9th Urban Mobility India Conference & Expo 2016
Planning Mobility for City's Sustainability

LAND USE TRANSPORT DECISIONS IN THE DEVELOPMENT PLAN- A CASE OF VADODARA

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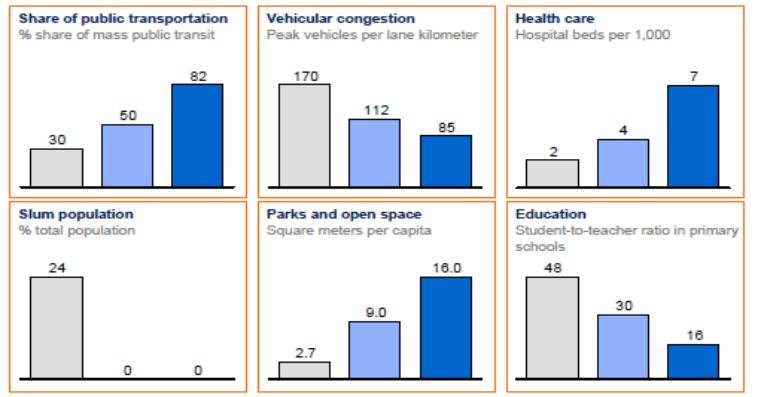
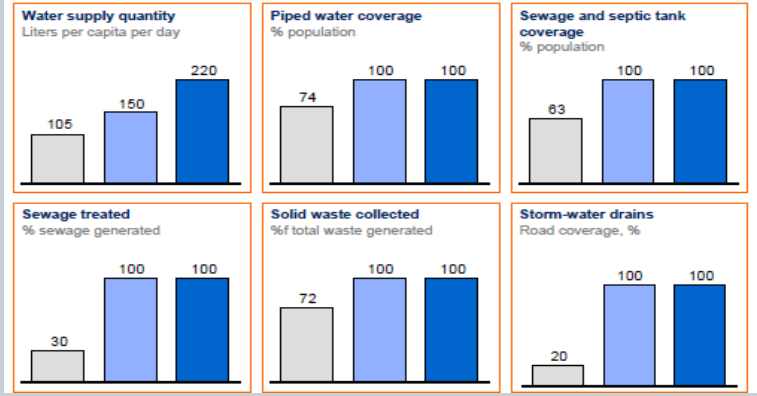
Introduction – Background

- **590 Million** India's urban population will increase by 2030.
- **68 cities** will have population more than 1 million by 2030.
- **18.6 Million Hectares** In the absence of rigorous planning there will be the demand for urban land in future that can lead to the lose of non-urban (Agricultural) land to unplanned urban sprawl.
- **6.2 Million Hectares** India could potentially save this much hectares of Potentailly arable land through effective planning for land use.

Source: MCKinsey Global Institute

Introduction – Background





Current

Basic Service Standard

Best in Cities

Source: MCKinsey Global Institute:

Thus, the current performance of India's cities is poor.

Therefore, efficient planning for Indian cities is required

Introduction – Need of Study

- Developing urban areas are more challenging.
- Adopt strategies to combat the challenges and use the opportunities.
- DP's failed target in both - contents and implementation.
- Need of systematic framework in implementation Phase.
- Enhancement of DP making process by assessing its strength and weaknesses.

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"Strong desire to study and evaluate the implementation level of Development Plan for Land use transport integration decisions."

Introduction - Aim & Objectives

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- **Objectives:**
  - To review the methods for critically evaluating urban plan.
  - To review successful master plans for understanding the level of LUT integration.
  - To develop a methodology for critically evaluating Vadodara DP.
  - To recommend for improvement implementation level.

Introduction – Scope & limitation

- Recommendations for enhancing DP making process.
- Google satellite images have been used in the analysis.
- Limitation is the accurate interpretation of land parcels at plot level at the available resolution.
- Variation among data collected due to varying preferences.

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- Considering the evaluation method & case studies together, adapt a methodology for quantifying the DP.

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- In depth analysis of data collected from the authority & experts and coming up with the desired output for achieving study aim.
- Analysis of two DP of Vadodara city on the basis of derived framework and data collected.

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CONCLUSION

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In depth analysis of collected data as per derived methodology, to find out the appropriate results.

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- Understanding the approach in DP reports.

Task 2: Interviews with the town planners.

- Meeting with town planners, discussing the reports and observation.

Literature Review- Evaluation concept

- Evaluation mainly focuses on the targeted objectives, what was forecast or either what and how it met the deadlines or not.

- The systematic and objective assessment of an ongoing or competed projects or programme, its design, implementation and results. (OECD)

- The exact definition of evaluation would have been personalized in context of its need, theories, data collected, purpose or may be methodology itself.

Literature Review- Evaluation Models

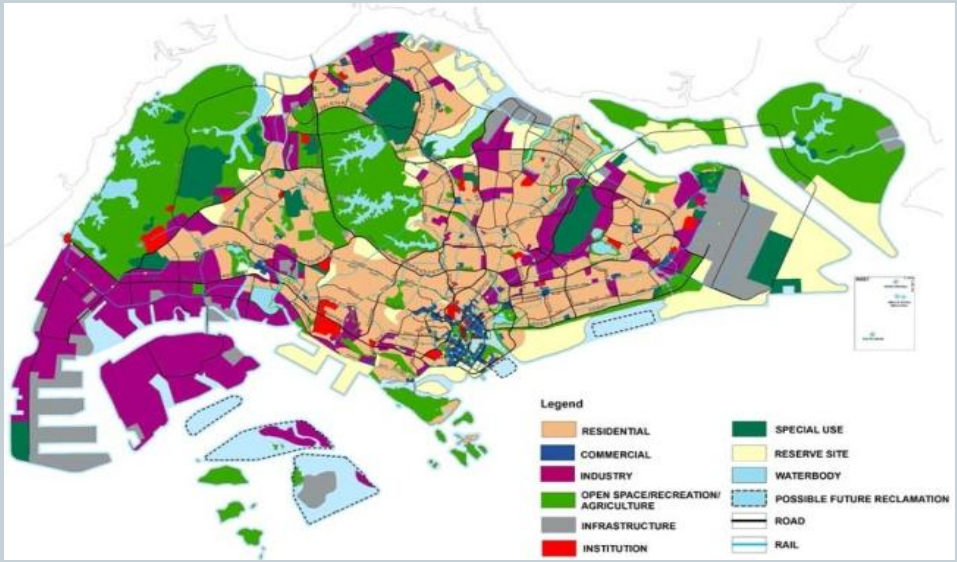
- Evaluating plan mainly emphasis on what and how to evaluate.
  1. Plan assessment in which it ensures that the plan demonstrates its given criteria.
  2. Plan testing and evaluation in which alternative ways are evaluated in order to accomplish plan's goal.
  3. Plan critique in which other planners subjectively review the prepared plan, it is a kind of book or movie review.
  4. Comparative research and professional evaluation in which various DP's and its reports would be compare with or without seeing the outcomes.
  5. Post hoc evaluation in which plan's outcome will be evaluated.

