Analysing effectivity of urban growth management in the National Capital Region Delhi, India

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List of Abbreviations

ADB	Asian Development Bank
AFPO	Adequate Facility Provision Ordinance
BBL	Building Bye-Laws
BLU	Binding Land Use
BPO	Business Processing Office
BP	Building Permit
BUA	Built Up Area
CAA	Constitutional Amendment Act
CDP	City Development Plan
CBD	Central Business District
CIP	Capital Improvement Programs
CMA Towns	Counter Magnet Area Towns
CNCR	Central National Capital Region or DMA
DA	Development Authority
DC	Development Control
DDA	Delhi Development Authority
DMA Towns	Delhi Metropolitan Area Towns or CNCR
FAR	Floor Area Ratio
FDI	Foreign Direct Investment
GDA	Ghaziabad Development Authority
Govt.	Government
GoI	Government of India
GM	Growth Management
JNNURM	Jawaharlal Nehru National Urban Renewal Mission
J-H	Job-Housing
LA	Local Authority
LAP	Local Area Plan
LDP	Local Development Plans
LDF	Local Development Framework
LR	Land Readjustment
LRT	Light Rail Transit
LU	Land Use
LUP	Land Use Plan
MCD	Municipal Corporation Delhi
MLA	Minister of Legislative Assembly

MP	Master Plan
MPD	Master Plan Delhi
MRTS	Mass Rapid Transit System
NCR	National Capital Region
NCRP	National Capital Region Plan
NCRPB	National Capital Region Planning Board
NCT Delhi	National Capital Territory Delhi
NBC	National Building Code
NDMC	New Delhi Municipal Corporation
NH	National Highway
OS	Open Spaces
PLU	Preparatory Land Use
PP	Public Participation
PuT	Public Transportation
RC	Regional Center
RP	Regional Plan
RSS	Regional Spatial Strategies
RWA	Resident Welfare Association
SEZ	Special Economic Zones
SPP	Spatial Plan Policies
TCP	Town and Country Planning
TCPO	Town and Country Planning Organisation
TDR	Transfer Development Right
TOD	Transit Oriented Development
UCA	Urban Control Area
UGB	Urban Growth Boundary
UGM	Urban Growth Management
ULB	Urban Local Bodies
UMTA	Unified Metropolitan Transport Authority
UTD	Urban Transport Division
UP	Uttar Pradesh
UPA	Urban Promotion Area
USB	Urban Service Boundary
ZP	Zonal Plans

Abstract

Urban growth and its management has been the concern for planners in both developed and developing countries. Their definitions reflects the relationship between the two, the former is a process of concentration of people or economic activities and the latter is a proactive approach enabling communities to maintain and improve their quality of life as they grow. Urban growth (or urban change) is often modelled as a cyclical process of urbanisation, suburbanisation, counter urbanisation and reurbanisation, and each stage is marked by peculiar characteristics of demographic, socio-economic, spatial development and problems associated with it. To deal with the stage specific problems, planners make use of urban growth management policies or strategies and tools to achieve effective urban growth.

If growth management is the application of planning policies and tools in a coordinated manner to achieve desired pattern of growth, then long term planning with infrastructure, housing, employment and social service are central to effective growth management, which is defined as a dynamic process for anticipating and accommodating development needs by balancing competing community-building goals and coordinating local and regional-scale interests. The right mix of policies and tools depending upon the governmental environment and their implementation are essential for effective urban growth management.

The old Indian metropolises of Mumbai, Kolkata, Chennai and Delhi are characterised by a lack of basic infrastructure, long congestion and commuting time, and outward expansion with large land take. The new incipient Bangalore, Hyderabad, and Pune are also on the same path of growth. The increasing population pressure coupled with lacking infrastructure has made the metropolises vulnerable to catastrophe from both climatic and non-climatic threats, where the latter is amplified by the former.

By 2030, Delhi urban agglomeration will accommodate 33 million people to remain second largest agglomeration of the world and will be a major contributor to Indian GDP. The economic growth of Delhi has not resulted in an overall development instead in the formation of slums, traffic congestion, sprawl, and environmental degradation. The current growth management approach will result in urban grid lock and decline. To deal with the above problems planners adopted population and employment decentralisation influenced by Greater London Plan (Abercrombie Plan) but have met with limited success in terms of providing respite to urban dwellers raising doubts on the effectiveness of the adopted growth management policies.

Not much literature is available for evaluating the effectiveness of growth management policies, although growth management policies have been adopted vastly in developed as well as in developing countries, but attempts to evaluate their effectiveness have been very limited. Piecemeal review of National Capital Region Plan (NCRP) the regional plan for National Capital Region (NCR) Delhi and master plan for NCT Delhi has been performed by scholars and the government agencies for preparing City Development Plan, regional plans and master plans for Delhi, but a systematic and comprehensive evaluation of the growth management policies has not been performed so far.

