

# SUSTAINABLE TRANSPORT INFRASTRUCTURE

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# Biggest transport problem in Africa

**Road and rail networks are one of the largest assets and liabilities for national governments in Africa**

## **Solutions:**

- Increase road funding:
- User pays principle: Road Funds, fuel levy, road user charges
- Needed: Road Asset Management Systems



**For every \$1 not invested in road maintenance, road users waste \$3 on extra transport costs - and the road must still be repaired.**

# RURAL INFRASTRUCTURES

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About 70% of the 1.4 billion people worldwide affected by extreme poverty live in rural regions

# Transport is essential

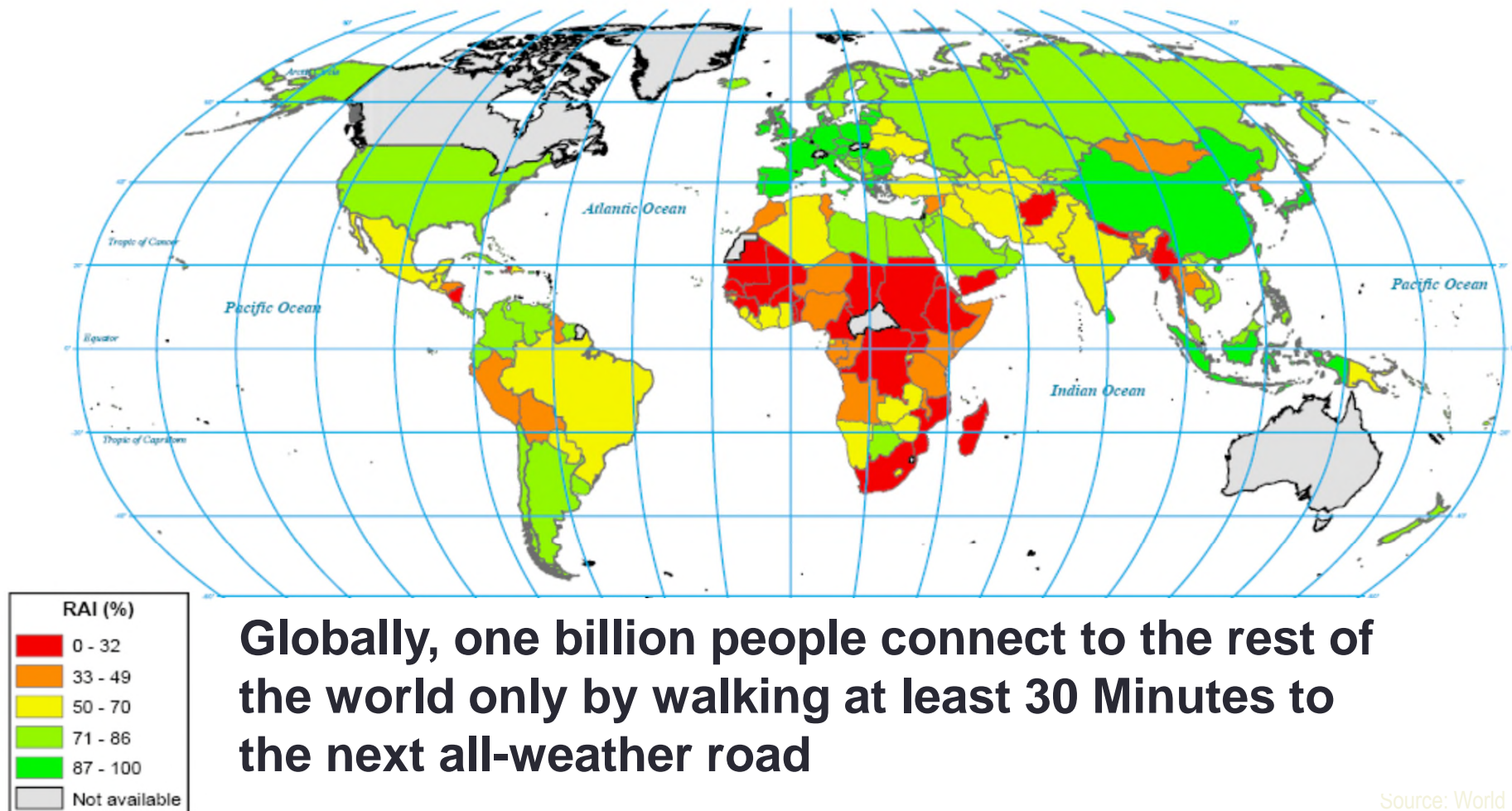


...but roads are not enough!



