UNDERSTANDING SMALL SCALE BUSINESS OF INFORMAL DE-SLUDGING OPERATORS

A synthesis of 4 Case Studies

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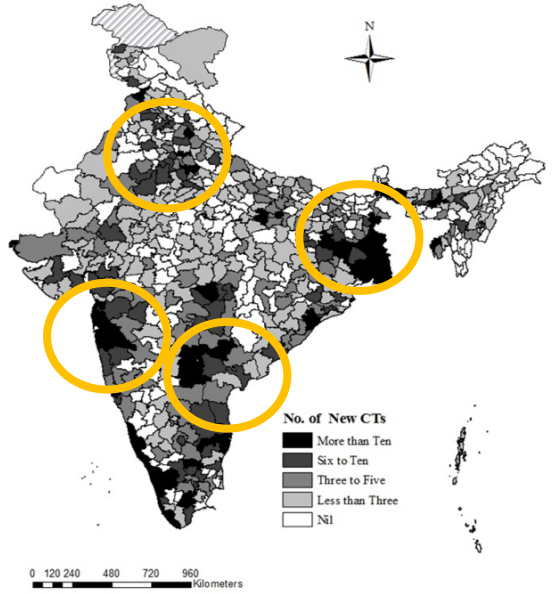
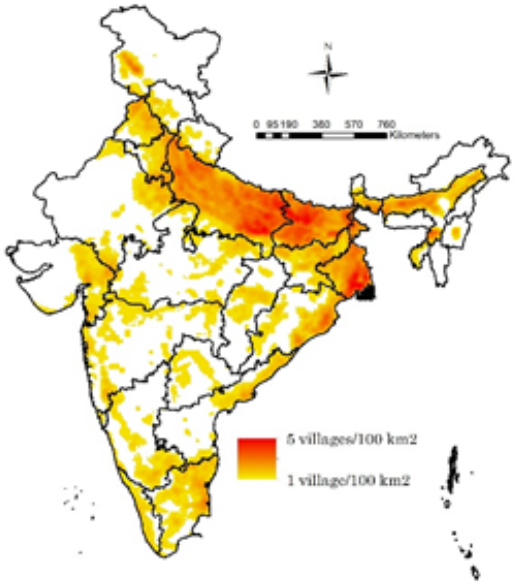
SETTING THE CONTEXT

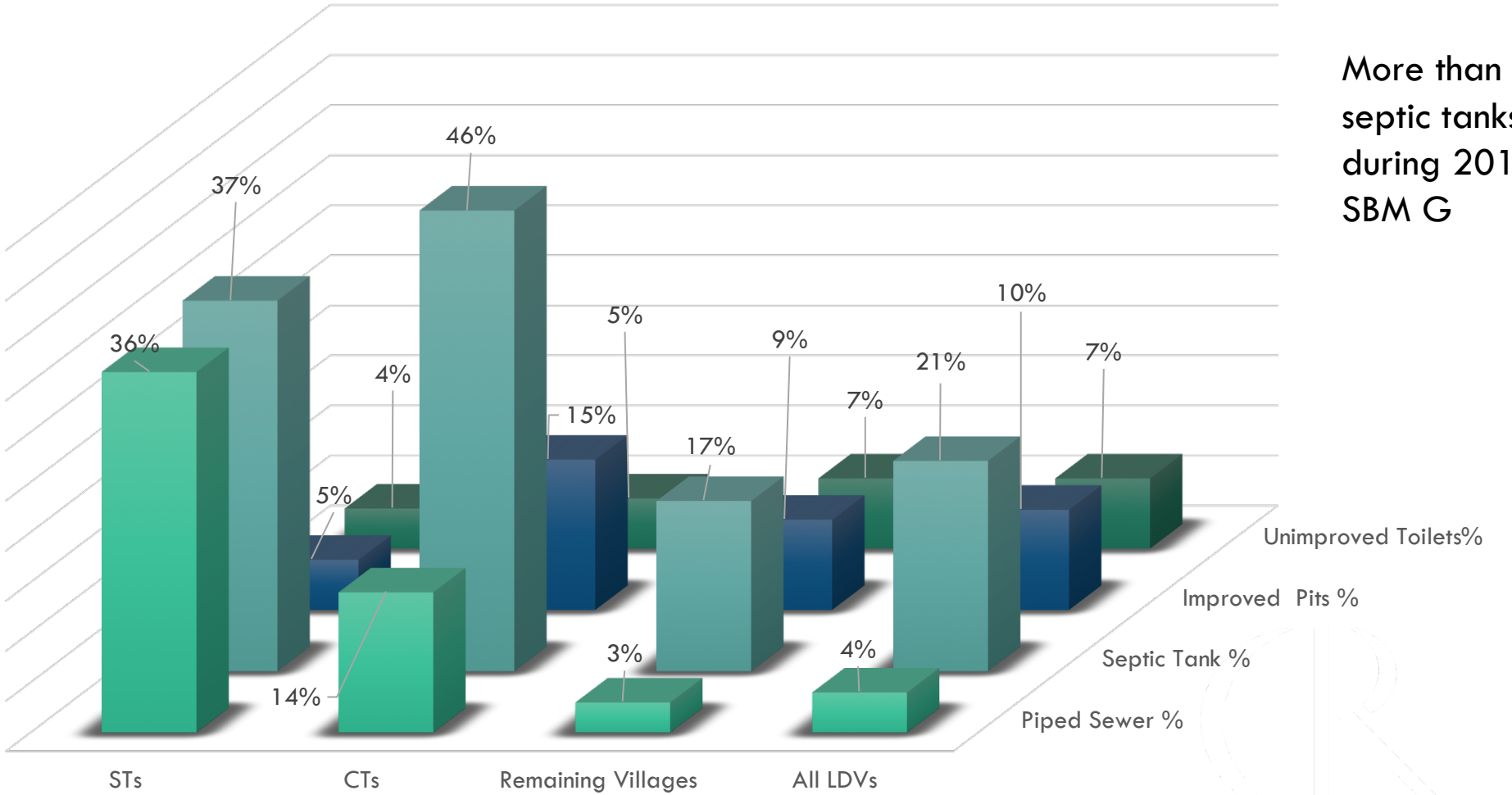
- Statutory Towns – 4,041
- Census Towns – 3,892
- Larger roster of dense villages[1] – 155,056
- With increased penetration of IHHL through SBM G (67 million) & U (4.2 million) importance of providing for de-sludging facilities increasing
- As India urbanises, providing for cost intensive networked solutions may not be feasible. Decentralised solutions are emerging as key priorities.





[1] LDVs defined as settlements with Minimum population of 1,000 people and Population density of at least 400 person per sq. km; Source: "Towards a New Research and Policy Paradigm: An Analysis of the Sanitation Situation in Large Dense Villages" http://www.cprindia.org/research/reports/towards-new-research-and-policy-paradigm-analysis-sanitation-situation-large-dense

SANITATION SITUATION ACROSS SETTLEMENT TYPOLOGIES



More than 1 million septic tanks constructed during 2017-18* under SBM G

* MoDWS MIS report

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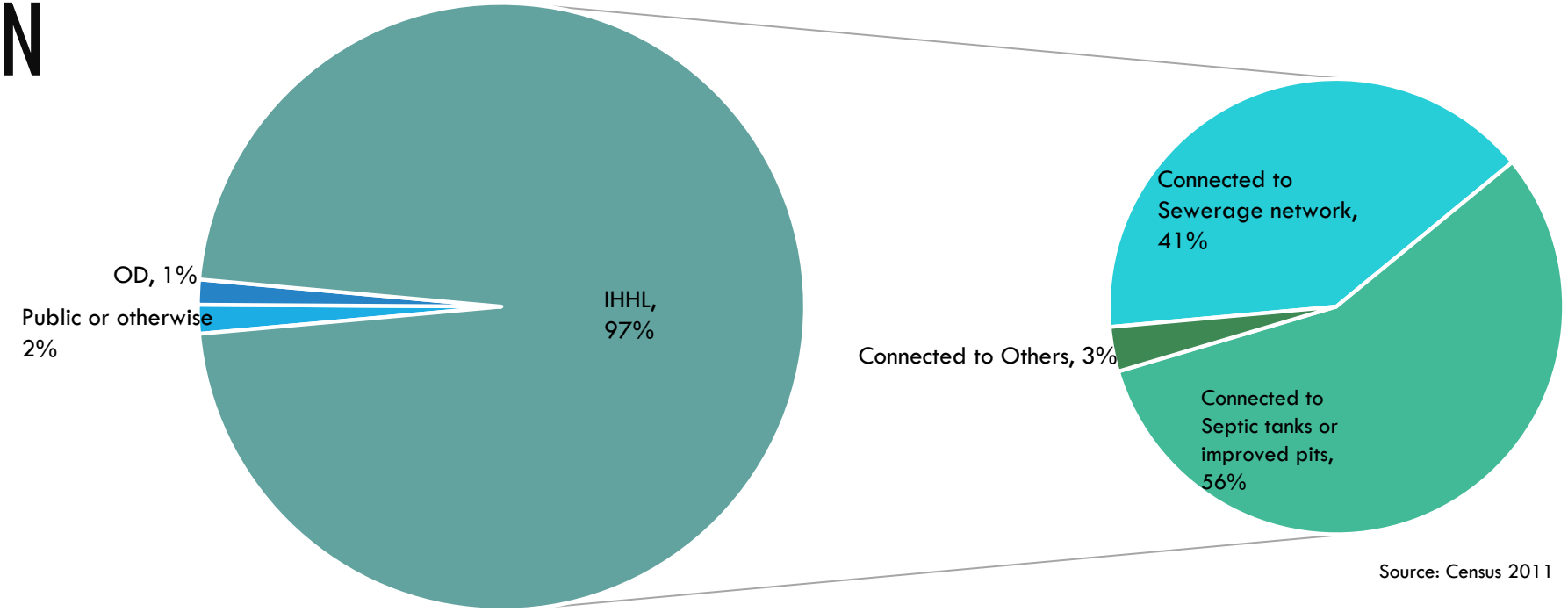
SANITATION PROFILING

