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Technology Needs Assessment in the Transport Sector

Evaluation of TNA Country Reports and the UNFCCC TNA Handbook

Daniel Bongardt, GTZ, Bangkok, 25.09.2009

Key activities of SUTP project

Developing and Disseminating Resources

Sharing Experiences and Best Practices

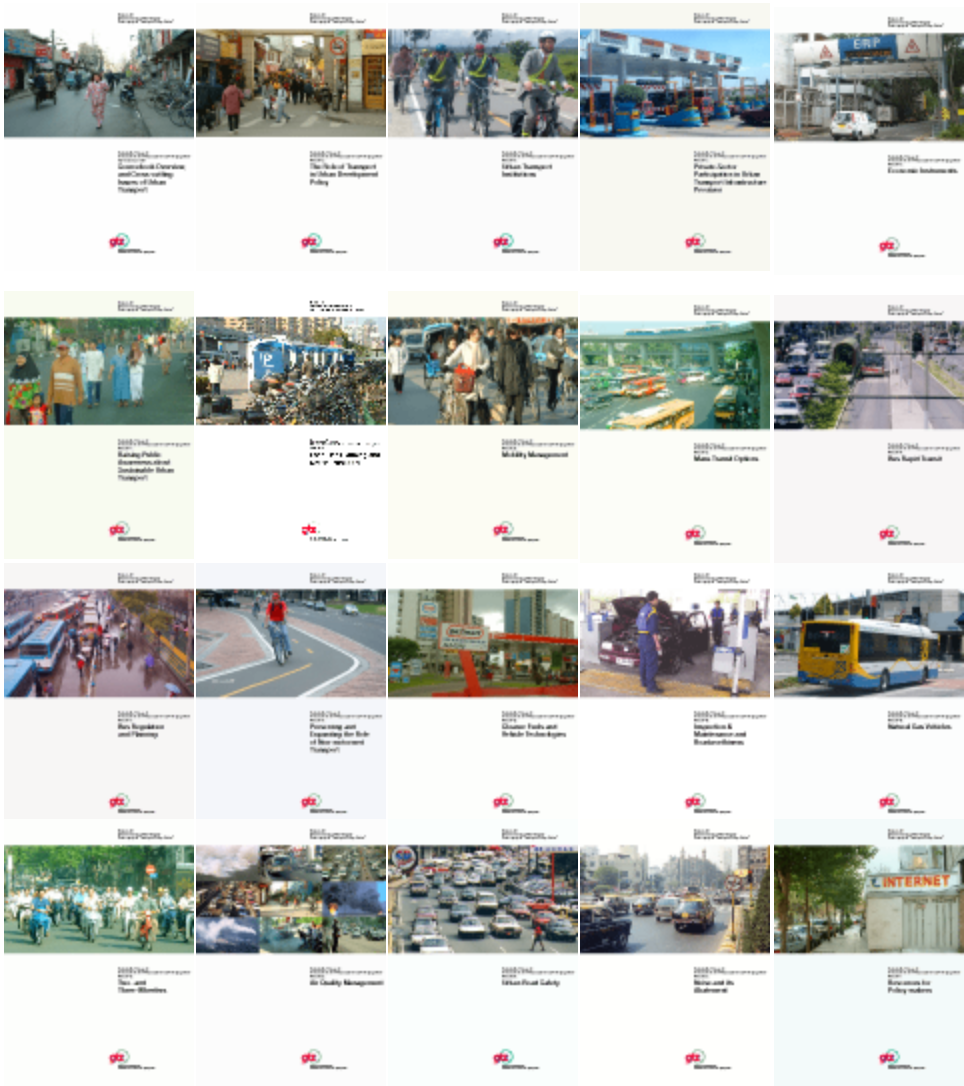
Implementing Projects

•World Cup 2010: Bus Rapid Transit System Johannesburg
• Improvement of Transport Conditions in Sibiu / Romania
•Sustainable Urban Transport Project- Indonesia

- Increasing **capacity** of municipal staff
- Changes in urban transport **policy**
- Development of sustainability

Material for Sustainable Transport

- Sourcebook **(at present 26 modules)**
  - print
  - online version
  - PDF
  - HTML format
  - PowerPoint presentations
- Training material
  - print
  - online version
  - PDF and partially HTML
  - PowerPoint presentations
- Online training courses material
- Photo CDs/DVD
- Videos