Literature Review- Case studies

- various planning approaches of the international cities to understand the successful implementation of plan and techniques used for evaluating Development plans.

- The cities selected for the purpose are Singapore, London, New York and Guangzhou (China).

Case study - Singapore



40 -50 year high level concept plan

Components of concept Plan

- Vision for the city.
- Target population, GDP, and employment by region.
- High level land use plan including areas for greenfield development and regeneration.
- Strategic transportation projects

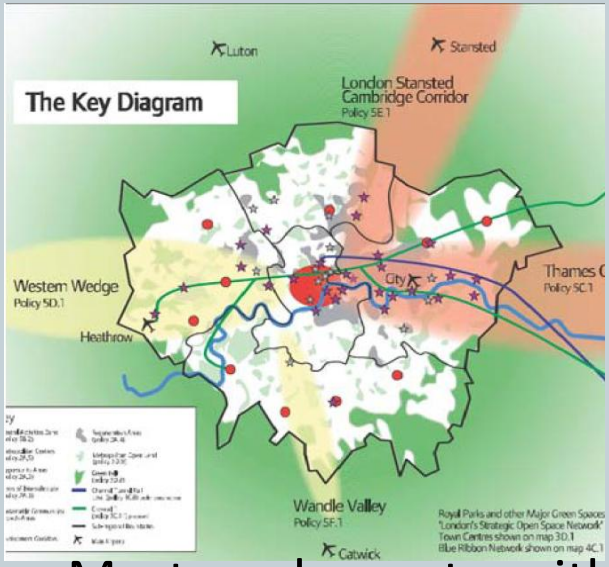
Case study - Singapore

Broken down into an 20 year master plan

Components of Master Plan

- Detailed land- use plan including zoning, FAR, setback etc.by region.
- Greenfield development and regeneration projects
- Sectorial norms such as urban design, sustainability, etc.

Case study - London



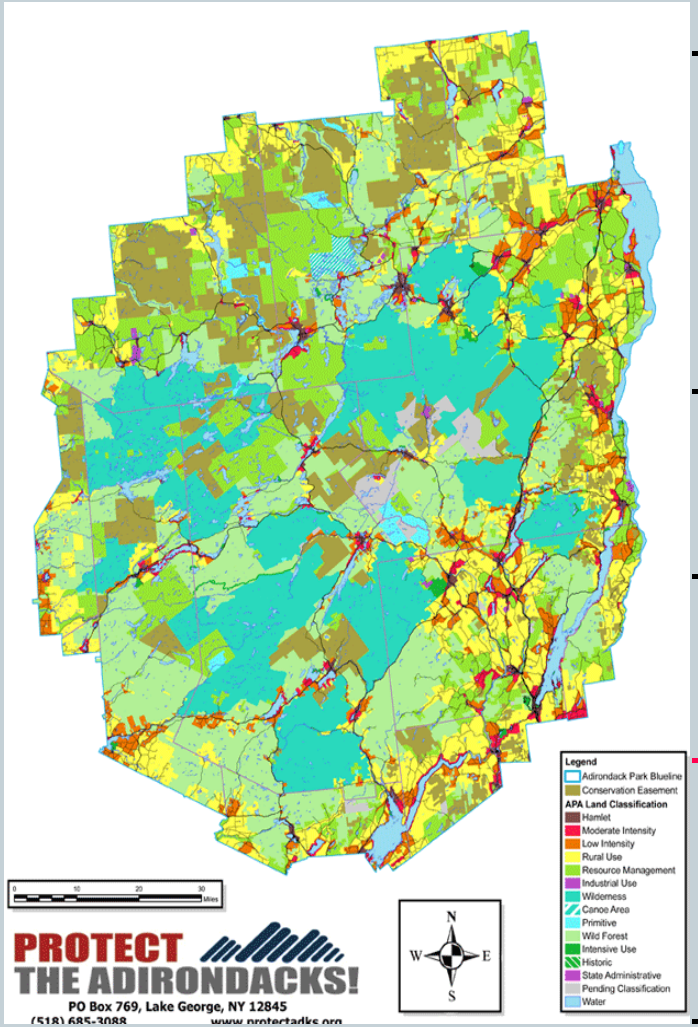
- City follows a unique cascaded model of urban planning.
- First priority given to the transport policies and its implementation which mainly focuses on public transport improvements.
- Master plan sets with vision, socio economic forecast including population and employment.
- Forecast then translated into broad land use plan and key initiatives in transportation , affordable housing and basic services
- Initiatives taken forward in sequenced manner with financing mechanism.