# Bad access to rural markets

Population within 2 km of walking distance from next all weather road

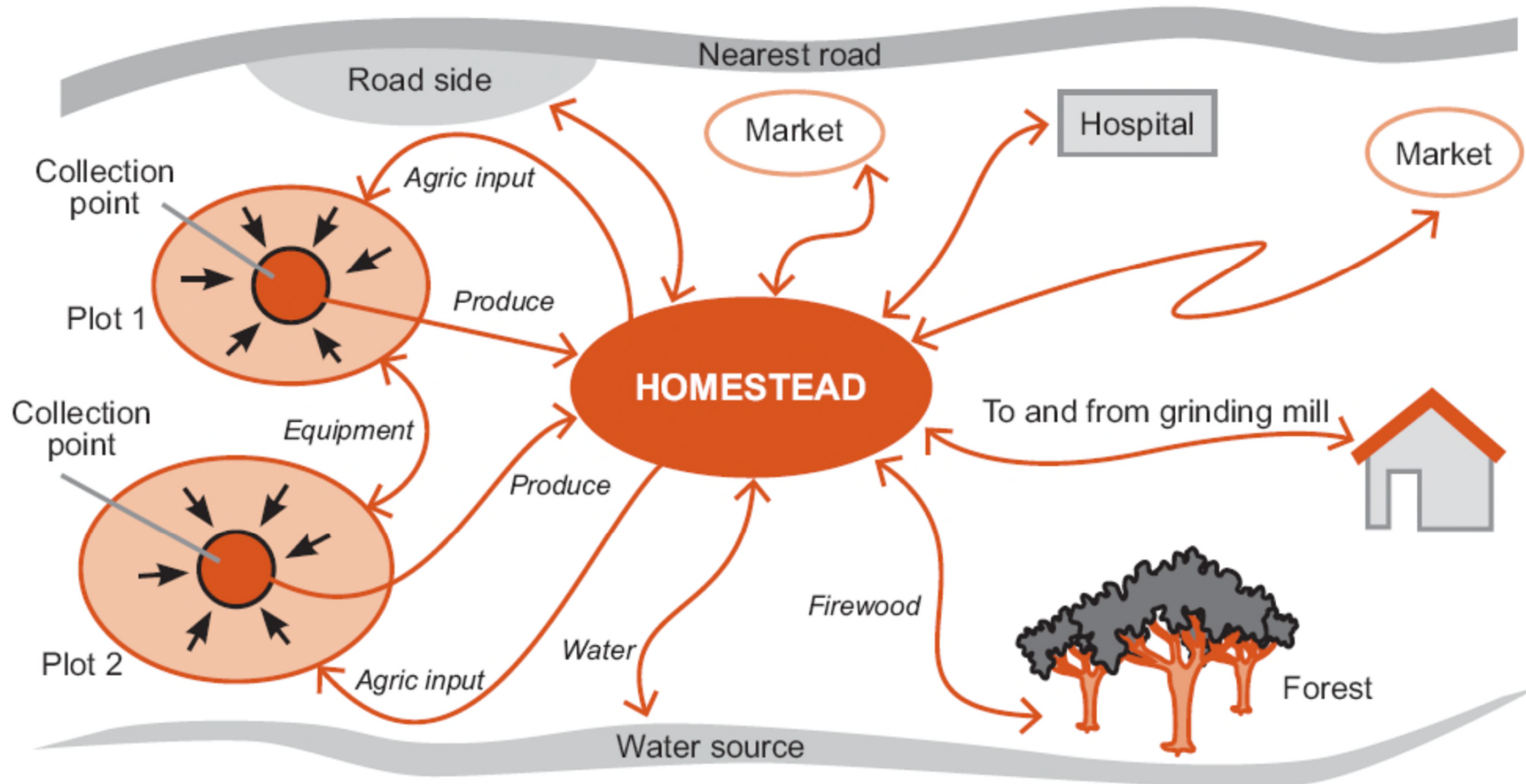


Source: World Bank

# Impact of rural road improvements

- Increased farm gate prices
- Reduced transport costs for inputs and marketing
- Increased use of fertilizer
- Higher yields
- Presence and frequency of markets
- Shift from food to cash crops
- Usage of improved crop varieties
- Reduced post-harvest losses
- Availability of non-food goods and services
- Lower food prices (since poor households are net buyers of food).
- Reduced damages during transport of sensitive crops