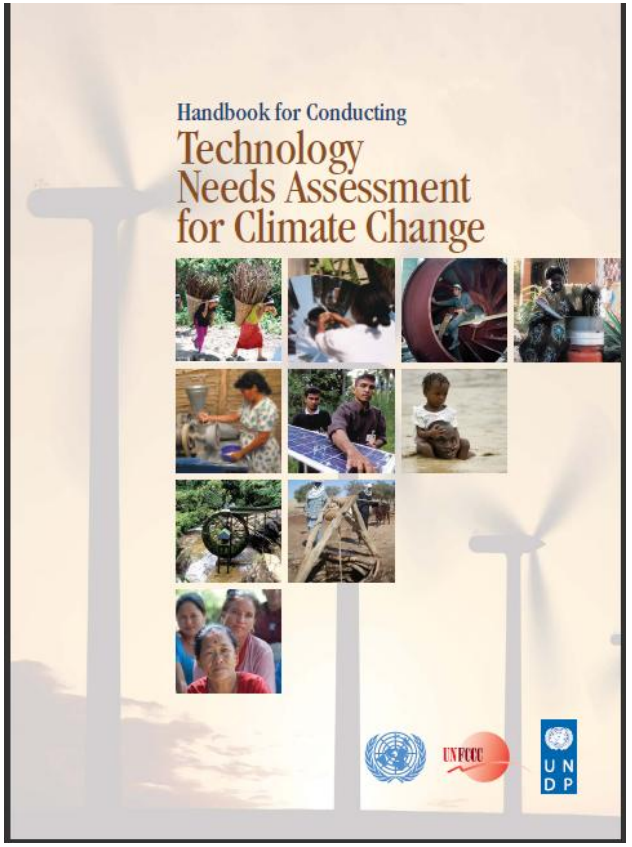


Content

- Background on Technology Transfer
- Analysis of UNDP TNA-Handbook and country reports
- TNAs and NAMAs
- Conclusion

Important Documents

- Article 4, paragraph 5, of the Convention
- Decisions 4/CP.4 and 9/CP.5: Development and transfer of technologies
- Technology Need Assessment Country Reports (about 90 available on www.unfccc.int); 47 include a transport chapter
- UNFCCC Technology Needs Assessment Synthesis Report
- UNDP TNA Handbook (recently revised)



Key elements to enhance technology cooperation under UNFCCC

- Joint R&D, enabling environments
- International Property rights & Trade
- Finance (Technology Fund)
- Link to national policies

→ differentiated according to needs by sector and stage of technological maturity

Background: Approach to Technology Transfer (4/CP.7)