Case study - London

Implementation, Monitoring and Reviewing Process

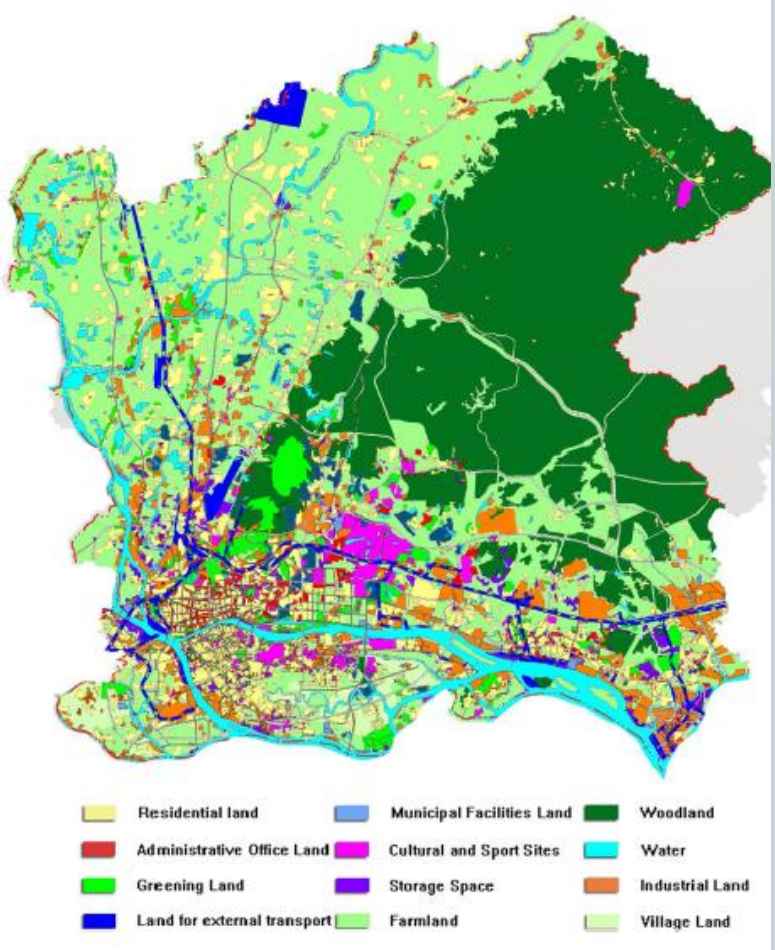
- Implementation process ensure the most effective coordination of the contributions of various stakeholders.
- Two phases of Master plan preparation : Strategies for proposing plan and strategies for Implementation.
- Third phase : Monitoring and reviewing the plan on annual basis

Case study – New York



- Plan provides guidelines for policies-projects more than 95 initiatives across six priority areas.
- NY Plan are rich in detail.
- NY uses granular planning norms
- Transparency creating & executing plan
- 200 planners.

Case study – China



Adopts the grid overlay method and identify three indicator:

- Types of Accordance- Consistence in plan
- Type of unfulfillment- not implemented
- Type of Deviation- Land use deviated from its actual use.

Case studies- learnings

- Importance of strategic development, public participation, strong correlation between policies, plans and projects.
- Common strategy is to integrate the sectorial plan with policies and projects related to DP.
- Major importance is given to the land use transport integration specifically in the case of London.

Vadodara & Gujarat - GTPUD Act

- It involves,
  - Delimiting an area,
  - Reconstituting properties,
  - Levying charges for infrastructure provision,
  - Levying betterment charges,
  - Informing landowners of proposed plans,
  - Compensating dispossessed landowners,
  - Seeking consent and recording suggestions,
  - Empowering quasi-judicial officers for grievance redressal (Ballaney, 2008)

Vadodara & Gujarat - GTPUD Act

- **Macro Planning : Development Plan consists**
  - Proposing new land uses, reservations for public purposes and other allocations of land for different purposes.
  - Infrastructure facilities, transportation and Road networks
  - Green & Open spaces, environmental and pollution control zone.
  - Provision of Drainage, Sewerage, storm water and water supply.

Vadodara & Gujarat - GTPUD Act

- **Micro Planning : Town Planning Schemes-**
  - The areas to be developed is clear and divided into small portion of 100 to 200 hectares
  - Taking the equal proportion of land from each landowners and by developing land for infrastructure developments.
  - Includes continues public participation for finalizing final plots after deducting parcel of land from original plot.

Proposed DP 2001 made in 1985

- Objectives
  - Orderly plan development
  - Balanced distribution of population, amenities and facilities in urban and rural areas, in hierarchical system.
  - Effective linkages to various settlements.
  - Optimum use of urban land by compact development
  - Co-ordination of development activities for urban areas.
  - Growth Centres with an broad objectives "to diffuse, decentralise and diversity
  - "Mini Counter Magnets" against the "Pull" generated by Vadodara City.

Proposed DP 2011 made in 1996

- **Vision:**
  - To develop Vadodara as a central city.
- **Objectives** :
  - To identify 6 potential villages i.e. Kelanpur, Varnama, Padra, Sindhrot, Padamla and Nimetha, the 10-15 surrounding villages will get services and linkages from that 6 villages .
  - Major concentration on "central village concept".
  - TP Schemes proposed for VUDA area.

Proposed DP 2031 made in 2006

- **Objectives**:
  - –To create better employment opportunity.
  - –To provide for comprehensive developed areas for residential, industrial, commercial & recreational uses.
  - –To improve connectivity and circulation.
  - –Mobilizing the land resources by the various planning proposals.
  - –To tap potentialities of private entrepreneurship.

Data Analysis- Population Projection

The whole planning process and its content is based on population projection, so it is necessary to analysis the prediction of population and to justify it.

