c) **Phase 3:** Phase 3 constitutes expansion of the cluster cities developed in first two phases of Global City. However, Cyber City, Media City, Industrial City, Entertainment City, and very large part of Knowledge City would be in full existence by the beginning of the Phase 3. Phase 3 is consolidation of the city as a whole. The cluster cities by now form and function as a sustainable economic environment with more or less complete urban infrastructure base.

(d) **Phase 4:** Phase 4 is the final phase of Global City and will be in place by end of 2032. It is expected that with completion of final phase city would be close to one million people and having complete urban infrastructure to achieve a city of international stature. Future expansion of the city beyond 2032 must be based on sound planning principles and in reference to existence of Global City at that phase of time. It is likely that area across the Sahibi and in between the proposed Railway Station and Airport would be logical area for further expansion beyond 2031. The aspects which define Phase 4 of Global City are as Follows.

Table 0-5; Details of phasing and associated cluster cities

Sl No	Clusters	Site Area (Sq Km)				Total
		Phase I	Phase II	Phase III	Phase IV	
1	Knowledge City	1.73	3.01	2.05	4.53	11.3
2	Cyber City	2.11	1.36	0	0	3.5
3	World Trade City	2.343	0.91	1.33	2.14	6.7
4	Entertainment City	1.7	3.16	0	0	4.9
5	Media City	1.26	1.26	0	0	2.5
6	Industrial City	1.2	0	0	0	1.2
7	Medi City	1.72	0.49	0	0	2.2
8	Dry Port City	0.93	1.39	0.82	0	3.1
9	State City	0.57	0.46	0	0	1.0
10	Biotech	0	1.53	0	0	1.5
	Sub-Total	13.563	13.57	4.2	6.67	38.0
11	Common Infrastructure					
11a	Housing	2.155	6.375	5.12	4.69	18.3
11b	ISBT	0.57	0	0	0	0.6
11c	Parks	5.54	2.14	8.06	3.01	18.8
11d	Mixed Use	0.68	1.12	1.27	0.77	3.8
11e	Socio-cultural	0.00	0.45	1.64	0	2.1
11d	Roads	5.30	1.97	0.38	0.60	8.3
	Sub-Total	14.24	12.06	16.47	9.07	51.8
	Total					**89.8**

E.12.2. PROJECT COSTING

97. The overall cost for urban infrastructure of Global City, which includes land cost, trunk network and secondary distribution system is INR 46596 million. The cost for development of cluster cities is INR 493956 million, which include land cost, land development cost, and built up area cost. The environmental cost for green system and parks is INR 6517 million, which includes city parks, green buffer along NH-8, investment for environmental conservation and sustainability.

Table 0-6: Summary of Project Cost of Global City

Sl No	Components	Cost in Million INR				
		Phase I	Phase II	Phase III	Phase IV	Total
A	**Cluster Level Costs**					
1	Land Costs	9884.94	12971.91	4351.73	4316.15	31524.72
2	Land Development Costs	7073.53	9195.25	5068.58	5075.00	26412.35
3	Built up Area Costs	110244.00	142326.00	86154.00	85900.00	424624.00
4	Infrastructure Costs					
4.1	Water Supply	152.44	295.81	209.81	63.42	721.48
4.2	Sewerage	354.42	687.76	487.80	503.98	2033.96
4.3	Solid Waste	25.78	75.16	130.76	227.92	459.62
4.4	Power	901.05	1151.99	671.72	737.80	3462.55
4.5	Roads	1242.38	1630.06	926.59	919.02	4718.05
4.6	Total Infrastructure (Within Clusters)	2676.07	3840.78	2426.68	2452.14	11395.66
5	Total Cluster Level Costs	129878.53	168333.94	98000.98	97743.28	493956.73
B	**City Level Costs**					

Sl No	Components	Cost in Million INR				
		Phase I	Phase II	Phase III	Phase IV	Total
1	Land Costs	2623.08	506.76	789.63	281.45	4200.92
2	Land Development Costs	272.36	2.72	1.98	0.45	277.50
3	Built up Area Costs	1425.00	0.00	0.00	0.00	1425.00
4	Infrastructure Costs					
4.1	Water Supply	316.11	3049.09	0.00	0.00	3365.20
4.2	Sewerage	522.77	0.00	217.24	0.00	740.01
4.3	Solid Waste	44.65	71.68	75.87	82.34	274.54
4.4	Power	2779.54	4082.34	2604.36	2720.14	12186.38
4.5	Roads	4094.28	2269.41	1716.98	799.20	8879.87
4.6	Public Transport	2044.57	2381.90	2105.12	2198.74	8730.33
	Total Infrastructure (City Level)	9801.91	11854.42	6719.58	5800.42	34176.33
5	Environmental Enhancement Costs	5031	265	889	332	6517
6	Total Common City Level Costs	19153.82	12628.44	8399.90	6414.09	46596.26
C	**TOTAL CAPITAL COSTS**	**149032.35**	**180962.38**	**106400.88**	**104157.37**	**540552.99**