Dehradun, Jaipur, Bhubaneswar and Delhi

DEHRADUN



Source: Census 2011

SBM U[2]: IHHL (693/1547) , PTBs/CTBs: 0

Dehradun has been declared ODF

Under AMRUT[3]: Investment to the tune of 48 Crs. For sanitation

[2] http://swachhbharaturban.gov.in/dashboard/
[3] SAAPs

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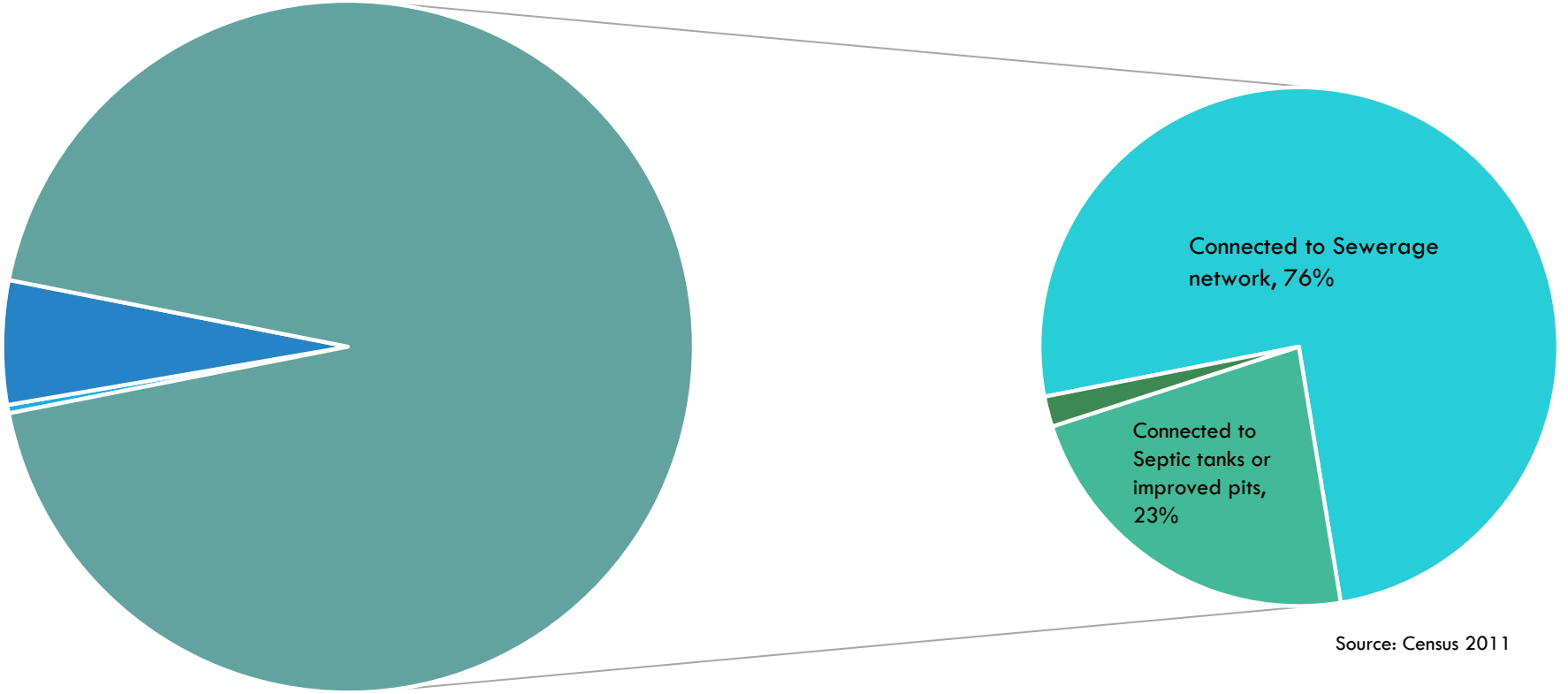
JAIPUR



Source: Census 2011

SBM U[2]: IHHL (15885/15867) , PTBs/CTBs: 182

Jaipur has not yet been declared ODF

Under AMRUT[3]: Investment to the tune of 275 Crs. for sanitation

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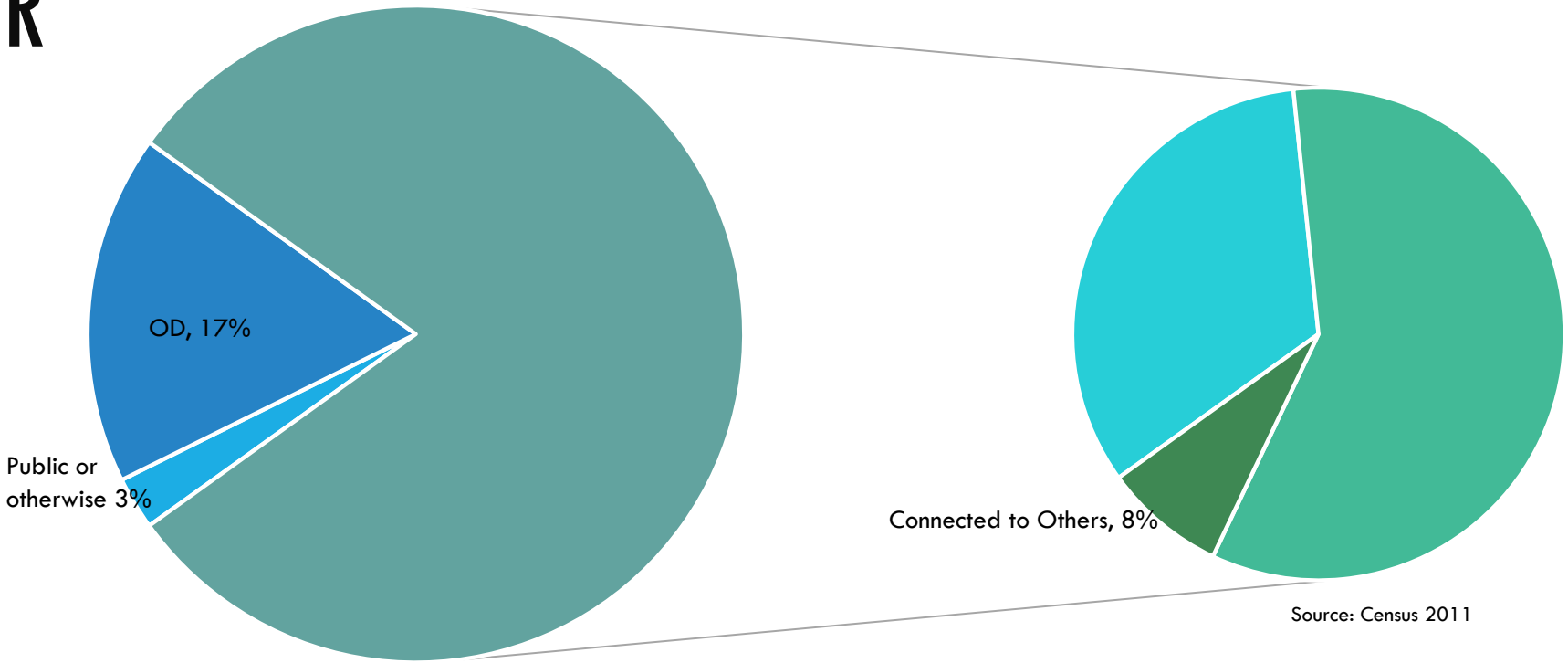
BHUBANESWAR



SBM U[2]: IHHL (9258/21252) , PTBs/CTBs: 126

Bhubaneswar has not yet been declared ODF

Under AMRUT[3]: Investment to the tune of 6.65 Crs. For sanitation emphasis on FSTPs

