Infrastructure Planning and Management

Class 8 - Rural Infrastructure in India

Agenda

- The state of rural infrastructure in India
- Infrastructure and rural growth
- Rural Characteristics
- Strategies to improve infrastructure in rural areas

What Rural India looks like today

- 71% of Indians live in rural areas
- 89% have no access to telephones
- 52% do not have access to power
- 10% have no access to drinking water, 91% have no access to toilet facilities
- Average distance to all weather roads is 2 km
- 244 million rural people are “poor”
  - Compared to 80 million urban poor

Can infrastructure help the rural poor?

- Several studies (e.g. Songco, Deichman et al and Roller et al) show that infrastructure is indeed correlated to economic growth in rural areas also.
- Studies (e.g Bery et al) also show that low per capita income correlates with lack of infrastructure
- Therefore infrastructure, which can be a driver of rural growth, is often not available in rural areas

How can Infrastructure Help?

- Findings from a survey in Nigeria indicate the infrastructure in rural areas can
  - Increase employment and income
  - Increase efficiency and productivity
    - For instance time saved due to improved transportation infrastructure can be used on other activities
  - Increase access to resources
  - Improve health and therefore productivity
    - For instance, if water supply is augmented, water-related health diseases can be reduced

Is there any empirical evidence to support these propositions?

- Provision of power and irrigation infrastructure in rural areas of India and Bangladesh has improved productivity, increased income and savings
- Water and Sanitation infrastructure in rural Thailand has led to more jobs, better health, increased school attendance, tourism benefits

More evidence

- Roads in rural Vietnam, Ghana and Morocco have led to
  - Increased income as middlemen are cut out and farmers can transport the produce directly to the market
  - Change in crop patterns leading to more income. Earlier, perishable crops could not be grown as the transportation time was large. Now these crops could also be added
  - Lots of secondary benefits such as health, national pride, growth in secondary industries
- There is therefore enough evidence to show that rural infrastructure does indeed promote growth