Evaluating the effectiveness of the growth management policies is just half answer to the problem of effectively managing urban growth, as it will only inform planners of where what went wrong, instead what is needed is a framework to manage rapidly growing cities. In the light of the above this research aims to develop a conceptual framework for managing urban growth effectively. To reach the above target the research was divided into three steps which form the three main objectives:

- To analyse the actual trend of urban growth in NCR Delhi with focus on NCT Delhi, in order to know what is the character of urban growth? What factors have driven the urban growth? How is the planning and implementation environment?
- To evaluate the spatial policies for NCT Delhi and NCR Delhi, in order to identify what and where are the gaps between actual and desired growth? What is spatial policy evaluation? Eventually developing and testing the evaluation approach.
- To learn from international best practices of urban growth management in order to improve the growth management situation in NCR Delhi. To know which factors are crucial for urban growth management? What are core competencies of the case studies and what can be transferred to NCR Delhi context?

To achieve the above objectives, the adopted research approach was a mix of qualitative and quantitative analysis, making use of Remote Sensing images (1977, 1999, and 2010), and census data (from 1961 to 2001). To analyse actual trend of urban growth in NCR Delhi, Klaassen-Van den Berg cyclical model of urban growth with a mix of socio-economic, population and spatial indicators was used. The results concluded that Delhi Metropolitan Area was in the phase of absolute decentralisation since 1981 and had sprawled by 2001. In fact, both market forces and government polices coupled with land use regulations lead to the current growth pattern, requiring strengthening of lacking building capacity (human resources, organisational and institutional).

For analysing the effectiveness of growth management policies for NCT Delhi and NCR Delhi, both quantitative (indicator based analysis) and qualitative (interviews and research articles) analysis was used to measure the performance of the policy objectives. The result indicated that policies are not faulted and were in alignment with the growth trend. The failure to meet their desired outcome was due to weak enforcement and implementation, coordination and cooperation between the states and authorities, missing public participation, use of old redundant data and weak political will, again highlighting the need for building capacity.

Qualitative analysis employing research articles was performed to learn lessons from international best practices of urban growth management. The analysis established that effective urban growth management is a function of regional composition, role of planning and implementing authority and agencies, combination of regulatory and fiscal based instruments, and public and political will to manage urban growth. In fact lacking or missing of any of the above factors impacts the effectiveness of urban growth management. The parallel drawn for NCR Delhi once again highlighted the need for capacity building in order to manage growth in rapidly growing Delhi region.

The final product of the research is a framework for planners consisting of standards for not only identifying the actual trend of growth, but also an approach to evaluate the policy performance, in order to upgrade the policy measure according to the growth trend. It also indicates the areas for building capacity for achieving effective urban growth management in National Capital Region Delhi.

Zusammenfassung

Die Themen Stadtwachstum und *Urban Growth Management* beschäftigen sowohl Planer in Industrie-, als auch in Schwellen- und Entwicklungsländern. Während Ersteres einen Prozess der Konzentration von Menschen oder ökonomischen Aktivitäten darstellt, ist Letzteres ein proaktiver Ansatz, der es ermöglichen soll die Lebensqualität in stark wachsenden Städten zu erhalten und zu verbessern.

Stadtentwicklung wird im Modell von Klaassen-Van den Berg als ein zyklischer Prozess der Urbanisierung, Suburbanisierung, Counterurbanisierung und Reurbanisierung modelliert – und jede Stufe ist durch besondere Merkmale der demografischen, sozio-ökonomischen sowie räumlichen Entwicklung gekennzeichnet. Um mit den spezifischen Problemen jeder Stufe umzugehen und das städtische Wachstum effektiv zu steuern, benutzen Planer die Werkzeuge und Techniken des Urban Growth Management, das als ein dynamischer Prozess des Vorausplanens und Anpassen an Entwicklungserfordernisse definiert ist. Von zentraler Bedeutung für ein effizientes Urban Growth Management ist neben einer langfristigen Planung von sozialer und technischer Infrastruktur, Wohnraum und gewerblicher Entwicklung auch der Ausgleich von konkurrierenden lokalen Interessen und die Koordination auf regionaler Ebene.

Charakteristisch für die alten indischen Metropolen Mumbai, Kolkata, Chennai und Delhi ist ein Mangel an grundlegenden Infrastrukturen, regelmäßige Überlastung der Straßen aufgrund von Pendelverkehr und eine städtebauliche Expansion mit großem Flächenverbrauch. Aber auch aufstrebende Städte, wie zum Beispiel Bangalore, Hyderabad und Pune, zeigen ähnliche Wachstumstendenzen. Der zunehmende Bevölkerungsdruck im Zusammenhang mit fehlender Infrastruktur hat die indischen Metropolen sowohl für klimatische bedingte Katastrophen als auch andere Bedrohungen anfällig gemacht.

