

Innovative National Policy for Financing Resilient Urban Rapid Transit

Colin K. Hughes

Director of National Policy & Project Evaluation



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Tools for National Urban Transport Policy

Urban Transport is a National Issue:

- Cities have the majority of residents in most countries and produce more GDP
- Congestion, air pollution, traffic increasing in cities because most countries not building infrastructure as fast as GDP and population growing



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National Metrics for Shaping Urban Transport

Rapid Transit is critical in large cities to provide a high quality, efficient, and sustainable alternative to unmanaged motorization. National Transport policy makers can use these simple metrics to assess their nation's urban rapid transit.

Measuring Levels of Rapid Transit

- Rapid Transit to Resident ratio: Kilometers of Rapid Transit per million urban residents
- Approximate Transit Coverage: Approximate percent of metropolitan area within 1 km of rapid transit

Enabling Rapid Transit

- Percent of GDP spent on Rapid Transit Infrastructure
- Annual Rapid Transit Infrastructure Funding per Urban Resident
- Percent of Rapid Transit Investment that is Debt-Financed
- Average Cost per Km of Rapid Transit in Country
- Capacity: Transport Governance, Planning Capacity, Technical Capacity



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Rapid Transit to Resident ratio

Rapid Transit to Resident (RTR) ratio



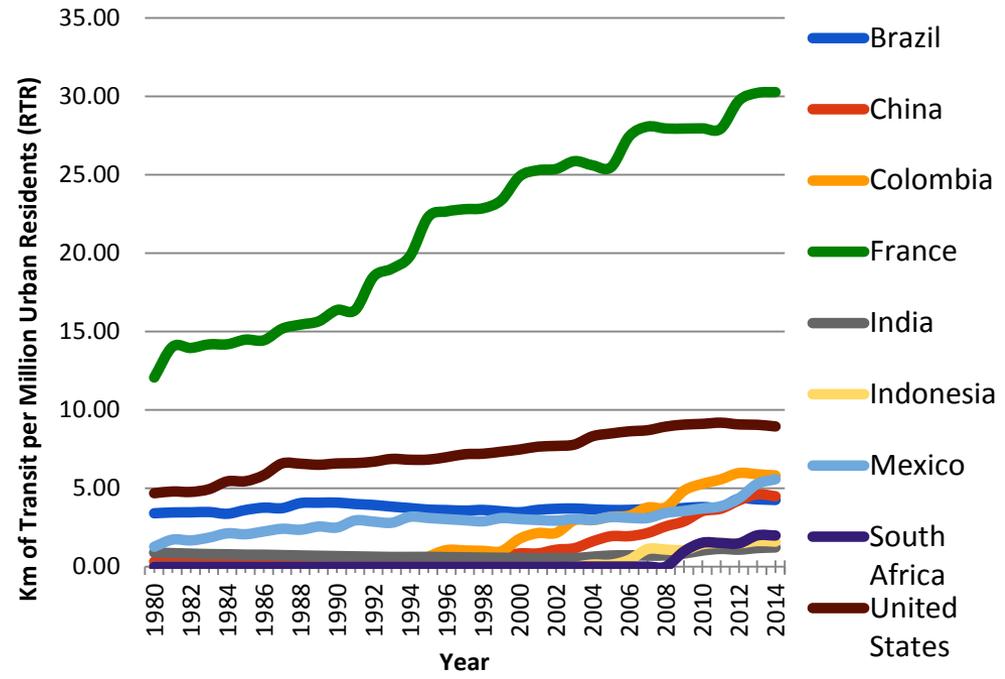
Kilometers of Rapid Transit



Millions of Urban Residents (in cities over 500k)

$$\text{RTR ratio} = \frac{\text{Kilometers of Rapid Transit}}{\text{Million Urban Residents}}$$

Growth of Rapid Transit per Urban Resident, 1980-2013



- Longitudinal Analysis allows a country to see if rapid transit is keeping pace with urban growth
- Urban Population Normalization allows international comparisons
- Best used at national scale

