

Characteristics of successful interventions in civic infrastructure and amenities

A Rapid Evidence Summary



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Technology Madras



Indian Institute of
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Agenda



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- Evidence Summary Questions
- Background
- Conceptual framework
- Methods used in the Evidence Summary
- Evidence base for the Summary
- Results and Findings
- Characteristics of successful interventions
- Implications

Thillai Rajan A
Professor
Department of Management Studies
IIT Madras

Ganesh Devkar
Associate Professor
Faculty of Engineering
CEPT University

Venkata Santosh Kumar Delhi
Assistant Professor
Civil Engineering Department
IIT Bombay



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Evidence Summary Questions



Rapid Evidence Summary Questions

Review Questions:

- *How effective are interventions which seek to improve access and quality of civic infrastructure and amenities?*
- *What are the key characteristics of successful interventions in urban areas?*

Objectives:

- *Creation of evidence map of interventions in infrastructure sectors*
- *Identification of key characteristics of successful interventions*



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Background

Background

- Millennium Development Goals – 2000
 - Improvement of civic infrastructure received special attention

Goal 7 – ENSURE ENVIRONMENTAL SUSTAINABILITY

Target 10 - "Halve, by 2025, the proportion of people without sustainable access to safe drinking water and basic sanitation"

Target 12 - "Have achieved by 2020 a significant improvement in the lives of at least 100 million slum dwellers"

Sustainable Development Goals further increased the emphasis on civic infrastructure and amenities

Goal 6

- Ensure availability and sustainable management of water and sanitation for all

Goal 9

- Build resilient infrastructure, promote sustainable industrialization and foster innovation

Goal 11

- Make cities inclusive, safe, resilient and sustainable

Background



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- Governments have implemented interventions to improve the provision of infrastructure
- Impact evaluation and other quasi experimental studies have been carried out to evaluate the effectiveness of these interventions
- Evidence Synthesis – Systematic Reviews and Evidence Summaries of the primary studies have lead to useful findings for policy makers

Key Question

- *To what extent these programmes/interventions delivered the intended and expected outcomes in access and quality in civic infrastructure provision*

