Columbia Business School

National Broadband Plans: Strategic planning, Keynesian stimulus or the return of state intervention?

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Beyond Recession – Visions for Broadband Communications Post 2010
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Agenda

- National Broadband Plan: three models
- National Broadband Plan as a strategic planning exercise
- The Keynesian stimulus broadband plan
- Government intervention
- Return of the state or government as an enabler?

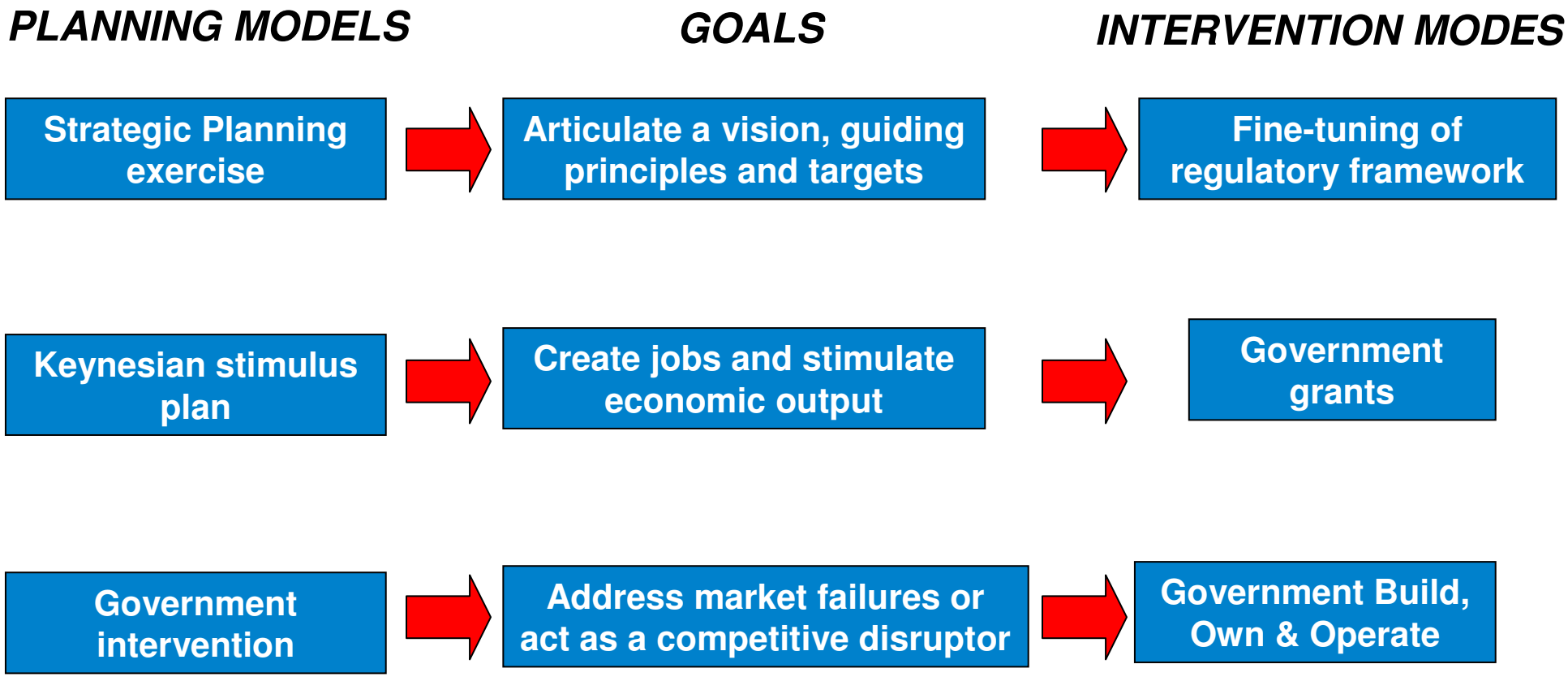
In the past two years, several governments have formulated National Broadband Plans

COUNTRY	BROADBAND FOCUS
United States	• Launched a Broadband Stimulus program focused on providing service to unserved and underserved areas for $7.2 billion
Australia	• Government is planning to spend A$ 11 billion of total A$ 43 billion required for construction of the National Broadband Network
Singapore	• Government will provide a grant of S$ 750 million of S$ 2.2 billion to support the roll-out of the fiber network
Germany	• Government has announced a National Broadband Strategy with the objective to have nationwide capable broadband access (1 Mbps) no later than by the end of 2010 and provide to 75 percent of German households access to a broadband connection of at least 50Mbps by 2014 (estimated investment: Euros 36 billion)
Sweden	• Broadband government promotion comprised financial incentives to municipalities to fund 2/3 of total NGN investment (Euros 864 million)
Colombia	• $ 0.29 b ($0.16 b in universal telephony, $0.05 b in ICT education, $0.03 b in Broadcasting, $0.03 b in computing education and $0.02 b in e-government)
Portugal	• Government announced an 800-million-euro credit line for the roll-out of NGAN. This is part of an the first step in a 2.18-billion-euro plan to boost the country's economy.
Ireland	• The government will invest 322 million in a National Broadband Scheme aimed at completing country coverage
Canada	• Has relied on four programs to promote broadband development resulting in an overall investment of C$ 300 million
Finland	• Government funds one-third of the NGN project cost (S$ 130.73 m)
New Zealand	• Government funds S$ 458,12m investment to boost fiber over the next five years