AREA	2001_Proposed	2001_Exisiting	Difference
VMC	17,06,000	14,04,000	3,02,000
VUDA	521529	3,53,000	168529
TOTAL	22,27,529	17,57,000	470529
AREA	2011_proposed	2011_Existing	Difference
VMC	20,72,800	1822532	2,50,268
VUDA	5,47,898	186902	3,60,996
TOTAL	26,20,698	20,09,434	611264

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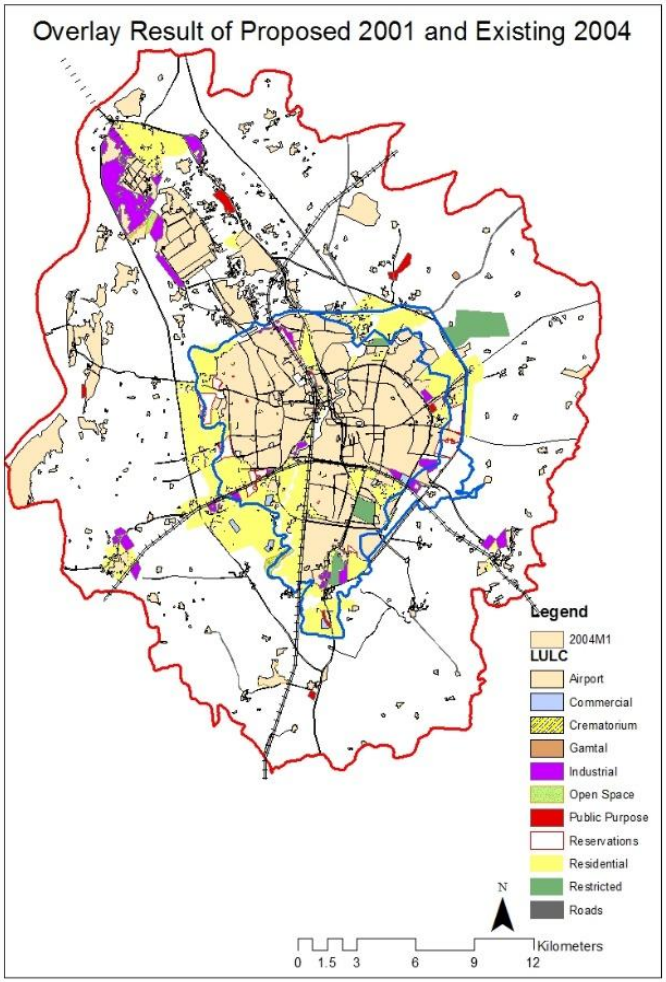
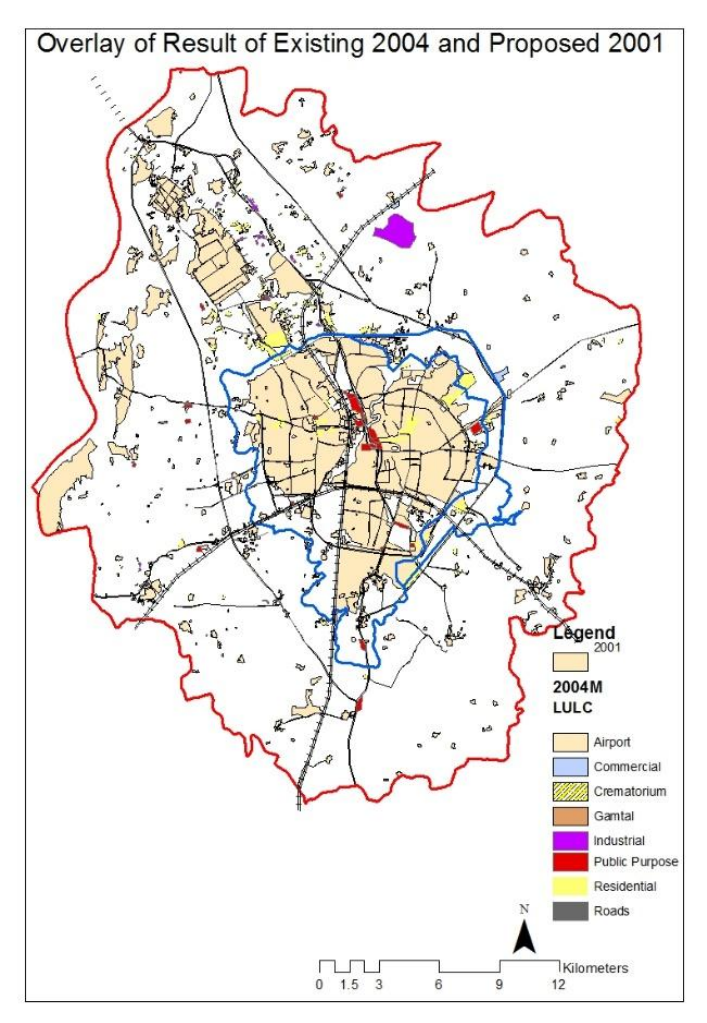


- Overlay Result of Proposed DP 2001 on Existing DP 2004 has been shown to identify:
  - Non implemented land uses .
  - Major land uses which didn't got implemented are residential and industrial which id followed by commercial and public purpose.