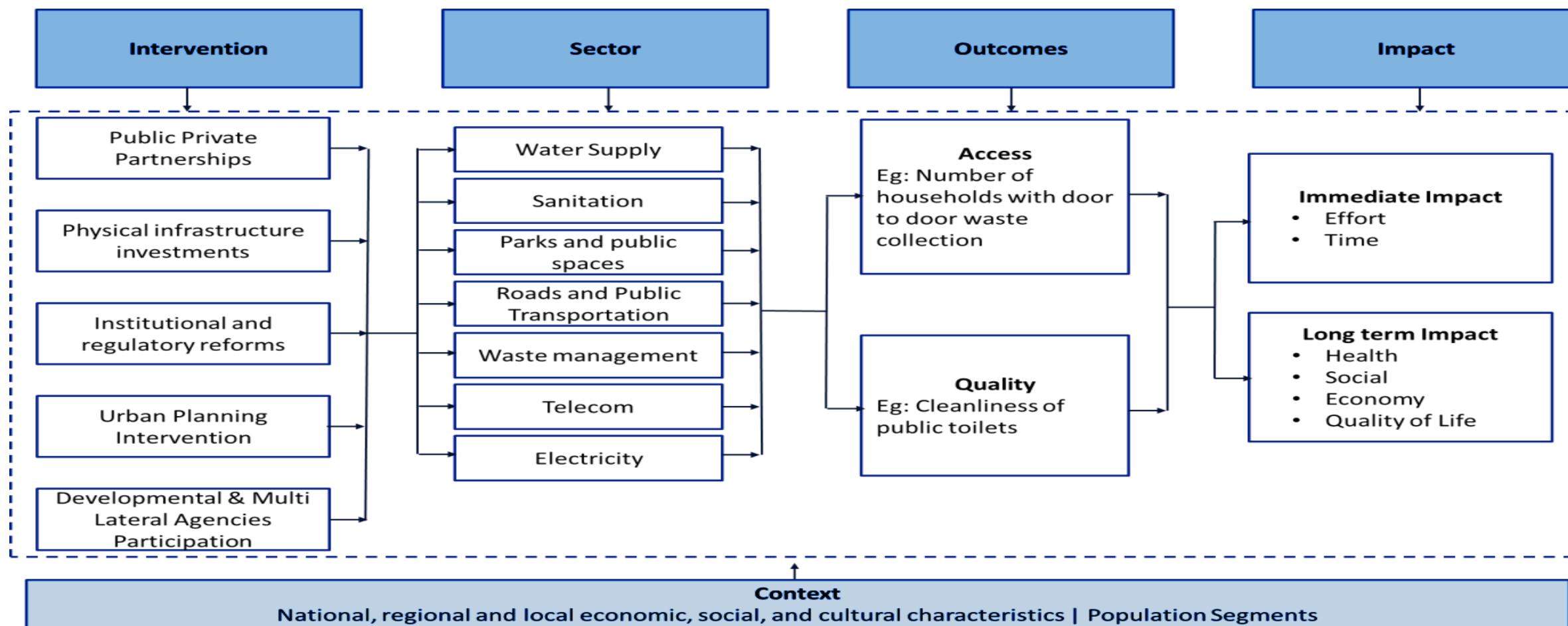




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Conceptual Framework

Conceptual framework

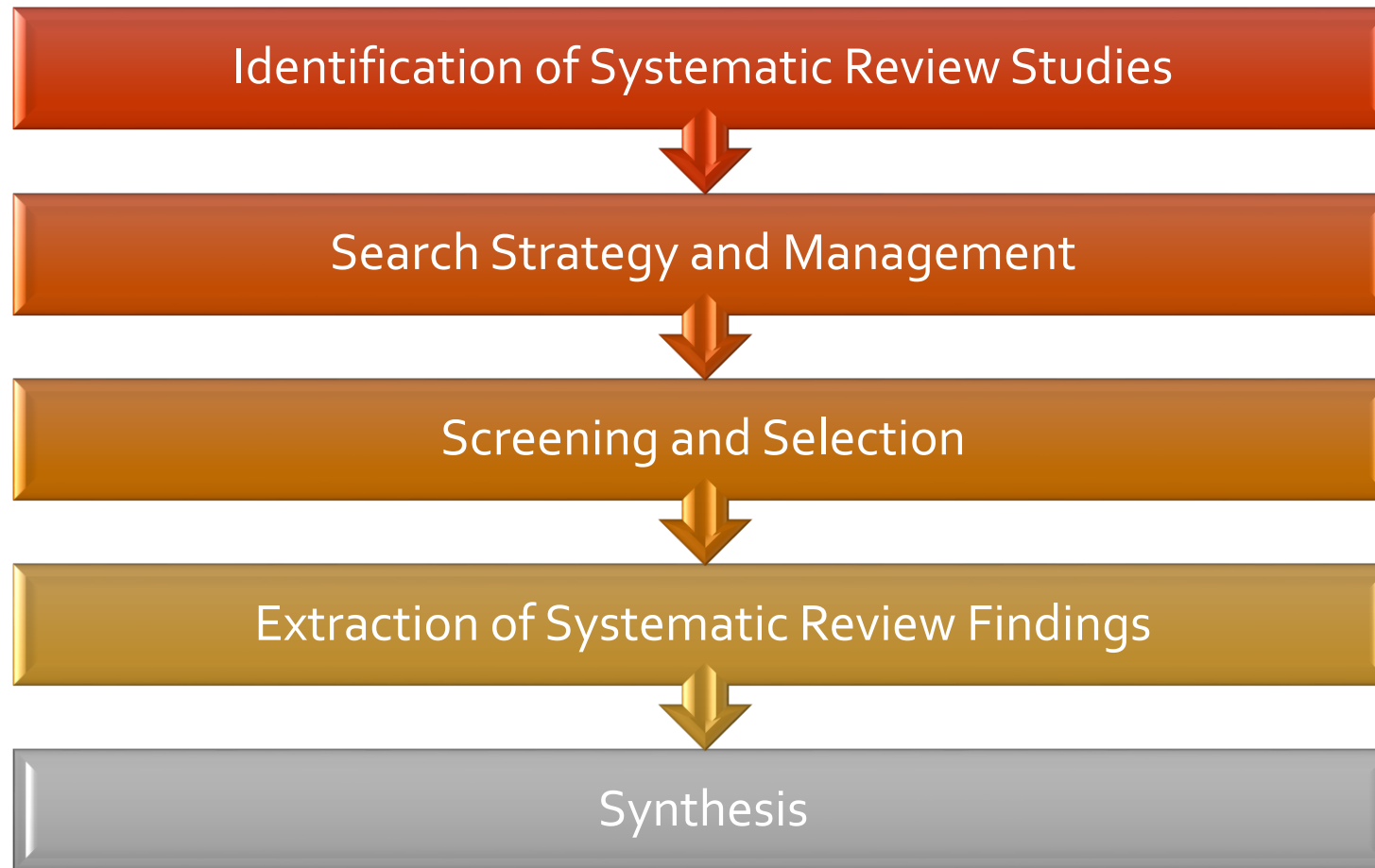




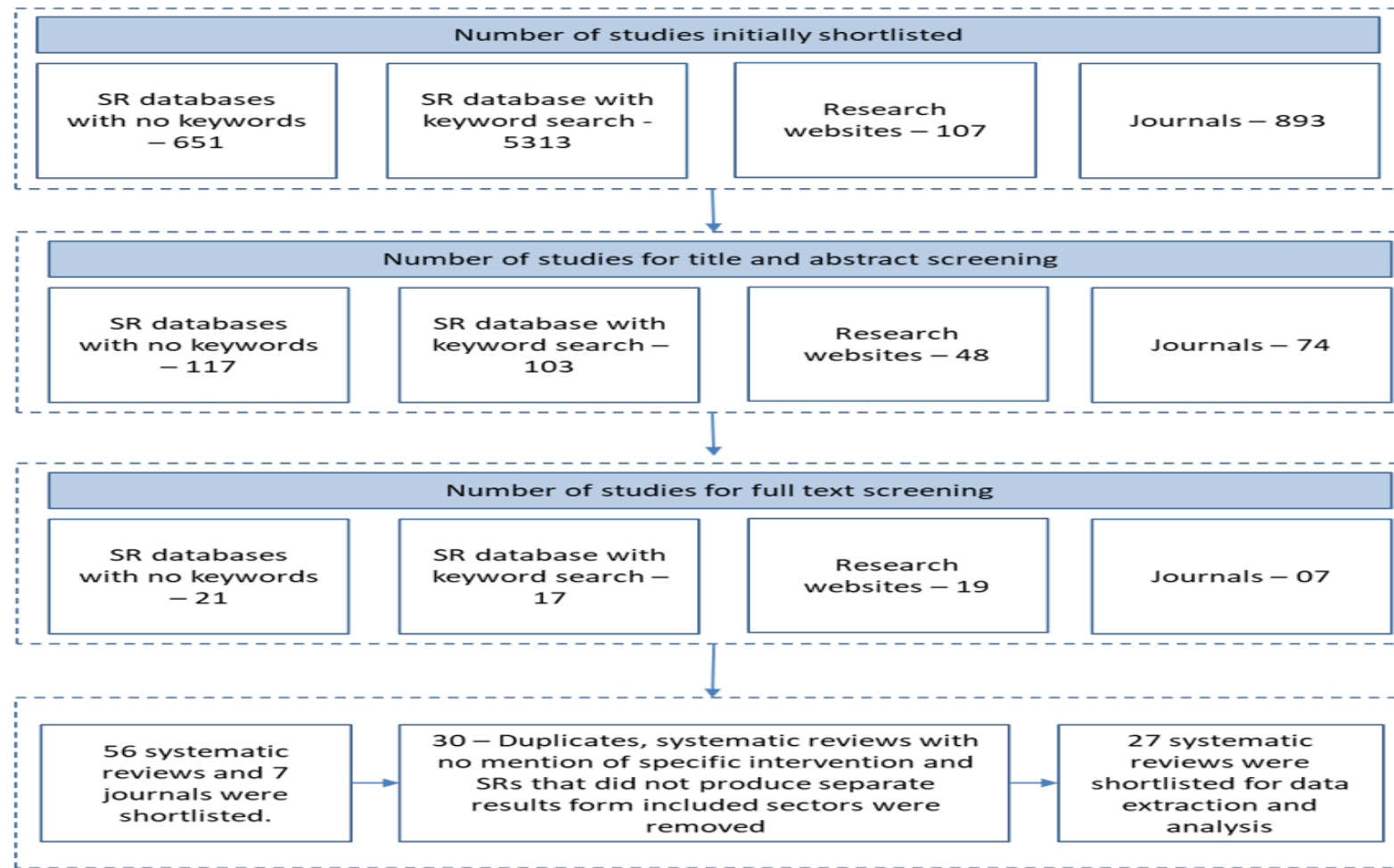
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Methods used in the Evidence Summary

Stages in the Evidence Summary



Systematic Reviews assessed





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Evidence Base for the Summary

By Sector



Sector	Number of SRs	Percentage of total	Outcomes Synthesized (No. of SRs)	
			Access	Quality
Water Supply	19	70%	12	16
Sanitation	8	30%	6	7
Electricity	6	22%	6	4
Road	4	15%	4	1
Telecom	3	11%	3	3
Combined Infrastructure Sectors	3	11%	3	2
Public Transportation	1	4%	1	1
Total number of Systematic Reviews	27			

By interventions



Intervention category	Number of SRs	Outcomes Synthesized (No. of Studies)	
		Access	Quality
Physical infrastructure creation	19	11	16
Urban planning intervention	7	5	5
Institutional and regulatory reforms	6	6	5
Public private partnerships	5	5	4
Community and Non-Governmental Organisation based intervention	3	3	3
Participation by Developmental and Multilateral Agencies	1	1	1