Sources: Government announcements

National Broadband Plans are motivated by three goals

NATIONAL BROADBAND PLANNING MODELS

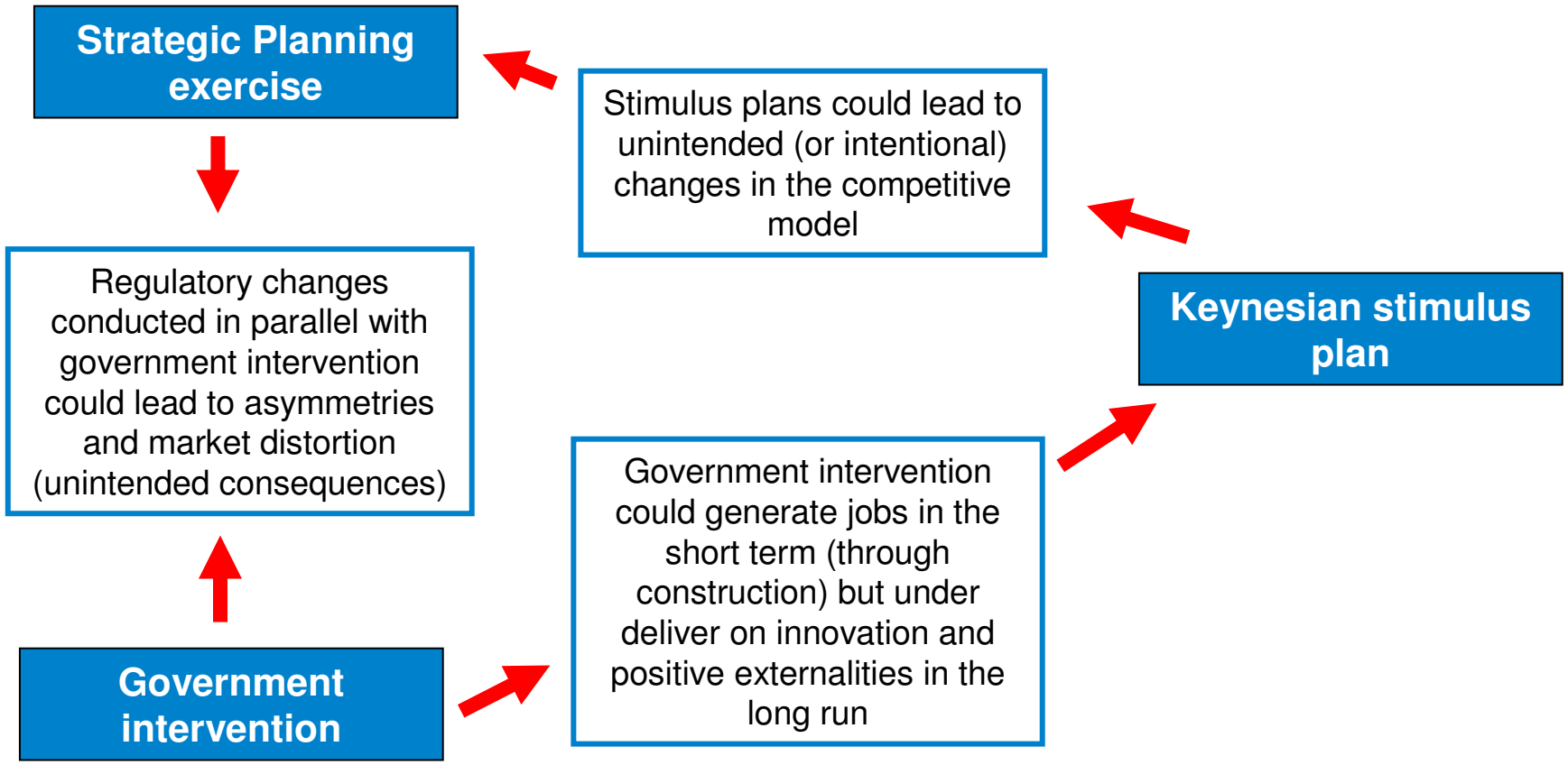


Goals and Models rarely appear in a pure mode

COUNTRY	STRATEGIC PLANNING EXERCISE	KEYNESIAN STIMULUS PLAN	GOVERNMENT INTERVENTION
United States		• Grants of $7.2 B to deploy broadband in unserved and underserved areas	
Australia	• Nationwide service of at least 12 Mbps		• Government commits S$14.16B to deploy and operate nationwide broadband network
Singapore	• Stimulate technological innovation and enhance national resilience by providing 1 Gbps access	• Spur economic growth	• Government invests up to S$1B to improve project's business case and fulfill policy objectives
Germany	• Have universal broadband access (1 Mbps) no later than by the end of 2010 and provide to 75 %of households access to at least 50Mbps by 2014		
Sweden	• By 2020 provide 100 Mbps to 90% of households and businesses		• State-owned fiber backbone combined with municipal networks
Brazil	• Extend broadband service to unserved areas and increase penetration in urban areas		• State-owned fiber backbone operating also as retailer of last resort
Portugal		• Government announced an E 800 m credit line for the roll-out of NGAN as part of a 2.18-billion-euro plan to boost the country's economy	
Ireland		• The government will invest 322 million in a National Broadband Scheme aimed at completing country coverage	
Canada	• Four programs to promote broadband development resulting in an overall investment of C$ 300 million		
Finland		• Fund 1/3 of NGN roll-out	
New Zealand		• Government investment to boost fiber deployment	

Will a broadband plan that is motivated by more than one of the three goals be internally consistent? Not necessarily

POTENTIAL ISSUES OF CONSISTENCY IN PLANNING MODELS



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The National Broadband Plan as a strategic exercise serves to articulate a vision, a set of guiding principles and targets

- Vision: broadband stimulates economic growth, promotes competitiveness and innovation
- Guiding principles: universal access, new business operating models, democratic institutionalization
- Specific initiatives: research and development, refinement of regulatory framework (e.g. frequency allocation, infrastructure sharing, network neutrality)
- Targets: universal broadband access, download speeds by region

Germany's broadband strategy aims to ensure that 75% of households have access to at least 50Mbps by 2014, with the goal of building an ultra broadband infrastructure by 2020

Federal Government Broadband Strategy (2010-2014)

The Federal Government of Germany has agreed on ambitious broadband strategy targets:

- Encourage operators to deploy wireless and mobile broadband services with at least 1Mbps in rural areas currently without broadband coverage via DSL or cable
- Upgrade "Grey zone" areas (speeds between 384 Kbps and 1 Mbps) to 1 Mbps and more
- Ensure that 75% of German households have access to a broadband connection of at least 50Mbps by 2014, with the goal that such access lines should be available as soon as possible over the whole German territory

Source: *Federal Government of Germany (2009) "Breitbandstrategie der Bundesregierung", p. 3.*

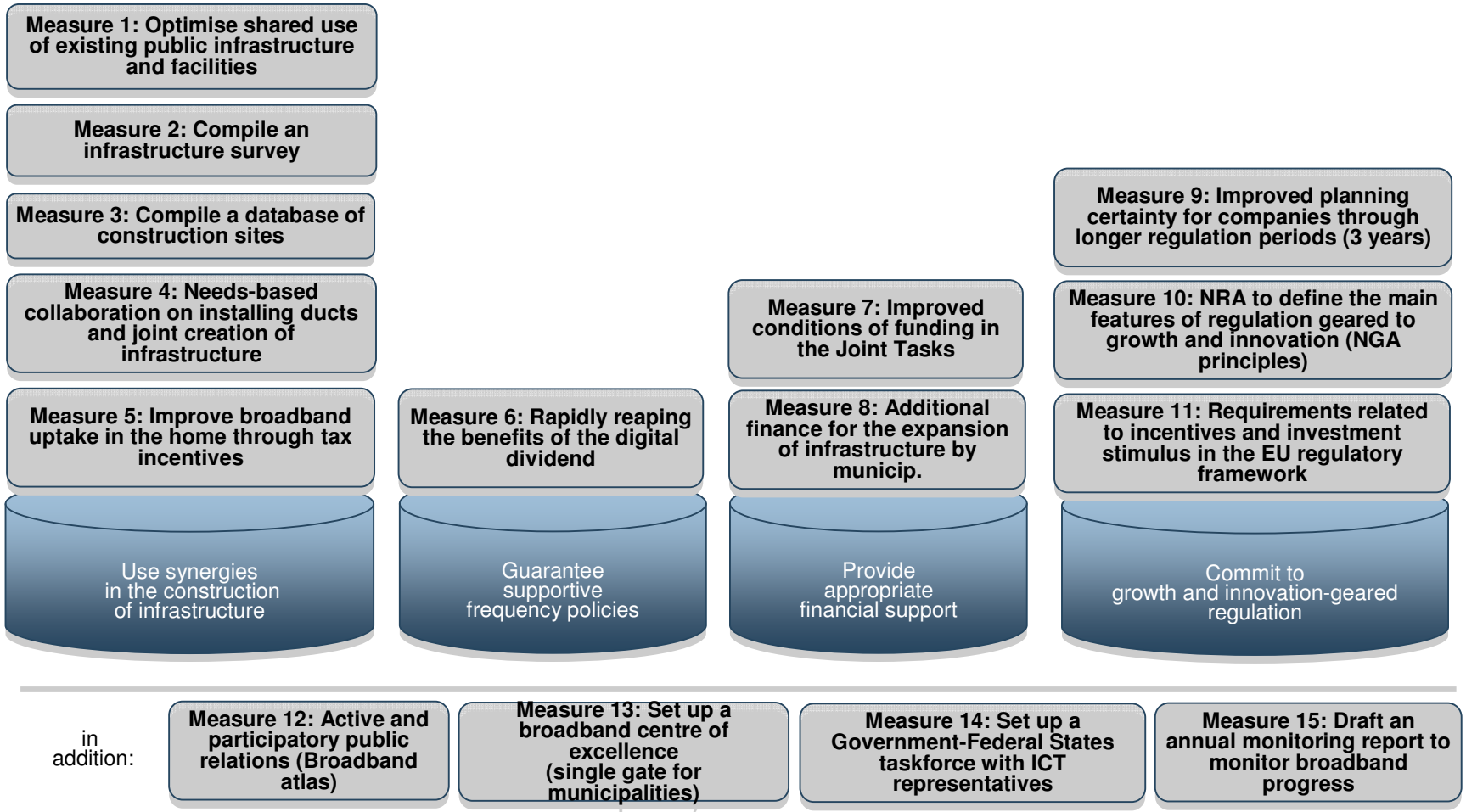
Long Term Broadband Requirements (2020)