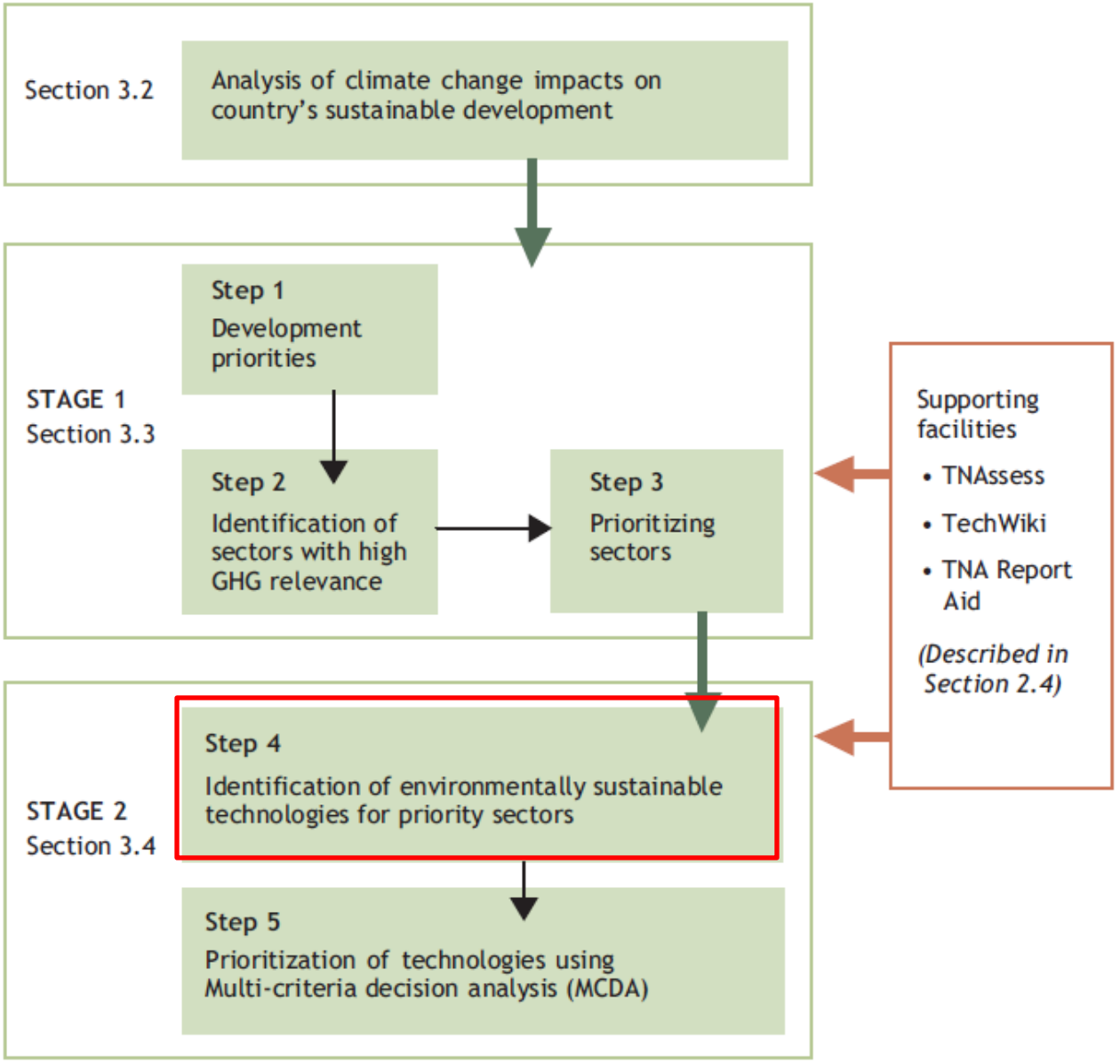
The successful development and transfer of ESTs and know-how requires …

- a countrydriven, integrated approach,
- at a national and sectoral level.
- cooperation among various stakeholders (the private sector, governments, the donor community, etc.),
- activities on technology needs assessments,
- technology information,
- enabling environments,
- capacity building and mechanisms for technology transfer.

Technology Needs Assessments (TNAs)

- A **tool for implementation** of Article 4, paragraph 5, of the Convention.
- TNAs identify and determine the mitigation and adaptation **technology priorities** of Parties other than developing country Parties.
- TNAs involve different stakeholders in a **consultative process**
- TNAs identify the **barriers to technology transfer** and measures to address these barriers through **sectoral analyses**.
- Activities may address **soft and hard technologies**, such as mitigation and adaptation technologies, identify regulatory options and develop fiscal and financial incentives and capacity building.
- The purpose of TNAs is to **form the basis for a portfolio of EST** projects and programmes
- **COP 15: TNAs as a basis for NAMAs ?**