# The first mile



Source: Crossley et al 2009, p.4



# IMT widen the modal choice

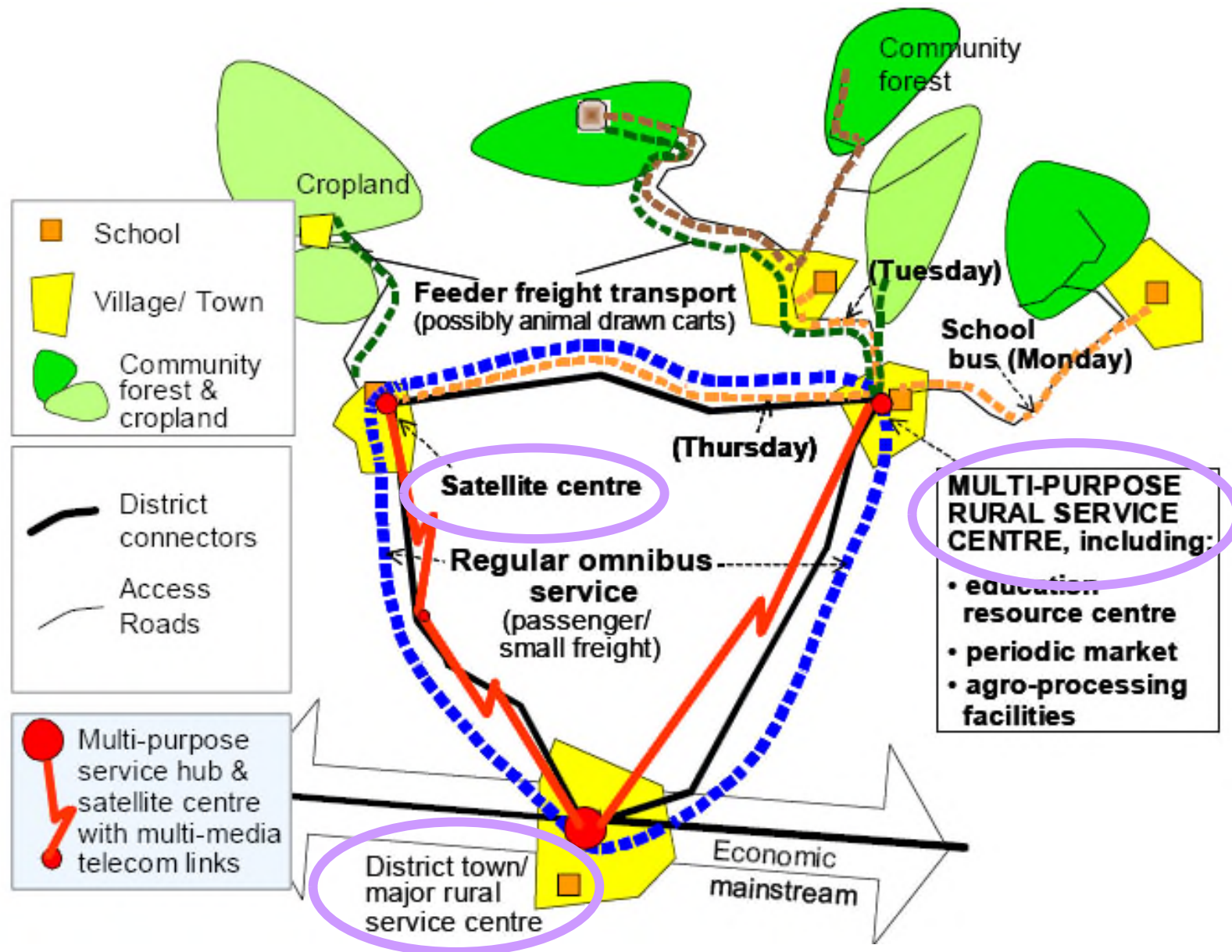




# A multimodal least cost planning approach

- Basic access for the first mile
  - Intermediate Means of Transport
  - low cost infrastructures
- LGV or HGV on well maintained rural roads
- Intermodal facilities at Buying Points or rural Hubs

# Leapfrogging from rural hubs to new markets



# URBAN TRANSPORT INFRASTRUCTURES

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# Development of Urban Traffic