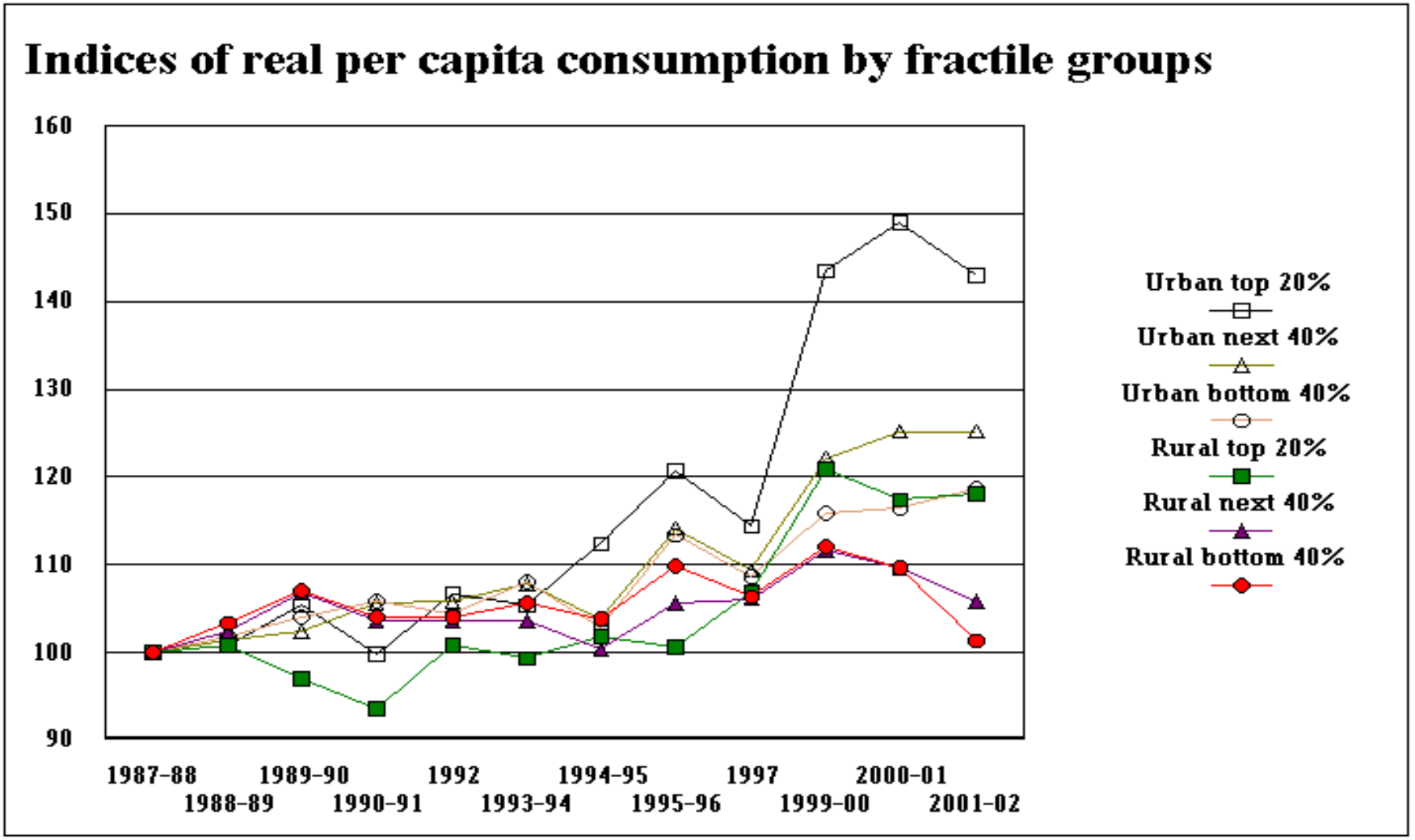
Issues unique to Rural Areas

1. Rural Population Density is very Low
   - 15.75 times lower than urban areas in the case of India
- As a result, economies of scale cannot work in rural areas, since the fixed costs (costs of installation) are very high and the variable costs (costs per user) are quite low
  - For instance, since there are fewer telecom users who are spread very far apart, many more telecommunication towers will be needed.
  - The low number of users per tower makes this an uneconomic proposition

Issues Unique to Rural Areas

2. Population Size is in rural areas is Low
   - More than 20 times lower than urban areas in the Indian context
- Due to this reason also, economies of scale cannot work in rural areas, since although the fixed costs (costs of installation) can be low sue to lesser infrastructure that needs to be installed, the variable costs (costs per user) are also quite low
   - To take the telecommunications example again, one would need to install only a few towers due to small population size, but variable costs are low users are not many and therefore revenue will not be much

3. Purchasing Power is also low



Hmmm – should we question this?

Table 3.1
Categorization of Rural Infrastructure

	Health	Education	Energy	Water and Sanitation	IT/Telecom	Roads	Canal Irrigation
Scale Economies	Low	Low	Moderate to High	Moderate	V. High	V. High	V. High
Initial Investment	Moderate	Low	Moderate to High	Moderate	V. High	V. High	V. High
Recurring Expenditure[1]	Moderate	Low	High	Moderate	Moderate	Low	Low
Willingness to pay	High	Moderate to High	High	High	Moderate to High	Nil	High

Source: Computed by author.

Willingness to Pay

- The previous two slides indicate that the purchasing power of rural people is also quite low due to reduced income. In many cases it is as much as 3 times lesser than in urban areas
- However, as the previous table taken from the India Infrastructure Report shows, this does not imply that the poor are not willing to pay for infrastructure – they will be able to pay up to their income capacity
- Also, there are some rural infrastructure sectors, where scale economies exists, and others where investment costs are low

What are the implications of these findings?