TNA Procedure



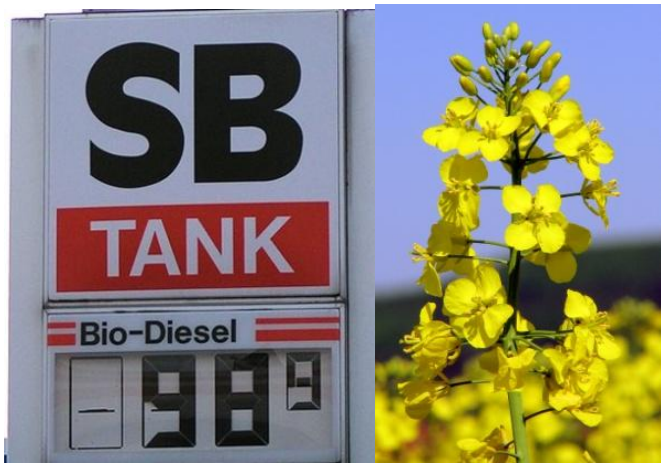
TNA Handbook: Transport measures

Some measures proposed in the are readily taken up…

Cleaner Technologies

- LNG / LPG
- Hybrid buses and cars

Low-carbon fuels



Mitigation Technology Options in TNA-Handbook

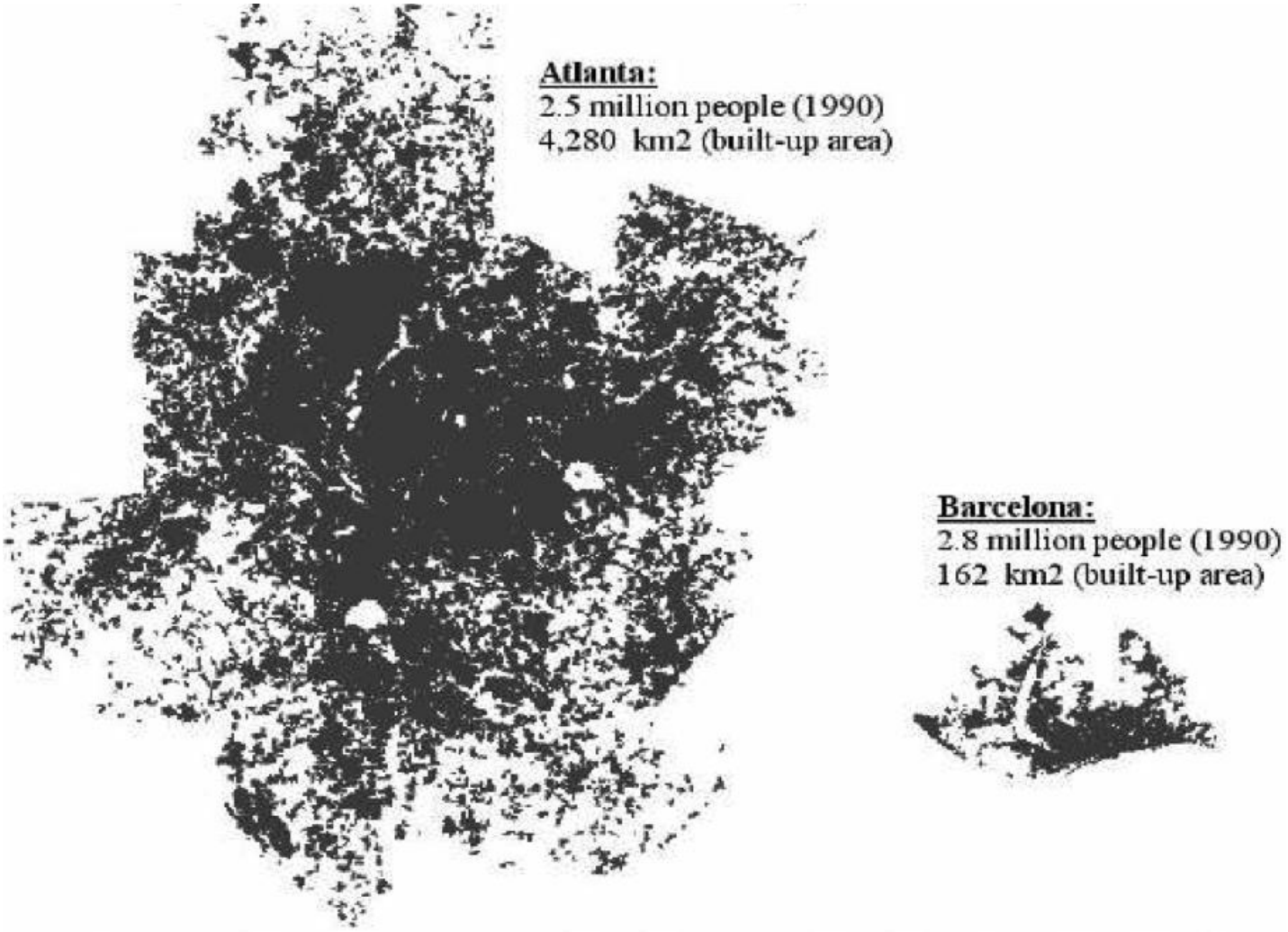
Energy saving / fuel switch	Hybrid technology (cars, buses)	S	Short
Energy saving	Vehicle add-on technologies (low friction oil, fuel-efficient tires)	S	Short
	Black carbon control technologies (e.g., particulate traps)	S	Short
	Vehicle technology improvements (e.g., aerodynamics)	S	Short to medium term
	Freight logistics improvements / geographic information system (GIS)	S	Short
	Truck stop electrification	S	Short
	Driver information technologies	S	Short
	Efficient diesel engines	S	Short
	Management technologies (traffic signal synchronization, intelligent systems)	S	Medium to long term
Fuel switch	Electric plug-in technology	S	Medium to long term
	LNG technology	S	Short to Medium
Fuel switch / renewable technology	Low carbon alternative fuels (cellulosic ethanol, biodiesel, algae)	S	Short
	Hydrogen	S	Medium to long term
Fuel cells	Molten Carbonate Fuel Cells	S	Long term
	Polymer Electrolyte Membrane (PEM) Fuel Cells	S	Long term
	Direct Methanol Fuel Cells	S	Long term
	Alkaline Fuel Cells	S	Long term
	Phosphoric Acid Fuel Cells	S	Long term
	Solid Oxide Fuel Cells	S	Long term
	Regenerative fuel cells	S	Long term