Rapid Transit to Resident ratio

Rapid Transit to Resident (RTR) ratio



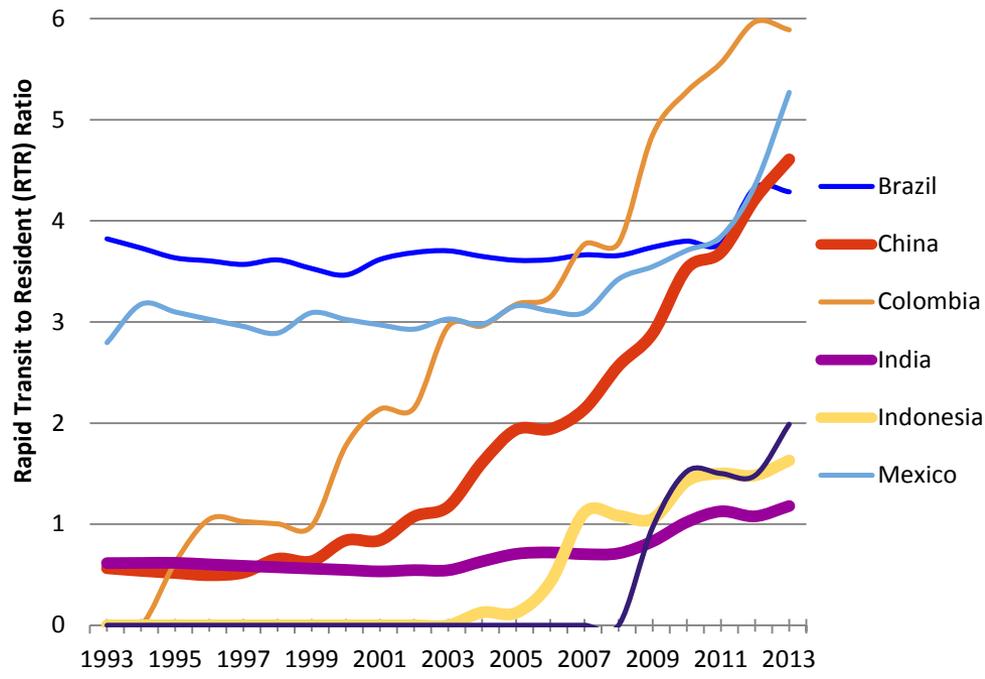
Kilometers of Rapid Transit



Millions of Urban Residents (in cities over 500k)

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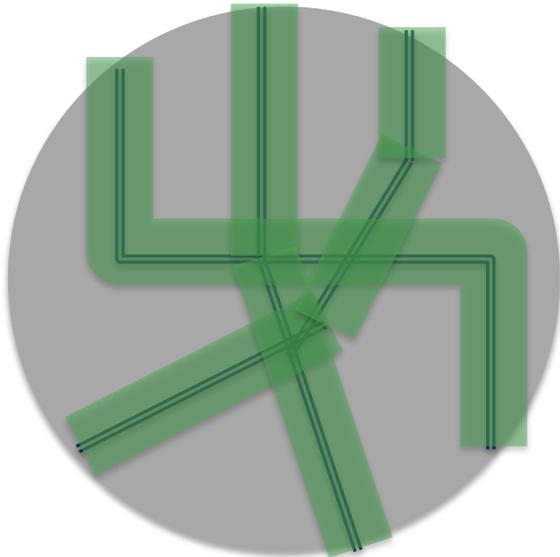
Growth of Rapid Transit per Urban Resident, 1993-2013



- Longitudinal Analysis allows a country to see if rapid transit is keeping pace with urban growth
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Approximate Rapid Transit Coverage (ATC)

Approximate Rapid Transit Coverage (ATC)



Urban Area: 100 km²

Transit Lines: 20 km

$$\text{ATC} = [(20 \times 2) / 100] \times 100\% = 40\%$$

Target Minimum ATC Value

40%

Of urban area within
1 km of transit

Current density and ATC values

RTA Target Setting	2014 Urban Density	2014 ATC
France	2,237	30%
Colombia	15,277	30%
China	6,284	10%
Indonesia	8,261	10%
S. Africa	3,329	2%
Mexico	7,030	12%
Brazil	5,371	10%
USA	1,208	4%
India	12,448	8%

