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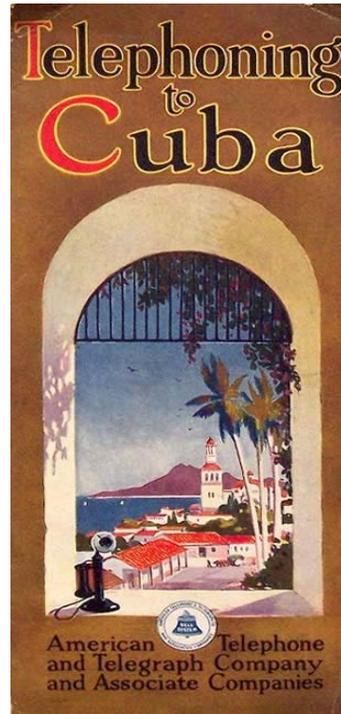
Cuba: Planning for Infrastructure Reform

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Outline

1. Background on Cuba
2. Lessons from transition economies
3. Present situation of infrastructure in Cuba
4. Applying the lessons from transition economies & LAC to Cuba
5. Conclusions



Background: Recent Activities Related to Cuba

- **Presentation summarizes published papers**
 - **August 2005:** Organized & chaired a panel on energy in Cuba (3 experts) at conference
 - **Early 2006:** support for CAFC II (multiple USG agencies)
 - **August 2006:** presented paper on power sector at conference
 - **February 2007:** made presentation at AEI on lessons from transition economies (broader than infrastructure)
 - **August 2007:** organized session & presented paper on power, telecommunications & water at conference. Other papers dealt with road transport and ports
- **Future activities**
 - Paper on airports
 - Wiki document on infrastructure
 - February 2008:
 - Infrastructure presentation to Cuban-American engineers
 - Power sector presentation at FIU conference

Negative Aspects

- **Private activity almost non-existent; Cuba 156 out of 157 in the Heritage Foundation/WSJ *Index of Economic Freedom***
- Weak property rights
- Economic policy erratic
- Economic data not reliable
- Weak civil society; high repression
- **Electric power sector not sustainable (low tariffs & high costs)**
- Very low teledensity; almost no Internet connections (2%)
- **Almost certain loss of Venezuelan subsidies (\$2 billion+)**
- **Fiscal crisis; difficult to analyze because of murky accounts; “*las cuentas del comandante*”**
- Aging population
- Clique would be well situated for asset stripping and tunneling
- Cuba not a member of the IMF or MDBs
- Large foreign debt, mostly to Russia

Positive Aspects

- Good social indicators & a highly trained population
- **Proximity to the US**
- In the past, **rapid responses to economic liberalization**
- Diaspora could be a positive force
- Transition government can learn lessons from Eastern Europe and Latin America
- Very favorable Production Sharing Agreements (PSAs) have resulted in fairly rapid increase in oil production
- **Oil production & refining can be a factor under a transition government**

Infant Mortality Rates (per '000)

YEAR	CHILE	COSTA RICA	CUBA
1960	119.5	74.3	35.9*
1970	82.2	61.5	38.7
1980	33.0	19.1	19.6
1990	16.0	13.7	10.7
2000	10.1	10.2	7.0

* Lowest rate in the Americas after the US and Canada

Lessons from Former Communist Countries

1. Introduce market friendly policies immediately
2. Strengthen market economy institutions
3. Establish social safety net
4. Protect health/education gains
5. Pursue discipline in existing SOEs
6. Encourage establishment of new enterprises

Infrastructure reform must take place in the context of other necessary reforms

Lesson: Transition Countries Must Apply Discipline and Encouragement

Discipline: particularly important in infrastructure because size of SOEs and systemic effects

Electric company (UE) has value of sales at economic prices \$2.0 billion

- Establishing **hard budget constraints** on enterprises; requires **tariff increases**
- Monitoring and influencing managerial behavior to reward efficient stewardship of assets & to **discourage tunneling & asset stripping**; performance-based management contracts can play a role

Encouragement: important to foster new businesses.