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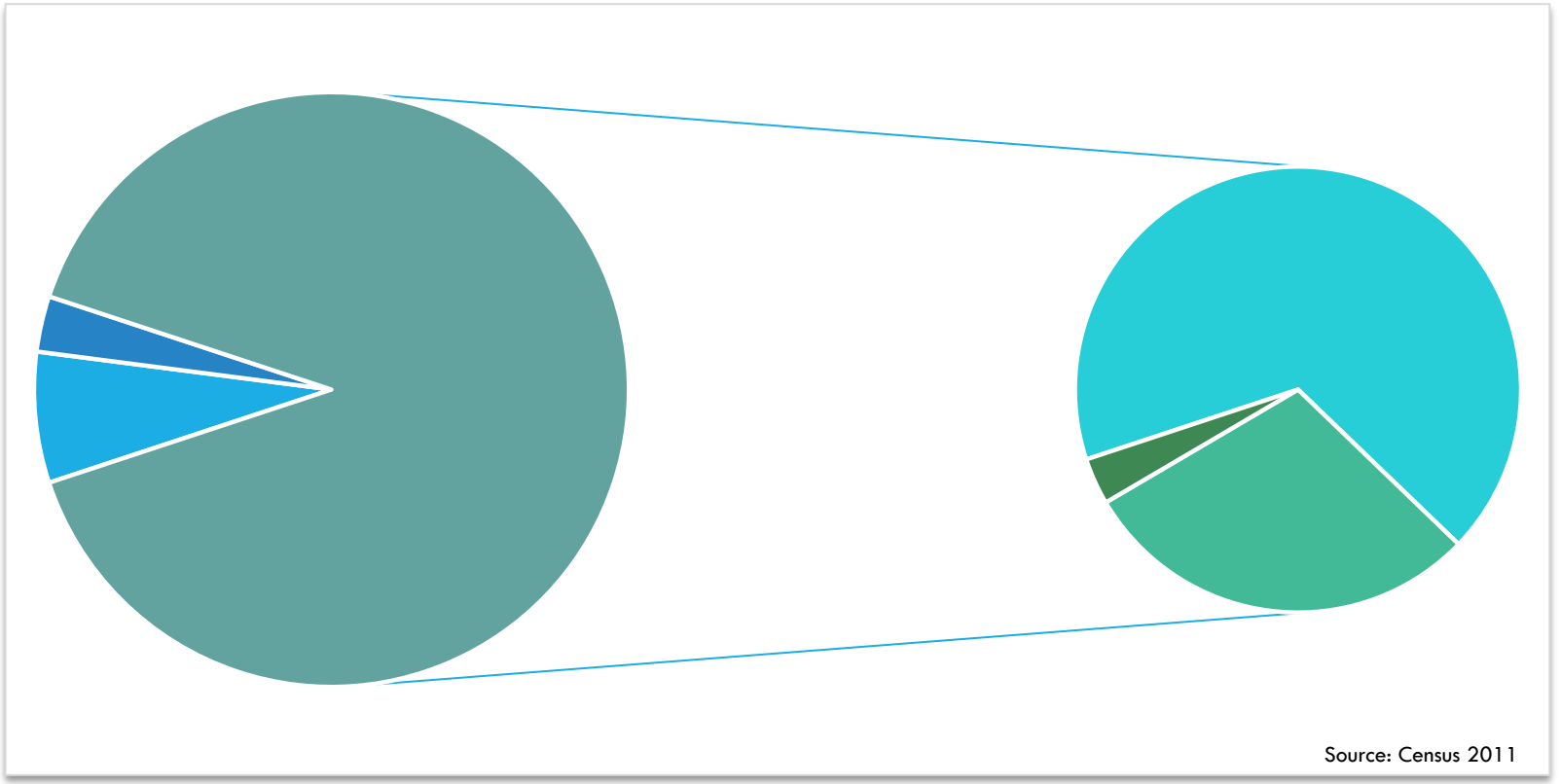
DELHI

Two neighbourhoods



Name of Area	Urban HHs	IHHL (%)	OD (%)	without IHHL (%)	Connected to Sewer (%)	Connected to OSS (%)	% HHs connected to Others
Aya Nagar	6582	93.6%	6.3%	0.1%	5.2%	94.4%	0.4%
Krishan Vihar	8985	NA	NA	NA	NA	NA	NA

SBM U[2]: IHHL (380/516) , PTBs/CTBs: 19171

Delhi has been declared ODF

Under AMRUT[3]: Investment to the tune of 431 Crs. For sanitation

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KEY OBSERVATIONS – FOUR CASE STUDIES

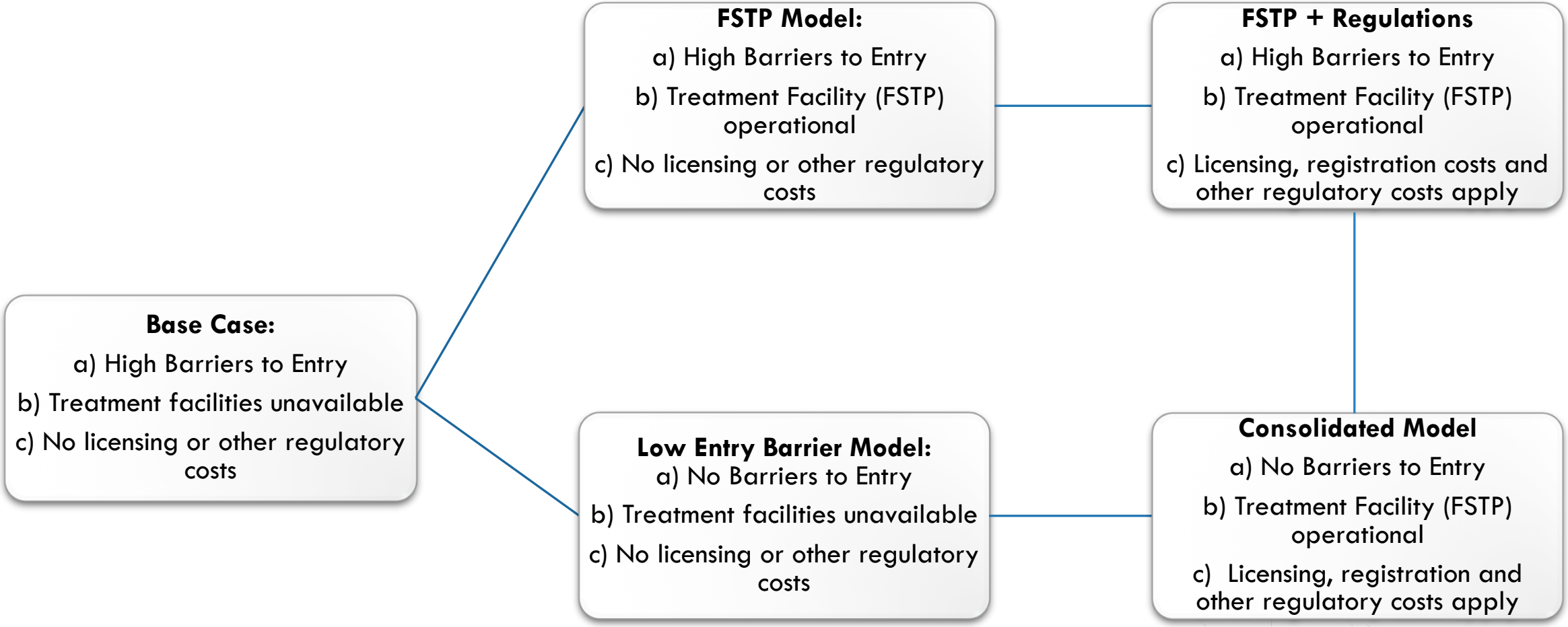
- In Delhi and Jaipur, the operations of septic tank emptiers are region specific as opposed to Bhubaneswar and Dehradun.
- The business thrives due to horizontal cartelisation which led to
  - Agreement regarding price fixation.
  - Agreement relating to market allocation.
  - Agreement relating to limiting or controlling the product and supply market, technical developments, investments etc.
- The entry barriers to the market are negotiated through kinship and/or friendship
- Mostly operated as a part-time enterprise
- Often operators have local political clout and relative economic well-being
- Non-existence of designated dumping sites, lack of regulations, keep the input costs low

LIST OF RISKS IN THE CURRENT OPERATING MODEL

Financial	No access to institutional credit
	Possibility of price war due to new entrants
Regulatory	Not informed or equipped to access necessary clearances
	Risk of law enforcement and police checking
Labour	Availability
	Unsafe labour practices
Public health	Indiscriminate disposal of sludge
	Leakages and slippages from the collection vehicle
	Irregular/unpredictable demand trends
	Quality of the containment structure

UNDERSTANDING THE BUSINESS POTENTIAL

DEFINING THE VARIOUS MODELS



ASSUMPTIONS - BASIC

- De-sludging enterprises have one revenue source- the fees charged to households and institutions.
- Costs to the enterprise