Also technologies …


Sport
Utility
Vehicle


For cars
For people

Built-up Area of Atlanta and Barcelona at Same Scale



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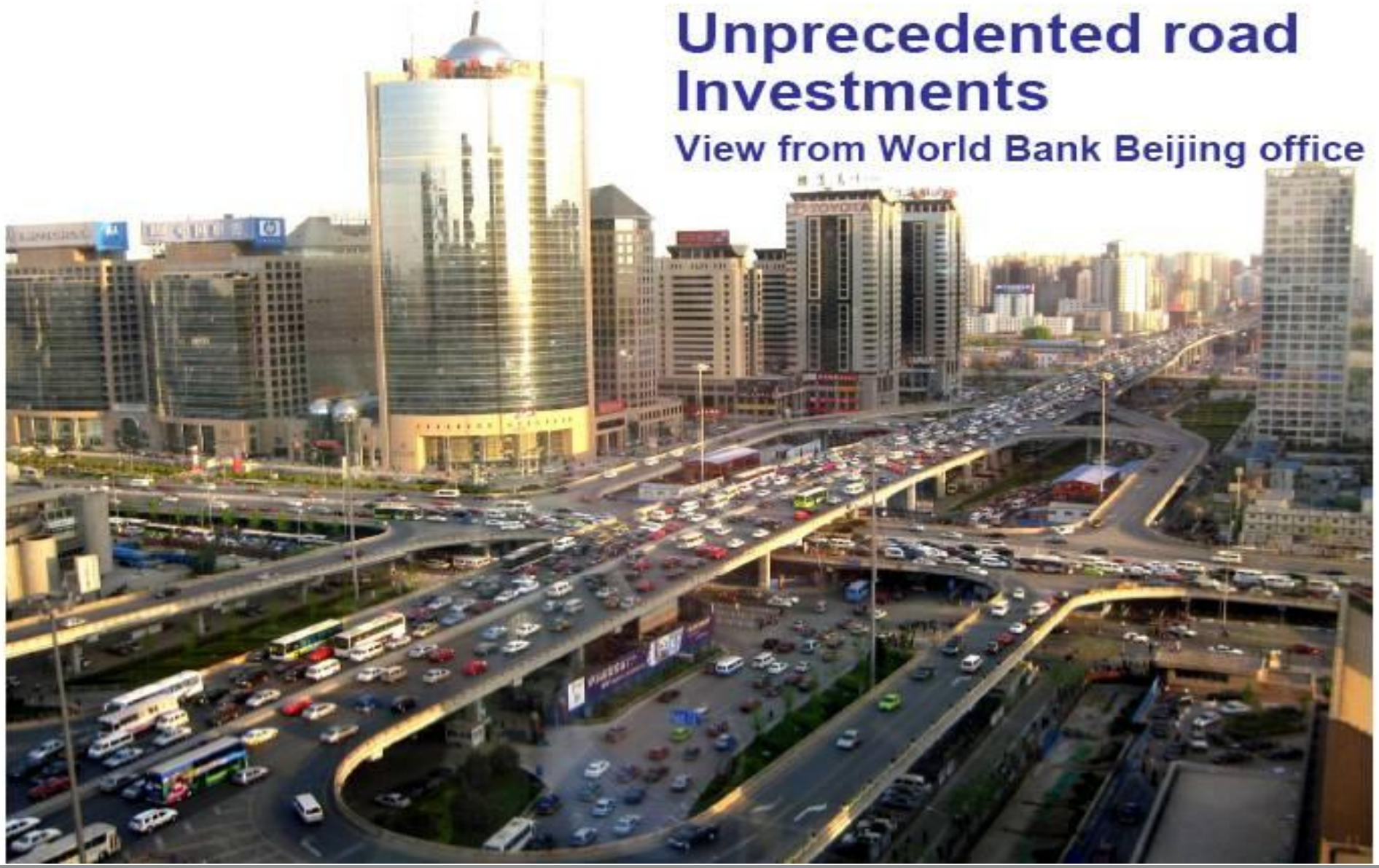
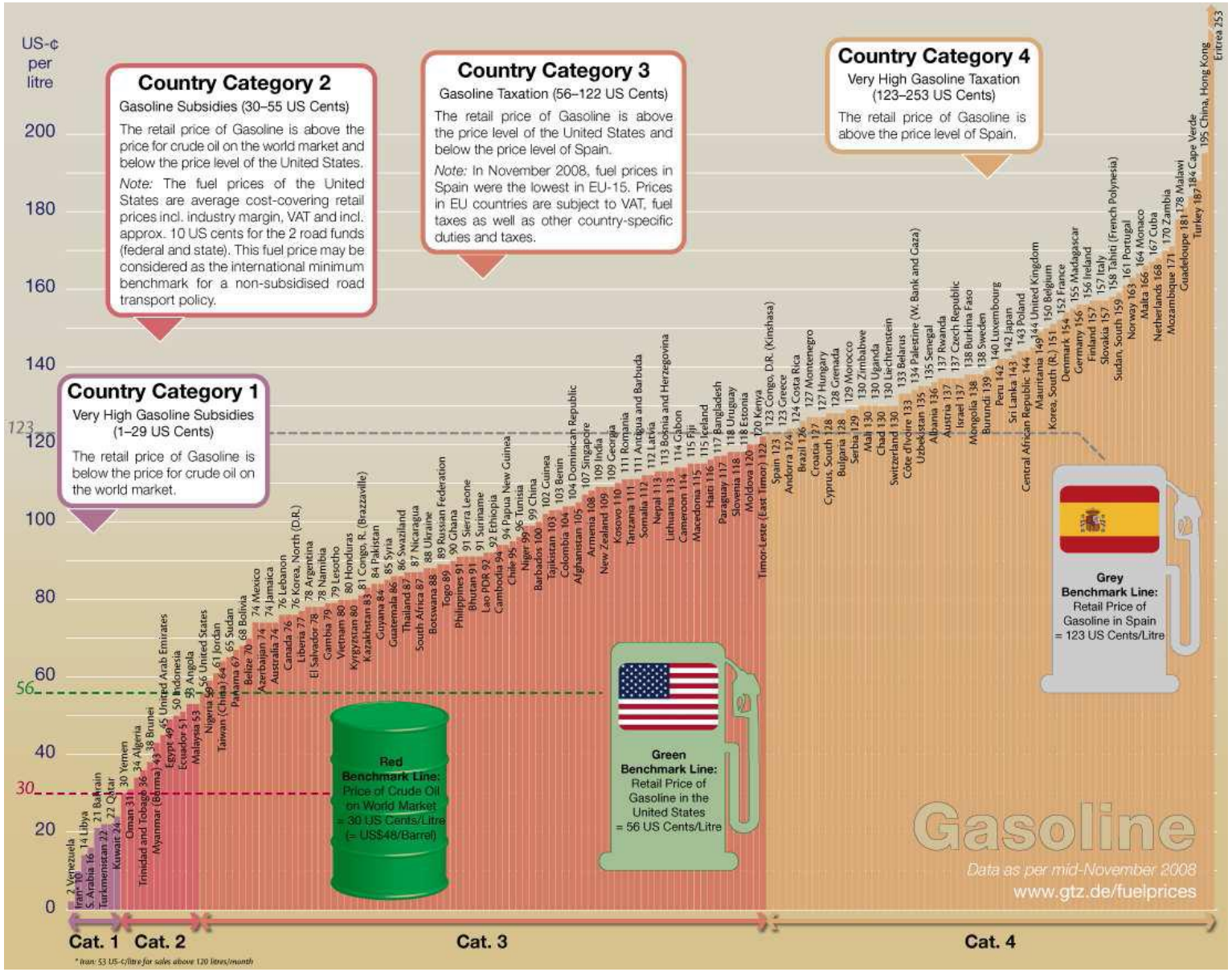
Unprecedented road Investments