Longer term, the aspiration is to build an ulttrabroadband national infrastructure:

- Deliver at least 100 Mbps to 50% of households
- Deliver at least 50 Mbps to the next 30% of households
- Offer broadband services under 50 Mbps to the remaining population (20%)

Source: Konjunkturgerechte Wachstumspolitik Jahreswirtschaftsbericht 2009, p. 38

Specific measures of Germany's National Broadband Plan



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The Keynesian stimulus program aims at creating jobs and stimulating output primarily in the short term

CONSTRUCTION EFFECTS

EFFECT	DESCRIPTION	EMPLOYMENT EXAMPLES
Direct jobs and output	• Employment and economic production generated in the short term in the course of deployment of network facilities	• Telecommunications technicians • Construction workers • Civil and RF engineers
Indirect jobs and output	• Employment and production generated by indirect spending (or businesses buying and selling to each other in support of direct spending)	• Metal products workers • Electrical equipment workers • Professional Services
Induced jobs and output	• Employment and production generated by household spending based on the income earned from the direct and indirect effects	• Consumer durables • Retail trade • Consumer services

POSITIVE EXTERNALITIES

EFFECT	DESCRIPTION	EMPLOYMENT EXAMPLES
Productivity	• Improvement of productivity as a result of the adoption of more efficient business processes enabled by broadband	• Marketing of excess inventories • Optimization of supply chains
Innovation	• Acceleration of innovation resulting from the introduction of new broadband-enabled applications and services	• New applications and services (telemedicine, Internet search, e-commerce, VOD and social networking) • New forms of commerce and financial intermediation
Value chain recomposition	• Attract employment from other regions as a result of the ability to process information and provide services remotely	• Outsourcing of services • Virtual call centers • Core economic development clusters

Network construction effects and multipliers are significant

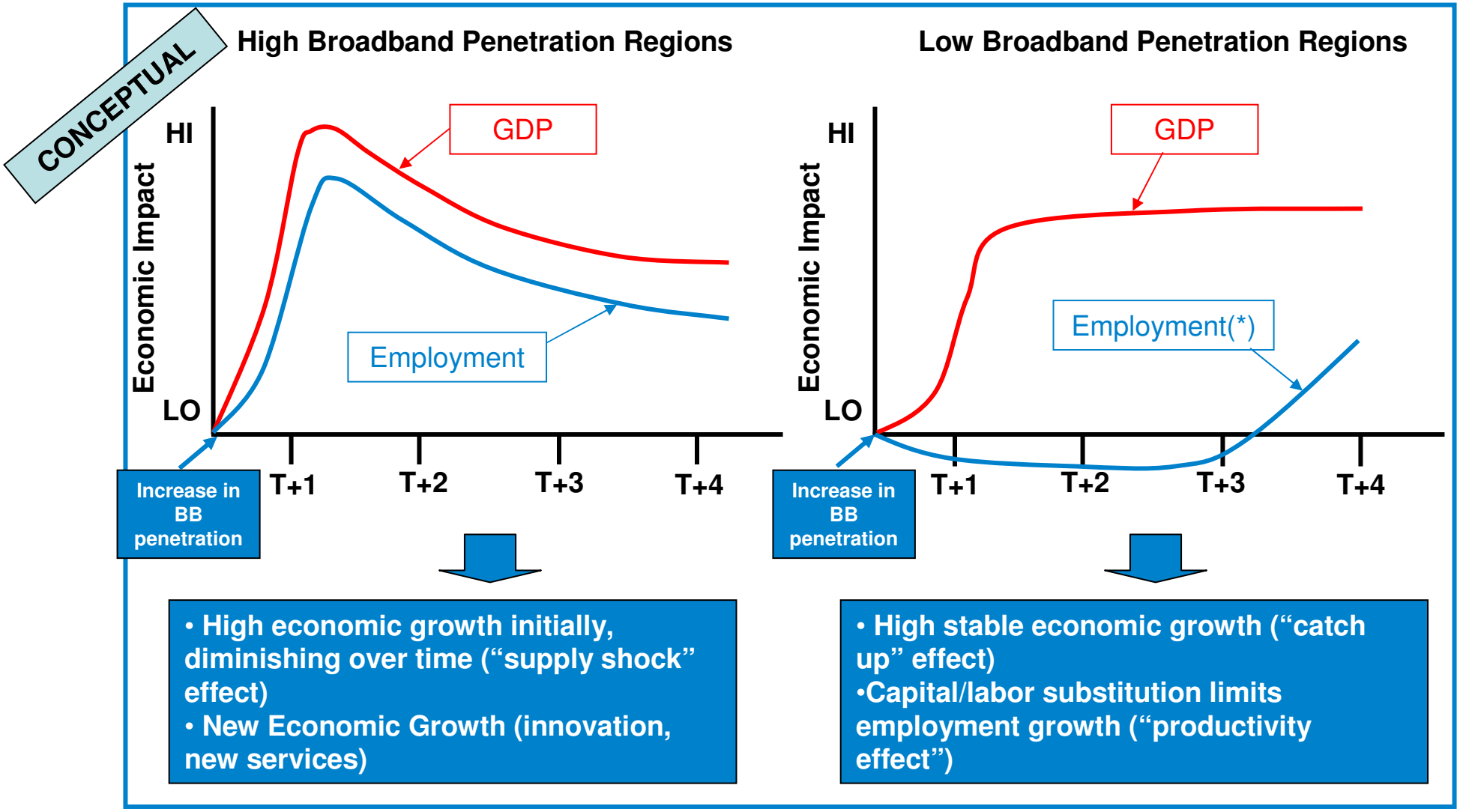
NETWORK CONSTRUCTION EFFECTS OF BROADBAND