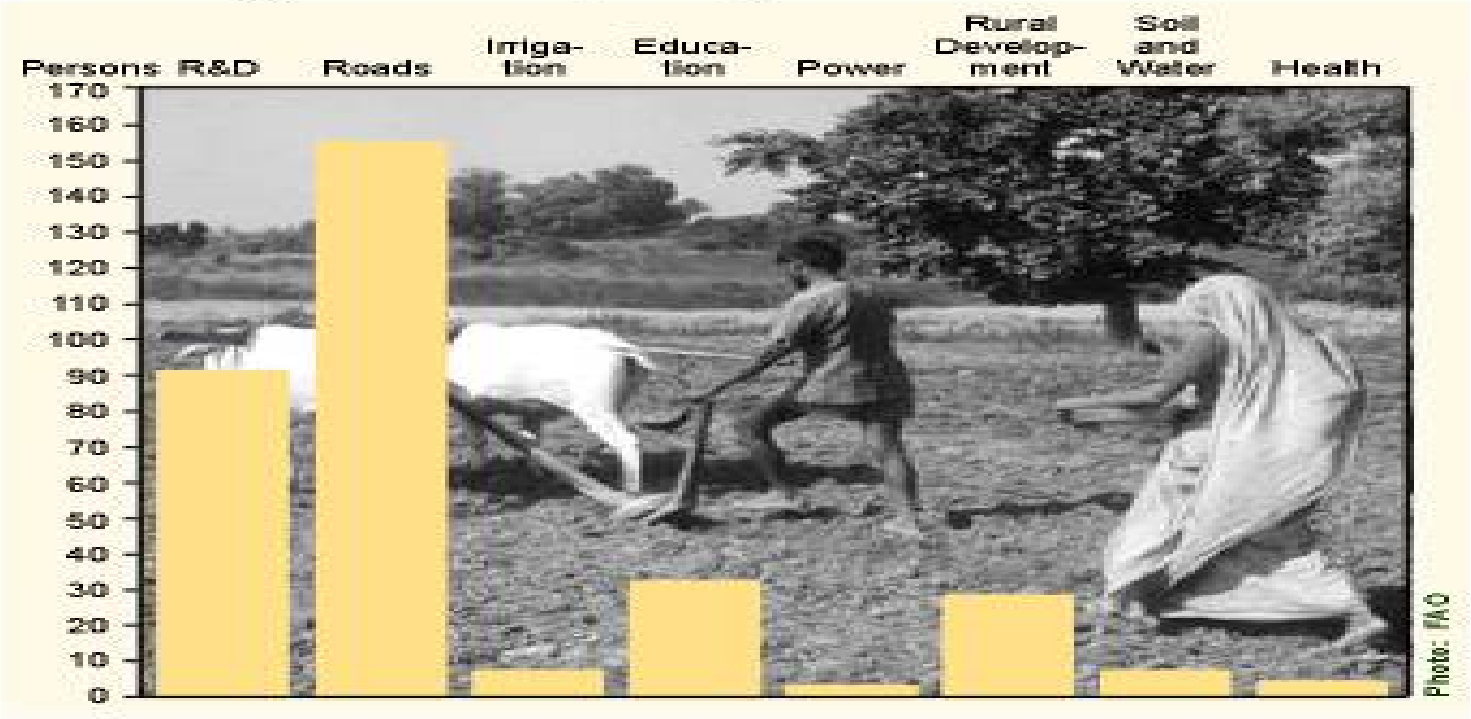
- We need to look for “Local Solutions” in rural areas and not large “Network Based” solutions
  - Septic tanks, Mobile Phones, local power generators etc will work better in rural areas give the scale of investment and use
  - Sanitation and Treatment plants, phone lines and power grids might not work since the costs might outweigh the demand
- Subsidies are needed to achieve break-even for investments in rural areas due to lack of economies of scale and reduce consumption power
- Micro-finance and micro-lending can play a part in generating finances for small scale projects that will make a difference in rural areas

How do we improve rural infrastructure?

- As the figure below indicates, government spending is one approach that can improve rural infrastructure and lead to economic and social growth

Figure 3

Number of people moved out of poverty as a result of additional government spending of Rs 1 million



By making rural areas more accessible, roads bring off-farm employment and increased income to poor rural workers.