Capital Costs	Operating Expenses		
Vehicle (tractor/small trucks)	Fuel cost	Wages	Registration fees
Container	Maintenance fees	Tipping fees	licensing fees
Estimated as an average of the data reported by the four case studies	Calculated as an average of costs reported		Annual Depreciation • vehicle@10% and • container @25%

- Other Assumptions

No. of Trips per day	Base price per trip (INR)	Business cycle
4 during non-monsoon and 7 in the rainy season	950	6 years
Range of trips reported	Average price reported	

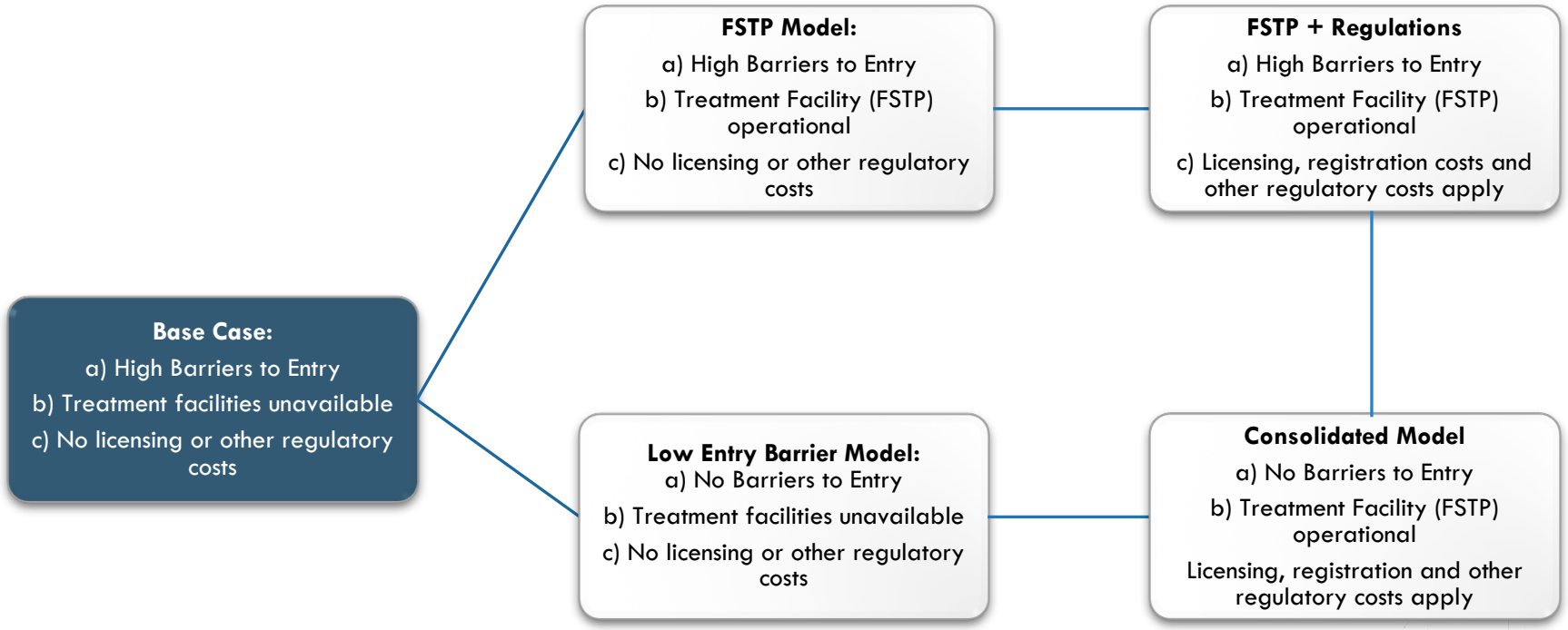
- Inelastic demand curve for de-sludging

ASSUMPTIONS – MARKET ENTRY AND REGULATORY

Market Entry	Regulatory
Entry possible at the end of year 2	Treatment facilities available • At a distance of 1km from city centre • At a distance of 8km from city centre
Price cut possible by the new entrants of: • 25% • 50%	Pooling possible by visiting max of 2 HHs
Horizontal cartelisation possible at the end of year 3 moving the reduced price back to the initial levels	Collusion not possible
	Have access to the institutional credit market: • 30% down payment • 3 year loan repayment period • Rate of interest @ 9.25% p.a.
	Licensing: Rs. 1000 every two years, with a one-time deposit of Rs. 10,000 in first year[4]
	Vehicular Regulations: Commercial registration, requisite vehicle taxes, obtaining PUC and regular fitness certificates

[4] DJB Septic Tank Emptying Regulations, 2015.

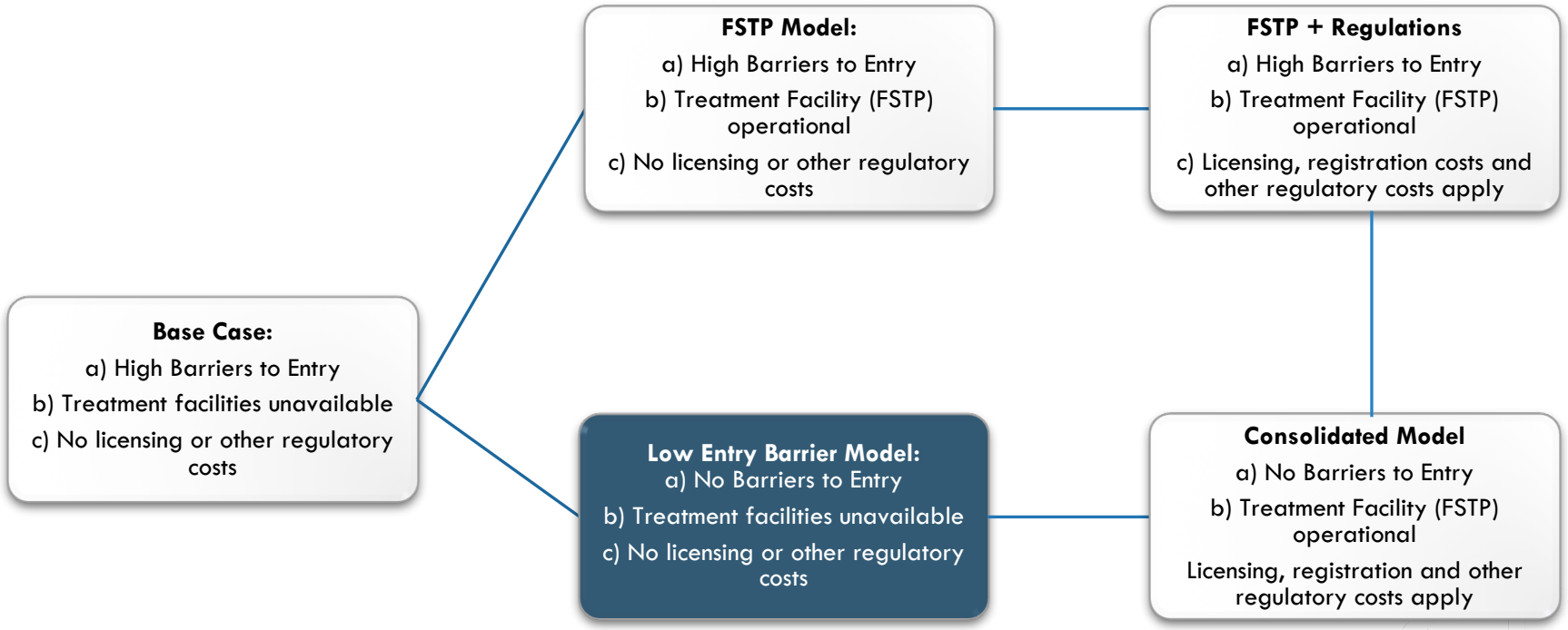
DEFINING THE VARIOUS MODELS



MODEL 1: BASE CASE

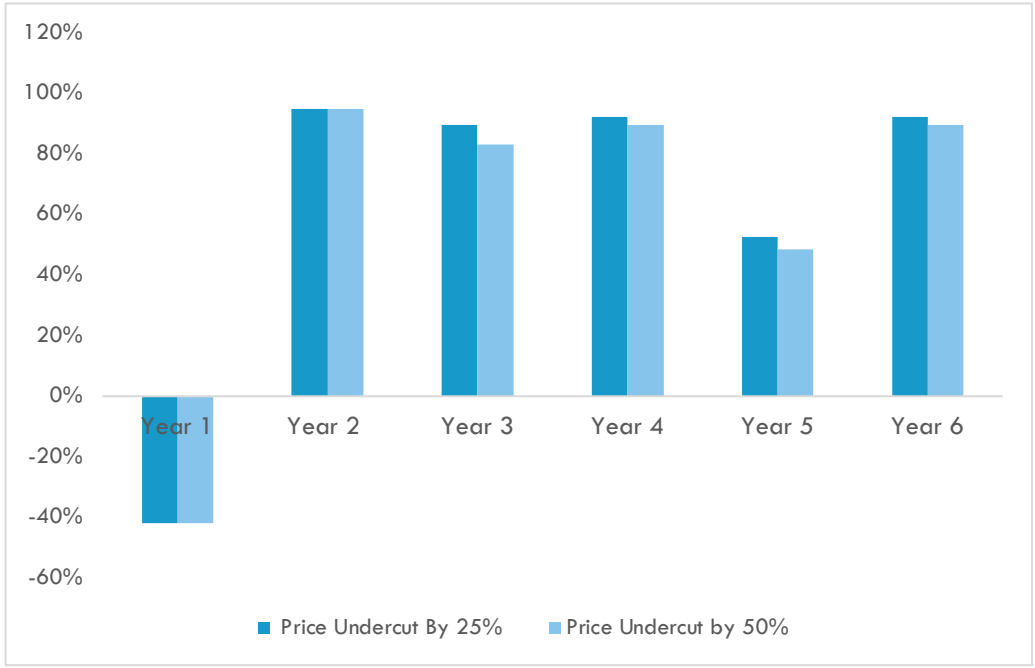
Year	Return on Investment
Year 1	-42%
Year 2	95%
Year 3	95%
Year 4	95%
Year 5	56%
Year 6	95%

