

Prepared for *Post-2015 Development Goals:
Designing Targets and Indicators*
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Korea's Leading Think Tank

Universal Connectivity for Access to Information, Services, and Opportunities: Energy, Transportation, and ICT

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- ✓ A Quick Review: Previous Discussions on MDGs
- ✓ Connectivity for Development: Definition, Literature Review, and Voices of the Poor
- ✓ Connectivity as a Goal
 - ✓ Overview
 - ✓ Basic Structure: 1 Goal, 3 Targets, 6 Indicators, and Modal Sub-Indicators
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- ✓ Connectivity Indicators and Series
 - ✓ Energy
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- ✓ Suggestions and Future Plans

MDGs beyond 2015: A Strategy

◆ Conceptual Framework

- Adopt a comprehensive and inspiring definition of development **that applies equally to rich and poor countries**: “development as freedom,” **building on a virtuous cycle between human development and economic growth**.
- Draw from theory and history to formulate an effective development paradigm: self-sustaining development based on progressive local capacity expansion.
- Identify development goals that are ends in themselves as well as proximate causes for better lives (e.g., education, health, connectivity/opportunity, empowerment, equity), **reflecting the needs of intended beneficiaries**.

◆ Structure and Methodology

- Keep the basic structure of goals, targets, and indicators.
- Keep the number of goals around 10 and targets around 20.
- Extrapolate from trends to arrive at feasible targets.
- Formulate regional and country targets as well as global targets.
- Measure progress with appropriate indicators.

Millennium Development Goals (2000: 1990-2015)



Breakthroughs

- Millennium Declaration: Global Agreement on Development at Leadership Level
- Recognition of Poverty
- Establishment of Global Partnership