What is the Government doing?

- 73rd Constitutional Amendment Act has been enacted to empower panchayats
- Bharat Nirman Program has been introduced to provide infrastructure in rural areas
  - Rs. 186,900 Crores outlay planned in 2006
- Other schemes such as the Pradhan Mantri Gram Sadhak Yojana for rural roads, the Accelerated Rural Water Supply Program for rural water and sanitation, the Rajiv Gandhi Vidyukranthi Yojana for rural electrification etc have been introduced.
  - Objectives include giving power to 125,000 villages
  - 4000Cr outlay is planned to connect rural roads

What is the Government doing?

- Universal Service Obligations (USO) exists in the Telecom sector to raise funds for rural phone connectivity
  - Target for rural Tele-density is 15% or greater. An 8000Cr outlay has been proposed for this.
- NREGS (National Rural Employment Guarantee Scheme) has been floated to provide at least 100 days of guaranteed employment to improve the economic conditions of some people in rural areas
- PURA scheme has been floated to Provide Urban Amenities in Rural Areas
- Rural Infrastructure Development Fund (RIDF) has been set up by NABARD to the tune of 60,000Cr

Bharat Nirman

Table 1.6
Outlay of Bharat Nirman 2005–9

S. No.	Sector	Target 2009	Required Investment (Rs cr)	Present Status	Disbursal 2005–6	Financing	Implementing agency
1	Irrigation*	10 m hectares additional		99.36 m	944 cr to cover 0.6 m hect by 2006–7		State govt.
2	Rural Housing	6 m houses (Rural BPL)		1.54 m in 2005–6	Rs 2260 crore	Rs 25,000 per household	DRDA
3	Rural Electricity	1,25,000 villages & 23 m households		10,366 villages	Rs 1100 crore	90% capital -subsidy, 100% capital subsidy to housholds	REC
4	Rural Telecom	66,822 (11/07)	451	30,251 (Sep 2006)		USO funds	USO Admin Authority
5	Rural Roads	66,802 habitations (>1000 pop)	48000	5337 (Sept 2005)	Rs 3749 crore	100% central govt	MoRD
6	Rural Drinking Water	55,067 habitations	4050 (2005–6)	47546 (ARWSP-Jan 2006)		50% central govt	State Governments

Source: Compiled by author.
Note: * Target is to be met by ongoing major and medium irrigation projects

Five year plan targets

Irrigation	-	to create 10 million hectares of additional irrigation capacity
Rural roads	-	to connect all habitations (66802) with population above 1000 (500 in hilly/ tribal areas) with all weather roads
Rural housing	-	to construct 60 lakh houses for rural poor
Rural water supply	-	to provide potable water to all uncovered habitations (55067) and also address slipped back and water quality affected habitations
Rural electrification	-	to provide electricity to all un-electrified villages (1,25,000) and to connect 23 million households below the poverty line
Rural telephony	-	to connect all remaining villages (66822) with a public telephone

Conclusion - The Governments role

- The previous two slides taken from the India Infrastructure Report and the approach paper to the 11th 5 year plan, indicate other programs and targets set by the government to improve rural infrastructure and growth
- Overall there is no dearth of policies from the government to improve rural infrastructure. The key issue is how well these policies are implemented.