Most growth in the former communist countries came from new enterprises

- **Establishing adequate legal/regulatory framework**
- Simplifying regulatory and licensing procedures; establishing good “business climate”
- Providing basic infrastructure key for establishing the basis for competitiveness. Power & telecom particularly important₈

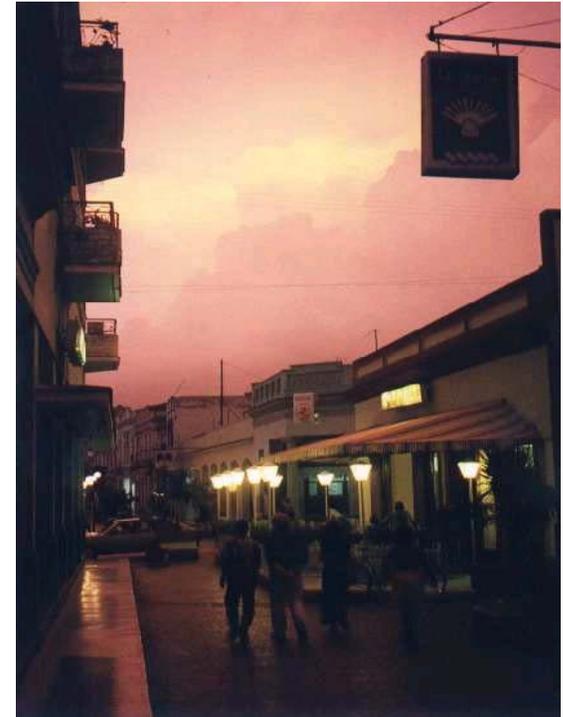
Lessons: Additional Considerations

- “Models” cannot be imported but lessons can be learned & applied
- Key decisions must be taken by local authorities
- Expediency vs. legitimacy: reforms should be implemented rapidly but are the authorities legitimate?
- Who are the potential reformers?; how can we reach out to them now?
- Infrastructure reforms must be coordinated with reforms in other sectors

Lessons from Infrastructure Reforms in Difficult Environments (post-socialism, post-conflict)

- Infrastructure usually damaged; need to restore rapidly; power most important
- SOEs: asset stripping, tunneling & plain stealing common
- May need to establish “receivership” to provide “discipline” in SOEs
- Difficult to get private investment in post-socialism:
 - high economic & political risk
 - lack of counterparts
 - low rates
 - low ability of users to pay
- Sustainability & private participation should be “on the table” since day one; more difficult in some sectors than in others

Need adequate regulation



Easiest: cellular telecom
Most difficult: Water & transport, except ports which is easier (\$ revenue)
Medium: power

Present Situation in Cuba

- **Power:** blackouts 2005-06 but situation has improved; low tariffs; **private PPA**
- **Telecommunications:** very low coverage; **private** participation
- **Transport:** relatively good coverage but insufficient investments in maintenance & safety; almost no private transport
- **Water:** poor quality of service; **private** participation in Havana & Varadero (AGBAR)



- **Ports:** many natural ports but infrastructure dilapidated
- **Airports:** need more information;