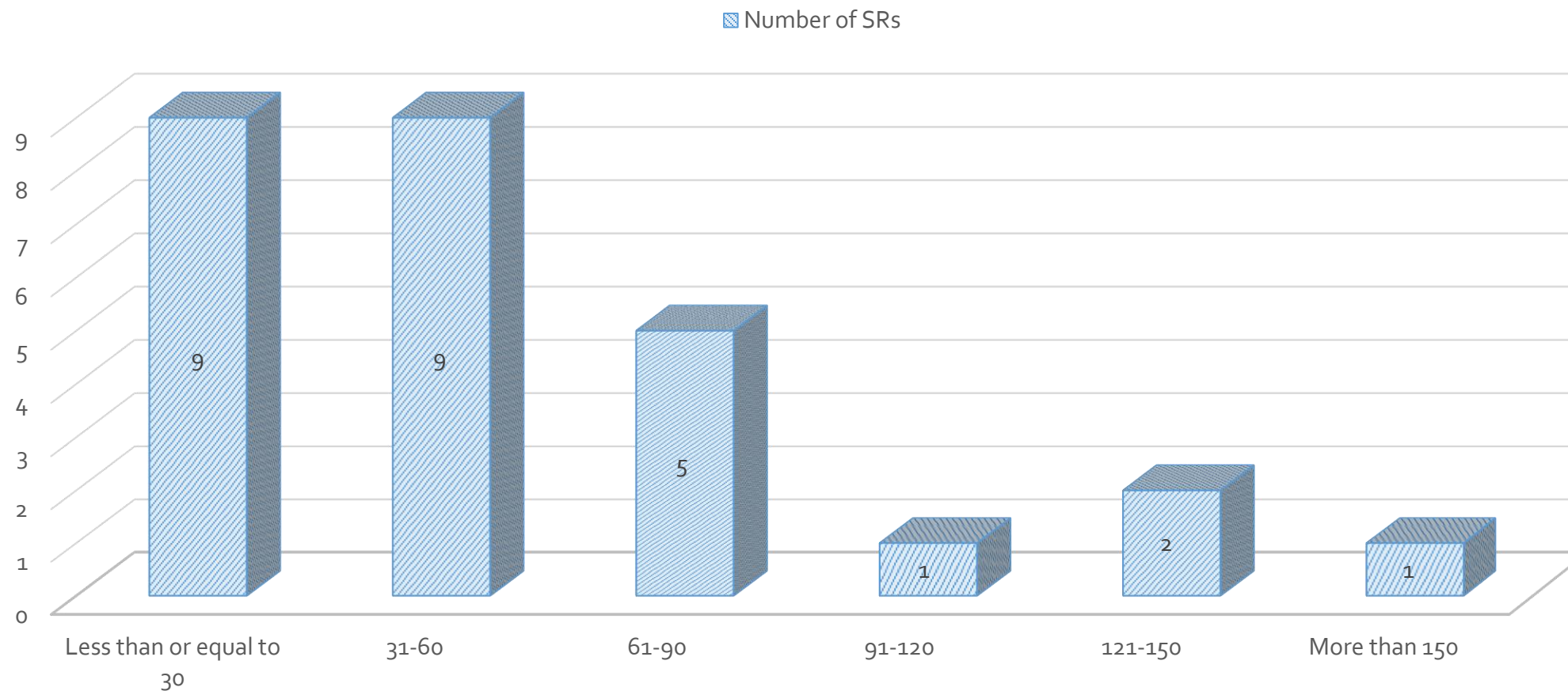
By region and year of publication

Regions	Number of SRs	Percentage of total
Asia	22	81%
Africa	20	74%
South America	12	44%
Central and North America	8	30%
Eastern Europe	5	19%
Oceania	5	19%
Total number of studies	27	

Year of Publishing	Number of SRs
2000-2004	1
2005-2008	3
2009-2012	11
2013-2016	12

When SRs synthesized evidence from multiple regions, it was counted for each region

By number of primary studies in the SRs



By SR range and QAT score

Range of SR (number of years that constituted the evidence base)	Number of SRs
Less than or equal to 10	3
11-20	7
21-30	6
31-40	8
Greater than 40	3

Quantile based on QAT score	No. of SRs	QAT Score range
1	2	115-106
2	11	105-96
3	7	95-86
4	2	85-76
5	5	75-66
Average Score		91
Maximum		114
Minimum		69