DEFINING THE VARIOUS MODELS



MODEL 2: LOW BARRIERS TO ENTRY

Year	RoI If Price is Cut by 25%	RoI If Price is Cut by 50%
Year 1	-42%	-42%
Year 2	95%	95%
Year 3	90%	83%
Year 4	92%	90%
Year 5	53%	49%
Year 6	92%	90%



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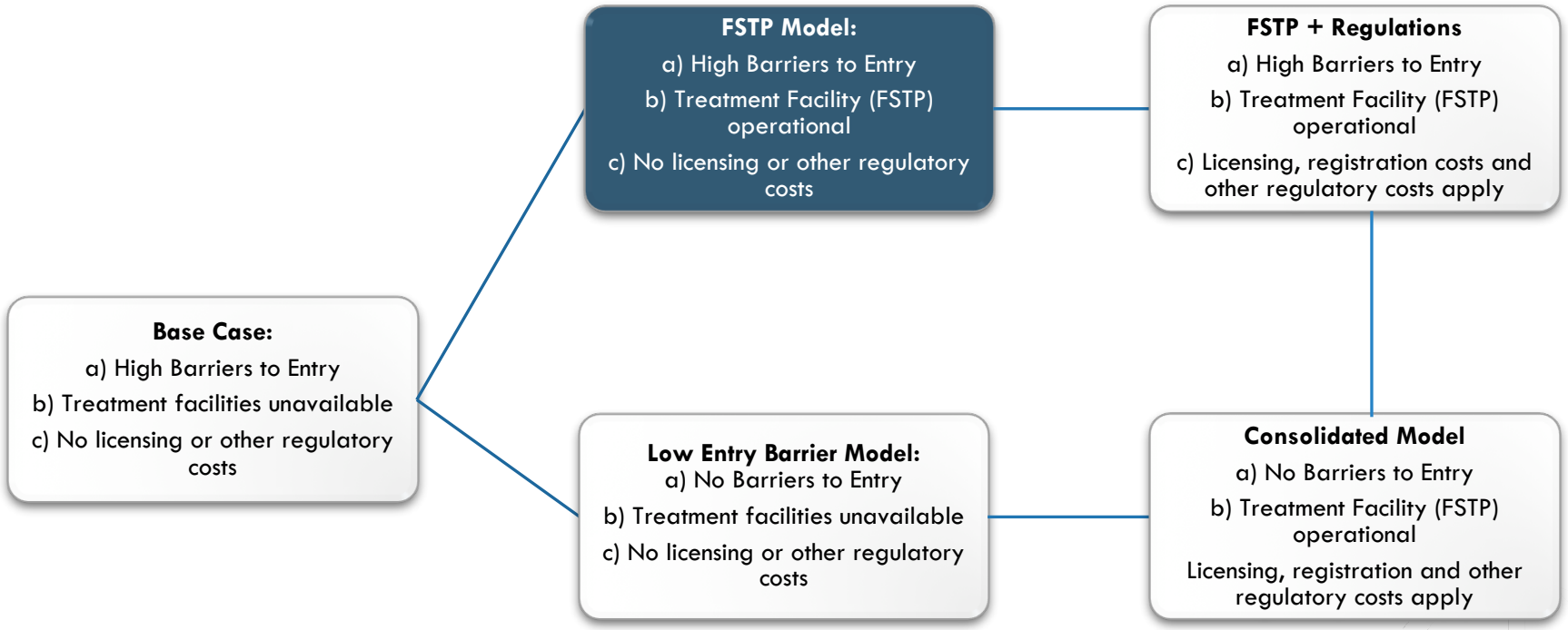
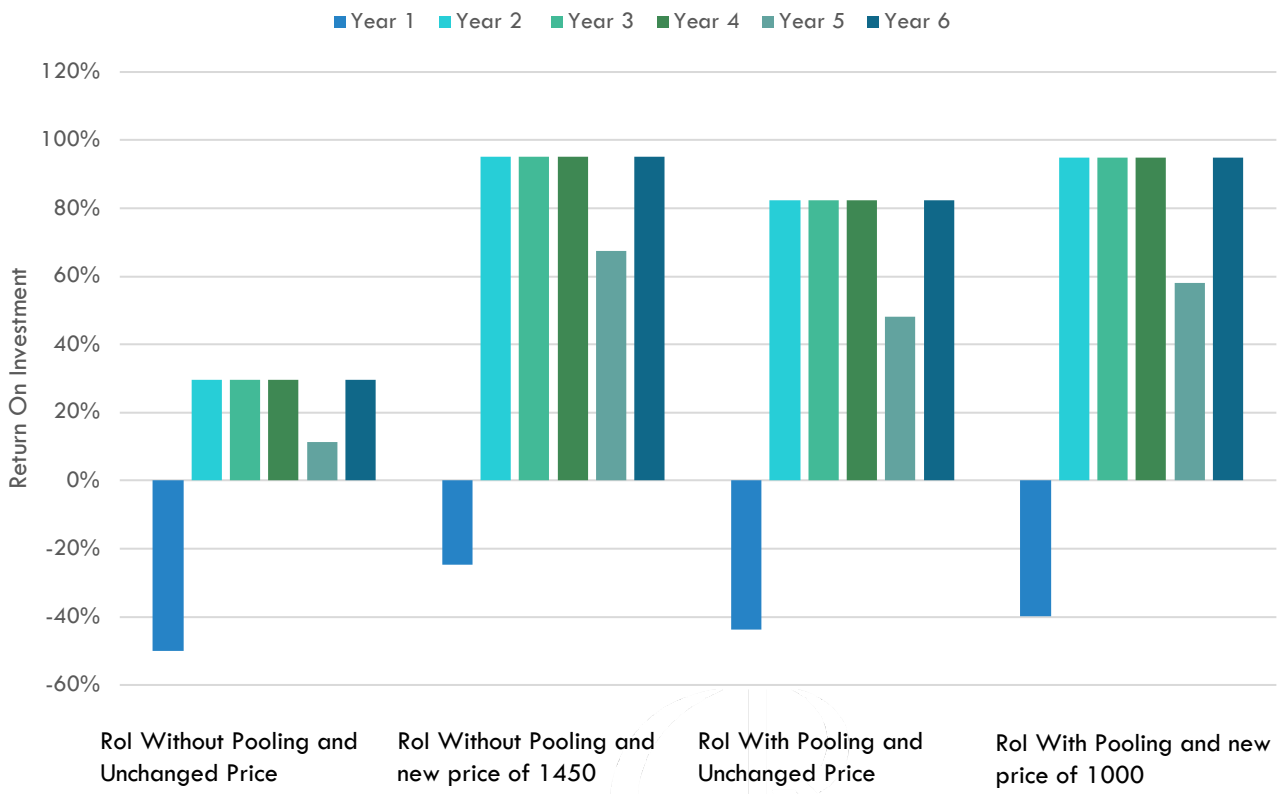


MODEL 3 (A): TREATMENT FACILITY OPERATIONAL WITHIN 1 KM

Year	RoI Without Pooling and unchanged price	RoI Without Pooling and new price of 1450	RoI With Pooling and unchanged price	RoI With Pooling and new price of 1000
Year 1	-50%	-25%	-44%	-40%
Year 2	30%	95%	82%	95%
Year 3	30%	95%	82%	95%
Year 4	30%	95%	82%	95%
Year 5	11%	68%	48%	58%
Year 6	30%	95%	82%	95%