View from World Bank Beijing office



Fuelprices

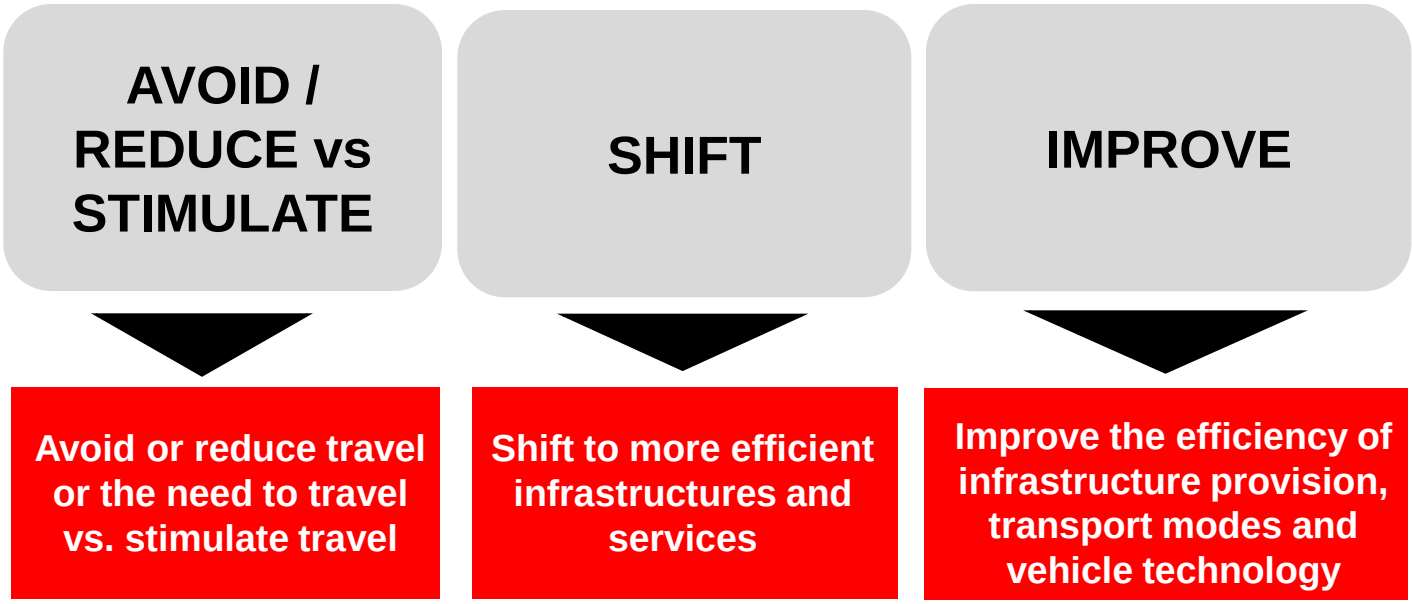

US-¢ per litre
Country Category 1
Very High Gasoline Subsidies (1–29 US Cents)
The retail price of Gasoline is below the price for crude oil on the world market.
Country Category 2
Gasoline Subsidies (30–55 US Cents)
The retail price of Gasoline is above the price for crude oil on the world market and below the price level of the United States.
Note: The fuel prices of the United States are average cost-covering retail prices incl. industry margin, VAT and incl. approx. 10 US cents for the 2 road funds (federal and state). This fuel price may be considered as the international minimum benchmark for a non-subsidised road transport policy.
Country Category 3
Gasoline Taxation (56–122 US Cents)
The retail price of Gasoline is above the price level of the United States and below the price level of Spain.
Note: In November 2008, fuel prices in Spain were the lowest in EU-15. Prices in EU countries are subject to VAT, fuel taxes as well as other country-specific duties and taxes.
Country Category 4
Very High Gasoline Taxation (123–253 US Cents)
The retail price of Gasoline is above the price level of Spain.
Red Benchmark Line: Price of Crude Oil on World Market = 30 US Cents/Litre (= US$48/Barrel)
Green Benchmark Line: Retail Price of Gasoline in the United States = 56 US Cents/Litre
Grey Benchmark Line: Retail Price of Gasoline in Spain = 123 US Cents/Litre
Gasoline
Data as per mid-November 2008
www.gtz.de/fuelprices
Cat. 1
Cat. 2
Cat. 3
Cat. 4
* Iran: 53 US-¢/litre for sales above 120 litres/month

What needs to be addressed?