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Results and Findings

Overall Evidence Map



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Study Reference	Analysis method Quantitative ● Qualitative ○	Sector												Intervention							Social Segments			Lifecycle Segments			Region	Impact				
		Road and public transportation		Water Supply		Sanitation		Electricity		Telecom		Combined infrastructure	Sector	Public private partnerships	Physical infrastructure investments	Institutional and regulatory reforms	Urban planning intervention	Developmental and Multilateral Agencies	Community and Non Governmental Organisation based intervention	Urban	Rural	Slum and Low income	Girls	Children	Adults	Health		Economy	Education	Quality of Life		
		Access	Quality	Access	Quality	Access	Quality	Access	Quality	Access	Quality	Access		Quality	Public private partnerships	Physical infrastructure investments	Institutional and regulatory reforms	Urban planning intervention	Developmental and Multilateral Agencies	Community and Non Governmental Organisation based intervention	Urban	Rural	Slum and Low income	Girls	Children	Adults		Health	Economy	Education	Quality of Life	
Annamalai et al. (2012)	○			●	●			●	●	●	●		●		●			●														
Annamalai et al. (2013)	●○							●	●	●	●		●																			
Annamalai et al. (2016)	●○			●		●									●																	
Arnold and Colford (2007)	●				●																											
Bain et al. (2014)	●				●																											
Bensch et al. (2016)	●							●	●																			●				
Birdthistle et al. (2011)	○					●	●										●						●	●					●			
Bouillon et al (2007)	○												●		●				●			●	●				●					
Clasen et al. (2010)	●						●																				●					
Clasen et al. (2015)	●			●	●											●											●					
Dangour et al. (2013)	●				●																			●			●					
Fewtrell et al. (2005)	●																		●	●							●					
Heijnen et al. (2004)	●						●																				●					
Hepworth et al. (2013)	○				●																	●					●					
Hine et al. (2016)	○																										●		●			
Huges et al. (2013)	●				●																						●					
Hunter (2009)	●				●																											
Knox et al. (2013)	○																			●								●				
Molina et al (2016)	●																										●		●	●	●	
Null et al. (2012)	○			●																												
Petrosino et al. (2012)	●			●																												
Taylor et al. (2015)	○				●																						●					
Turley et al. (2013)	●○			●	●									●																		
Waddington et al. (2009)	●				●	●	●	●																				●				
Watson et al. (2012)	○																											●		●		●
Wolf et al. (2014)	●																															
Wright et al. (2004)	●				●																											
Total Count		2	--	7	12	3	4	4	3	2	2	1	--	5	18	4	6	1	2	3	5	4	1	7	1	6	10	5	4	3		

Water supply



Water Supply	Outcome						Impact					
	Access				Quality			Impact				
	Connectivity	Affordability	Capacity	Mixed access parameters	Product quality	Service quality	Mixed quality parameters	Health	Economy	Education	Quality of life	Environment
Investment in Physical Infrastructure	▲	▲▲ ▲▲			▲▲▲▲▲▲▲▲ ▲▲▲▲▲▲▲▲ ▲▲▲▲▲▲▲▲ ▲▲▲▲▲▲▲▲			▲▲▲▲▲▲ ▲▲▲▲▲▲ ▲▲▲▲▲▲ ▲▲▲▲▲▲	▲		↕ ↕ ▲	
Institutional & Regulatory Reforms				↕								
Urban Planning	↕↕↕ ↕△△ △↕			▽▽△ △↕↕ ↕	↕▲▲↕△	△▽↕ ↕		↕↕ ▲▼↕△				
Participation from Multilateral and Bilateral Agencies												
PPP and Privatization initiatives	△▲			↕		△△	↕	△▼				
Micro level initiatives such as NGO and Community Participation				△			△					
Others - Multiple Reforms				↕								

Key	
▲	Quantitative study reporting positive effect
▼	Quantitative study reporting negative effect
↕	Quantitative study reporting mixed/no effect
△	Qualitative study reporting positive effect
▽	Qualitative study reporting negative effect
↕	Qualitative study reporting mixed/no effect

Sanitation



Sanitation	Outcome							Impact				
	Access				Quality			Health	Economy	Education	Quality of life	Environment
Intervention Category	Connectivity	Affordability	Capacity	Mixed access parameters	Product quality	Service quality	Mixed quality					
Investment in Physical Infrastructure	▲▲▲		↕		△△△			▲▲▲▼△▲ ↕ ↕↕↕		↕↕↕		
Institutional & Regulatory Reforms				▲			▲	▲▲				
Urban Planning	▲▲↕↕↕ ↕△△△		▽	▽▽△△↕↕↕	▼▼△↕↕			▼▼↕↕△				
Participation from Multilateral and Bilateral Agencies	↕									↕		
PPP and Privatization initiatives												
Micro level initiatives such as NGO and Community Participation												
Others												

Key	
▲	Quantitative study reporting positive effect
▼	Quantitative study reporting negative effect
↕	Quantitative study reporting mixed/no effect
△	Qualitative study reporting positive effect
▽	Qualitative study reporting negative effect
↕	Qualitative study reporting mixed/no effect