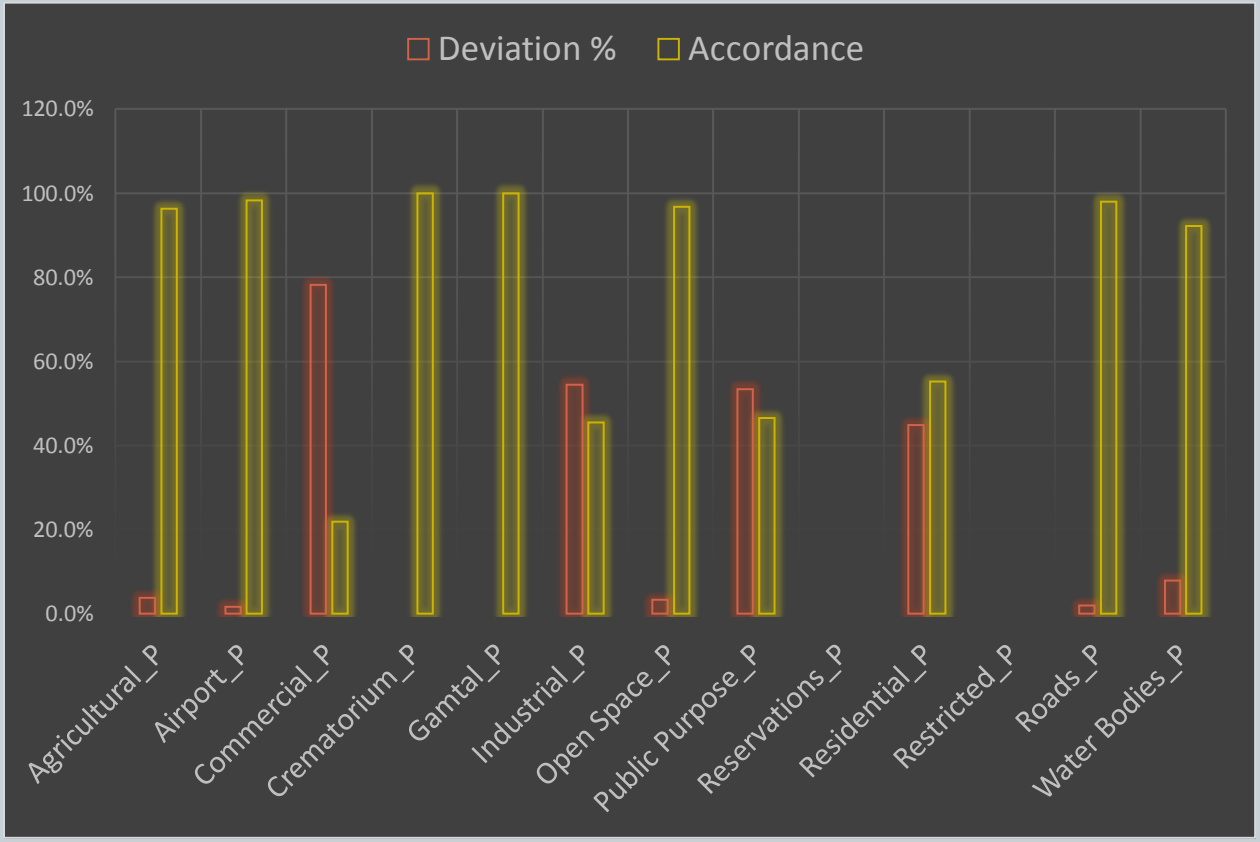
Data Analysis – Spatial Analysis



- Overlay Result of Existing DP 2004 on Proposed DP 2001 has been shown to identify:
  - Land uses that came into existence which was not proposed in DP.
  - Major land uses which is existing irrelevant of Proposed DP are public purpose ,residential which is followed by commercial.

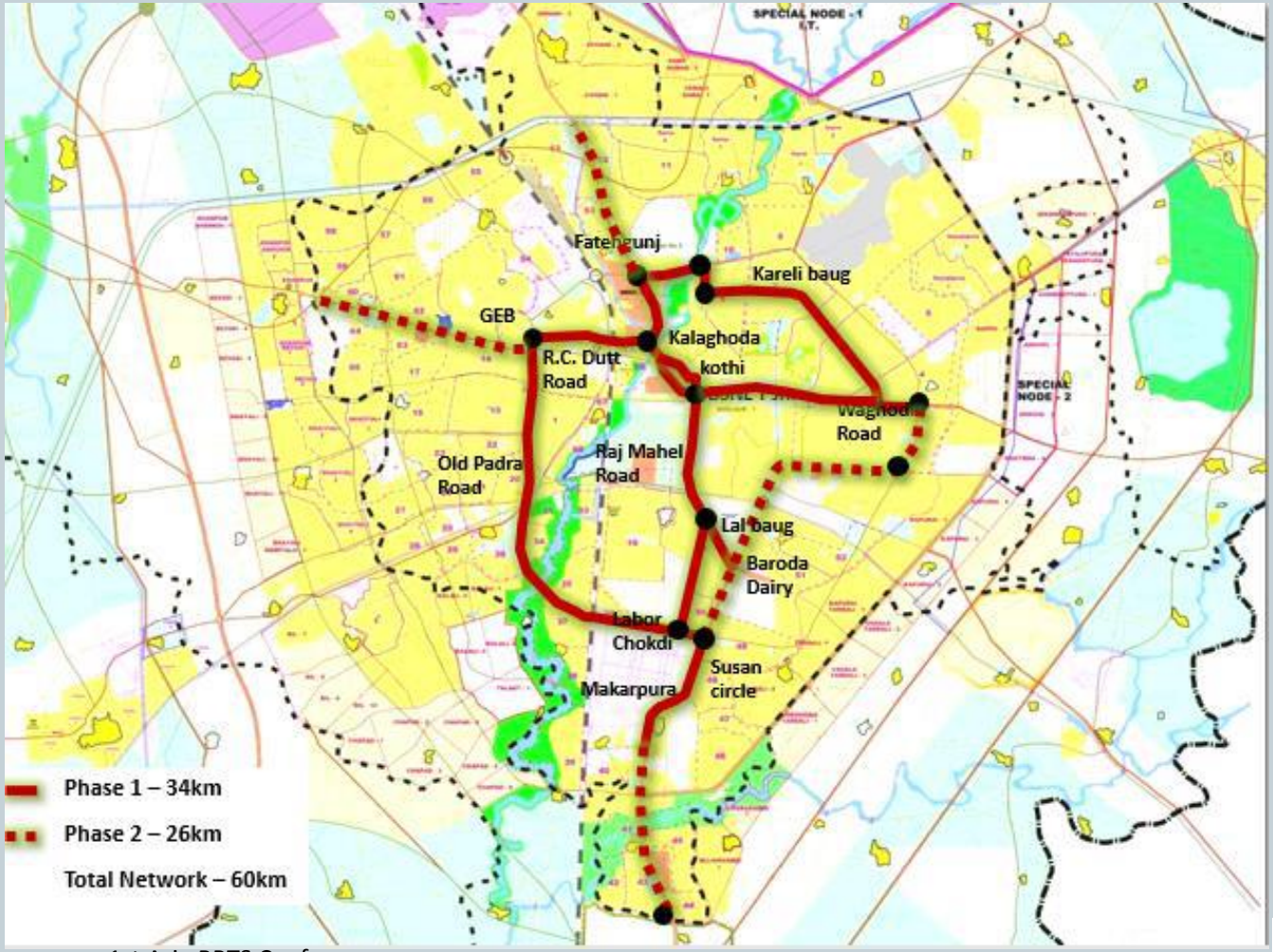
Data Analysis – Spatial Analysis

The accordance and deviation between the proposed DP of 2001 and Existing DP of 2004 has been shown.