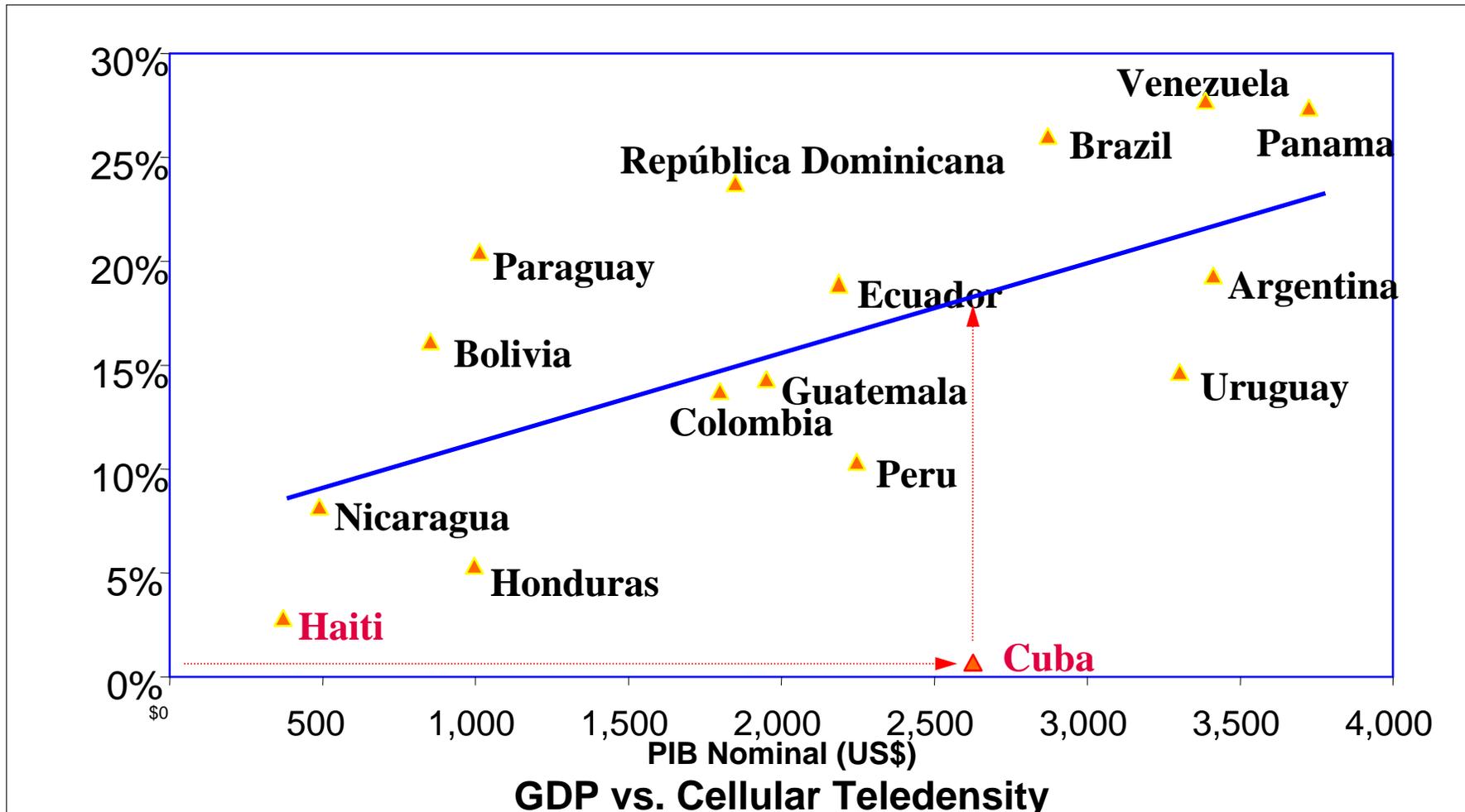
Next slides will discuss only power in detail

Even hard core Marxists seek private participation in infrastructure

Power: Bad Situation but has Improved Recently

- Reliance on subsidies from Venezuela (more than \$2 billion); likely loss during transition will affect power sector & economy as a whole
- Electricity tariffs very low for households (were adjusted but still too low)
- Generation plants deteriorated: lack of maintenance & the use of high sulfur crude oil as plant fuel
- Distribution & transmission network deteriorated: lack of maintenance and hurricanes
- Riots in 2005-06
- “Energy revolution” in 2006/7
 - Small gensets costly to operate but have added capacity to system rapidly (more than 1,000 MW in only one year)
 - Energy efficiency program (mandatory)
 - Energas/Sherritt gas plants (increase from 250 MW to 376 MW)
 - GOC claims installed capacity 3,400 MW, peak demand 2,500 MW
 - If true, blackouts less likely
- Energy sector not sustainable without high subsidies

Telecommunications: Extremely Low Coverage



Transport

Old Chevy & 2 “cocos”



- Road infrastructure OK but needs maintenance
- Few private vehicles but good mechanics!
- Public transport highly deficient



“Camello” can carry 350 passengers¹⁴

Transport: Present Situation

- **A well-developed transportation infrastructure**
 - Nearly all Cuban cities, towns, airports, harbors, and agricultural areas are accessible by paved roads
 - Extensive road network across the island of approximately 30,000 km
 - Quality of roads is comparable to standards of other LAC countries
 - About 700 km of completed / paved expressway (4 lanes or more) and more than 100 km expressway in construction or near completion (2006)
- **Insufficient level of investments**
 - Major needs for urban public transportation, safety programs & adequate maintenance
 - Increasing demand: 70% of the current Cuban population live in urban areas; 2 million in Havana
 - Proper urban transportation planning, funding & improvement are necessary (cause of civil unrest today)