- Better metric for considering differences in density and area of cities
- Urban built-up area normalization allows for comparisons
- Can be used at city scale or averaged for national scale

National Spending on Rapid Transit Infrastructure



Recommended Minimum
GDP Spending on Rapid Transit:

0.15%

of annual GDP spent on rapid
transit infrastructure

	Annual RTR Growth: 2000–2014	Annual Rapid Transit Spending per Urban Capita	Estimated Percentage of GDP Spent on Rapid Transit
France	0.8	\$82	0.07%
Colombia	0.49	\$19	0.08%
China	0.49	\$44	0.15%
Indonesia	0.44	\$3	0.01%
South Africa	0.26	\$2	0.01%
Mexico	0.26	\$6	0.02%
Brazil	0.15	\$25	0.08%
United States	0.16	\$26	0.03%
India	0.07	\$6	0.02%

- The amount of funding for rapid transit infrastructure largely determines its growth rate
- Observing it as a percent of GDP allows a country to monitor investment levels over time and compare to other countries (though urbanization levels are also an issue).

Rapid Transit Infrastructure Portfolio & Costs

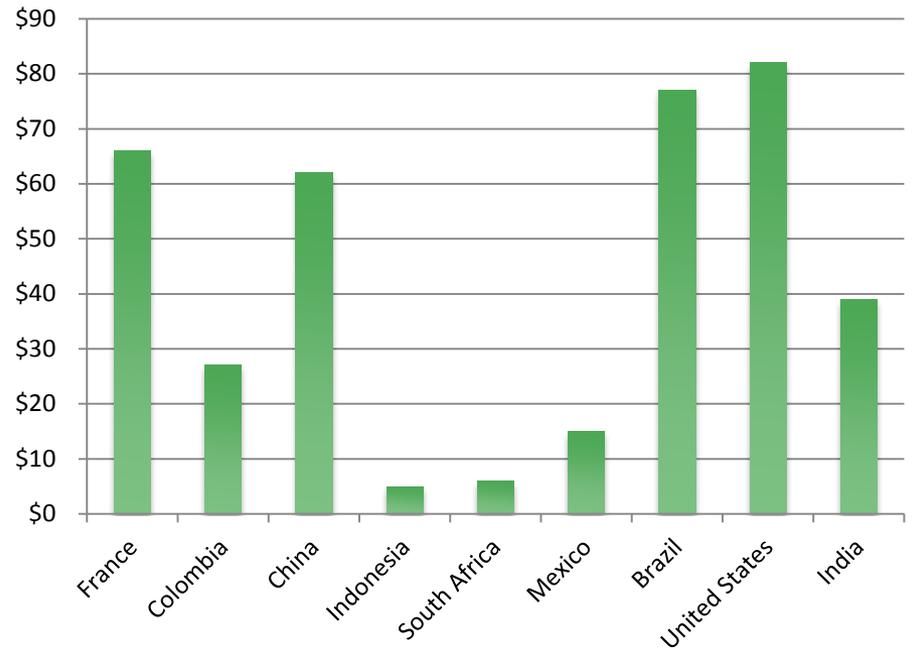


Ensure Cost-Effectiveness of High Quality Transit

Cost of Infrastructure: Avg. Cost & Modal Mix of Rapid Transit Investments 2000-2014

	Million USD per Kilometer of Rapid Transit	BRT	LRT	Metro
France	\$66	11%	70%	19%
Colombia	\$27	94%	0%	6%
China	\$62	15%	6%	79%
Indonesia	\$5	100%	0%	0%
South. Africa	\$6	100%	0%	0%
Mexico	\$15	88%	3%	8%
Brazil	\$77	69%	1%	30%
United States	\$82	8%	84%	9%
India	\$39	26%	0%	74%