- Highest amount of deviation is found in commercial i.e. 78% of 1.1 sqkm.
- Followed by Public Purpose, Industrial and Residential.

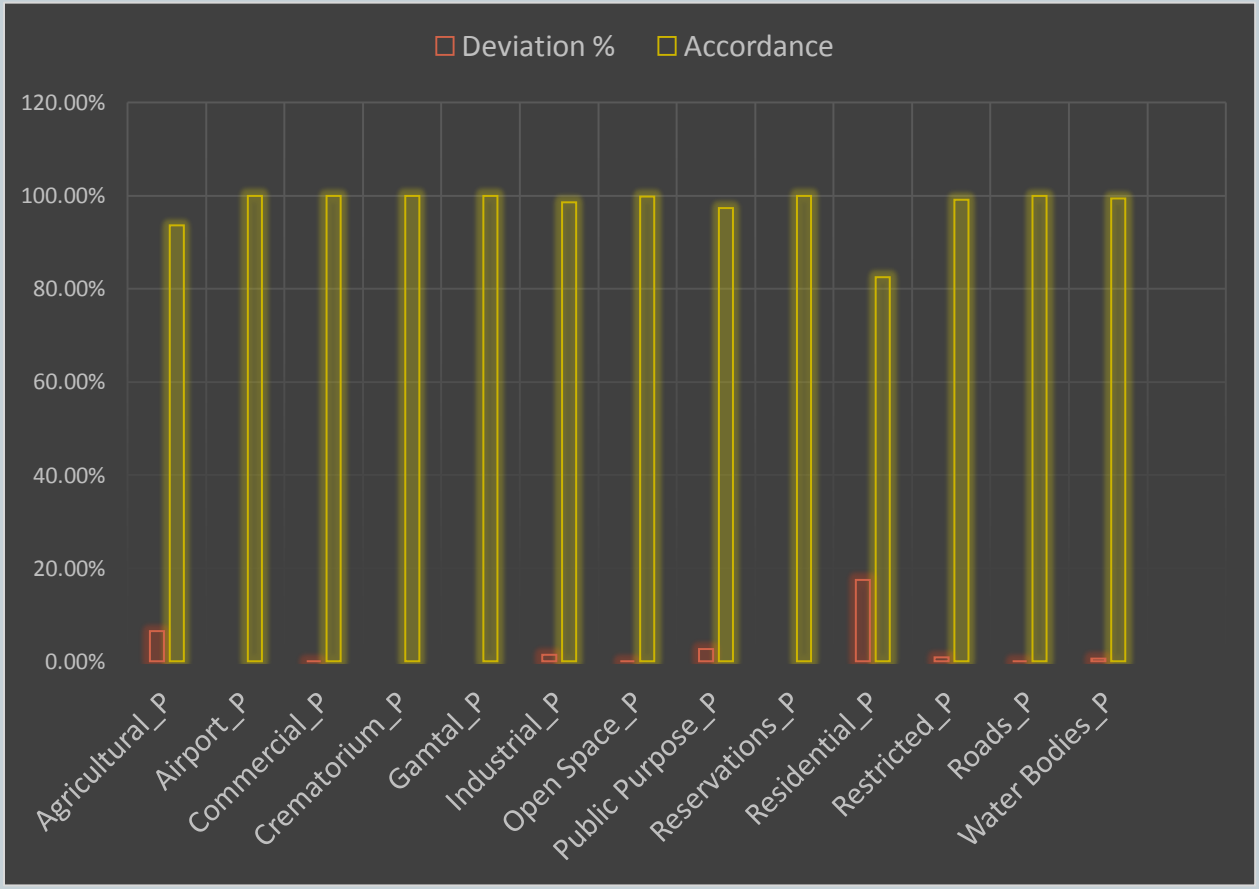
Data Analysis – Spatial Analysis



source: 1st Asia BRTS Conference

Data Analysis – Spatial Analysis

The accordance and deviation between the proposed DP of 2011 and Existing DP of 2016 has been shown.



- Slight deviation is found in Residential i.e. 17% of 64.33 sqkm.
- Deviation is very less Compared to last proposed DP, due to initiative taken for BRTS in 2012.

Data Analysis – Proposed Projects

Projects	Authority involved	Proposed	Implemented	Remarks
TPS	VUDA	53	11	Late approval and lack of staff
TPS	VMSS	85	30	Late approval and lack of staff
Parks and Gardens	Garden department VMSS	38	23	Small area provided according to garden requirement
Special Projects	Special Project Department VMSS	38	7	Project team started 2 years before, and proposals were made since 1985
Bridges	Bridge and road department	78	40	
Housing	JNNURM	5 schemes	5	5th scheme work is in progress.
Housing	Gujarat Housing Board	6 reserved land	2	Other 11 schemes are in progress since 2011