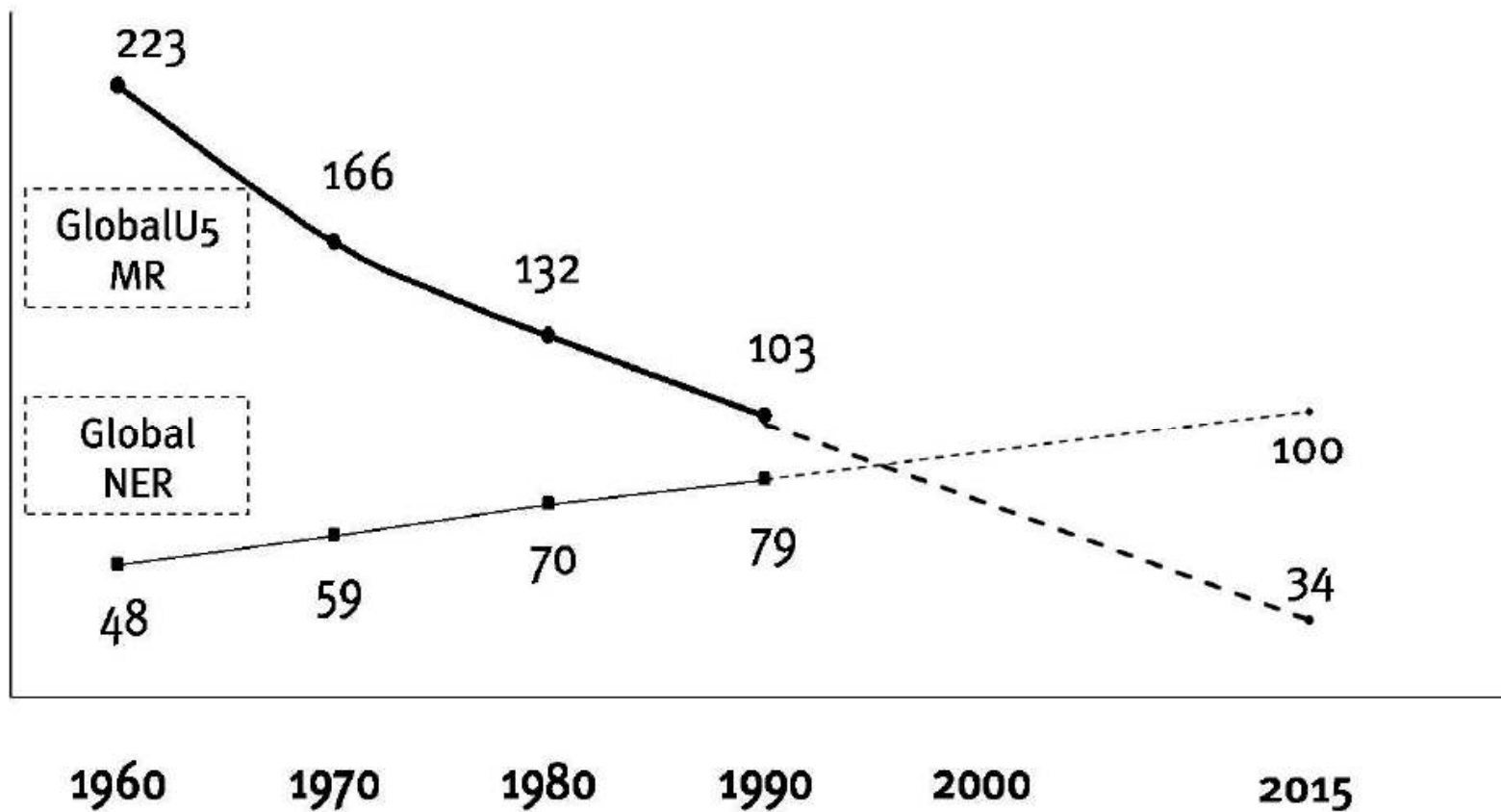
Methodological Features

- Simplicity and Measurability
- Focus on Ends rather than Means
- No Unifying Theory of Development
- Global rather than Regional/Country Targets
- Different Levels of Abstraction (Mixed Bag)

Limitations

- Focused on Basic Human Needs
- Weak on Basic Freedoms and Equity
- Susceptible to Vertical Approaches (e.g., Combat malaria with vaccines vs. broad-based development)
- Insufficient to Generate Self-Sustaining Growth Based on Progressive Local Capacity Development (cf. Korea's G20 consultation with LICs: industry, infrastructure, skills, and trade; Voices of the Poor: job, connectivity, security, and respect)

Global Targets Extrapolated from Global Trends: Under-Five Mortality Rate and Net Enrollment Rate



Source: Vandemoortele (2009: 357)

- MDGs 1-4 (Poverty, Education, Gender Equality, Child Mortality) based on trends
- MDGs 5-8 (Maternal Health, Diseases, Sustainability, Global Partnership) aspirational

CONNECTIVITY for Development: Defining Characteristics



◆ Definition

- ✓ Subset of infrastructure, with a focus on linking two or more points in a system: physical and institutional coordination issues (e.g., standards and networks)

“Quality or Condition of being Connected; Ability to make and maintain a connection between two or more points in a telecommunications system”

◆ Significance

- ✓ Access to economic, social, and political opportunity
- ✓ Impact on transaction cost: market integration, competition, and cooperation
- ✓ Enabling infrastructure: education, health, freedom/repression
- ✓ Technological platform: smart infrastructure to take advantage of advances in engineering sciences and ecologically sound systems design

Effective development strategies require good infrastructure as their backbone (Juma, Calestous, “Enabling Infrastructure” from *The New Harvest: Agricultural Innovation in Africa*, New York: Oxford University Press, 2011)

CONNECTIVITY for Development: Empirical Literature Review



- ✓ *“The results point to reductions in transportation and communication costs in particular as a suitable vehicle to speed up growth. The results also show a strong positive effect of reductions in the cost of making new connections.”*
 - Adriaan van Zon and Evans Mupela, “Endogenous Economic Growth through Connectivity,” UNU-MERIT Working Paper Series, 2010-001, 2010.
- ✓ *“In addition to the direct effects, a number of indirect effects have been identified: human capital formation, improvement of labor productivity, and lowered operating costs at micro level”*
 - Straub, S, “Infrastructure and Growth in Developing Countries,” *Policy Research Paper No. 4460*, World Bank, Washington DC, January, 2008.
- ✓ *“Studies identified the returns to investment in infrastructure as averaging 30-40% for telecommunication, more than 40% for electricity generation, and 80% for roads”*
 - Antonio Estache, “Infrastructure and Development: A Survey of Recent and Upcoming Issues” from *Rethinking Infrastructure for Development*, Annual World Bank Conference on Development Economics (ABCDE) Global, 2007.