E.13. POTENTIAL INVESTORS AND ANCHOR INDUSTRIES

98. As stated earlier, Global City is a green field project and falls in a NCR region where number of cities are competing for promoting investments from private sector to develop cities. It is important that quality investors and anchor industries are promoted in the initial development process of Global City to make it a success. Following potential investment sectors and anchor industries are visualized important for economic success of Global City.

99. **Knowledge Industries:** It is conceived that Global City become a knowledge led development, where high quality institutions, research centres, schools, and other academic forums become major resource of the city to create quality and skilled human resource. It is also expected that most of the cluster cities proposed in Global City would required highly qualified and skilled human resource. Hence, it is visualized that knowledge industries are most important part of the anchor industries in Global City and highly potential area for private sector investment. It is expected that educational institutions, research centres, skill development institutions, information technology hubs, IT and bio-technology led industrial developments are likely to become anchor for promoting urban economic base in Global City.

100. **Tourism and Entertainment Industry:** The proposed Global City is located only 120 km from and Delhi and there is significant development taking place in this part of the NCR and along Delhi -Jaipur national highway. Delhi-Jaipur is also an important tourism corridor. It is expected that entertainment and tourism industries are likely to play an important role in anchoring economic and urban development in Global City. In the light of this potential economic development a significant development is proposed along the NH-8 in Phase 1 of the Global City in the form of Entertainment City.

101. **Commercial and Corporate Development:** Very large amount of industrial development is taking place in NCR region. To promote business infrastructure to support these industrial developments in the region Global City can play an anchor

role. Hence, it is expected commercial development for corporate offices and related commercial development can play a role of anchor investment to promote Global City. It is important to support such development through quality transport infrastructure for public transport, intercity movement through rail, road, and air.

102. **Housing:** there is significant shortage of quality housing areas with support social and recreational infrastructure in the NCR. It is expected that housing development can play an important role in supporting promotion of knowledge industries, tourism and entertainment infrastructure, and corporate hubs.

103. In addition, it is expected that small scale and non polluting industries, dry port, media centres can too become part of the anchor investments to make Global City commercially viable

E.14. PROJECT IMPLEMENTATION STRATEGIES

E.14.1. APPROACH

104. The strategies to formulate approach for implementation of Global City deals with setting up city management or institutional system, land procurement options, resource mobilization for development of the city and its cluster cities, and marketing strategy for PPP. The strategies for project implementation for Global City are as follows

(a) Global City as a whole is anticipated as a PPP led model, where capital and Foreign Direct Investment (FDI) will play a major role in structuring the resource mobilization for making of the city.

(b) Global City is a green field project and is projected to start with knowledge-led economy and cutting edge urban infrastructure led city.

(c) It is envisioned that success of implementation of Global City is linked with having **state-of-art city management or institutional framework,** which can provide dynamic direction for public-private sector led partnerships for development of the city.

(d) Land procurement is important issue in development of cities, especially related to green field projects. It is important to keep in mind that project area consists of smaller land holdings, which are currently in agriculture use. It is important that negotiated land procurement options are likely to suite for efficient implementation of Global City in terms of time required for the land procurements and giving compensations for the affected parties.

(e) It is important to state here that Global City should not become a paradise for investors and developers to make fortune but they instead should participate in the making of the city with a specific purpose, which is defined in this report, and in the process can also benefit by developing, marketing, and implementing the city.

E.14.2. RECOMMENDATIONS FOR INSTITUTIONAL FRAMEWORK

105. Based on the objectives of development of Global City and study of options available for institutional framework following recommendations are made.

- Considering that Global City would be private and foreign investment led city and it would require high transparency single window oriented city management system and competent decision making institution to plan market and manage the city. It is desirable hence recommended by the consultants that **Alternative 1 based on Joint Venture Model is** desirable option for Global City as it would be friendly and familiar with the needs of private and foreign investments groups and capable of promoting city of international stature .
- The **Alternative 2 which is a Corporation based Model** in lines of CIDCO and RIICO is potentially a second option however not recommended by the consultants. It would certainly have autonomy to function and operate in managing the city development process vested with the corporation by GOR. However it may not be very effective in mobilizing quality private sector and foreign direct investments.