Railway over Bridges (Work Done existing)					
Sr.No.	Name of Bridge	Cost In Crore	Start date of project	Completion date	Work status
1	Vishwamitry ROB at Gujarat Tractor	24.84		Not yet started	Work Sanction
2	Jetalpur ROB over Jetalpur Underpass	17.52		29-08-2011	work completed
3	Shashtri Bridge ROB near polytechnic	17.52			work in progress
4	D-Cabin Navayard ROB	12.16		29-08-2011	work completed
5	Vadsar ROB (GIDC- Vadsar)	13.13		01-03-2010	work completed
6	Pratapnagar ROB (Pratapnagar - Chotaudepur B.G. Line)			12-12-1990	work completed
7	Lalbaug ROB (Pratapnagar-Jambusar N.G.Line)	44.97		01-12-2011	work completed
8	Somatalav ROB	40.84		14-02-2014	work completed
9	Kalali ROB	52		12-06-2013	work completed
10	Railway and River over bridge at Akota to Dandiyabazar	41.99		01-05-2014	
	Fly over Bridges				
11	Amitnagar Fly over Bridge	31		12-06-2013	work completed
12	IPCL flyover Bridge at Fatehgunj	62		25-12-2015	work completed
13	Harinagar Flyover Bridge at harinagar Junction	31.45		16-10-2015	work completed

Results

- City depicts slow and steady growth as compared to Ahmedabad & Surat, in spite of being a university hub, an industrial hub and a gateway to the golden corridor due to good rail & road connectivity.

- Before the proposal of BRTS in DP 2001, no steps for integrating LUT decisions for allocating different zones and land uses which depicts the deviation and unfulfillment in the land uses.

- Thus showing its content and implementation failure which is the major component of DP as discussed.

Results

- Later in the proposed DP of 2011, existing scenario of year 2016 shows 90% of its accordance level, due to the initiative taken for the land use integration for the BRTS proposal for the inner city of Vadodara, in year 2012

- Thus results show that there was a sudden change and increase in fulfilment in the land use during past 4 years after the announcement of BRTS proposal in 2012 and steps taken for LUTI decisions for the same.

Conclusion and Recommendation

- Delay in approval of TPS from the state government and insufficient staff
- Lack of awareness among people and also the failure of Development Authority
- Monitoring and reviewing can play a major role.
- GTPUD Act gives no enforcement for plan evaluation and monitoring on annually base.

Conclusion and Recommendation

- Case studies suggest a good staff capacity can really improve the activities in reviewing and monitoring the development plan.

- Case studies also suggest the changes in planning approach by considering public participation and involving strategic planning while proposing proposals as well as while implementing them.

- It also suggest evaluation model to evaluate the plan which can help in setting the further goal of development plan by reviewing and analysis the existing or post hoc situation.

Conclusion and Recommendation

- As from analysis, considering three criteria i.e. Fulfilment, unfulfillment and deviation it can be seen that plan is 60% in fulfilment, 20 % unfulfillment and 20 % deviation mostly in commercial, public purpose, industrial and residential.

- No harm or violence is seen in natural uses , say open spaces and water bodies

- By evaluating the development plans these mistakes can be avoided & changes be done as per market approach and requirements.

Conclusion and Recommendation

- According to project base VMSS doing quite well in comparison of VUDA and quality of life is better.

- According to population projection , it seems little questionable as all projects and land use allocation is based on population.

- By evaluating the successive development plans of Vadodara the reasons for non implementation were found lack of staff, late approval of TPS, revising TPS after 10 years after passing from Government, locality , market demand, political influence, and wrong assumption.

Thank you

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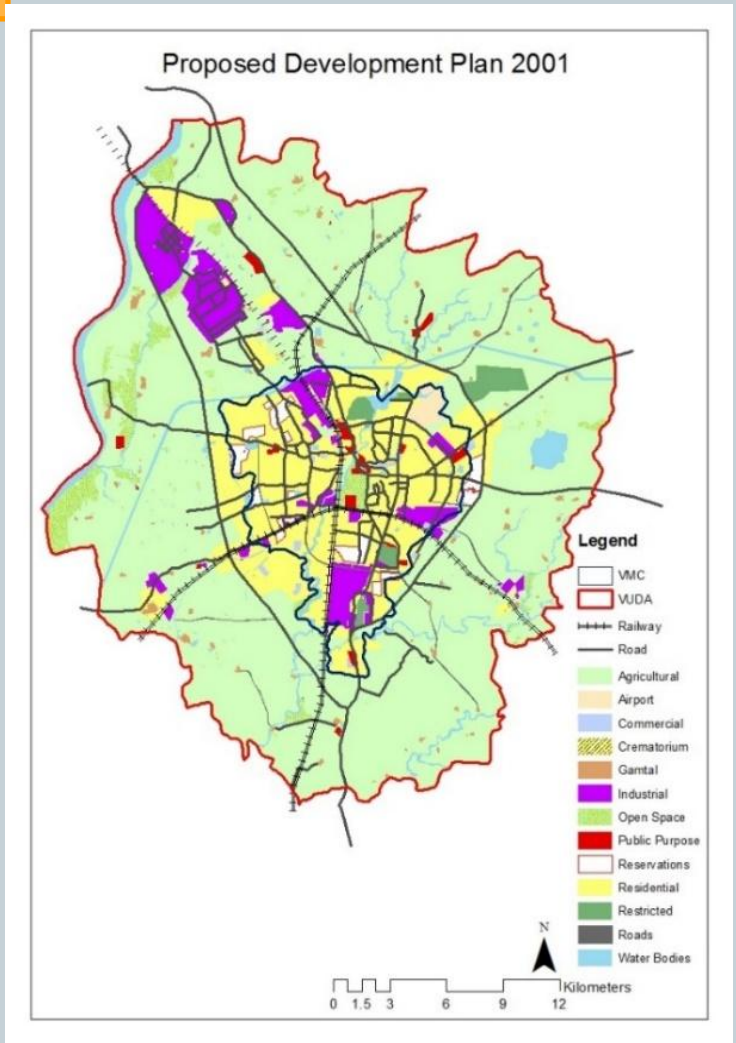