CONNECTIVITY for Development: Voices of the Poor



◆ Voice of Poor

- ✓ *“We think the earth is generous; but what is the incentive to produce more than the family needs if there are **no access roads to produce to a market?**” –Cameroon, 1995*
- ✓ *Even the poorer families living in the prosperous villages are comparatively better than poor people living in medium and poorest villages, in terms of social and educational awareness, because **these facilities are more accessible to them**” – India, 1997*
- ✓ *The members of the unconnected villages remain effectively marginalized from virtually all educational institutions above primary level, from adequate health care facilities, and from important governmental and non-governmental institutions” – India, 1997*

Absence of adequate infrastructure and service provision that directly determines the connectivity of the group of people can be phrased as the COMMUNITY POVERTY; isolation of communities from other infrastructure deny access to every freedom and rights including political participation, education, health care, market activities and security from both the natural disasters and crimes.

CONNECTIVITY as a Goal: Overview



◆ New Goal proposed for Post-2015

- ✓ Expansion of a target to “*make available benefits of new technologies, especially information and communications*”

packaged in Goal 8 to address issues on:

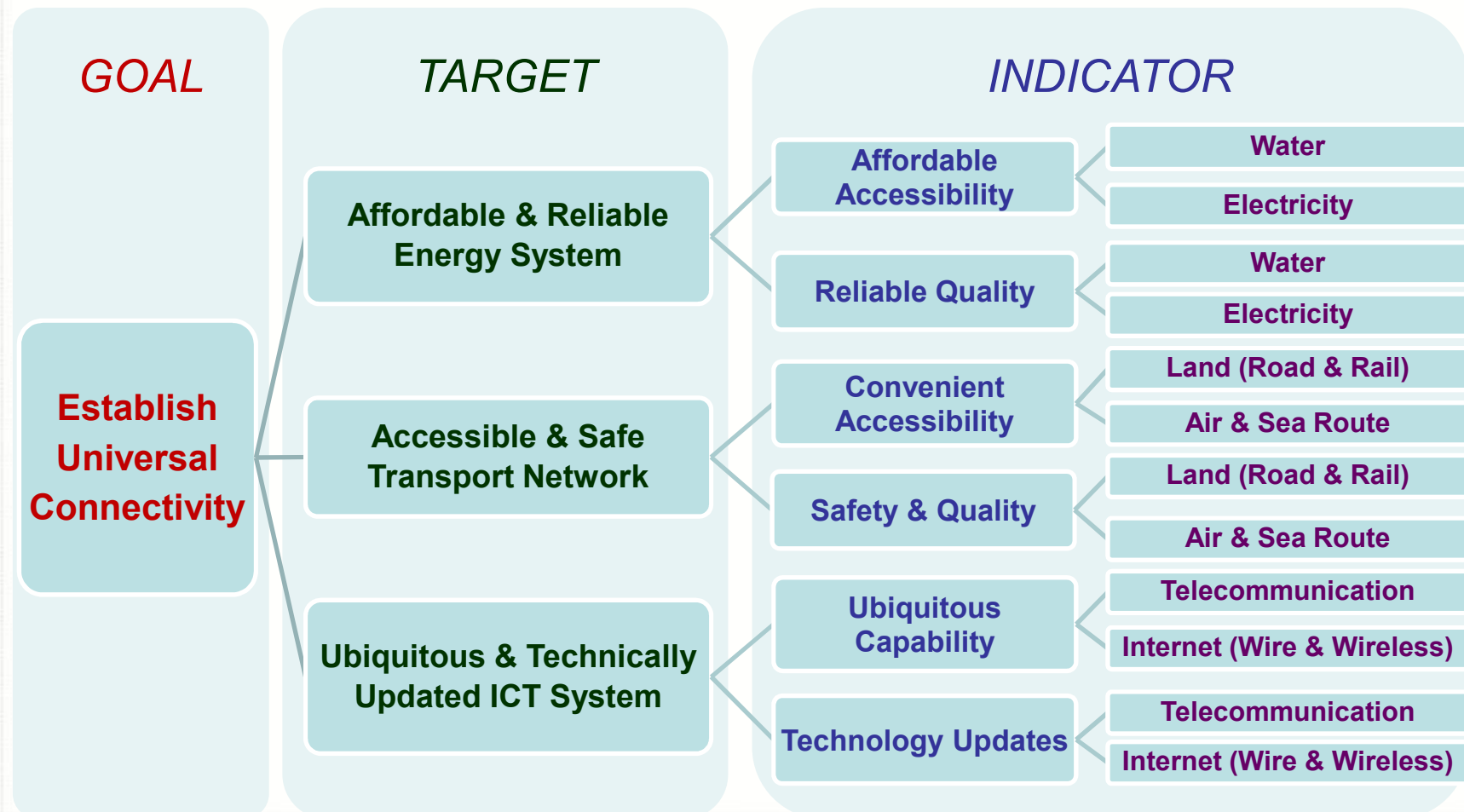
- Reliable Energy Supply
- Access to Transportation
- Access to Information and Communication Technology (ICT)