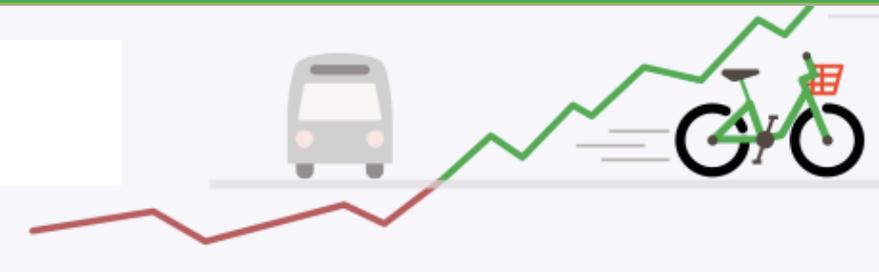
Avg. Cost of Infrastructure: Million USD per Kilometer of Rapid Transit



BRT: \$5 - 30 Million USD per km

Metro: \$75 – 250 Million USD per km

Utilizing Debt-Finance for Resilient Rapid Transit



Finance More Infrastructure Using Debt

Recommended Debt-Finance Level for Rapid Transit projects:

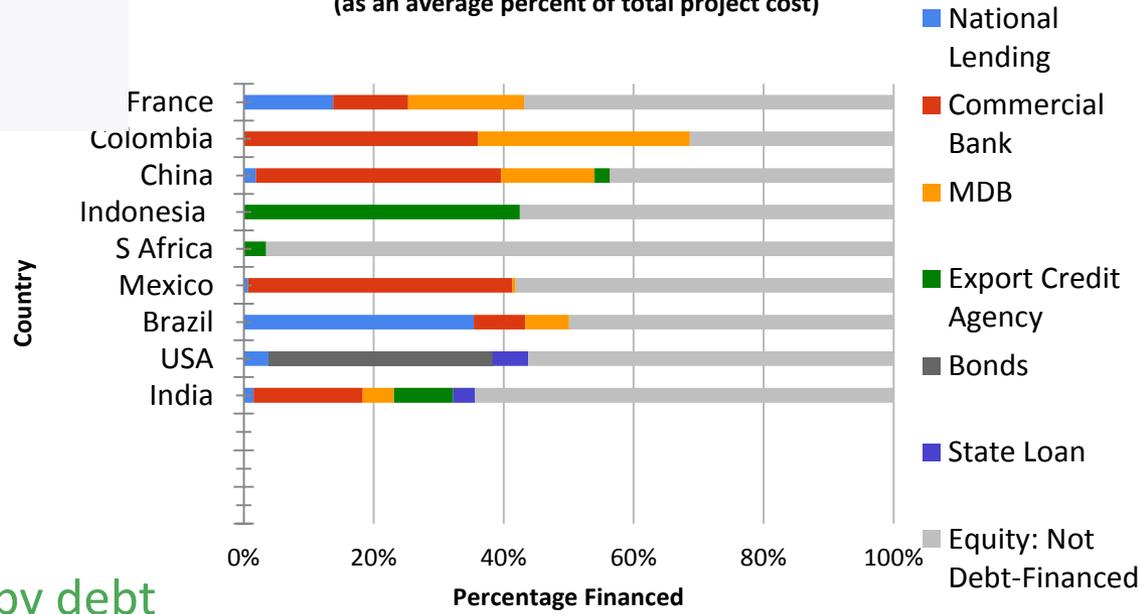
70%

Of a project's total cost financed by debt ensures Infrastructure can be built quickly and those who benefit pay for it.

- This data can be kept in a national database
- Countries should pursue low-cost debt-finance sources via development banks and/or by developing strong bond ratings

Rapid Transit Debt Finance By Source

(as an average percent of total project cost)



Capacity to Govern, Plan, and Implement Resilient Infrastructure



Give Cities the Power

Transport Governance Capacity of an Institution—The degree to which an authority has the clear legal and political authority to plan, finance, and build rapid transit infrastructure across a metropolitan region.