Water: Present Situation

- Policy, regulation & commercial operations centralized at INRH (ceased as an institution of the Central Government in April 2007, now a Division of the Ministry of Construction)
- Vertically integrated State-owned monopoly reorganized in 2001, with regional, state-owned “business” enterprises
- Categories of drinking water services:
 - piped water (65%)
 - water truck and public tap (25%)
 - other means (10%)
- Categories of sanitation
 - sewerage (38%)
 - latrines (56%)
 - wastewater treatment is a major environmental issue (8 plants, 4 operational)
- Statistical information misleading – quantity rather than quality
- Deteriorating & obsolete infrastructure; \$600 million only to modernize system in Havana (GOC data)
- Low water rates
- Private water services in critical tourism areas – Aguas de Barcelona in Havana and Varadero, Aguas de Valencia has contract for water treatment with AGBAR

Objectives and Agenda for Action

- Power
- Telecommunications
- Road transport
- Ports
- Water & sewerage
- Institutional Framework to Support Reforms: Multi-sector Regulator
- Beginning to write paper on airports but not ready

Will only discuss power & telecommunications & the institutional framework
“Hidden” slides include all other sectors except airports

Power: Agenda

POSSIBLE ULTIMATE OBJECTIVE

- 3-4 Private DISTCOS: regulated
- 8 or more private GENCOS: unregulated
- One state-owned transmission company
- One market operator: government or owned by market participants (“club”)

AGENDA FOR ACTION

- **Plan A:** support UE to improve control systems to introduce discipline & minimize **asset stripping and tunneling**
- If A not feasible, **Plan B: performance-based management contract to introduce discipline & minimize asset stripping and tunneling**
- Minimum investment to “keep the lights on”
- Begin tariff adjustment in coordination with other price adjustments, safety net & other broader policies
- May need PPAs as an interim solution to increase efficiency of generation
 - What is the price elasticity of demand?
- Develop laws, regulations and institutions to **encourage** private participation; establish regulator