◆ Main issues raised in Bellagio:

- ✓ Service Provider: Public vs. Private
- ✓ Impact on Environment: Smart Infrastructure
- ✓ Quality Measure: No point of having the infrastructure if no one makes use of it

CONNECTIVITY as a Goal: Basic Structure

◆ 1 Goal, 3 Targets, 6 Indicators, and Modal Sub-Indicators



CONNECTIVITY as a Goal: Universality and Country Specificity

◆ Universal Goals to be applied in accordance with the National Priorities

UNIVERSAL GOAL on Post-MDGs

Establish Universal Connectivity



*Customization of Targets by applying
different weights to best address
National Priorities*

**Accessibility
& Affordability**

**Safety &
Quality
Control**

**Technology
Innovation &
Environment-
friendliness**

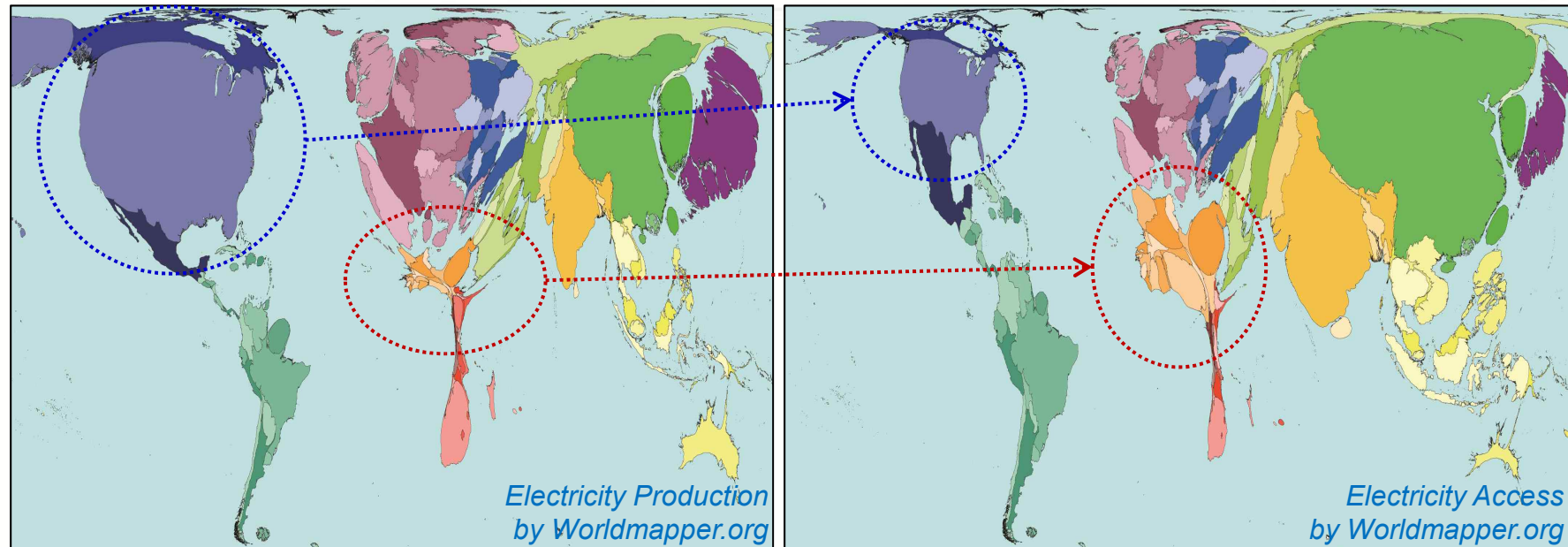
✓ **Economies with Sufficient Connectivity Platform:**

- Establishment of connectivity without compromising environment-friendliness
- Sustainment, or even improvement, of today's mobility at enhanced safety
- Technology innovation for better service at lower cost for ubiquitous connectivity