Planning Capacity of an Institution—The degree to which the institutions have the proper organization and processes to plan and facilitate projects efficiently and effectively, including financial planning, urban and transport planning, data collection, resiliency planning, and project preparation resources.

Technical Capacity of an Institution—The degree to which the institution’s staff (or consultants) have the technical ability to collect, analyze, and use data to plan, design, and engineer infrastructure and/or to structure complicated finance schemes, tendering agreements to implement resilient infrastructure.

New Report from ITDP

How Can Countries Grow their Rapid Transit Infrastructure?



1 Increase Funding, Make it Stable and Predictable
Many countries are spending less than 0.10% of GDP per capita on transit. Increasing to even 0.15% of GDP spent on transit would yield massive infrastructure gains. Consistent, reliable funding would allow authorities to make effective long-term plans.



2 Give Cities the Power
City-level governments are the most directly accountable to the users of transit. When cities control the funds, have legal authority, and have the technical capacity to plan, design and build projects, the result is more, and better, rapid transit at a lower cost than regional or national governments.



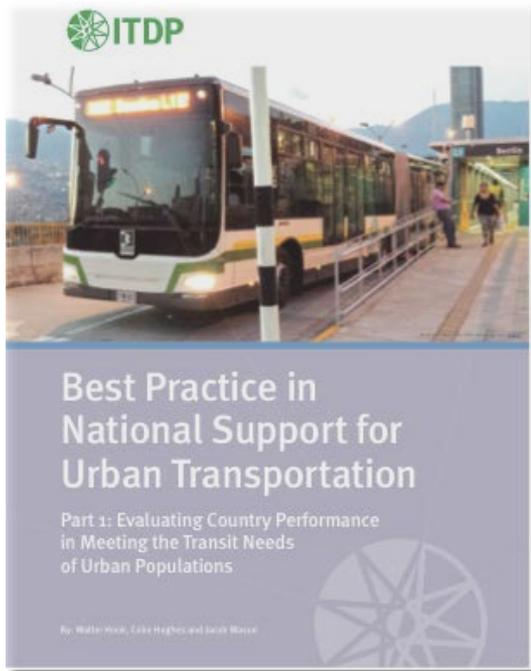
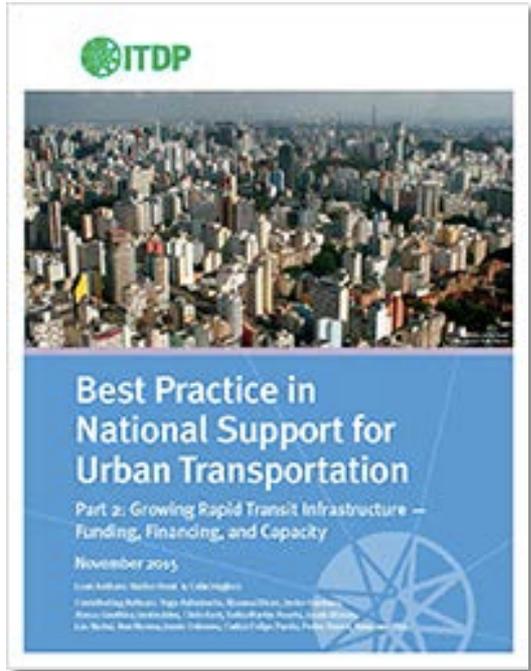
3 Ensure Cost-Effectiveness of High Quality Transit
Countries should invest more in transit that gives their cities the biggest bang for the buck, such as BRT, and cycling lanes, and less in expensive and limited metro systems and rail.



4 Finance More Infrastructure Using Debt
Debt-finance allows cities to grow the infrastructure quicker, incentivizes better oversight and project quality, and allows the taxpayers that benefit from a project to pay for it.



5 Better Credit Ratings Mean More Money for Rapid Transit
Cities should focus on improving their credit ratings for greater access to, and efficiency of, the lenders and bond markets needed to finance rapid transit.



Executive Summary Available Now:

<https://www.itdp.org/how-can-countries-grow-their-rapid-transit-infrastructure/>

Thank you!

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colin.hughes@itdp.org

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