MODEL 3 (B): TREATMENT FACILITY OPERATIONAL WITHIN 8 KM

Year	RoI Without Pooling and unchanged price	RoI Without Pooling and new price of 3170	RoI Without Pooling and new price of 4000	RoI With Pooling and unchanged price	RoI With Pooling and new price of 1775	RoI With Pooling and new price of 2300
Year 1	-71%	-3%	26%	-60%	-24%	-2%
Year 2	-55%	50%	95%	-20%	50%	95%
Year 3	-55%	50%	95%	-20%	50%	95%
Year 4	-55%	50%	95%	-20%	50%	95%
Year 5	-57%	42%	84%	-27%	36%	77%
Year 6	-55%	50%	95%	-20%	50%	95%

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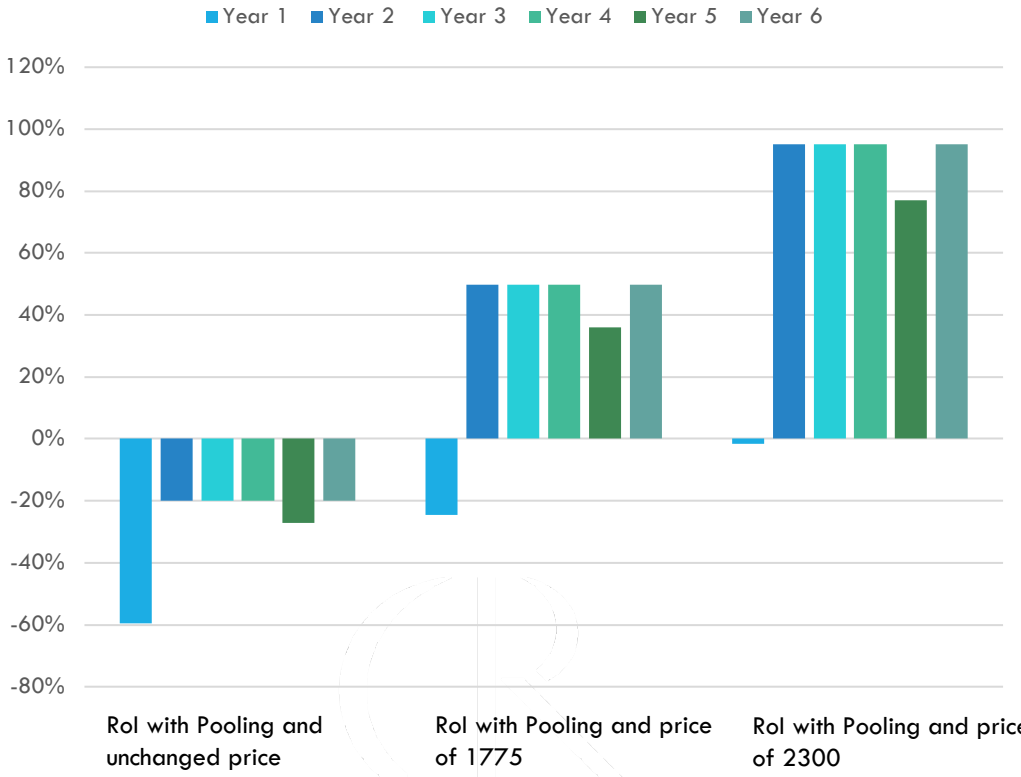
MODEL 3 (B): TREATMENT FACILITY OPERATIONAL WITHIN 8 KM

Without Pooling:

With Pooling:



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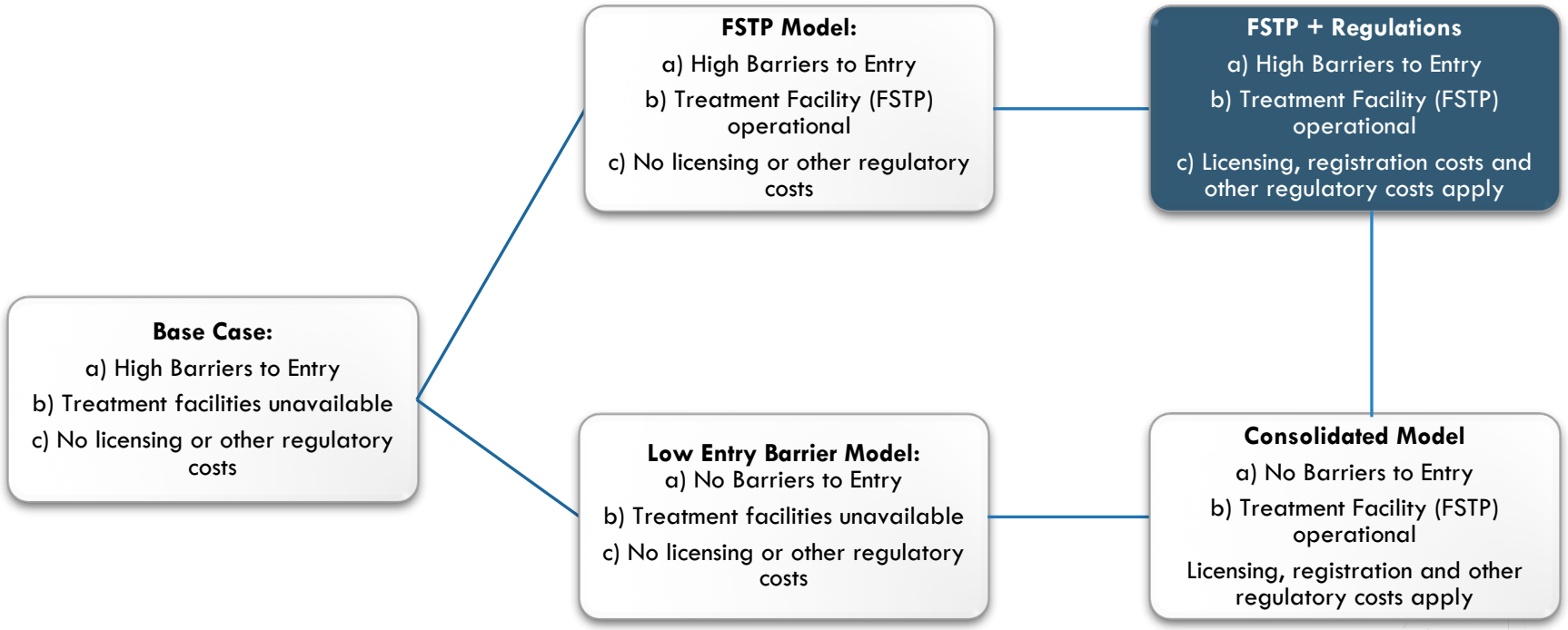
DEFINING THE VARIOUS MODELS



MODEL 4 (A): TREATMENT FACILITY OPERATIONAL WITHIN 1 KM; REGULATIONS INTRODUCED

Year	RoI Without Pooling and Unchanged Price	RoI Without Pooling and new price of 1090	RoI Without Pooling and new price of 1425	RoI With Pooling and unchanged price	RoI With Pooling and new price of 1015
Year 1	-25%	-13%	13%	-9%	-4%
Year 2	10%	26%	64%	46%	54%
Year 3	11%	28%	66%	48%	56%
Year 4	12%	29%	68%	50%	59%
Year 5	12%	29%	67%	49%	58%
Year 6	31%	50%	95%	84%	95%

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MODEL 4 (A): TREATMENT FACILITY OPERATIONAL WITHIN 1 KM; REGULATIONS INTRODUCED