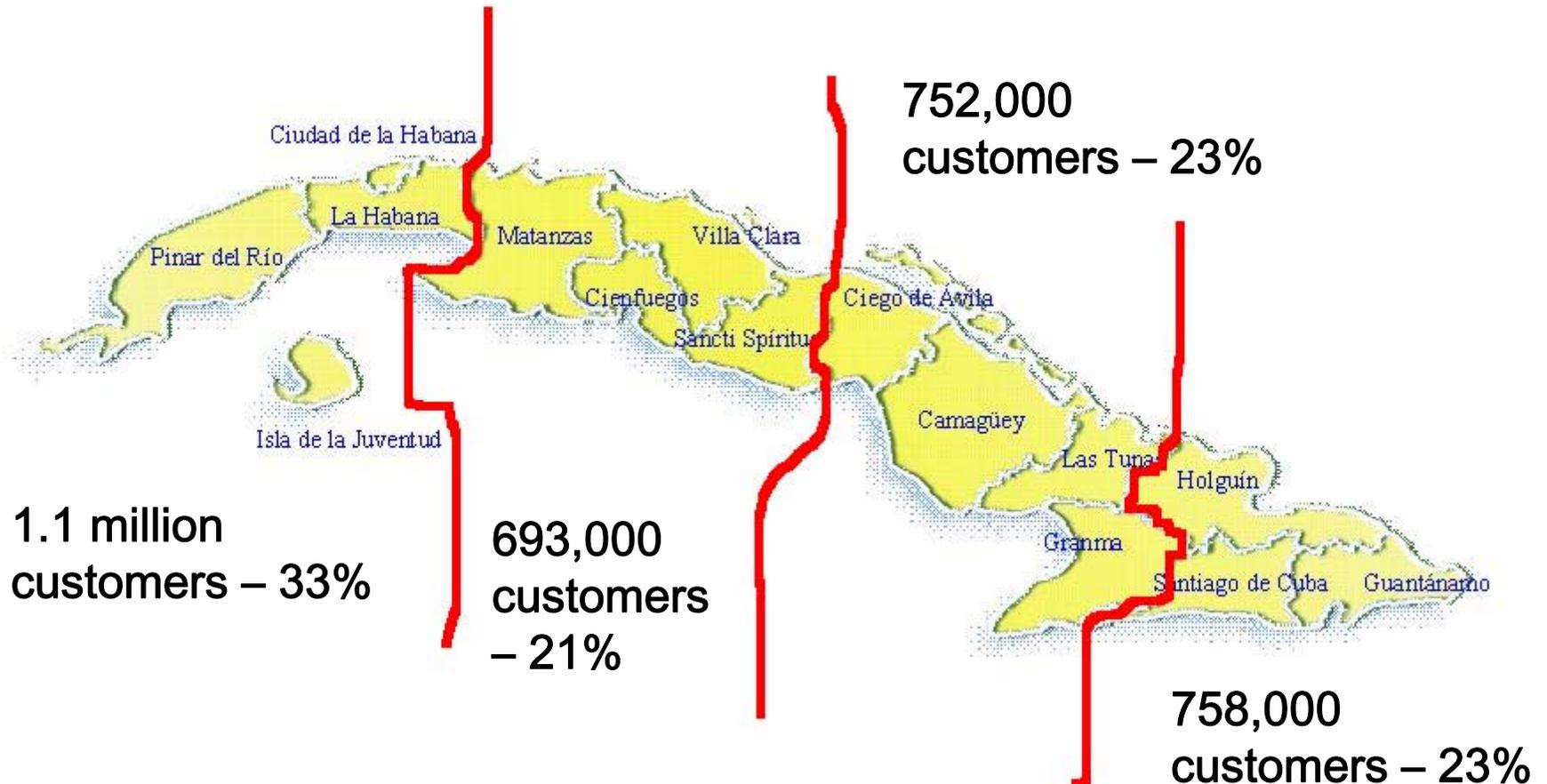
Power Sector Reform Requires Time

Activity Description	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5
Transition begins	█				
Strategy & Legal Framework	█	█	█		
Draft strategy		█			
Develop consensus			█		
Draft laws (power, telecom & water)			█		
Enact laws			█		
Establish regulatory agency			█		
Power sector	█	█	█	█	█
Emergency Rehabilitation Program		█	█		
Operation contracts & PAs			█		
Unbundle/corporatize			█	█	
Adjust rates			█	█	
Sell DISTCOS				█	█
Sell GENCOS					█

• Need to develop additional generation must be evaluated carefully

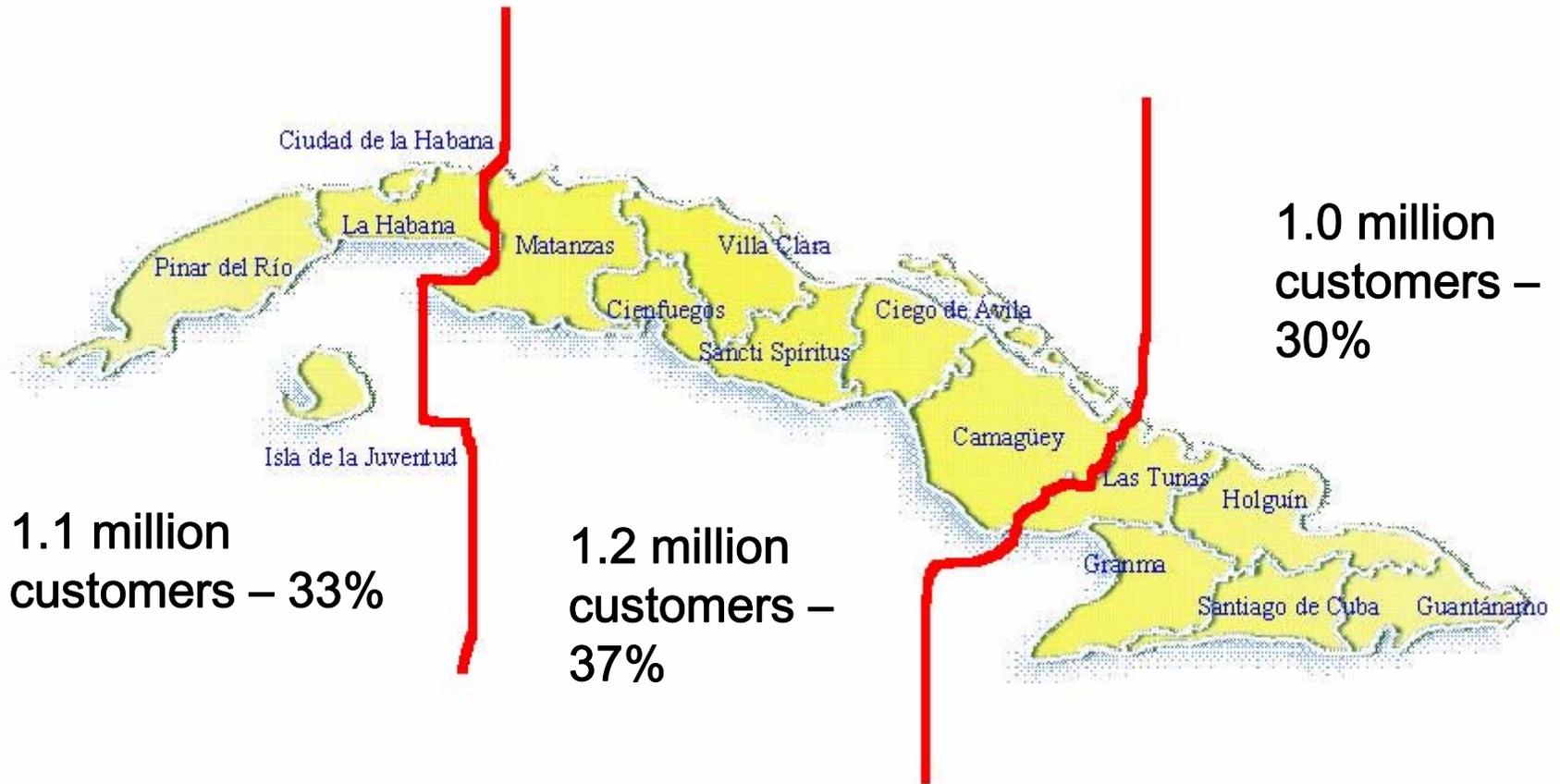
• What is the elasticity of demand?