✓ **Economies with Weak Connectivity Platform:**

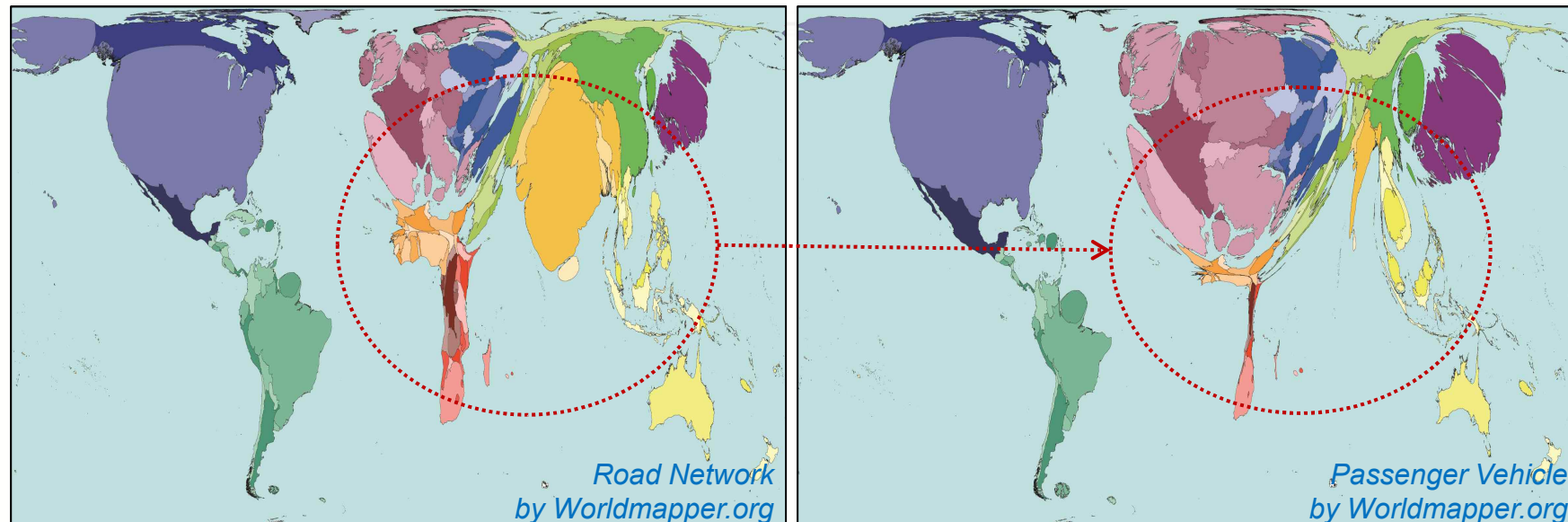
- Establishment of 100% household accessibility to affordable energy sources (electricity & water)
- Promotion of the use of environment-friendly transportation for more active economic activities and, thus, daily lives
- Establish both international and national connection for all communities at affordable price

Electricity as Source of Energy (2002): Unequal Distribution and Different Priorities