Potential ways to raise funds for rural infrastructure

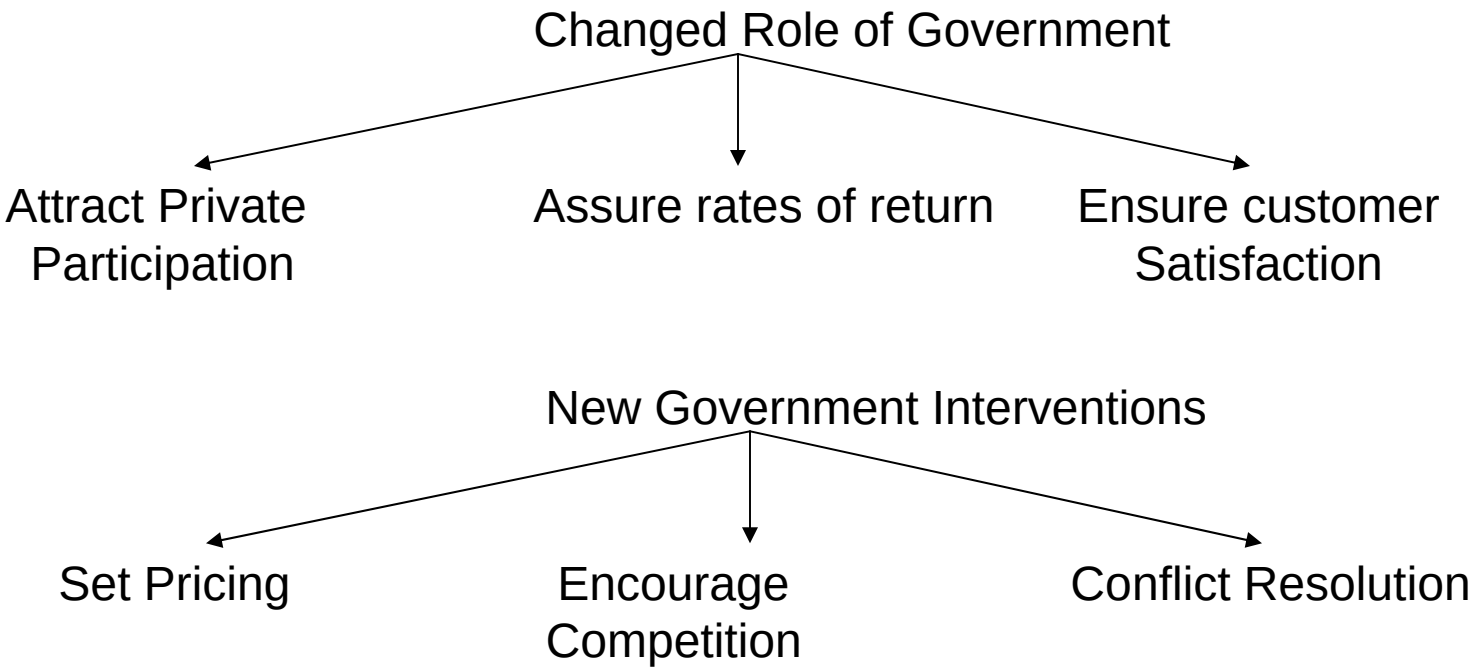
- Central Govt grants
- Micro Finance Institutions and NGOs
- Multilateral Bank loans
- Community pooling of resources
- Commercial Bank loans

Are there other options other than government spending for rural infrastructure?

- Private partnerships
  - Evidence from Chile and Argentina suggests that the private sector could play a role.
  - What advantages does privatization provide?
    - Productive efficiency
    - Allocative efficiency
    - Dynamic efficiency
  - Will it work in rural areas?
    - It is possible, under certain circumstances

What modifications need to be made in existing arrangements to foster private participation?

- Gauri and Nauriyal (1995) define the following roles



What about subsidies???

Features of a new partnership model for rural infrastructure development

- Government grants and subsidies should be provided to make up for economic deficiencies
- Encouragement of private sector to provide rural infrastructure
- Taxes and collection of user fees to finance the infrastructure
- Community participation to create a shared sense of ownership
- Community resource pooling
- NGO involvement
- The figure in the next slide shows a framework and a roadmap that may enable infrastructure delivery in rural areas