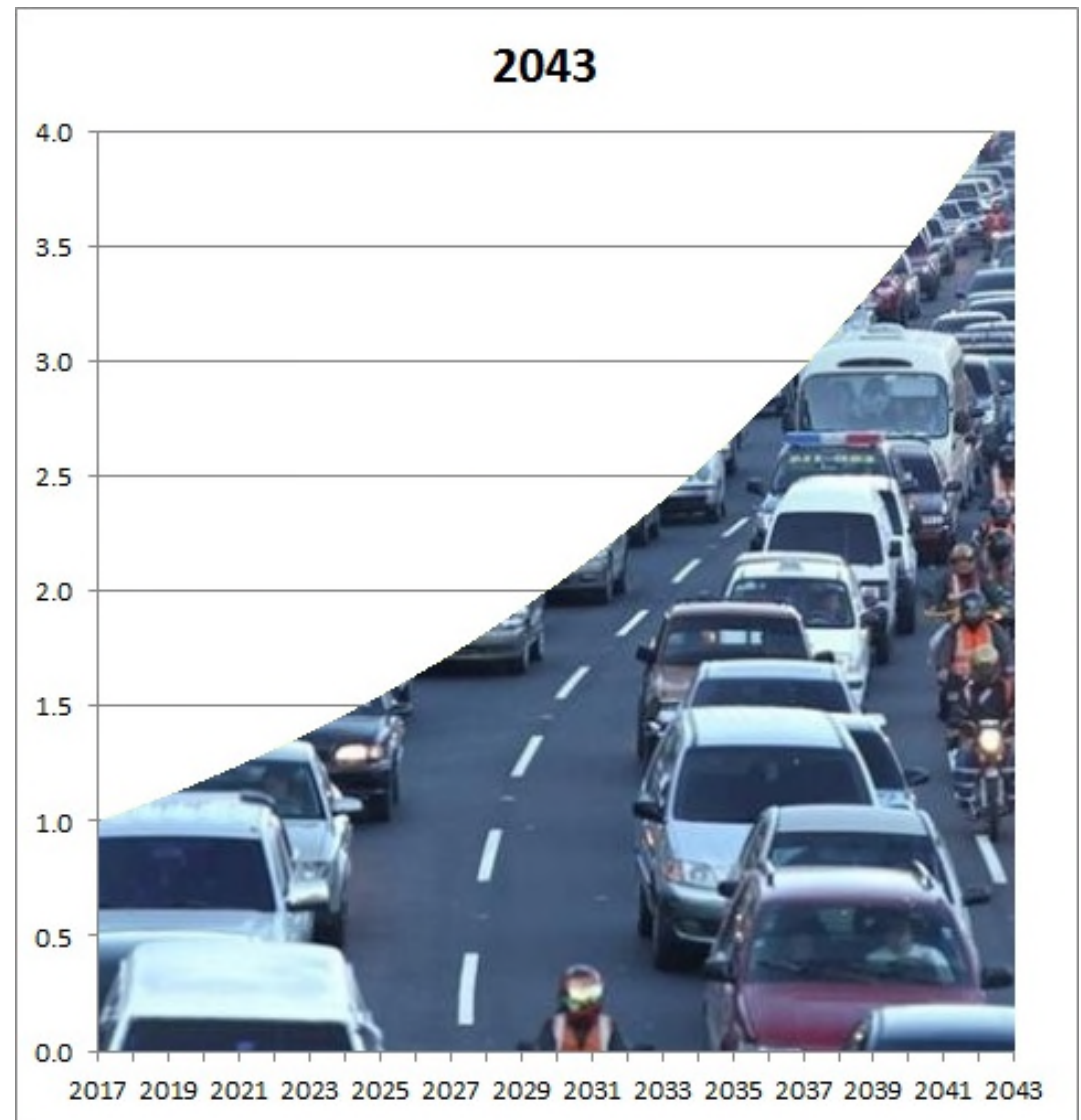
## Example Guatemala

Annual Growth

Vehicle Fleet: 5.6%

13 years: double traffic

**=> Investments in roads  
will not solve the problem!**





# Mass Transit Modes



**Suburban Rail**



**Metro**



**Light Rail Transit (LRT)**



**Bus Rapid Transit (BRT)**



**Tramways**

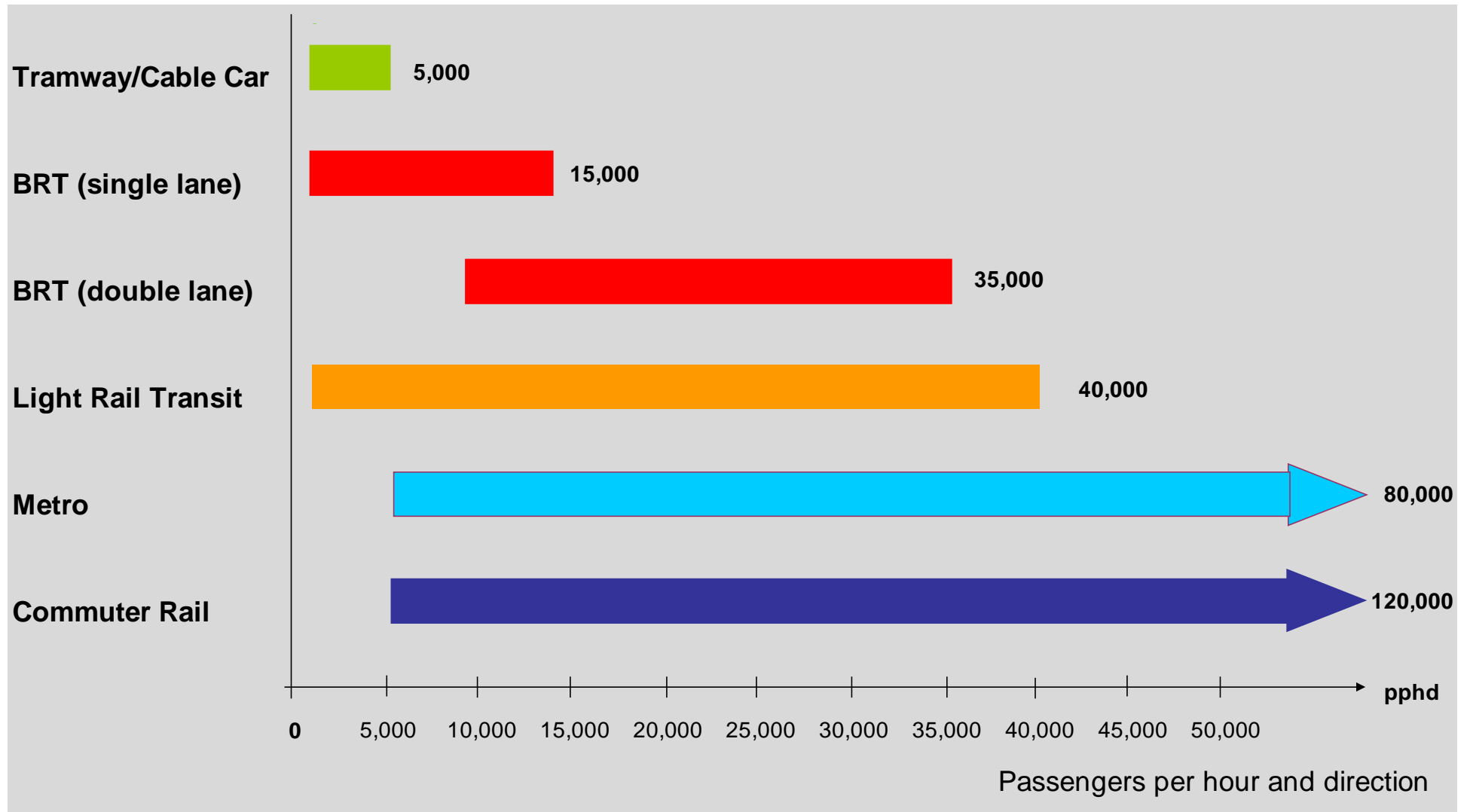


**Cable Cars**



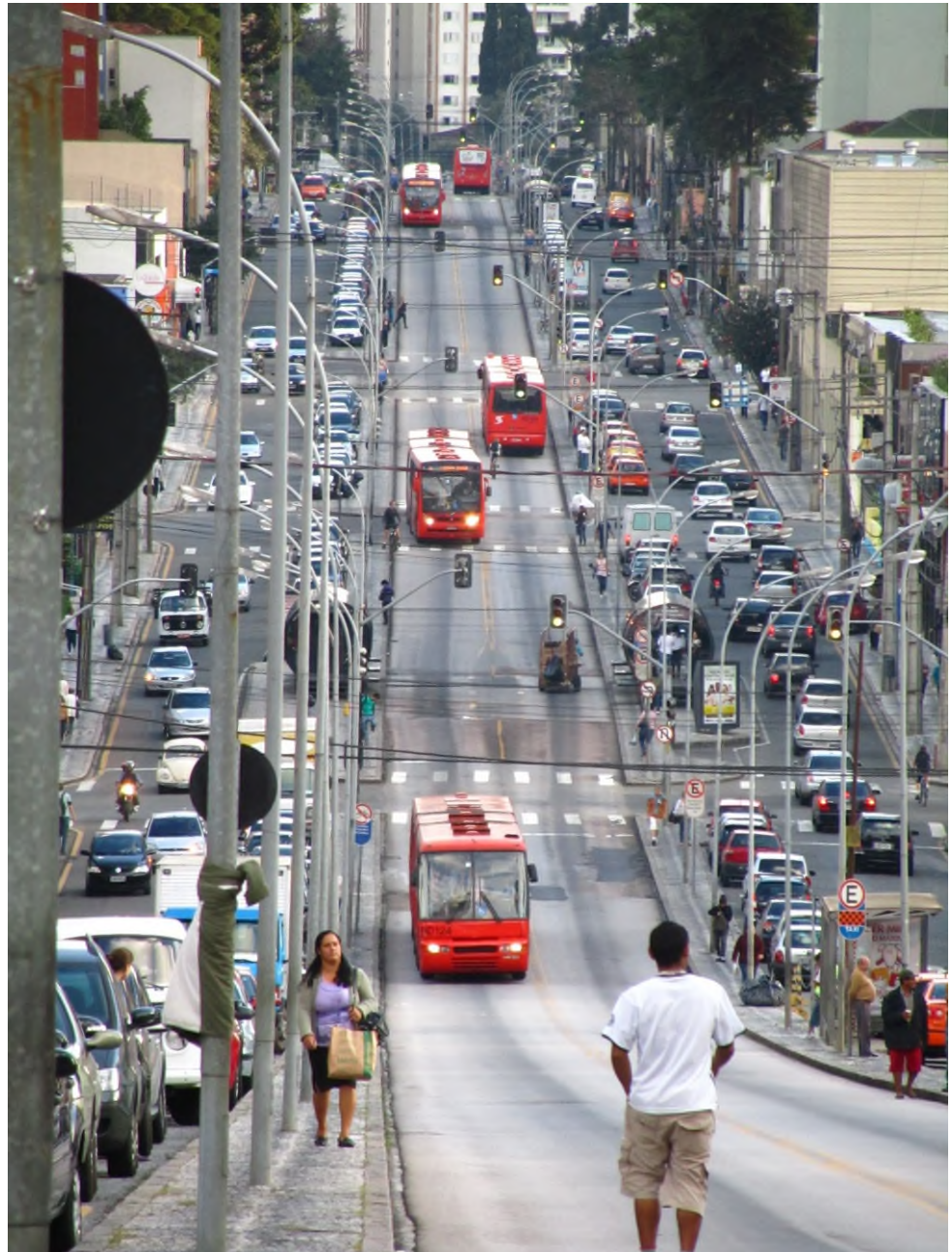


# Comparison of capacities



# Bus Rapid Transit in Curitiba

- Exclusive right of way
- 60 buses per hour
