Steering growth towards integrated regional development in rapidly growing Indian regions

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Introduction: Urbanization the Indian way

In 2011, India was 31.2% urbanized with 377 million urban residents (CoI 2011: 5). By 2050 the rate of urbanization is expected to increase to 56%, adding another 484 million urban dwellers (Swerts et al. 2014: 51). Urbanization is linked to economic growth and regional development. However, development in India is concentrated in certain large cities; the rural hinterlands are deprived of growth, resulting in spatial disparities across the country (Verma 2007; WB 2008; Kundu 2011). The projected future growth will be a challenge to be accommodated as the large cities face stretched resources and existing infrastructure cannot keep up with demand (Mukhopadhyay & Revi 2009; Sankhe et al. 2010; WB, 2013). These pressures also apply to the National Capital Region (NCR) Delhi, which is one of the world's largest rural-urban regions. Covering 1% of the national territory with 3.8% of the total population, the region generates 7% of India's GDP (NCRPB 2013). NCR offers diverse employment opportunities and is the constant source of attraction for the migrants. The NCR's population is projected to increase to 61.7 million by 2021, of which 20.2 million will live in Delhi (NCRPB 2013). This means that only 3% of the regional area must accommodate one third of the population growth. Achieving balanced distributed growth in the NCR will be crucial for sustainable development. Taking NCR as a case study, this paper discusses the current state of urban development, planning and implementation environment as well as instruments for growth management. The conclusion offers a framework for integrated regional development.

Current state of spatial development in the NCR

The NCR is composed of four states with National Capital Territory of Delhi (NCT) at the centre (see

Figure 1). NCT is located between the states of Haryana to the west and Uttar Pradesh to the east. A small portion of Rajasthan forms the southwest corner of the NCR. These three states contribute only partial area of their states to the region (refer Table 1). Although, NCT contributes minimum land area to the region, it relies on neighboring states to relieve its population pressure and to execute cross border infrastructure.
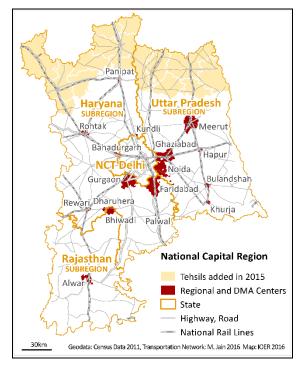

Figure 1: National Capital Region Delhi

Constituent states (sub-region)	Area (km²)	Population (million) in 2011
Haryana	13,428	11.03
NCT	1,483	16.75
Rajasthan	8,380	3.67
Uttar Pradesh	10,853	14.58
NCR (total)	34,144	46.03

Source: NCRPB (2013)

Table 1: Population and area of the states in the NCR

In 1947, the Indian government adopted decentralization policy for NCR, which foresaw the development of greenbelts around NCT and other growth centres to avoid the coalescence of the settlements. Several metro and regional centers were identified in the region. NCT and its six neighboring metro centers (satellite towns) are defined as Delhi Metropolitan Area (DMA) Also, nine counter magnet towns were identified within a 120 kilometer radius of the main city falling in different states. These towns were intended to redirect the flow of migrants away from NCT. The identified towns were planned to be self-reliant in terms of employment and housing, and were to be well connected with each other and with NCT via rail and road networks (NCRPB 1988; 2013). However, growth remains concentrated in and around NCT, while the centres outside

DMA remain underdeveloped. The envisaged growth centres had not reached their planned population growth targets by 2011. The only centres that outperformed the plan were Gurgaon-Manesar, Ghaziabad-Loni, Hapur-Pilkhuwa and Noida (c.f. fig. 1).

Name	Total Population	Proposed Population
NCT Delhi	16,787,941	19,300,000
Metropolitan and regional centre within DMA		
Bahadurgarh)	170,767	200,000
Faridabad	1,414,050	1,600,000
Gurgaon-Manesar	909,967	450,000
Ghaziabad-Loni	2,164,725	1,900,000
Noida	637,272	600,000
Sonipat-Kundli	310,966	350,000
Metropolitan and regional centre outside DMA		
Alwar	322,568	340,000
Baghpat-Baraut	154,074	160,000
Bhiwadi	104,921	100,000
Bulandshahr –Khurja	351,231	370,000
Greater Noida	102,054	700,000
Hapur-Pilkhuwa	346,719	300,000
Meerut	1,398,741	1,500,000
Palwal	131,926	170,000
Panipat	295,970	500,000
Rewari	143,021	200,000
Rohtak	374,292	420,000
SNB Complex	46,511	100,000

Source: Jain & Korzhenevych (forthcoming)

Table 2: NCR total and proposed population in 2011

The spatial analysis of population growth, economic development and changing modes of transportation within DMA from 1977 to 2010 identified the following drivers of urban sprawl (see also Figure 2): The population increased from 4.8 million in 1977 to 16.3 million in 2010. Until 1977 trade and commerce provided the majority of jobs in NCT. Public transportation via buses was sufficient to cope with the population growth; as a result, development was concentrated as nodes. NCT and satellite towns were separated by open spaces and were connected with NCT through national highways (Jain 2013).

The pace of urbanization increased from the 1990s in the wake of economic liberalization, leading to increased job opportunities, population growth and intensified developments. Buses were no longer able to meet demand, whilst higher income led to increased car ownership. In 2011, there were 7.2 million motor vehicles compared to 16.7 million inhabitants (NTDPC 2013: 392). Consequently, the city became fragmented in all directions, with increased ribbon development along the national highways connecting satellite towns with NCT. Both, core city and satellites expanded their physical peripheries until they eventually coalesced. The spatial transformation of DMA from 1977 to 2010 can be characterized as 'Nodes-Corridor-Megalopolis' (Jain 2013). This development trend seems to be the outcome of planning and implementation environment, and the

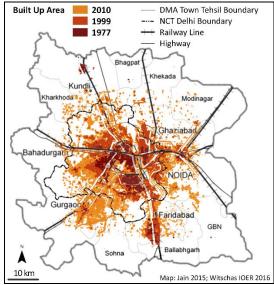adopted growth management instruments, which are discussed in the next section.