Electricity provision

Electricity	Outcome							Impact				
	Access				Quality			Health	Economy	Education	Quality of life	Environment
Intervention Category	Connectivity	Affordability	Capacity	Mixed access parameters	Product quality	Service quality	Mixed quality parameters					
Investment in Physical Infrastructure	▲▲▲▲▲▲▲▼△	▲▲▼				▲▲			△△△↔		△↔	
Institutional & Regulatory Reforms	↔↔↔	↔△△△		↔↔		↑	↔↔		△↔		△	
Urban Planning	↔↔△△△			△△▼▼↔								
Participation from Multilateral and Bilateral Agencies												
PPP and Privatization initiatives	△△			↔↔			↔↔					
Micro level initiatives such as NGO and Community Participation												
Others Multiple Reforms				↔			↔					

Key	
▲	Quantitative study reporting positive effect
▼	Quantitative study reporting negative effect
↔	Quantitative study reporting mixed/no effect
△	Qualitative study reporting positive effect
▽	Qualitative study reporting negative effect
↔	Qualitative study reporting mixed/no effect

Public transportation



Roads and Public Transportation	Outcome						Impact					
	Access				Quality							
Intervention Category	Connectivity	Affordability	Capacity	Mixed access parameters	Product quality	Service quality	Mixed quality parameters	Health	Economy	Education	Quality of life	Environment
Investment in Physical Infrastructure				△△△ △△				↕	△△△ △▽↕ △△△	△	△△	
Institutional & Regulatory Reforms												
Urban Planning	↕↔ △↕ △				△↕▽ ▼▼			△↕▽ ▼▼↕		↕▲↕	△	
Participation from Multilateral and Bilateral Agencies												
PPP and Privatization initiatives												
Micro level initiatives such as NGO and Community Participation												
Others												

Key	
▲	Quantitative study reporting positive effect
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△	Qualitative study reporting positive effect
▽	Qualitative study reporting negative effect
↕	Qualitative study reporting mixed/no effect

Telecom



Telecom	Outcome							Impact				
	Access				Quality							
Intervention Category	Connectivity	Affordability	Capacity	Mixed access parameters	Product quality	Service quality	Mixed quality parameters	Health	Economy	Education	Quality of life	Environment
Investment in Physical Infrastructure									△△↔		△↔	
Institutional & Regulatory Reforms				△△			△▽					
Urban Planning												
Participation from Multilateral and Bilateral Agencies												
PPP and Privatization initiatives	△ △ △			△▲			↔↑					
Micro level initiatives such as NGO and Community Participation							↔					
Others – Multiple Reforms				↔			↔					

Key	
▲	Quantitative study reporting positive effect
▼	Quantitative study reporting negative effect
↑	Quantitative study reporting mixed/no effect
△	Qualitative study reporting positive effect
▽	Qualitative study reporting negative effect
↔	Qualitative study reporting mixed/no effect

SRs with combined sectors

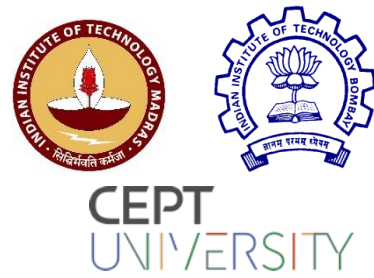
Infrastructure	Outcome						Impact					
	Access				Quality							
Intervention Category	Connectivity	Affordability	Capacity	Mixed access parameters	Product quality	Service quality	Mixed quality parameters	Health	Economy	Education	Quality of life	Environment
Investment in Physical Infrastructure								▲ ↔ ↔ ↔	▲	↔ ↔	↔	
Institutional & Regulatory Reforms												
Urban Planning	▲	▲ ▲ ▲						↔	↔		▲ ↔	
Participation from Multilateral and Bilateral Agencies												
PPP and Privatization initiatives												
Micro level initiatives such as NGO and Community Participation												
Others												

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△	Qualitative study reporting positive effect
▽	Qualitative study reporting negative effect
⇔	Qualitative study reporting mixed/no effect

Summary of Evidence

- Water sector
 - Intervention studied widely: Physical infrastructure investment
 - Positive effect on affordability and health with the adoption of physical infrastructure interventions
- Sanitation sector
 - Interventions studied widely: Physical infrastructure investment and urban planning
 - Positive effect on connectivity and product quality, and the impact on health has been mixed with the adoption of physical infrastructure interventions
 - Positive to mixed effect on connectivity, mixed access parameters, product quality and health with the adoption of urban planning interventions
- Electricity sector
 - Intervention studied widely: Physical infrastructure investment, and institutional and regulatory reform
 - Positive effect on connectivity and service quality and mixed effect on affordability with physical investments in infrastructure
 - Positive effect on affordability and mixed effect on connectivity and quality related parameters with institutional and regulatory reform