In dieser Arbeit wird die indische Hauptstadtregion Delhi (*National Capital Region*) vertieft untersucht. Bis zum Jahr 2030 wird die Agglomeration Delhi auf 33 Millionen Menschen anwachsen und dabei die zweitgrößte Agglomeration der Welt bleiben, die ungefähr der höchste Teil des indischen Bruttoinlandsprodukts generieren wird. Das dynamische Wirtschaftswachstum von Delhi hat jedoch bisher nicht zu einer generell positiven Stadtentwicklung geführt. Stattdessen kam es zur Bildung von Slums, Verkehrsbelastung, Zersiedelung und Umweltzerstörung. Um mit diesen Wachstumsproblemen umzugehen, haben sich die verantwortlichen Planer von Delhi von der Idee der Dezentralisierung von

Bevölkerung und Arbeitsplätzen des *Greater London Plans* (Abercrombie Plan) inspirieren lassen. Da es aber bisher misslang die Situation zu entschärfen, gibt es zunehmend Zweifel an der Wirksamkeit der angewandten Growth Management Strategy und es droht ein Kollaps des städtischen Systems.

Es existiert nicht viel Literatur über die Effektivität des Urban Growth Management der Delhi National Capital Region. Die Überprüfung der Pläner (*National Capital Region Plan 2001* und des *Delhi Master Plan 2001)* durch Wissenschaftlern und Regierungsstellen erfolgte lediglich im Rahmen der Fortschreibung, aber eine systematische und umfassende Evaluierung der Growth Management Strategie blieb bislang aus. Aber die Evaluierung alleine wäre auch nur die halbe Antwort auf die Probleme, da sie Planer lediglich darüber informiert, an welcher Stelle etwas schief gelaufen ist. Vielmehr wird ein übergreifender Ansatz benötigt, um rasantes Stadtwachstum managen zu können. Angesichts der oben genannten Problemstellung zielt diese Arbeit darauf ab, einen konzeptionellen Rahmen für ein effektives Urban Growth Management zu entwickeln. Die Untersuchung gliedert sich in drei Schritte, welche die drei wesentlichen Hauptziele bilden:

- Die Analyse und Charakterisierung der tatsächlichen Entwicklung des städtischen Wachstums in der Delhi National Capital Region. Welche Faktoren haben das Wachstum vorangetrieben? Wie funktionieren die öffentliche Planung und deren Umsetzung?
- Die Entwicklung und Erprobung eines Ansatz zur Evaluierung der räumlichen Bedingungen der Delhi National Capital Region .
- Die Untersuchung von internationalen Best-Practice des Urban Growth Management auch hinsichtlich einer Übertragbarkeit auf die Situation der Delhi National Capital Region. Welche Variablen sind für ein erfolgreiches Urban Growth Management entscheidend? Was kann davon auf Delhi übertragen werden?

Um diese drei Hauptziele zu erreichen, wurde eine Mischung aus qualitativen und quantitativen Analysen, unter Verwendung von Fernerkundungsdaten und Zensus-Daten eingesetzt. Um die tatsächliche Entwicklung des städtischen Wachstums in der Hauptstadtregion Delhi zu analysieren, wurde das Modell der zyklischen Urbanisierung von Klaassen-Van den Berg verwendet und mit einem Set aus räumlichen, sozio-ökonomischen und Bevölkerungsindikatoren unterlegt. Die Ergebnisse belegen, dass die Metropolregion von Delhi im Jahr 2001 in die Phase der absoluten Dezentralisierung und Zersiedelung eingetreten ist. Außerdem konnte gezeigt werden, dass sowohl Marktkräfte als auch politische

Entscheidungen, zusammen mit den Bodennutzungsvorschriften, zu dem derzeitigen Wachstumsmuster führten.

Für die Analyse der Effektivität der Growth Management Strategie für Delhi und die National Capital Region wurden quantitative und qualitative Methoden verwendet. Es zeigte sich, dass die Planungspolitik grundsätzlich dem Wachstumstrend angemessen ist, aber die anvisierten Ziele trotzdem verfehlt wurden. Zu den Umsetzungsproblemen gehören neben einer ungenügenden und veralteten Datenbasis die mangelnde Kooperation zwischen den Behörden, die fehlende Öffentlichkeitsbeteiligung, sowie ein zu schwach ausgeprägter politische Wille. Dies unterstreicht die Notwendigkeit des Ausbaus von *Capacity Building Maßnahmen*.

Die Analyse von internationalen Erfolgskonzepten des Urban Growth Management kam zu dem Ergebnis, dass folgende Variablen das Funktionieren von Growth Management Strategien entscheidend beeinflussen: die regionale Zusammensetzung, die Rolle der Planung und der Umsetzung von Behörden und Agenturen, die Kombination von regulatorischen und fiskalischen Instrumenten, der öffentliche und politische Wille. Jede Veränderung einer dieser Variablen ändert die Effektivität des Urban Growth Management.

Das Ergebnis des Forschungsprojekts ist ein Rahmenkonzept für Planer, das nicht nur Indikatoren für die Charakterisierung von aktuellen Wachstumstrends beinhaltet, sondern auch einen Ansatz zur Bewertung der Leistungsfähigkeit der Planungspolitik. Das Rahmenkonzept bietet also die Grundlagen für eine Analyse der Stadtentwicklung und eine Evaluation und Anpassung der Planungspolitik. Eine wichtige Erkenntnis der Arbeit ist auch, dass ein kontinuierliches *Capacity Building* notwendig ist, um ein effektives Urban Growth Management für die Hauptstadtregion Delhi zu erreichen.