- 250 passengers per bus
- => 15,000 passengers per hour and direction



# Urban density and sprawl

Mumbai:  
8.3 m inhabitants



Cairo:  
8.9 m inhabitants



Los Angeles  
8.4 m inhabitants



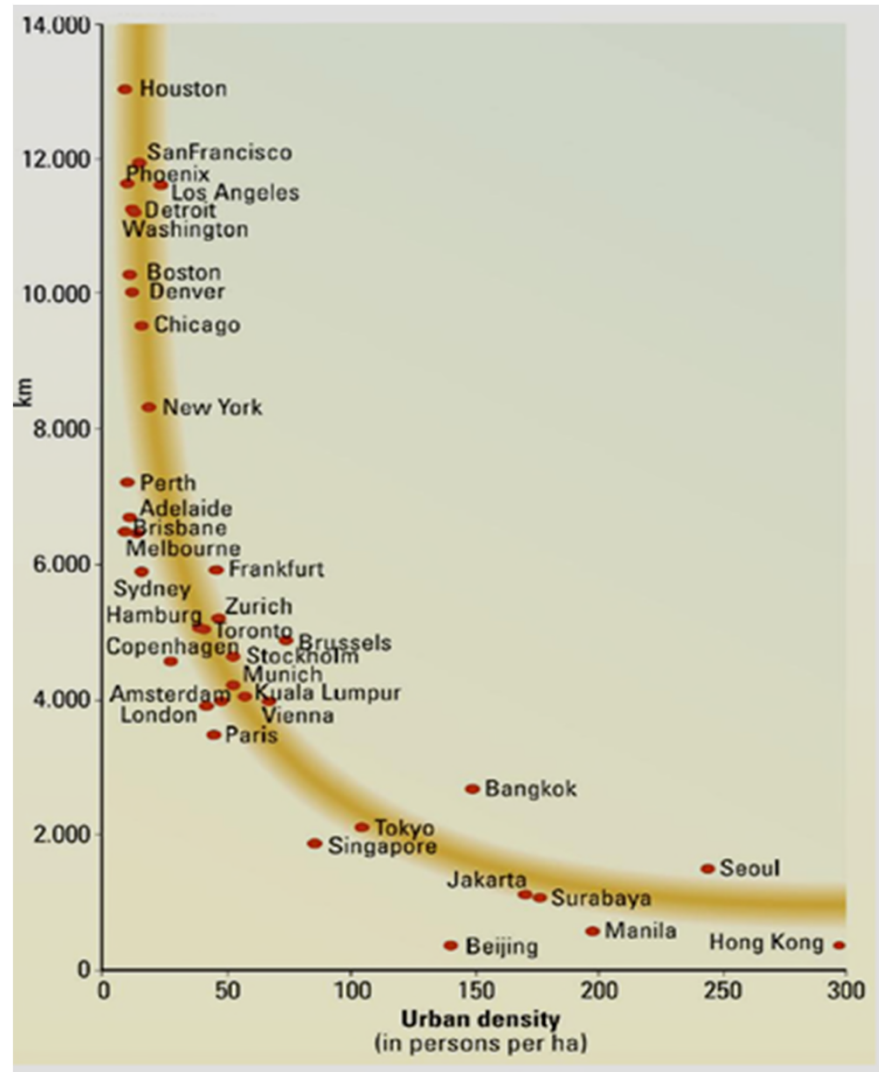
Is Africa on this development path?