Summary of Evidence



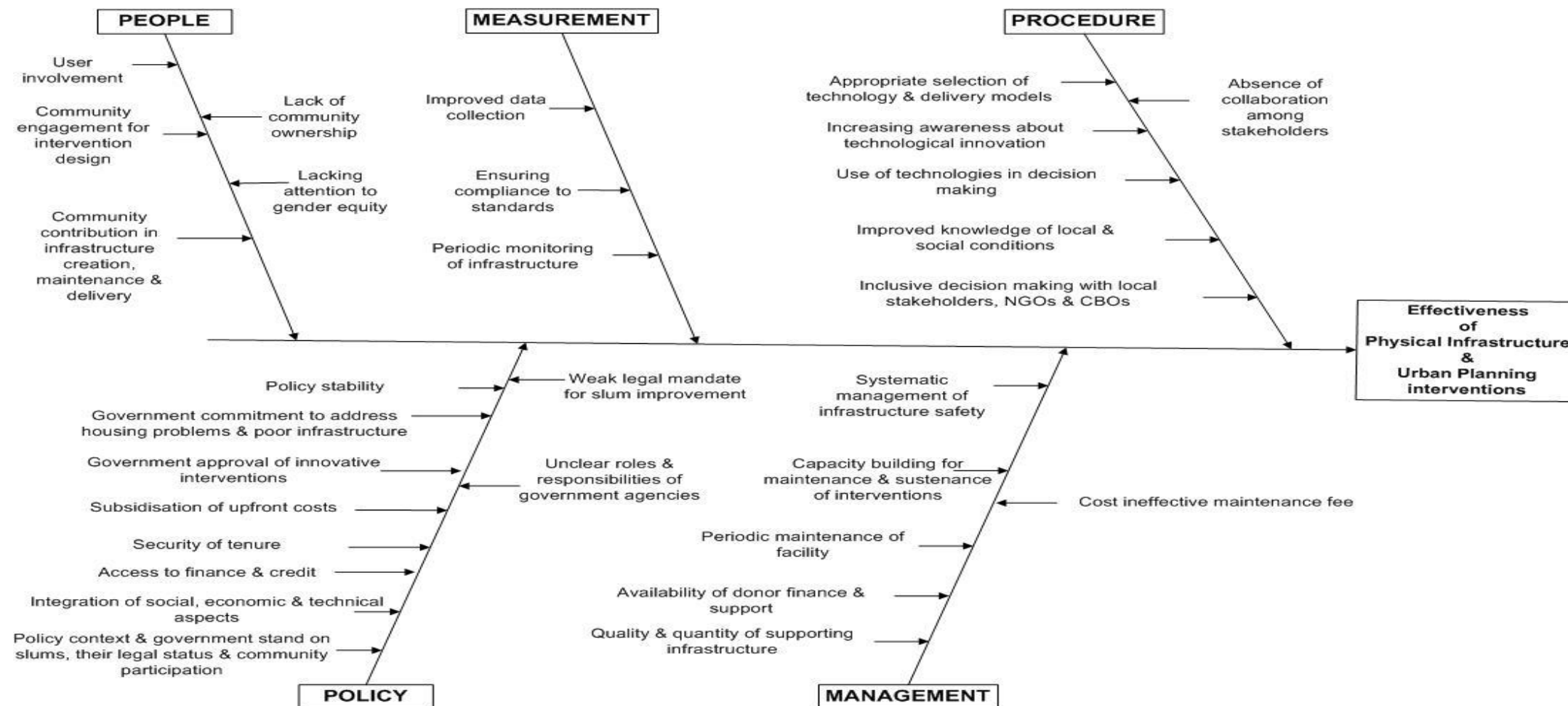
- Road and public transportation
 - Intervention studied widely: Physical infrastructure investment and urban planning
 - Physical infrastructure investments: Positive effect on access and economy, education and quality of life
 - Divided evidence on effect of urban planning on outcomes parameters like connectivity, product quality as well as impact on health and education
- Telecom
 - Public private partnerships and privatization initiatives leads to positive effect on connectivity
 - Institutional and regulatory interventions has positive effect on access parameters
 - Positive effect on economy and quality of life with physical infrastructure intervention