COUNTRY	STIMULUS INVESTMENT (USD billion)	NETWORK DEPLOYMENT JOBS ESTIMATE				MULTIPLIERS		POSITIVE EXTERNALITIES
		DIRECT	INDIRECT	INDUCED	TOTAL	TYPE I (*)	TYPE II (**)	
UNITED STATES	$ 6,390	37,000	31,000	60,000	128,000	1.83	3.42	136,000
SWITZERLAND	~$ 10,000	~80,000	~30,000	N.A.	~110,000	1.38	N.A.	
GERMANY	$ 47,660	281,000	126,000	135,000	542,000	1.45	1.94	427,000
UNITED KINGDOM	$ 7,463	76,500	134,500		211,000		2.76	69,500
AUSTRALIA	$ 31,340				~200,000			

Sources: Katz, R. and Suter, S. (2009). *Estimating the economic impact of the US broadband stimulus plan, Columbia Institute for Tele-Information working paper;* Katz, R., P. Zenhäusern, S. Suter, P. Mahler and S. Vaterlaus (2008). *Economic Modeling of the Investment in FTTH* in Switzerland, unpublished report; *Libenau, J., Atkinson, R. (2009) The UK's digital road to recovery. LSE and ITIF; Australian government.* Katz, R., S. Vaterlaus, P. Zenhäusern, S. Suter and P. Mahler (2009). *The Impact of Broadband on Jobs and the German Economy*; Columbia Institute for tele-Information working paper

(*) (Direct + indirect)/direct
(**) (Direct + indirect + induced)/direct

We are generating evidence that the economic impact of broadband deployment varies by region



(*) Results are at a low significance level

Broadband deployment should be stimulated because of its economic impact

- Generate jobs and output as a result of the construction of networks
  - Estimates for network construction jobs are fairly robust and consistent with prior research
  - Output multiplier: every Euro invested in infrastructure, generates 0.90 Euros in domestic value added
- Promote innovation, and creation of new businesses once the networks are deployed
  - Accelerate development of core regions
  - Attract new industries, with employment potential
- However, differential impact across regions prompts the question of where to focus
  - It would appear that, in the short term, investment in advanced industrialized regions yields stronger impact
  - This needs to be balanced against a social policy oriented toward fostering digital inclusion