Market Segmentation – Electricity Distribution Concession Areas – Option 1



4 Distribution Areas

Market Segmentation – Electricity Distribution Concession Areas – Option 2



3 Distribution Areas

Telecommunications: Agenda

POSSIBLE ULTIMATE OBJECTIVE

- 3-4 cellular companies
- More than one land line company including Cable TV
- Dozens of ISPs
- More than one international cable landing or equal access rules
- Clear rules for interconnection; agile dispute resolution mechanism (ADR)

AGENDA FOR ACTION

- **Renegotiation of exclusivity agreement**
- **Spectrum auction; licenses for cellular providers; interconnection agreements**
- Develop laws, regulations and institutions to encourage competition & private participation
- Establish regulatory agency separate from policy ministry

Cuba's highly educated population can benefit from modern telecommunications & export ICT services ("near shoring")

Roads: Agenda

POSSIBLE ULTIMATE OBJECTIVE

- Widespread participation of the private sector in the operation, design, and construction of road programs & in the provision of transport services

AGENDA FOR ACTION

- Design and implement accelerated and immediate road investment, maintenance & safety improvement programs
- Prepare urban transport plans for major priority cities
- Prepare institutional modernization plans for MINTRAS
- Enhance local capacity in all aspects of road services

Ports: Agenda

POSSIBLE ULTIMATE OBJECTIVE

- Ensure the participation of the private sector all possible areas of harbor operations / commercialization

AGENDA FOR ACTION

- Conduct rapid assessments
- Perform immediate repairs & urgent maintenance activities
- Modernize ICT
- Increase port security
- Develop legal framework to promote PSP
- Reform the functions of the Ministry of Transport (MINTRANS) to concentrate on policy issues
- Establish regulatory agency
- Develop concession instruments (similar to Peru?)