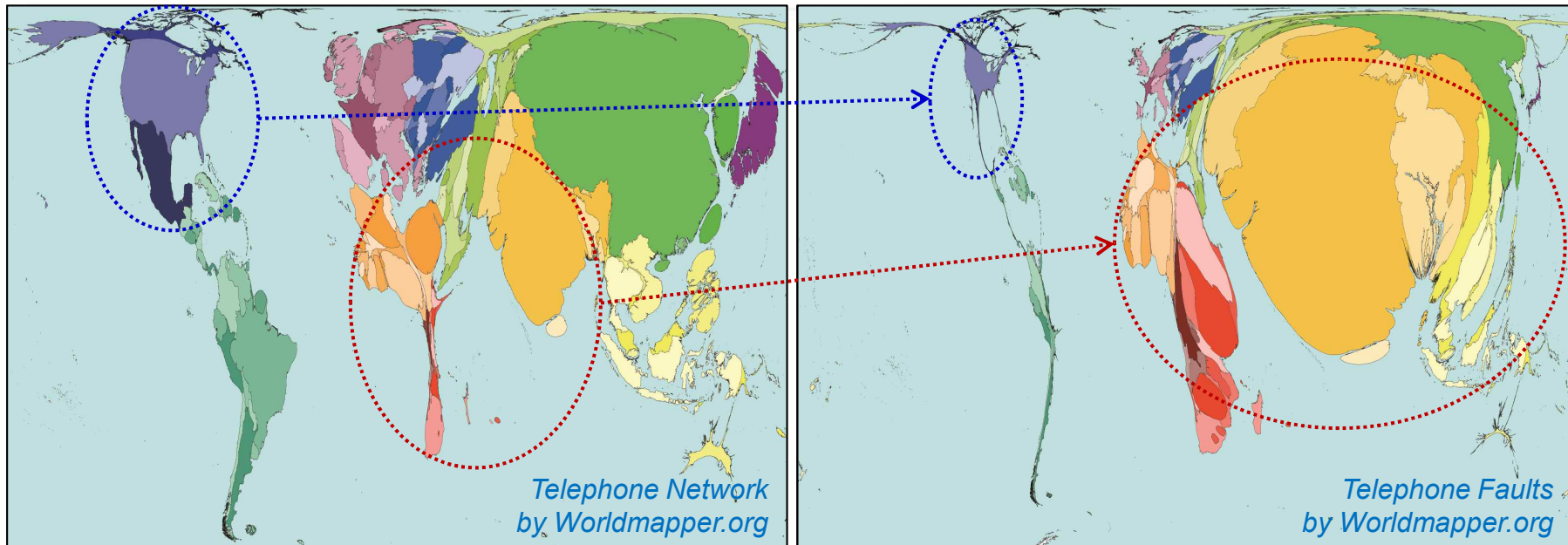
- ✓ Currently, the World is experiencing imbalance between Production Capacity and Household Accessibility of Electricity; Including self-generated electricity, 7 of the 10 territories with the lowest access to electricity are in Central Africa.
- ✓ Another urgent issue is to discover an environment-friendly energy source for electricity; this is closely linked to the environmental sustainability goal.

Roads as Transport Network (2002): Capacity/Access and Usage



- ✓ Close to non-existence of passenger vehicles in Africa epitomizes the *absence of link between infrastructure building and actual usage* of the system
- Global Average, Uniform Distribution: 590 mil. Vehicles = 1 for every ten people
- Country Reality: 1 for every 2000+ people in Central African Republic, Bangladesh and Tajikistan

Telephone as Information System (2002): Accessibility and Quality/Reliability



- ✓ Over 1 billion mainline telephones worldwide as of 2002, being doubled since 1990; Highest density shown in China, Germany, Japan, India and the US; Greatest increase in East Asia.
- ✓ For the areas with a low telephone line density, a single fault can affect a larger population than areas with a higher line density.

CONNECTIVITY as a Goal: Data Limitations

- ✓ Imperfect Data in General
 - Unavailable country/global data
 - Inconsistent available years among data sets
 - Short time series: how to extrapolate on limited existing data
- ✓ Data shaded in green are missing as a whole: only available on National Data
- ✓ Data marked in red are either unreleased or under construction
 - Core ICT Indicator*: endorsed at UN Statistical Committee in 2007 but not available

Energy: Indicators and Series



Provide reliable electricity at affordable price to all	Accessibility & Affordability	Capacity	Electricity Installed Capacity for all sources(ranging from conventional thermal electricity to renewable sources)	International Energy Agency
			Annual Freshwater Withdrawals, Total (billion cubic meters)	Food and Agriculture Organization, AQUASTAT data
			Renewable Internal Freshwater Resources per Capita (cubic meters)	
		Access	Access to electricity(% of population)	World Bank
			Household with an Electricity Connection	Core ICT Indicator*
			Access to Improved Water Source (% of population)	World Health Organization
			Access to Improved Drinking Water Sources (% of population)	
		Actual Usage	Spending on Energy Services	World Bank EAP Infrastructure Flagship**
			Average household spending on electricity as percentage of income	World Bank
			Net National Electricity Consumption	World Bank
	Proportion of Total Water Resources Used (% of Total)		UN Statistics, MDG	
	Reliability of Supply System	Service Quality against Unit Cost	Average tariff (Residential + Industrial) for Electricity and Water	National Data***
			Hours of Power and Water Outages from Public Grid	
	Transmission and Distribution Losses(% of output)			
Safety & Future Plan	Reported Number of Electrical Accidents in a Year			
	Total National Expenditure on Electricity Supply System			
	Electricity Operation Reserve			

Transportation: Indicators and Series (1)