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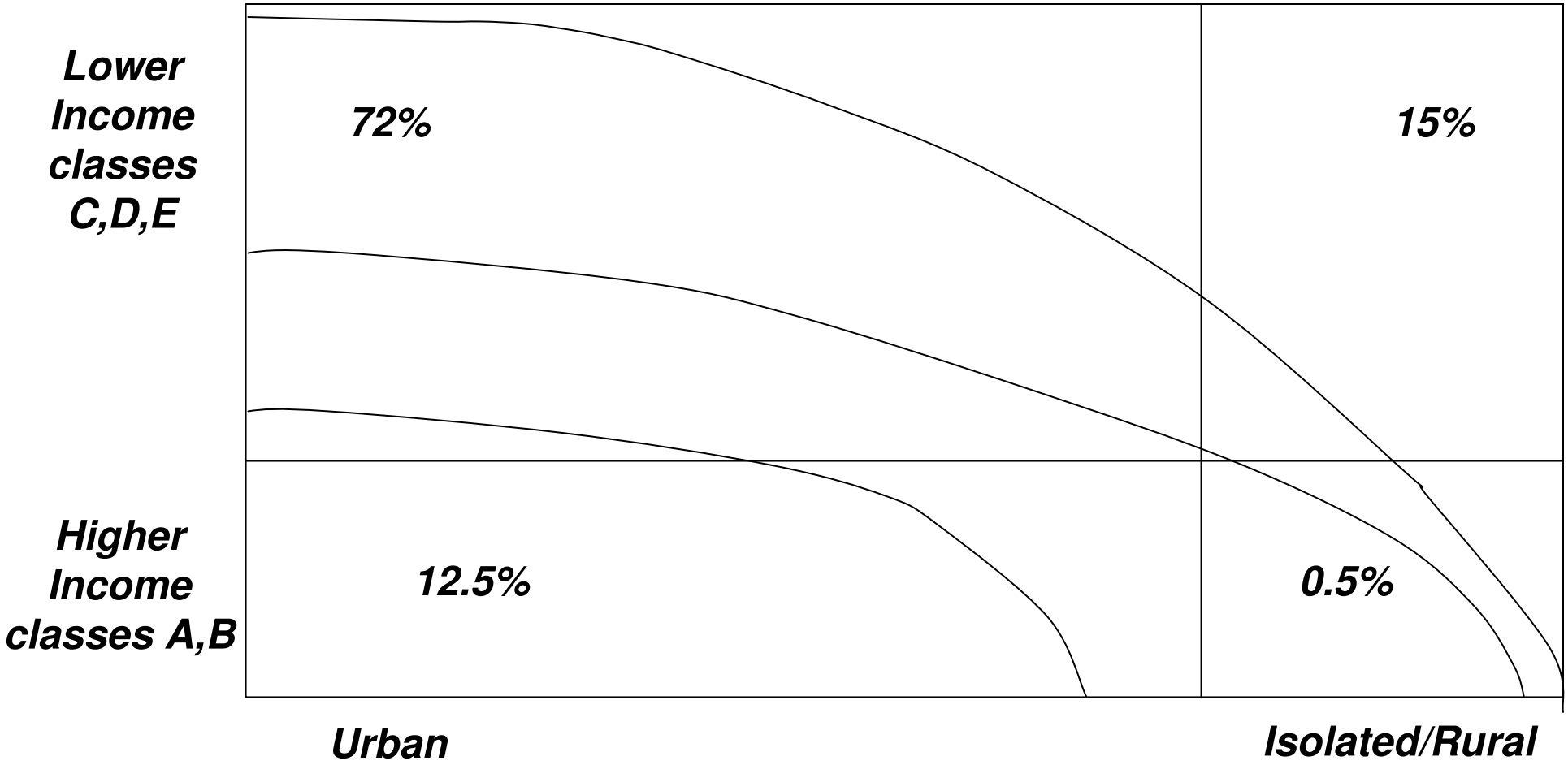
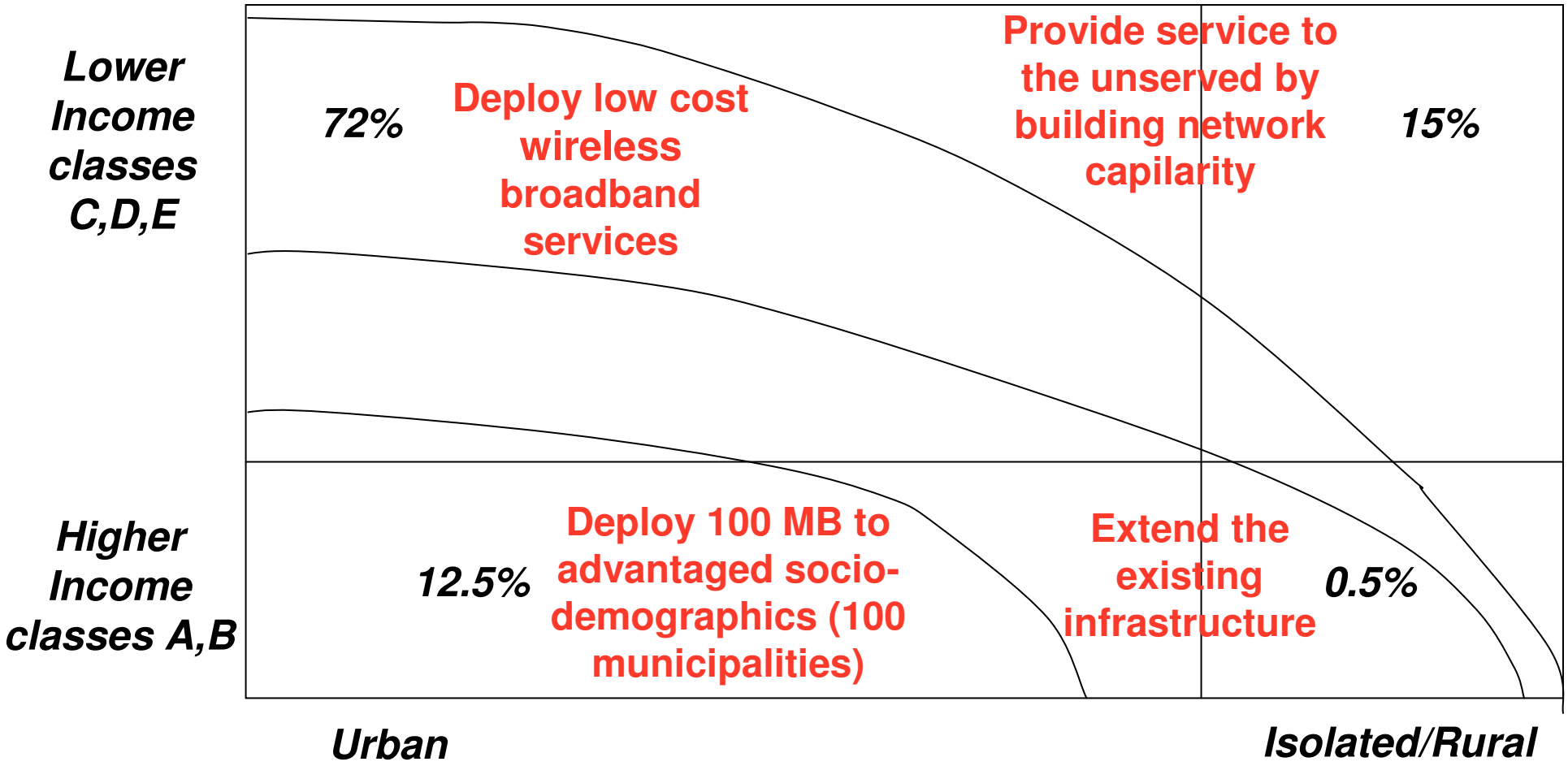
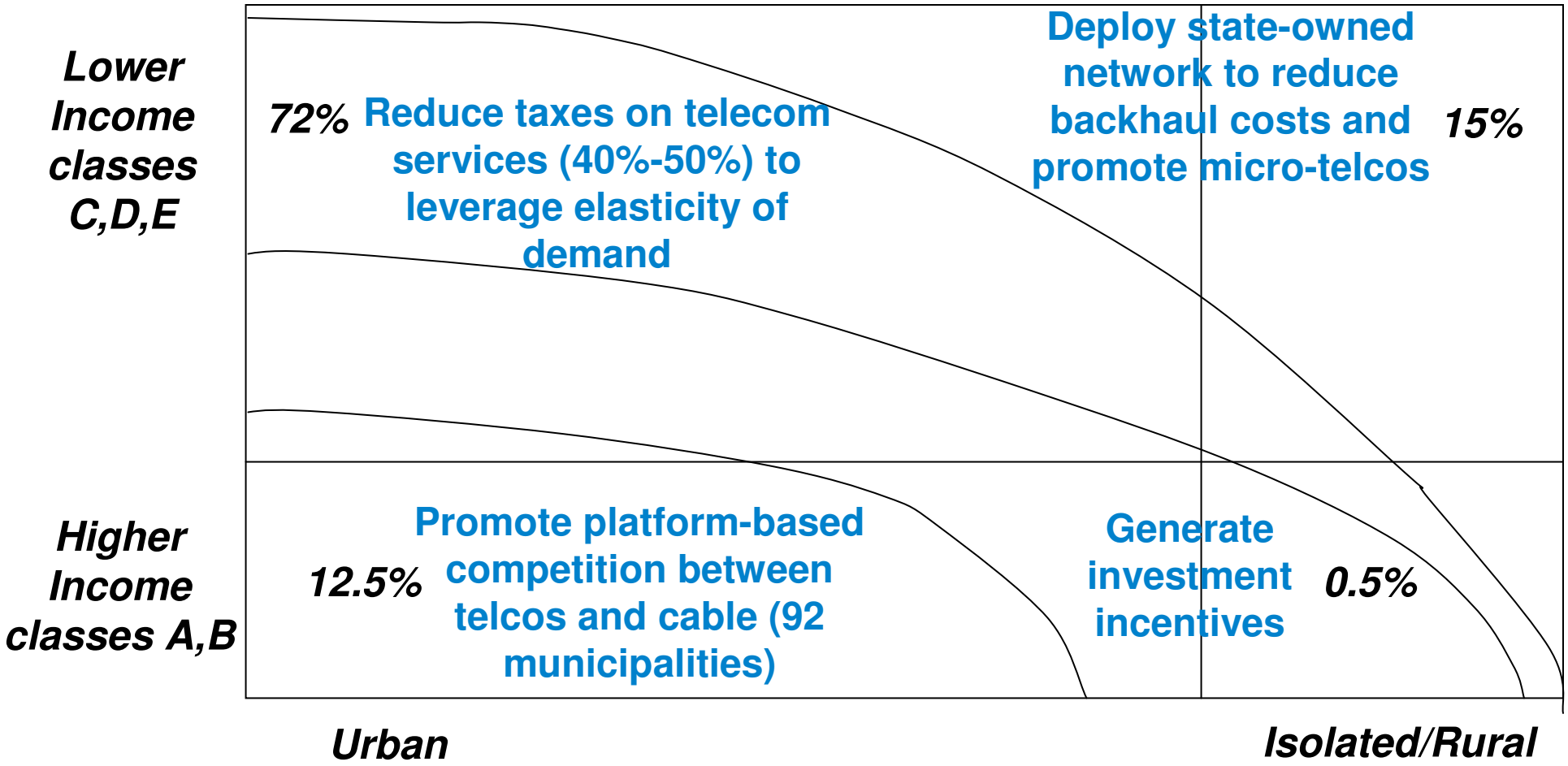
The Brazilian Broadband Plan, which comprises government intervention, is structured around four core socio-economic dimensions