Water: Agenda

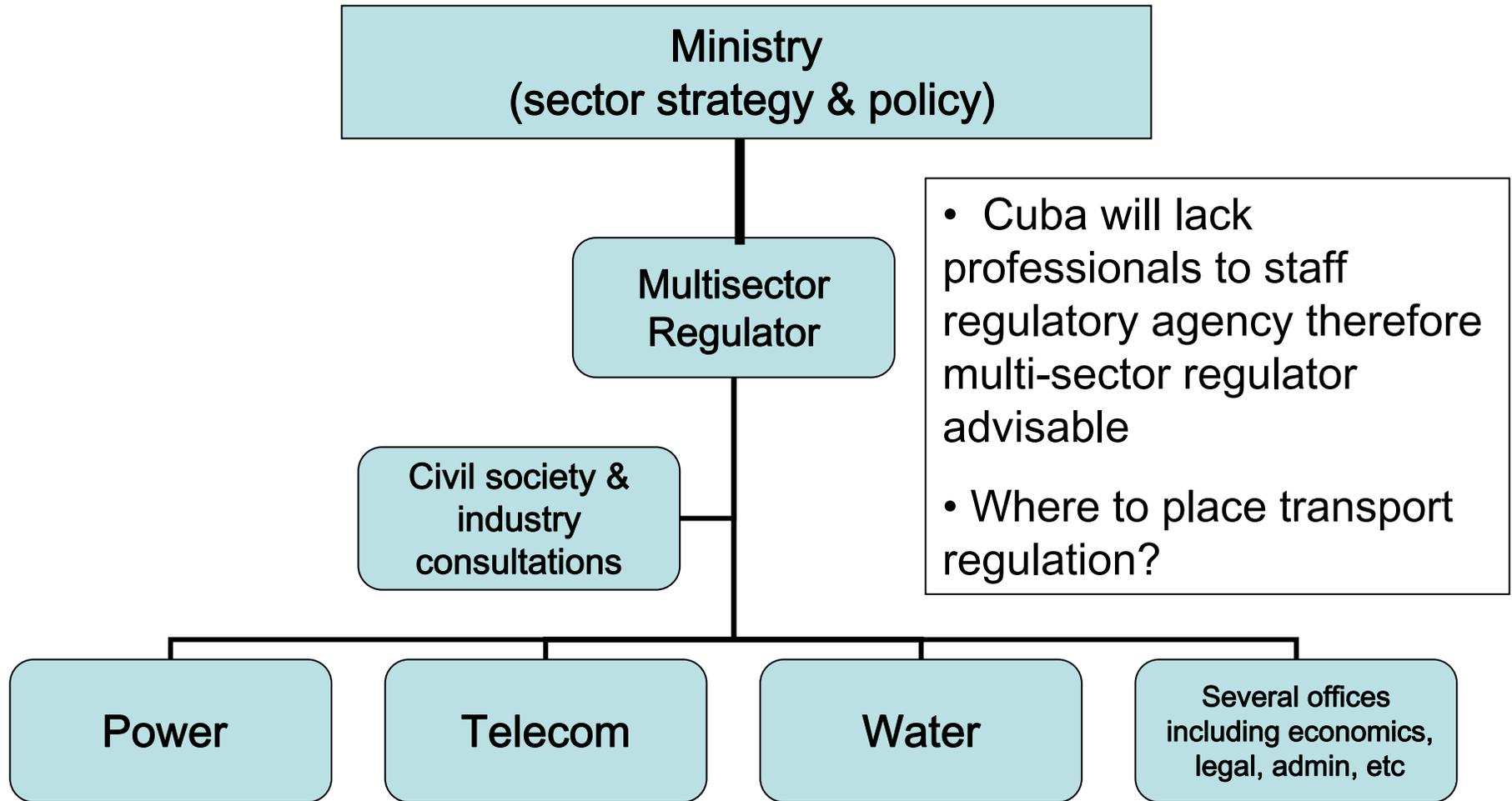
POSSIBLE ULTIMATE OBJECTIVE

- Decentralized Municipal Water Supply Utilities, organized according the location of water resources & proximity to markets
- Modernization of 3~4 wastewater treatment plants
- Private operation in water production, long-distance transportation & sewage treatment
- Design and implementation of rules and pricing incentives to stimulate private sector participation

AGENDA FOR ACTION

- Main issue is to avoid deterioration that could have a rapid effect on health standards. Opportunity for asset stripping and tunneling low in Havana and Varadero (foreign operator)
- Sector reform can follow but introducing private participation much more difficult than in power and telecommunications. Concessions? Municipal?
- Establish multi-sector regulatory agency separate from policy ministries

Possible Institutional Framework



Conclusions

- **Adequate infrastructure necessary for EG, health, public safety**
- **Lessons from transition economies**
 - Need to protect from asset stripping and tunneling
 - Need to coordinate policies with other sectors: tariff increases, property issues, fiscal issues
- **Promote private participation rapidly but judiciously:** need legal/regulatory framework & competent regulator
- **Power** sector top priority: “keep the lights on”; avoid asset stripping & tunneling; may need to promote PPAs depending on electricity demand
- **Telecommunications:** end exclusivity, spectrum auctions, licenses; interconnection agreement, promote additional cable access
- **Water:** could become health issue
- **Road transport:** maintenance; private investment in transport services
- **Airports & ports:** security issues related to US regulations
- **Cuba: an example of potential benefits of introducing EG at early planning stage & of inter-agency coordination**