Establish well maintained transport system for both private and business purposes	Proportion of population accessible to Transport Network	Capacity	Air transport, registered carrier departures worldwide	International Civil Aviation Organization
			Airport Density (per million population)	International Air Transport Association
			Available airline seat kilometers	
			Sea Port Density (per million population)	
			Road density (km of road per 100s sq. km of land area)	International Road Federation
			Road, total network (km)	
			Number of rural people living within 2km of an all-season road	
			Rail, lines (total route-km)	World Bank
			Public Transport Network (Bus and/or Subway)	
		Actual Usage	Air transport, freight and passengers	International Civil Aviation Organization
			Road sector energy consumption (% of total energy consumption)	International Road Federation
			Roads, goods transported and passengers carried	
			Railways, goods transported and passengers carried	World Bank
			Total daily traffic on roads	World Bank EAP Infrastructure Flagship
			Railway Passenger Fare Revenue and Freight Tariff Revenue	
Vehicles (per km of road)	World Bank Indicators			
Container Port traffic	Containerisation Int'l Yearbook			

Transportation: Indicators and Series (2)



Establish well maintained transport system for both private and business purposes	Availability of safe and high quality transport system	Service Quality against Unit Cost	Quality of Airport Quality of Port Infrastructure Roads, paved (% of total roads) Public Transport: Single Journey Tariff Road Tax	SKYTRAX World Airport Awards World Economic Forum International Road Federation
		Safety & Future Plan	Main (national) road agency administration cost Capital Investment Maintenance Expenditure Road maintenance requirement Annual Road Expenditure Number of fatalities from Road accidents Number of Railway Passenger Fatalities Number of Serious Incidents on Railway	World Bank EAP Infrastructure Flagship

ICT: Indicators and Series (1)



Connect all through readily available communication technology	Proportion of population connected to the World	Capacity	Mobile Base Station Density by subscribers	
			Waiting list for main lines	EAP Infrastructure Flagship
		Access	Total capacity of local public switching exchanges	International Telecommunication Union Statistics and Database
			Percentage of population covered by mobile cellular telephone network	
			3G/4G Mobile Network Coverage (% to population)	
			International Internet bandwidth per inhabitant	
		Actual Usage	Active Fixed Telephone Lines per 100 population	International Telecommunication Union Statistics and Database
			Percentage of localities with telephone services	
			Mobile Cellular Subscriptions	
			Internet Users(per 100 people)	
Percentage of households with Internet access				
Public Wireless Local Area Network (PWLAN) access points				
Percentage of localities with public Internet access centers (PIACs)				
Fixed broadband internet subscribers (per 100 people)	World Bank EAP Infrastructure Flagship			
Income per fixed and mobile telecom line (including prepaid mobile)				
		Fixed broadband Internet access tariffs per month (as % of income)		

ICT: Indicators and Series (2)



Connect all through readily available communication technology	Availability of latest communication technology	Service Quality against Unit Cost	Residential monthly telephone subscription and Residential telephone connection charge	World Bank EAP Infrastructure Flagship
			Price of three minute local call and analog cellular 3 min call	
			Telephone faults per 100 main lines	
			Analog cellular monthly subscription charge	
	Safety & Future Plan	Service Quality against Unit Cost	Total number of mobile cellular subscriptions to low and medium speed access to data communications	International Telecommunication Union Statistics and Database
			Number of mobile cellular subscriptions with access to data communications at broadband speeds	
			Percent of fixed telephone lines connected to digital exchange	
			Average Internet subscription tariff	
			ISDN Subscriptions	
			Secure Internet servers (per 1 million people)	
Safety & Future Plan	Service Quality against Unit Cost	Investment in telecoms with private participation(current US\$)		
		Total National Expenditure on Telecommunication		
Safety & Future Plan	Service Quality against Unit Cost	ICT goods imports (% total goods imports)	UN Statistics Division's COMTRADE database	
		Total ICT related exports (% of total exports)		

Suggestions & Future Plans

- ✓ Collection of Data
- ✓ Choice of Appropriate Indicators
 - ✓ Accessibility and Quality Dimensions
 - ✓ Modes
 - ✓ Data Availability
- ✓ Weighting
- ✓ Extrapolation of global/regional/country trends if possible
- ✓ Aspirational numbers based on cross-sectional comparison if necessary (e.g., Increase global rail density to 20% of the world leader Germany's 2010 level by 2030.)