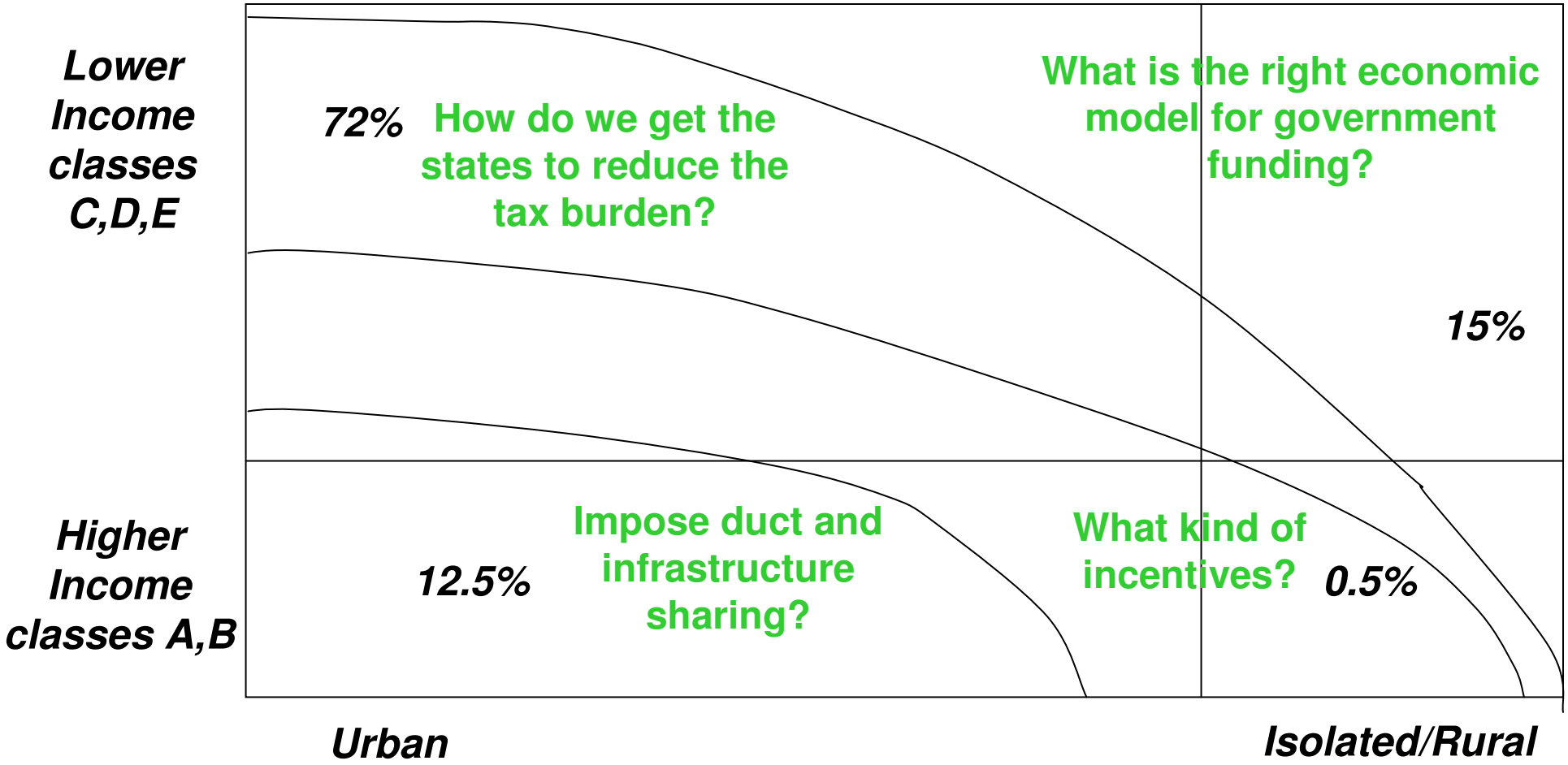
The primary objective is to provide universal broadband access



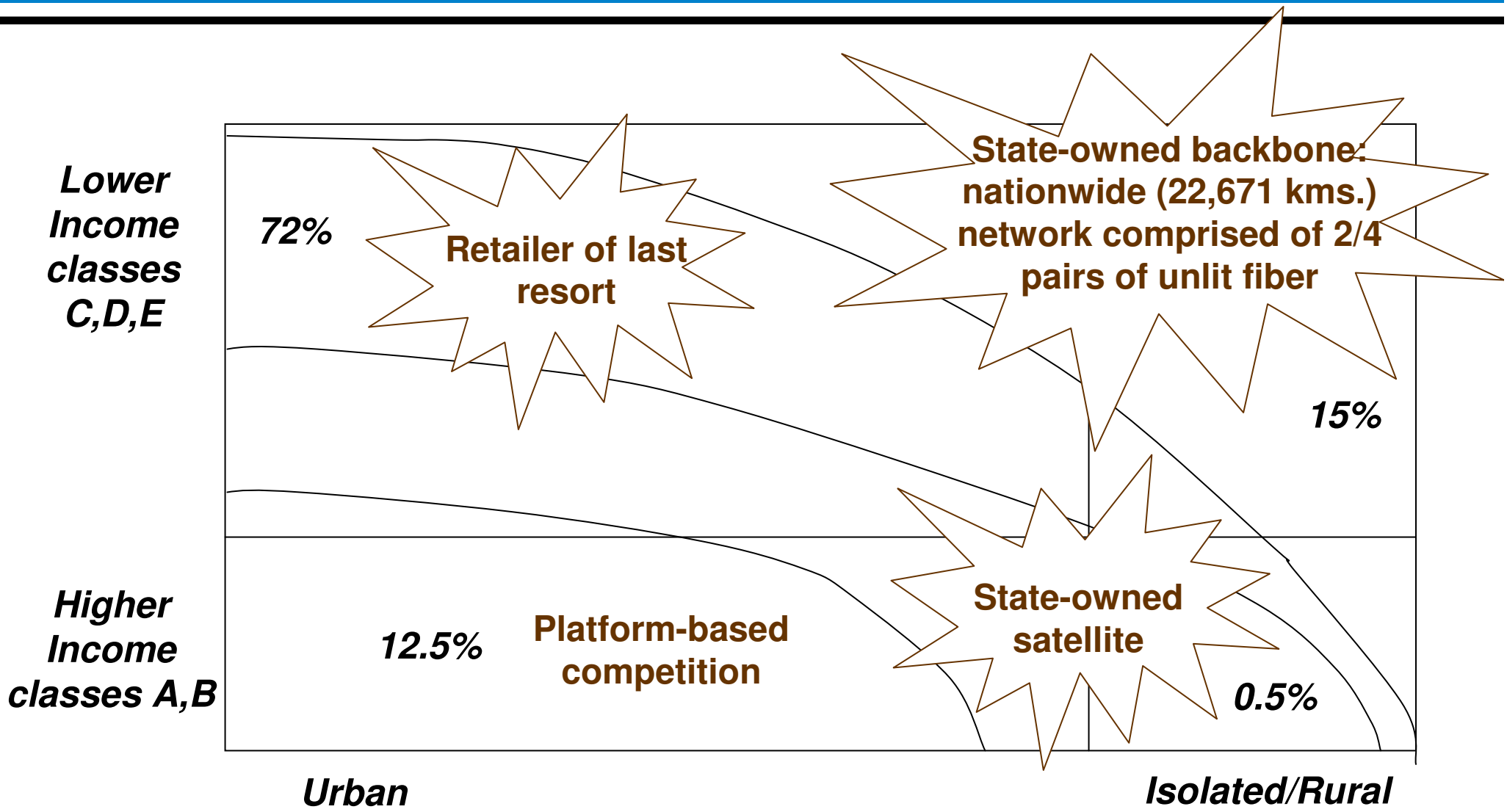
The policy tools combine government participation in a state-owned network, tax cuts and platform-based competition



Several open questions remain to be defined reflecting overlapping ideological and institutional conflicts