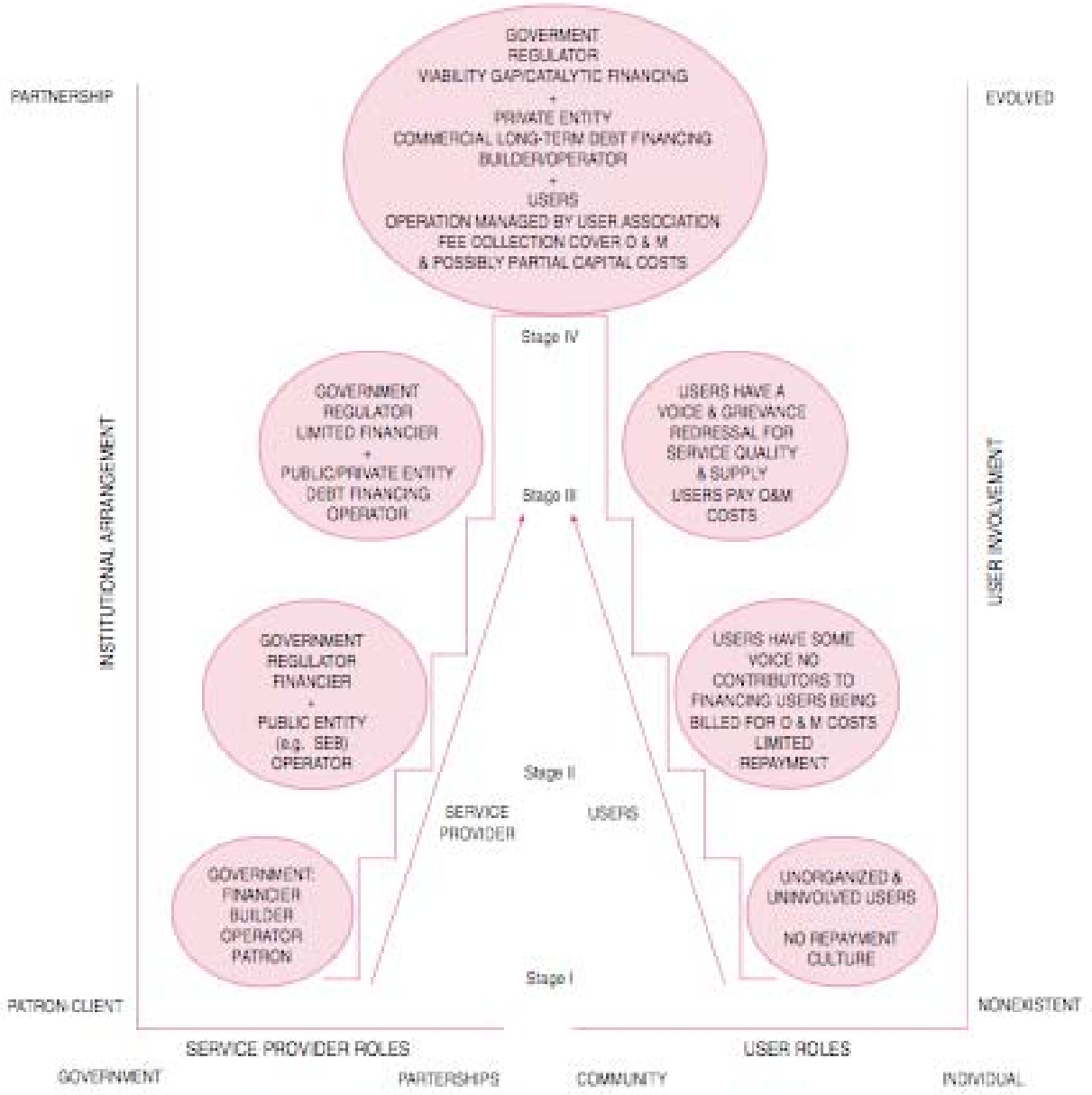


Figure 3.1 Evolution of Institutions and Financial Arrangements for Rural Infrastructure

How is this discussion different if we consider an urban context?

- Poor people exist in an Urban context also
- Land is scarce in Urban areas and this is a unique issue here
- However population density and population size are quite high, as can also be the case with purchasing power
- These issues make it easier to provide infrastructure to the urban poor rather than the rural poor


Thank You