Quelle: Sieverts 1997

Daten aus den 90er Jahren



# Urban Sprawl and Transport

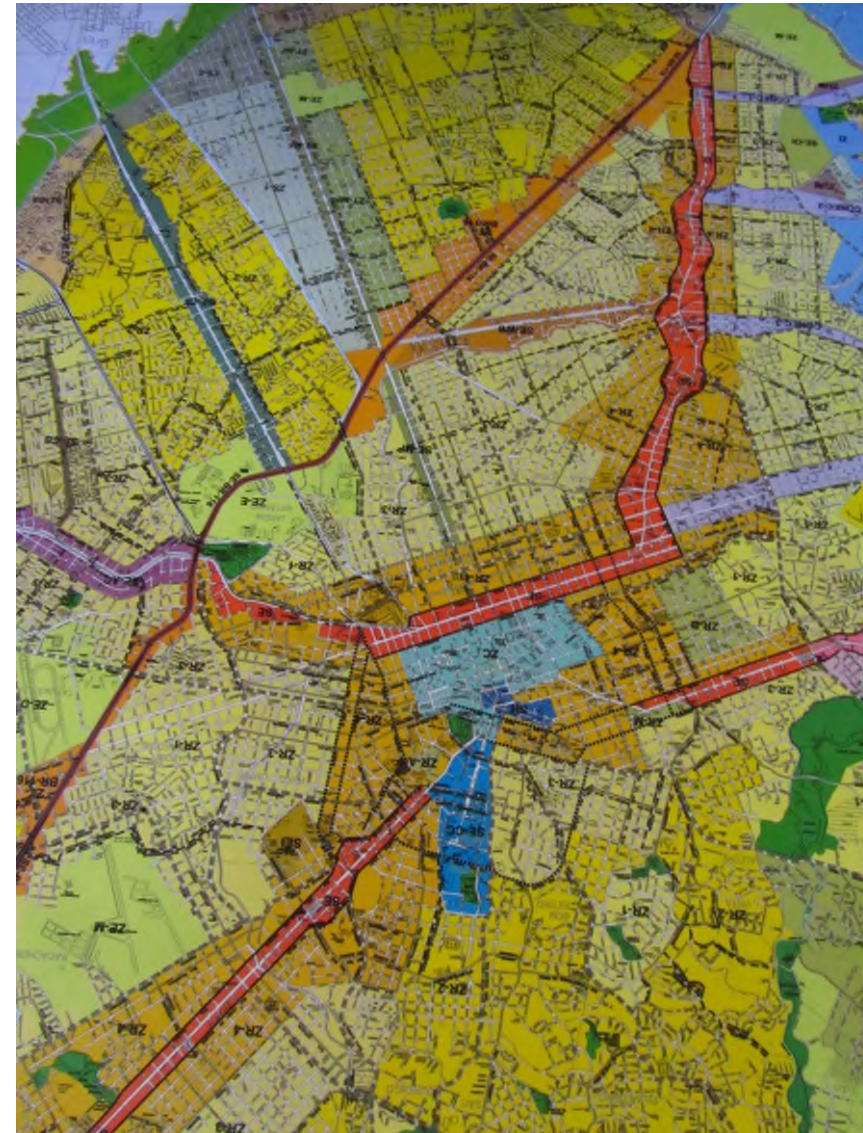


- Low urban densities cause
- Long distances
  - Large traffic volumes
  - Bad public transport services