The plan contains high risk of expansion of government intervention



Two divergent opinions exist within the government as to the ultimate role of the state-owned company

- **A disruptor of tacit collusion**
  - Competitive dynamics have resulted in cartel-like equilibrium, whereby the two incumbent telcos (Oi and Telefonica) do not enter their respective territories and the cable TV operator (NET) only competes through cream-skimming
  - As a result, effective platform-based competition exists only in 92 municipalities out of 5,500
  - In this context, the purpose of the state-owned company is to break the bottleneck that incumbents have on local networks and enable competition through either privately-held micro-telcos or the carrier as “retailer of last resort”
  - Ideally, micro-telcos could roll up following an Indian model and become a sustainable stand-alone business
- **An enabler of universal service**
  - The state-owned company provides an opportunity to utilize infrastructure that has already been deployed
  - This player would become a regulated wholesaler with clearly defined rules and limitations with the purpose of enabling privately-owned local networks

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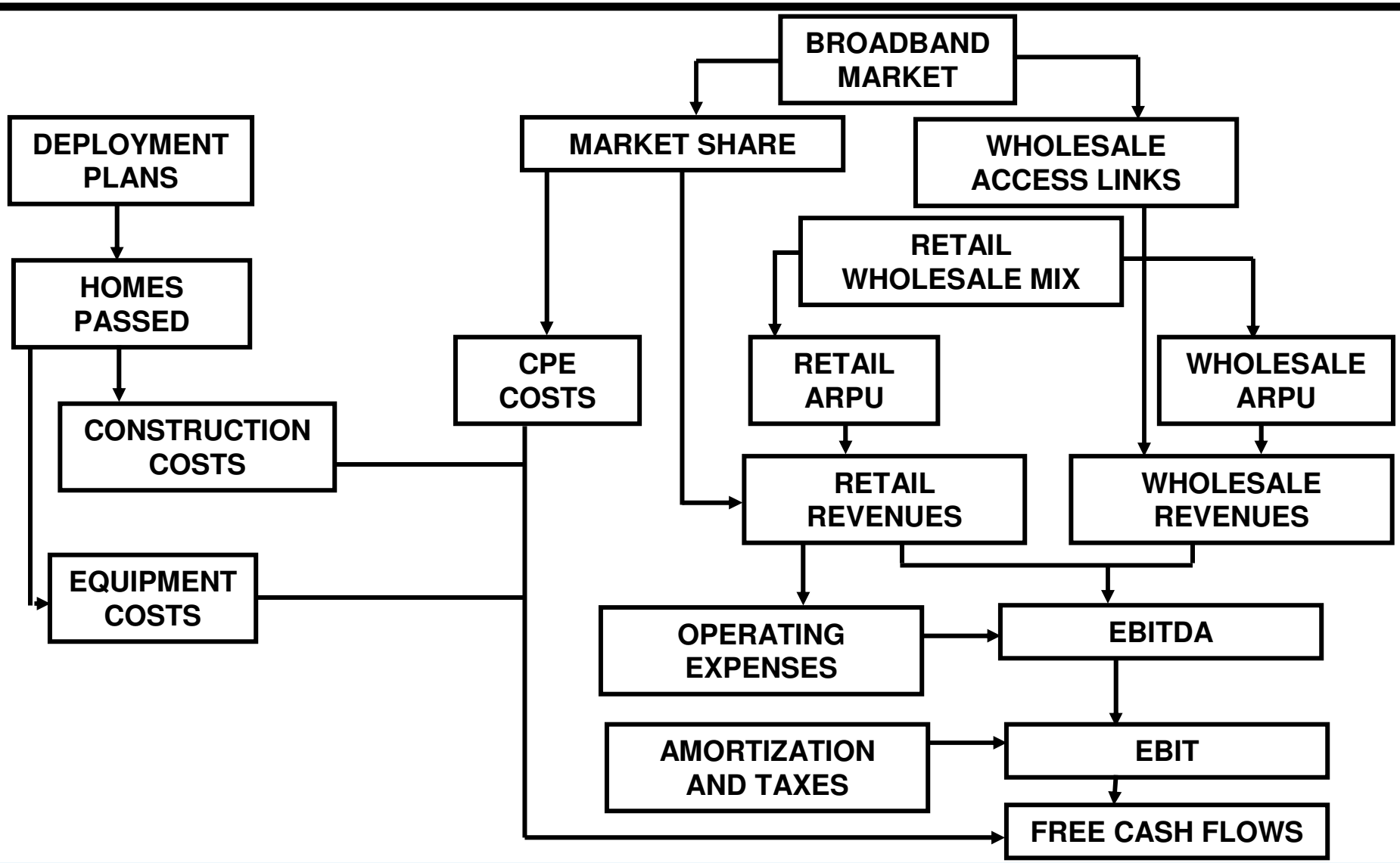
Our premise: governments should focus their intervention alleviating the constraints of a financial model on very selected cases

- If the region cannot attract private investment, there is a substantial public policy challenge:
    - Deal with a monopolistic situation (utility regulation?) or no privately owned broadband at all (government ownership?)