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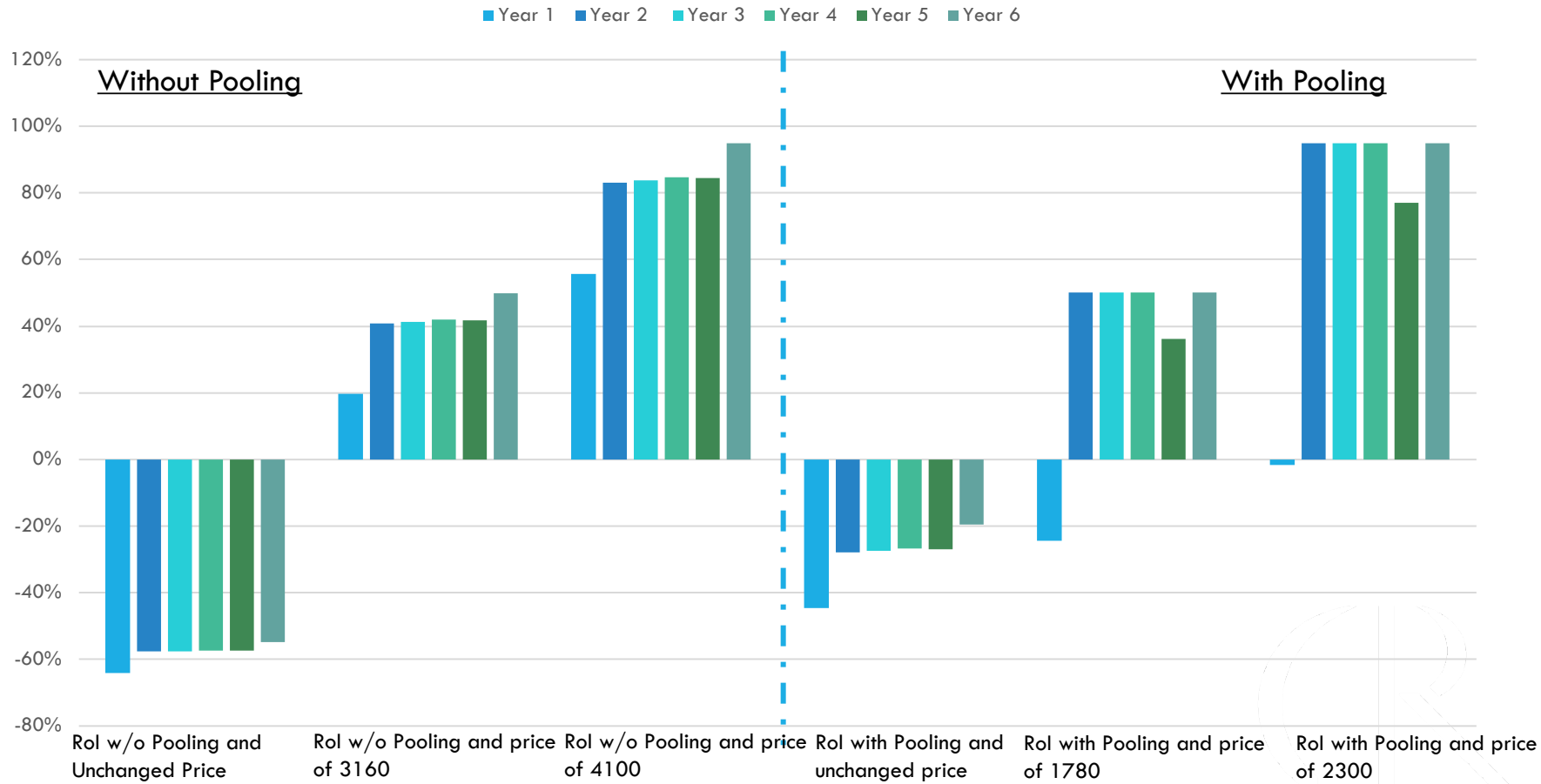
MODEL 4 (B): TREATMENT FACILITY OPERATIONAL WITHIN 8 KM; REGULATIONS INTRODUCED

Year	RoI Without Pooling and Unchanged Price	RoI Without Pooling and new price of 3160	RoI Without Pooling and new price of 4100	RoI With Pooling and Unchanged Price	RoI With Pooling and new price of 1780	RoI With Pooling and new price of 2300
Year 1	-64%	20%	56%	-45%	-24%	-2%
Year 2	-58%	41%	83%	-28%	50%	95%
Year 3	-57%	41%	84%	-27%	50%	95%
Year 4	-57%	42%	85%	-27%	50%	95%
Year 5	-57%	42%	84%	-27%	36%	77%
Year 6	-55%	50%	95%	-19%	50%	95%

MODEL 4 (B): TREATMENT FACILITY OPERATIONAL WITHIN 8 KM; REGULATIONS INTRODUCED



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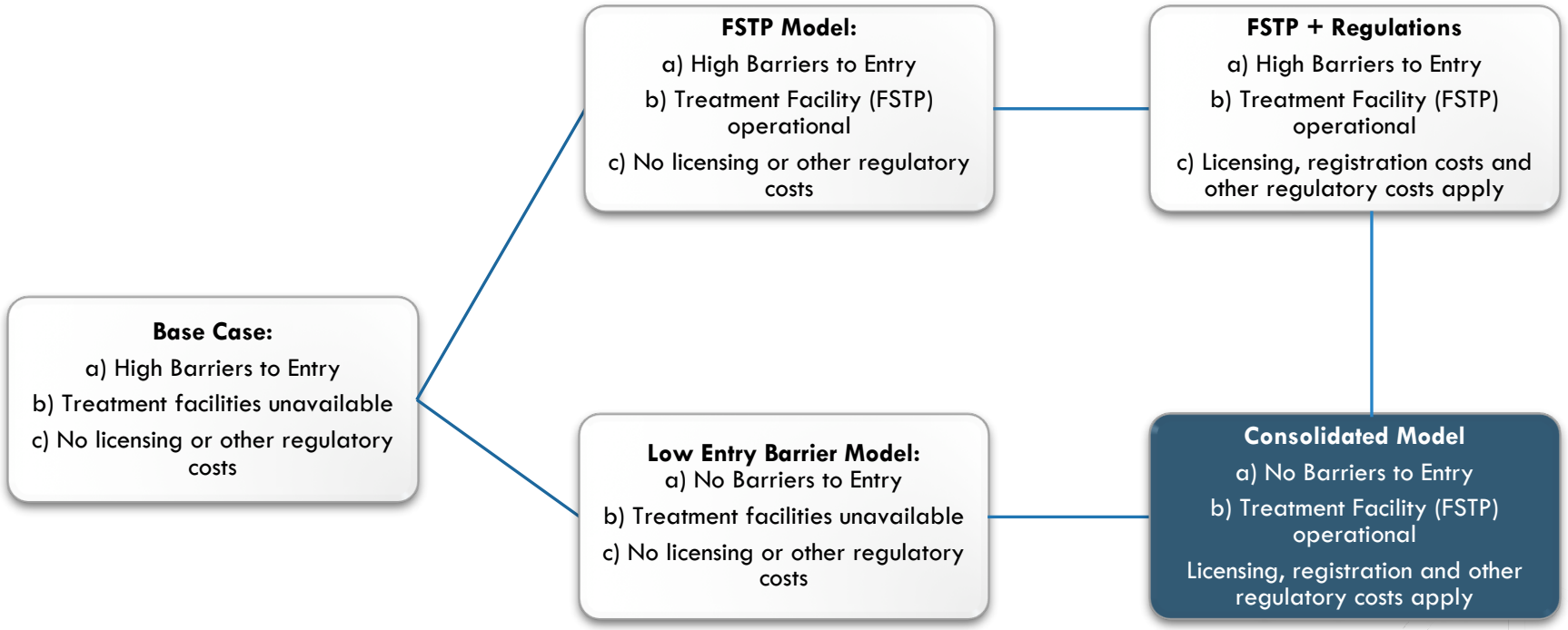
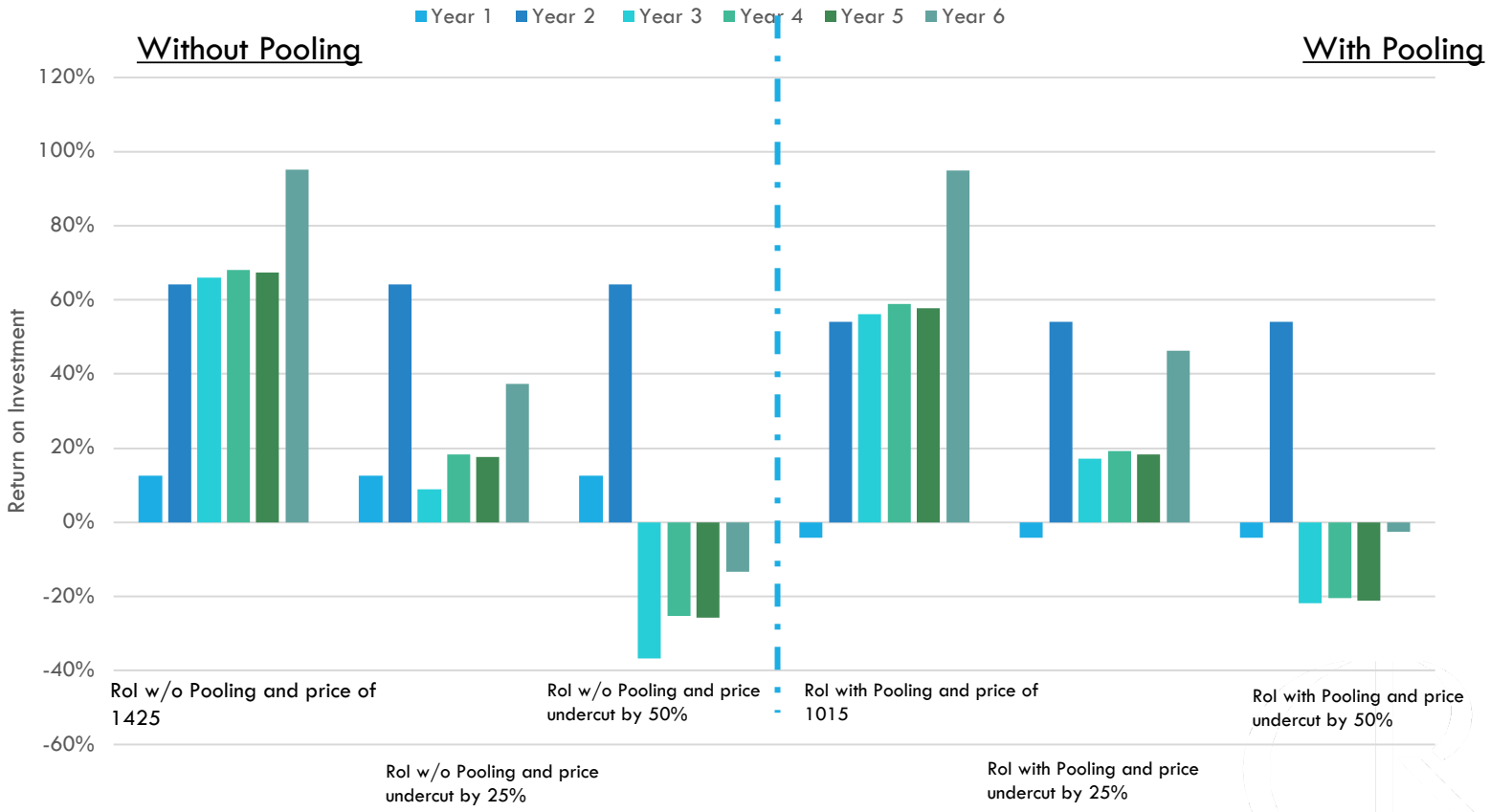
DEFINING THE VARIOUS MODELS