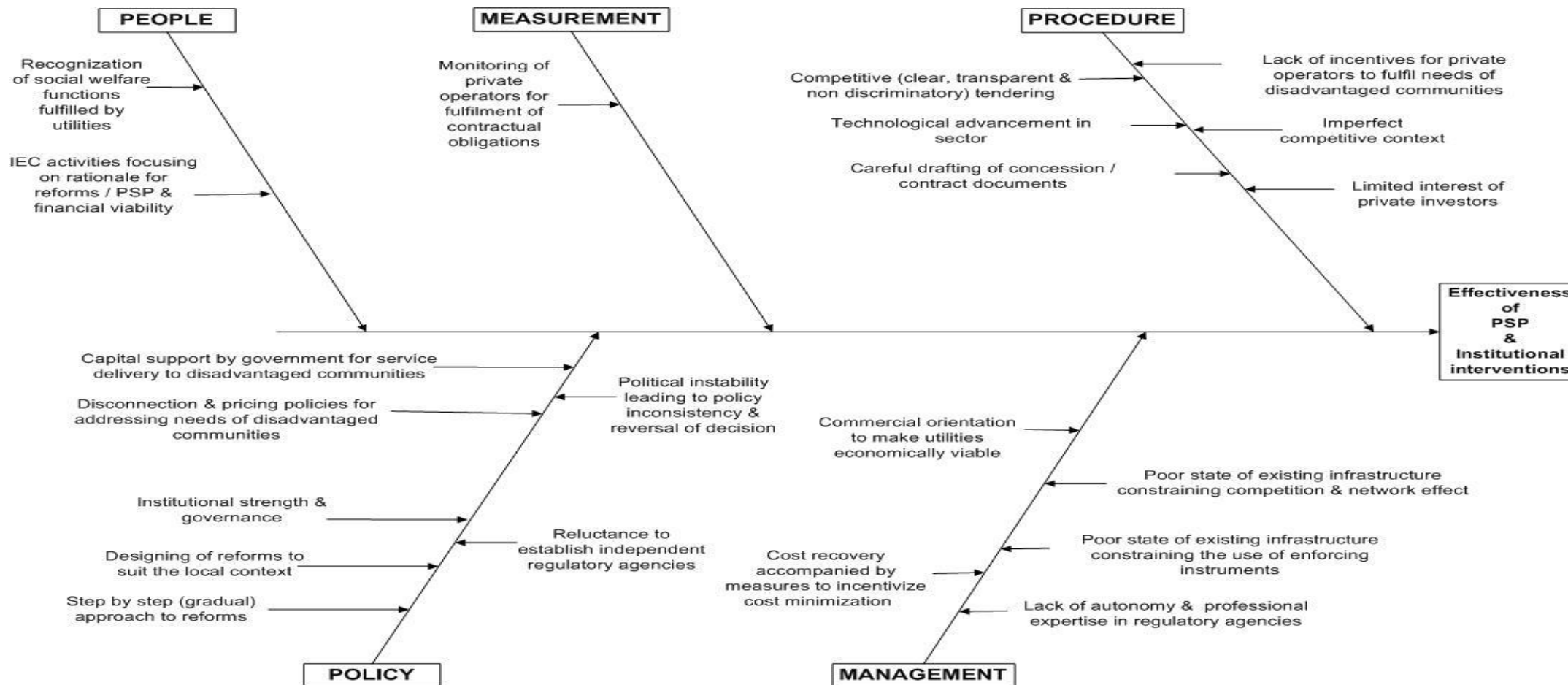
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Characteristics of successful interventions

Physical infrastructure and urban planning



Private sector participation and Institutional reform



Summary of Characteristics of Successful Interventions



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- Physical infrastructure and urban planning interventions
 - Necessary to involve user/community right from the stage of intervention design to implementation
 - Policy content should focus on security of tenure for slum dwellers, targeted subsidies to cover connection costs and upgradation of slums
 - Efforts towards asset management and recognition of upstream and downstream linkages of network infrastructure
- Private sector participation, institutional and regulatory reforms, social monitoring and multilateral and developmental organizations
 - Reform implementation should be gradual with recognition of social welfare functions performed by utilities and protection of interests of the urban poor
 - Procurement process should showcase elements like transparent bidding process and well defined performance parameters
 - Utilities should balance demanding priorities – social, political, economic and administrative alongwith cost recovery and professional management of service delivery process



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Implications

Implications

- Commission additional systematic reviews on sectors like sanitation, electricity, road, telecom and public transportation
- Forthcoming systematic reviews should analyze
 - Outcomes (immediate effect) but also impacts (long term effects)
 - Effect of reforms on “quality” as well along with the “access” parameters
 - Effect of interventions in systematic reviews from the lens of social (urban, rural, slum and low incomes) and lifecycle (girls, children and adults) segments
- Design of successful interventions
 - Urban planning and physical infrastructure investment reforms
 - Involvement of users / community
 - Protecting interests of poor section of society
 - Private sector participation and institutional & regulatory reforms
 - Reorienting the focus from “access” to “quality” as well as “provider” to “manager” of urban services

Thank you



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