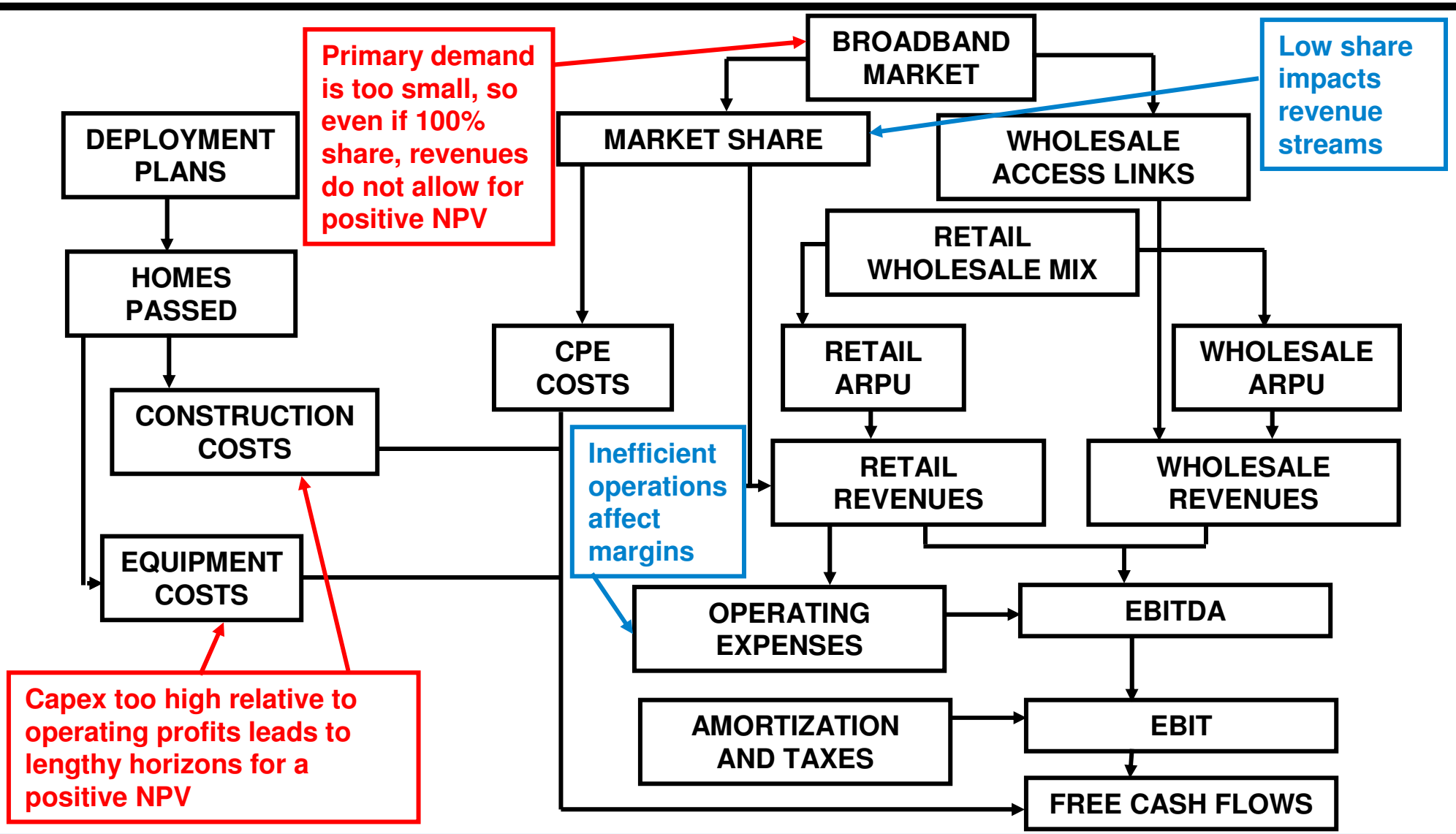
      OR

    - Create an environment that can attract investment?
- In general, we recommend not to attempt to build a state-owned facility
  - Less dynamic and innovative
  - No checks and balances
  - More regulation, particularly to protect open access
  - Some unintended consequences in terms of utility behavior (pricing, erosion of public good, etc.)
- We recommend using the power of the state as a catalyst of private investment

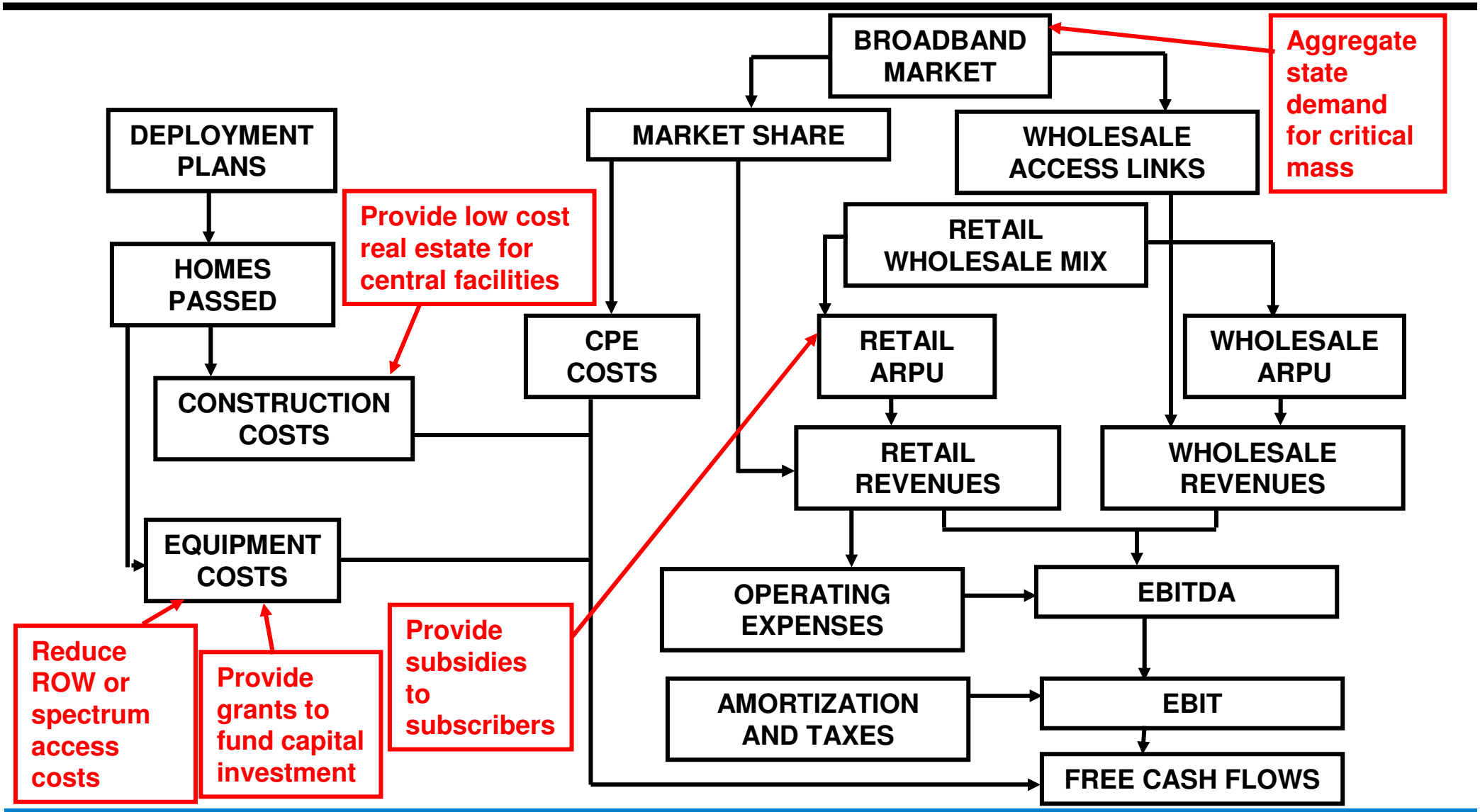
The development of a policy framework to guide government intervention should start by examining an investment model



A sustainable broadband business case presents two structural challenges, and two strategic and operational ones



Government intervention can render a business case sustainable by taking several initiatives



Should Government Be the Risk-Taker of Last Resort? Maybe

- First principle: not to manage risk with tax payer money
- Subsidize incumbent telco/BB to upgrade to “utility”
- In greenfields, government could build (contracts) for the construction of universal access network
  - Strong competition for government contracts = lower initial costs
- Government can then auction the broadband infrastructure to highest (qualified) operator
  - Monopoly for wholesale-only/open access “utility”operator?
- Any “loss” is a one-time infrastructure subsidy (like building a highway and road system)

The international experience allows us to determine the areas of opportunity and the risks attached to state intervention

		IS PROJECT SUSTAINABLE AND PROFITABLE?	
		YES	NO
IS GOVERNMENT INTERVENING?	YES	• Preemption of private investment (Germany, Switzerland, Netherlands)	• Alleviate the constraints of the business case to stimulate private investment • Re-creation of access bottlenecks • Erosion of the public utility model (Sweden)
	NO	• Market addresses the need of public good	• Supplier of last resort

Should State governments intervene in broadband and wireless deployment? Yes, but facilitating market forces not preempting them

- Coordinate with governments, communities, businesses, and operators to identify supply and demand conditions and tailor services to unmet needs
- Identify barriers to consumer adoption where broadband exists
- Identify areas where there is no broadband service
- Help establish a “business case” to deploy broadband