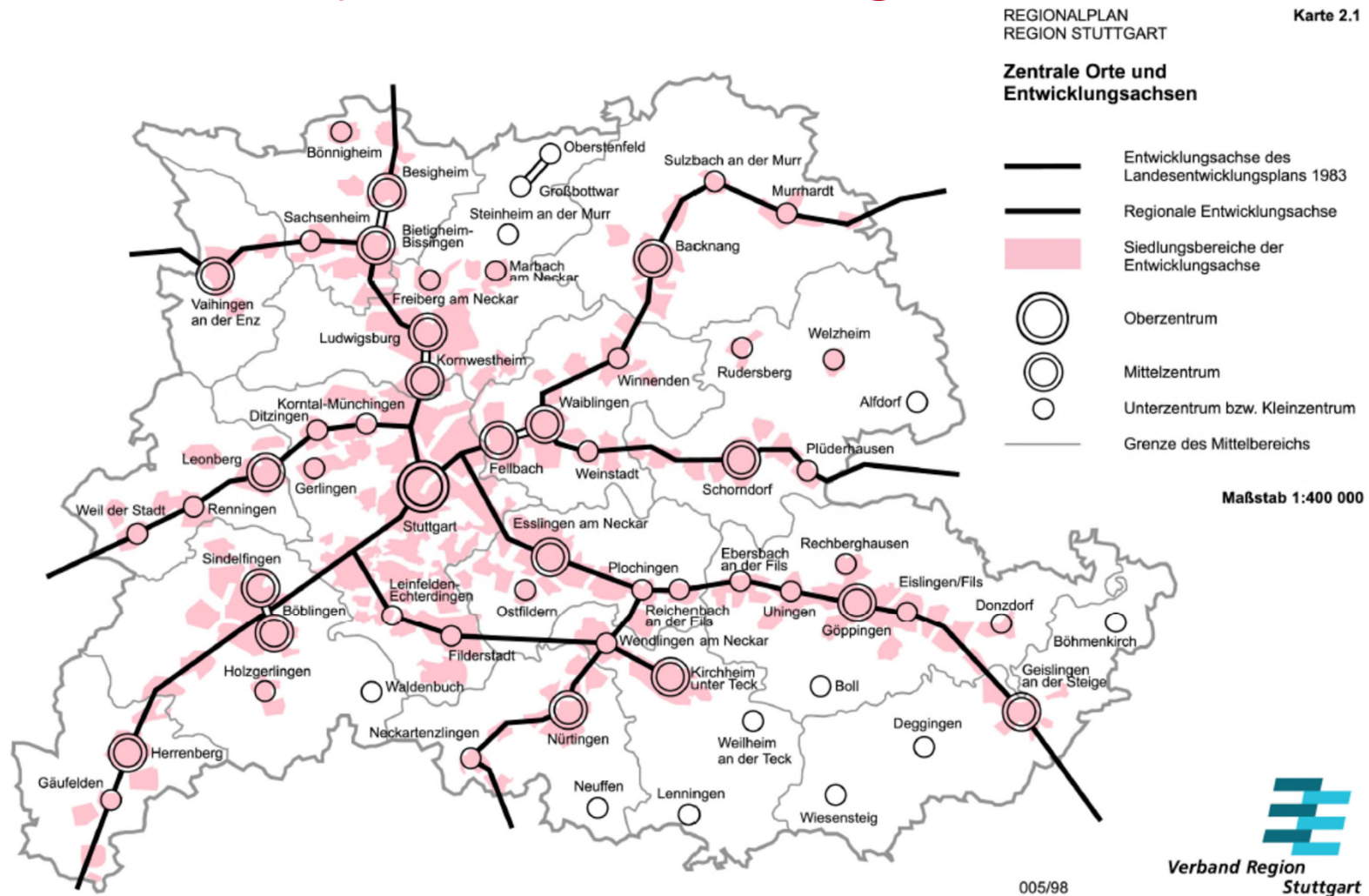
# Transit Oriented Development

- Urban planning to avoid car traffic
- Dense settlement structures along public transport corridors (see right hand: Curitiba)
- Mixed landuse on the level of urban quarters (barrios)  
=> Non motorised transport





# Point-Axle System in Stuttgart





**Thank you for  
your attention**

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