- Promoting awareness among people
- Encouraging Public Transport
- Encouraging non-motorised transport (walking, cycling)
- Integration
- Providing alternatives

Addressing the Key Challenges…

… through three basic routes



Analysis of TNA Country Reports

Transport-related measures / issues identified in TNA country reports										Hits (pages)
	Infrastructure			Vehicle and Fuels			Political Framework			
Country	Public Transport	Non-motorised Transport	Land use planning	Emission / Fuel Quality Standards, Technical checks	Cleaner Technologies	Biofuels	Economic and Fiscal Instruments	Public Awareness	Traffic & Demand Management	
Albania	✓									p. 45, 63
Armenia	✓			✓	✓		✓			pp. 30
Azerbaijan	✓				✓	✓				pp. 21
Benin	✓		✓		✓		✓			p. 6, 15
Bolivia	✓	✓		✓				✓		pp. 57, 66
Botswana					✓				✓	pp. 25, 65

Transport-related GHG mitigation measures …

… identified in TNA country reports

Measure	Frequency of mention in TNA Country Reports	Included in UNDP TNA Handbook
Public Transport Improvements	28	✗
Non-Motorized Transport	6	✗
Land Use Planning	3	✗
Emission / Fuel Standards, Technical Checks	16	(✓)
Cleaner Technologies	31	✓
Biofuels	6	✓
Economic and Fiscal Instruments	3	✗
Public Awareness	4	✗
Traffic and Demand Management	9	(✓)

… while other measures cited in Country Reports are not yet included in the TNA Handbook:

- Public Transport

- Non-Motorized Transport

- Several forms of regulatory instruments (planning, economic incentives, demand management, . . .)

Current TNA Country Reports

- Country Reports vary widely with regard to coverage of transport issues, i.e. few sentences to12 pages for transport
- Few country reports are written in accordance with the recommendations formulated in the current UNFCCC TNA Handbook *(not surprisingly, because most of the reports are more than 5 years old)*
- Country Reports include several GHG Mitigation measures proposed in the UNFCCC TNA Handbook, but often go beyond the handbook
- Several measures in the TNA Handbook, such as Fuel Cells and Hydrogen, are almost not taken up (*technological mismatch!?)*

Example: The TNA Country Report of Indonesia

Good practice	*Possible Improvements*
- Analytic approach - base line information ons - Evaluation of a wide range of mitigation options wit - Analysis of costs and benefits - Elaborated proposal for an implementation plan, - includes information on relevant stakeholders in Indonesia	- Information about underlying information

Example: The TNA Country Report of Mauritius

Good practice	*Possible Improvements*

- Analytic approach
- Baseline data (as far as available)
- Evaluation of current technologies and possible options
- Reference to local political and institutional framework
	- Decision matrix for possible technologies to be adopted seems biased towards
	  - a light rail system and
	  - bi-fuel technologies
	- NMT and regulatory measures are dismissed as
	  - “rather recreational activity” and
	  - “socially not acceptable”.

Recommendations

- Many of the actions proposed in the Country Reports are **comparatively low-tech and low cost** and offer several co-benefits!
- The UNFCCC TNA Handbook might profit from including further **mitigation options on transport** in future editions
- For having **TNAs as a basis for NAMA development**, it would be crucial to include issues such as the promotion of Public Transport, NMT and others (e.g. capacity building)
- The proposed **TechWiki,** which will serve as primary source of information for authors of future TNA Country Reports and needs to include sustainable options

Discussion

- What are suitable technologies in the transport sector?
- How to achieve a better analysis of technology and capacity building needs?
- Can TNAs offer a sound basis for NAMAs?
- Who should be involved in conducting TNAs (transport sector)?
- How can GTZ support the development of TNAs?

Thank You

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