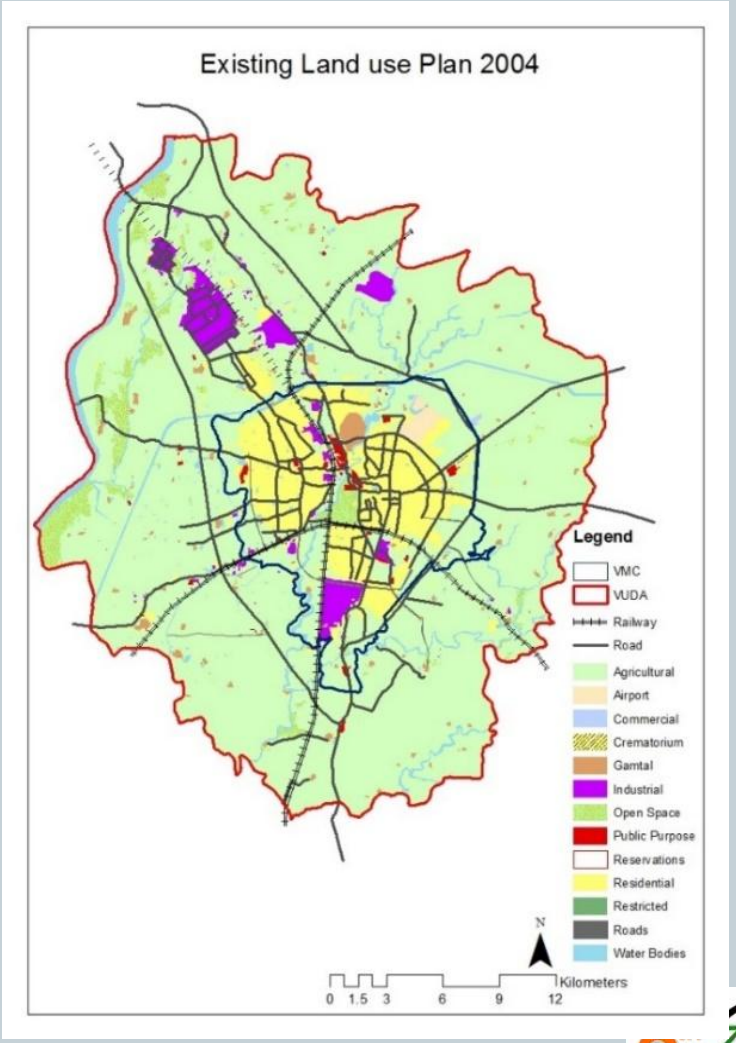

Data Analysis – Spatial Analysis

Sum of Area_sqk_1	Column Labels													
Row Labels	Agricultural_P	Airport_P	Commercial_P	Crematorium_P	Gamtal_P	Industrial_P	Open Space_P	Public Purpose_P	Reservations_P	Residential_P	Restricted_P	Roads_P	Water Bodies_P	Grand Total
Agricultural_E	86.61		0.36			5.71	0.1	1.14	2.14	21.84	2.04	0.18	0.19	120.31
Airport_E	0.07	0.59				0.01								0.67
Commercial_E	0.37		0.24			0.18	0	0.01	0	0.32				1.12
Crematorium_E	0.04			0.03										0.07
Gamtal_E	0.09				1.25	0.01		0		0.84	0.6		0	2.79
Industrial_E	0.21		0.01			9.62		0.01	0	1.04				10.89
Open Space_E	0.07					1.47	3.88	0.32		0.42	0			6.16
Public Purpose_E	0.22					0.05		1.62	0.01	0.63			0	2.53
Residential_E	2.26	0.01	0.49		0	4.08	0.03	0.31	2.14	31.2	0.02		0.18	40.72
Roads_E	0					0			0	0		8.99	0	8.99
Water Bodies_E	0.06					0.01		0.07	0.02	0.25			4.35	4.76
Grand Total	**90**	**0.6**	**1.1**	**0.03**	**1.25**	**21.14**	**4.01**	**3.48**	**4.31**	**56.54**	**2.66**	**9.17**	**4.72**	**199.01**
Deviation	3.39	0.01	0.86	0	0	11.52	0.13	1.86	-	25.34	-	0.18	0.37	
Deviation %	3.8%	1.7%	78.2%	0.0%	0.0%	54.5%	3.2%	53.4%	-	44.8%	-	2.0%	7.8%	
Accordance	96.2%	98.3%	21.8%	100.0%	100.0%	45.5%	96.8%	46.6%	-	55.2%	-	98.0%	92.2%	

Data Analysis – Spatial Analysis

Sum of Area_sqk_1	Column Labels													
Row Labels	Agricultural_P	Airport_P	Commercial_P	Crematorium_P	Gamtal_P	Industrial_P	Open Space_P	Public Purpose_P	Reservations_P	Residential_P	Restricted_P	Roads_P	Water Bodies_P	Grand Total
Agricultural_E	83.27		0	0	0	0.55	0	1.18		14.5		0.01	0	99.51
Airport_E		0.6												0.6
Commercial_E	0.36		1.32			0.09							0.48	2.25
Crematorium_E				0.03										0.03
Gamtal_E	0				1.19									1.19
Industrial_E	1.17					15.67				0.07	0.68	0.01		17.6
Open Space_E			0.07				4.24			0				4.31
Public Purpose_E								2.65						2.65
Residential_E	3.74					0.55	0.09	1.03	0.04	49.76	0	0.01	0.04	55.26
Restricted_E	0.07										1.42			1.49
Roads_E	0.01									0		9.71		9.72
Water Bodies_E	0		0							0	0	0	4.34	4.34
Grand Total	**88.62**	**0.6**	**1.39**	**0.03**	**1.19**	**16.86**	**4.33**	**4.86**	**0.04**	**64.33**	**2.1**	**9.74**	**4.86**	**198.95**
Deviation	5.35	0	0.07	0	0	1.19	0.09	2.21	0	14.57	0.68	0.03	0.52	
Deviation %	6.42%	0.00%	0.08%	0.00%	0.00%	1.43%	0.11%	2.65%	0.00%	17.50%	0.82%	0.04%	0.62%	
Accordance	93.58%	100.00%	99.92%	100.00%	100.00%	98.57%	99.89%	97.35%	100.00%	82.50%	99.18%	99.96%	99.38%	