Figure 2: Spatial expansion in the Delhi Metropolitan Area between 1977 and 2010. Source: Jain (2013)

Planning and implementation in the NCR

Indian planning is top down and is more in terms of economic planning with a lack of spatial planning at the top tiers of the planning system. Spatial planning starts at the regional or at the city level. At national level, the National Institution for Transforming India (NITI Aayog replaced National Planning Commission in 2015) formulates and coordinates development activities in cooperation with the states and the union territories. At State level, detailed planning and project formulation is carried out, which are followed at the District level and Tehsil level. Tehsils, which form the lowest level of planning, consist of urban and rural areas. Spatial plans for urban and rural areas have to be coordinated at the district level by District Planning Committees (DPC) and at metropolitan level by Metropolitan Planning Committees (MPC). However, MPCs have not been constituted in the states of NCR, whilst out of 19 districts of Haryana only 16 have DPCs. NCT has been exempted from setting up DPCs and another two states have none (GoI 2007). Thus resulting in uncoordinated development in the region

The National Capital Region Planning Board (NCRPB) is the planning body for the region. Grants from the central and state government form the main source of funding for regional projects. NCRPB is merely an advisory body and does not have legal authority over state governments (TCPO 2007). This affects project implementation in the regions. Furthermore, the participating states in the region are reluctant to contribute funds because the respective state area within the region is less and economically well compared to other areas of the states (Nath 2007; Interviewee 6).

With four participating states and several agencies active in the region, coordination and cooperation is very difficult. The struggle between various political interests hinders the implementation of cross border infrastructure such as transport infrastructure (Interviewee 6; 8). For instance, NCT Transport Corporation buses were seized by the Uttar Pradesh (UP) government because they covered extra mileage outside their jurisdiction; in retaliation the NCT government did the same to buses from UP (Dutt 1999), affecting large number of commuters. Similarly, during the Commonwealth games of 2010, work on upgrading National Highway 24 through the region was stopped at the NCT border and prevented its extension to UP with opposing ruling party (Interviewee, 16). Similarly, the Mass Rapid Transit System (MRTS) is a stand-alone system without connections to feeder and other regional centres, thus weakening the regional integration. This lack of regional integration by public transport resulting in limited success of spatial decentralization in the NCR was also confirmed by Jain & Korzhenevych (forthcoming)

Urban growth management instruments in the NCR

Regarding instruments for growth management, top in the hierarchy is the regional plan, followed by sub-regional plans of respective participating states and, finally, master plans for cities. *Regional Plan 2001* was published in 1988. It was the first spatial plan for the region but was not successfully implemented as it was an advisory policy document and not a legally binding plan (interviewee 6; 7); its legal status was only confirmed in 1994.

The master and regional plans lack combination of regulatory and fiscal instruments; instead, only regulatory approaches such as zoning and floor area ratio (FAR) are used. Zoning is the main tool of land use implementation (DDA 1962). Although Transfer Development Rights (TDR) for redevelopment are recommended by Delhi's MP, until today they have not been introduced to the city (Bhardwaj 2012). The MP recommends reserving 10% of land for affordable housing in every housing scheme and provides incentives in the form TDR for relocation of the slums. However, these recommendations have previously proved ineffective. The traditional practice of single-use zoning, which segregates land use and the use of low FAR, has led to outward expansion and increased reliance on automobiles.

In addition, the land use and transport plans are not integrated. There are no measures to achieve a balance between housing and jobs. In fact, under the current system, wherever a road is built developments follow. Normally transport is taken as the consequential requirement. For instance, first the spatial plans were made and implemented, and later the MRTS was introduced. This mismatch of landuse and transport escalated sprawl in NCT and DMA (Interviewee 16; 10). Consequently, there is a high reliance on cars for commuting. NCT has the largest number of car ownership in India, and majority of municipal funds are used for constructing more road space, flyovers etc. (Ghate & Sundar 2014: 4, 2).

Framework for integrated development

In alignment with the case of NCR the lack of fiscal and regulatory instruments, and lack of viable planning and implementation environment have resulted in sprawl in major Indian regions. This section provides a framework for integrated regional development, which could be applicable to other similar regions.

At national level there is a need to specify priority projects as well as inter-state cooperation and coordination. The central government should take the initiative by funding cross-border projects and by ensuring a viable regulative environment for implementation. The regional authorities such as NCRPB should be made development authorities for the region and should be empowered. This would help control the multiplicity of agencies in the region.

A spatial strategy is required that integrates land use with transport at national level; this should also be applied to lower levels, i.e. regional, state and city level. At the same time, data and information as well as the aspirations and needs of the lower levels should be integrated in formulating the strategy. Regulatory and fiscal policy instruments are needed to integrate transport and land use. Zoning for high density mixed-use areas around transit stations as well as land readjustment techniques should be used to intensify developments along transit lines. FAR bonuses should also be offered to upgrade infrastructure and to foster the building of inclusionary housing. Incentives must be introduced to encourage the use of public transport as well as fees to reduce parking and congestion.

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Interviewee-10 (Ministry of Urban Development-Urban Transport-Officer on special duty)

Interviewee-12 (Delhi Development Authority-Director Planning Development Control)

Interviewee-13 (Town Country Planning Office-Ministry of Urban Development -Chief Planner)

Interviewee-16 (Ghaziabad Development Authority-Chief Town Planner)

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