E.14.3. LAND PROCUREMENT OPTIONS

106. The consultants reviewed a number of models of land acquisition and development that have been adopted by State Government entities for urban and industrial development purposes, which includes:

(a) Compulsory land acquisition under the Land Acquisition Act. 1894
(b) Town Planning Scheme through Reconstitution of Plots, which has been implemented by Urban Improvement Trusts in the past
(c) The Jaipur Development Authority 25% and Road Strip Model in which the key feature is compensation of affected landowners with developed land parcels and commercial development rights.
(d) The Gurgaon Model in which the key features are where Licensing of developers, colonizers to take up land acquisition and development.
(e) Kolkatta JV Model, in which the key features are where Land to be acquired by the Govt and in this case it was Housing Board enters into a joint venture with a private company, company registered under the Companies Act. The land acquisition was the responsibility of Housing Board.
(f) CIDCO Model (Navi Mumbai), in which the key features are where Land is acquired by the Govt. under the L.A. Act but with a choice of compensation mechanisms offered to landowners – monetary, plots in other parts of Navi Mumbai or Transfer of Development Rights Certificates.
(g) JDA model of land procurement is done with an idea of landowners receives developed land as form of compensation.
(h) Magarapatta Model is a co-operative formed by landowners to develop a township where all land owners are shareholder in the township. Hence, there is no land acquisition involved.

Recommendations for Land Procurement:

107. The land procurement is the most important aspect of development and implementation of Global City. There are associated successes and risks of failures involved with land procurement process. The consultants in light of planning process and understanding of the project recommend the following options.

(a) It is important to keep in mind that Global City is PPP model and FDI-led project. Besides, the land holdings in the project area proposed for Global City are comparatively smaller in size hence very large number of landowners is involved in this process of land procurement and development of the city. Global City is also to be an urban infrastructure-led project, where responsibility of GoR is

greater to achieve the objective. **Under such scenario, the consultants recommend that there is need to have combination of land procurement policies.**

(b) For development of trunk urban infrastructure for Global City, GoR or City Institution if authorized to procure land on behalf of GoR, acquires land needed for trunk networks of urban infrastructure and roads, city parks and buffer along the NH-8, social infrastructure, and other important amenities.

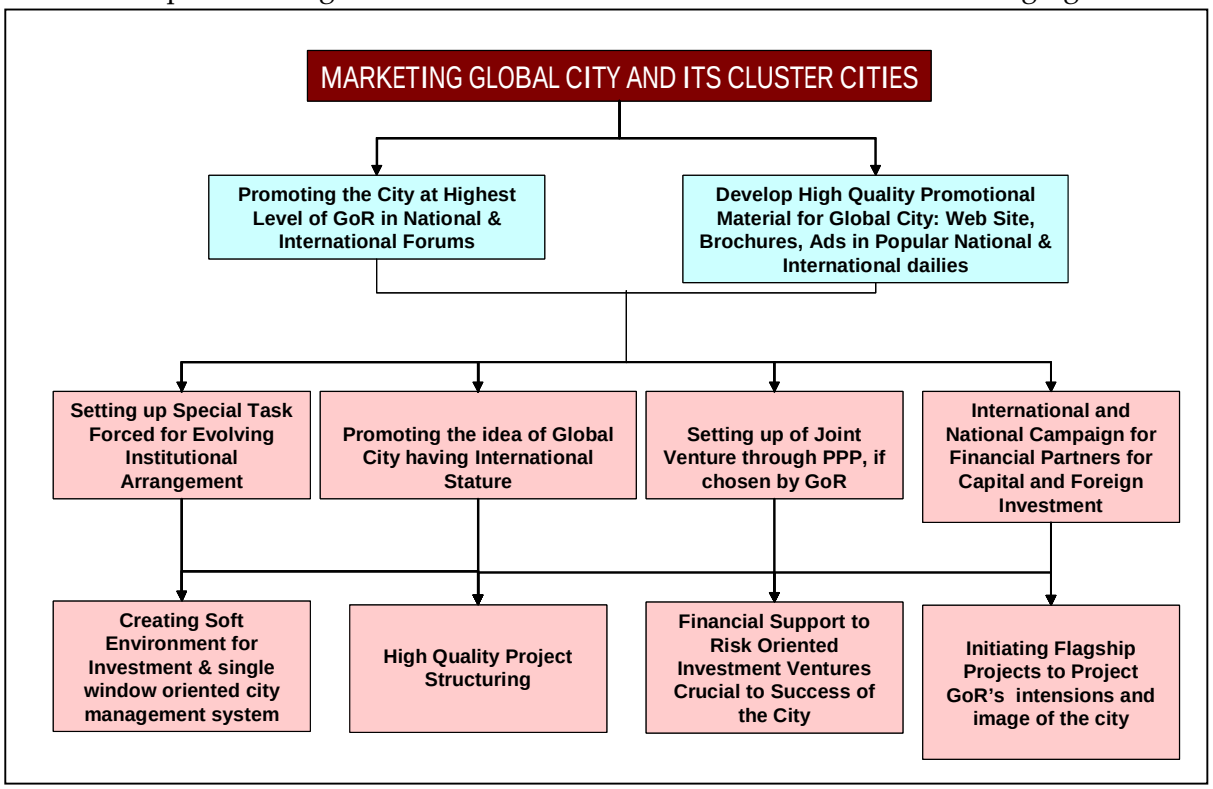
(c) It is also recommended that GoR or city agency may not exceed procurement of land beyond 25% of total land requirement for the city. The land can be acquired with options of negotiated land purchase deal with second option under the compulsory land acquisition act. However, if agency chosen for city development is a JV between GoR and private investment or financing groups then it may be desirable to have negotiated land purchase deal. In this case, the Kolkata model for land procurement may be desirable.