MODEL 5: TREATMENT FACILITY OPERATIONAL WITHIN 1 KM; REGULATIONS INTRODUCED; LOW BARRIERS TO ENTRY

Year	RoI Without Pooling and Price of 1425	RoI Without Pooling and Price Undercut by 25%	RoI Without Pooling and price undercut by 50%	RoI With Pooling and Price of 1015	RoI With Pooling and Price Undercut by 25%	RoI With Pooling and Price undercut by 50%
Year 1	13%	13%	13%	-4%	-4%	-4%
Year 2	64%	64%	64%	54%	54%	54%
Year 3	66%	9%	-37%	56%	17%	-22%
Year 4	68%	18%	-25%	59%	19%	-21%
Year 5	67%	18%	-26%	58%	18%	-21%
Year 6	95%	37%	-13%	95%	46%	-3%

MODEL 5: TREATMENT FACILITY OPERATIONAL WITHIN 1 KM; REGULATIONS INTRODUCED; LOW BARRIERS TO ENTRY



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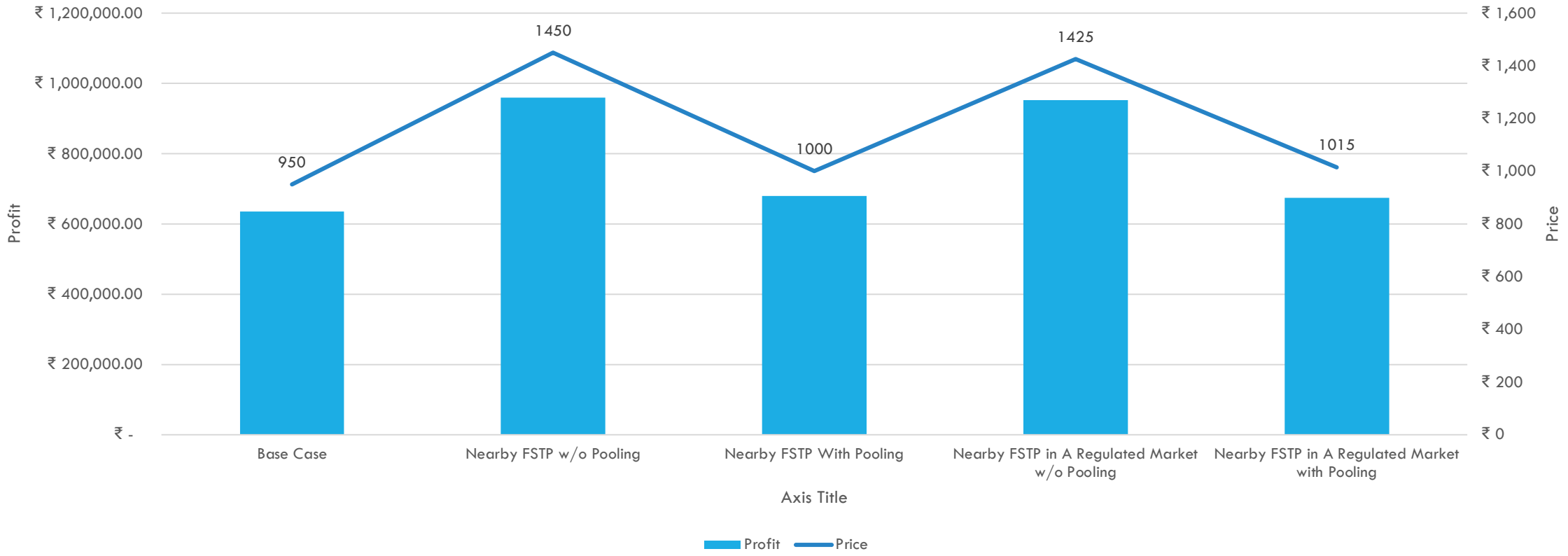

ANALYZING VARIABILITY ACROSS MODELS: THE 'NEARBY FSTP' CASE

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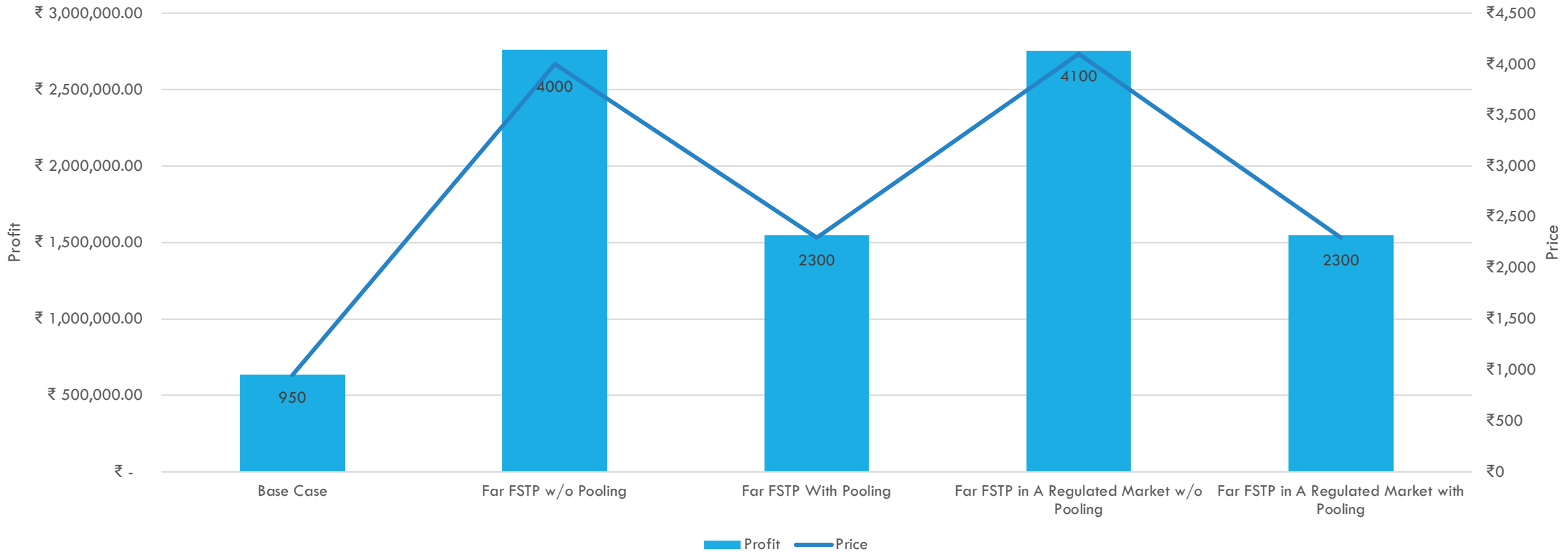

ANALYZING VARIABILITY ACROSS MODELS: THE 'FAR FSTP' CASE

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CONCLUSIONS

- If regulations are driven by public good perspective, is it at the expense of these enterprises?
- Is it more useful for the consumers to have different set of service providers – Government as well as private?
- Is differential pricing the way ahead?
  - Among HHs – f(plot size)? Plot size as a proxy for economic status in cities?
  - Among institutional buildings – hotels, hospitals, shopping complexes, schools and colleges?
  - Based on the distance to be travelled for the treatment facility?
- Should locating the treatment facility be a f(city size, urbanisation prospect, no. of households dependent on OSS and future plans to cover the city under networked solutions) ?
- Scheduled may decrease cost – is it implementable?
- Is pooling for economic benefit the way forward?
- Is 'uberisation' of the de-sludging services able to stabilise the prices?
- Should the regulations come in at one go, or incrementally?

THANK YOU