(d) The land required for cluster cities may not be acquired by GoR but can authorize investment companies to procurement land on market prices through negotiated land purchase deals. However, private companies must follow compensation framework for land procurement recommended in this report as part of the R&R framework. In this case, the land procurement model followed by HUDA in Gurgoan and other cities of Haryana may be desirable.

E.14.4. RESOURCE MOBILISATION AND MARKETING STRATEGIES

108. In principle, Global City to be a public and private sector led urban infrastructure and development project. It is also recommended that a Joint Venture between GoR and private financing and investment groups under the companies act be the institutional framework to management city on short and long term basis. Considering the fact that cities are competing for economic and financial place in the globalizing urban economy, hence setting up a dynamic institutional arrangement is important to create a soft environment to mobilize resources to build urban infrastructure and cluster cities. High degree of competence in city agencies is necessary to build urban infrastructure and quality cities and to promote a city which

can find its place among the successful cities of the world. This is a challenging task.



E.14.5. INCENTIVES AND ATTRACTING INVESTMENT

109. In India existing and new cities are competing to promote investments from private and other institutional sectors. To promote investments various innovative methods and incentives are being used by city and state governments to build cities. In this context of promoting green field cities it becomes important that incentives are offered to enhance chances of quality developments. It not necessary that incentives are always monitory and tax oriented. In this context a combination of institutional, simplified procedures to bring investments, and tax incentives are more desirable options. Following strategies and incentive areas are recommended here for promotion of investments in Global City.

(a) To create a dynamic institutional set up for marketing, implementation, and management of the city to tap private sector and other institutional investments. A single window approval system and information system is most critical in this respect. .

(b) To simplify land procurement procedures to promote private sector investments. Number of options are recommended in this study which are private sector investment friendly.

(c) To support social, urban services, and transport infrastructure through viability gap funding for public and private sector partnerships projects. Provision of public transport, open and recreational space, other social infrastructure are important areas for supporting viability gap funding. Also these development components are important part of making cities an economic success.

(d) Creation of water and power infrastructure for Global City are very critical infrastructure components to support through viability gap funding if not promoted by the government.

(e) To provide tax incentives to anchor investments which may be similar to tax incentives given to SEZs and create a soft environment for negotiation with private sector bring investment. Various state taxes, duties, and local taxes can be restructured or given tax holiday for investment phase to promote private sector led development in Global City. There is a potential of declaring of some of the anchor industries or investments area as SEZ in the Global city, however this is entirely a prerogative of State Govt. of Rajasthan.

(f) Incentives for promotion of urban forestry and green belts could be a way forward to promote green image for the Global City. In this context various local tax incentives or holiday can be given for investment phase to promote investments for urban forestry and green area led recreational development.

(g) It is recommended that local or property tax incentives can be given to promoters who are carrying out green development in the form of rainwater harvesting, using solar energy, ground water recharge and promoting plantation etc.