



ConceptT Study Tour 2010
Research

Main objective



To develop a clear understanding of the role sustainability plays in civil engineering projects in Brazil and how this compares to the Netherlands

Research Structure



- Macro (Stienstra)
 - what about Brazil
- Meso (Stienstra)
 - what about civil engineering in Brazil
- Micro
 - what about projects in Brazil that we visit

Sustainability



- 3 P-s
 - People - Planet - Profit/Prosperity
- 3 E-s
 - Environment - Economy - social Equity
- Perspective
- Time frame

Micro Study - Themes



- Mega Events
- New Infrastructure
- People



Trias Energetica (1996)

(Executive, Legislative, Judicial)

Translation to transport

- Reduction of Volume
 - demand management
- Towards sustainable structures
 - Infrastructures
 - operations
- Efficiency
 - Hybrid, electric vehicles

Mega Events



Rio 2016



FIFA WORLD CUP
Brasil

Mega events - transport



- Accessibility of sport venues
- Public transport and traffic management
 - Monorail in Manaus, Arena da Amazonia
 - T5 BRT, Barra da Tijuca, Rio de Janeiro
 - Traffic (demand) management, João Havelange stadium

Mega events - transport



- PT initiatives are sustainable
 - Transport modes are environmentally friendly
 - ticket prices are relatively low
 - BRT is low tech, low construction cost
 - monorail maybe more a showcase
 - post-event perspectives are good
- Traffic (demand) management unclear
 - Emissions play no role
 - Current problems indicate a challenge

Mega events - stadiums



- Grolsch Veste – Arena da Amazonia
 - Water (enforced by FIFA)
 - Participation – social sustainability
 - Working methods (step 1 and 3, reduce volume and efficiency)
- Highly comparable
- Post event perspectives uncertain



Economy



- New infrastructure
 - Follow demand
 - Economic development
 - Reduce environmental impact
- LUTI



Amazon – contradictions

bridge over Rio Negro



Amazon – contradictions

bridge over Rio Negro



Bridge Rio Negro



- Was regarded as a sustainable project in almost all aspects
- However, on second thought some serious reservations concerning long term environmental effects of economic development of the Amazon

Amazon – contradictions

Balbina dam



Balbina dam

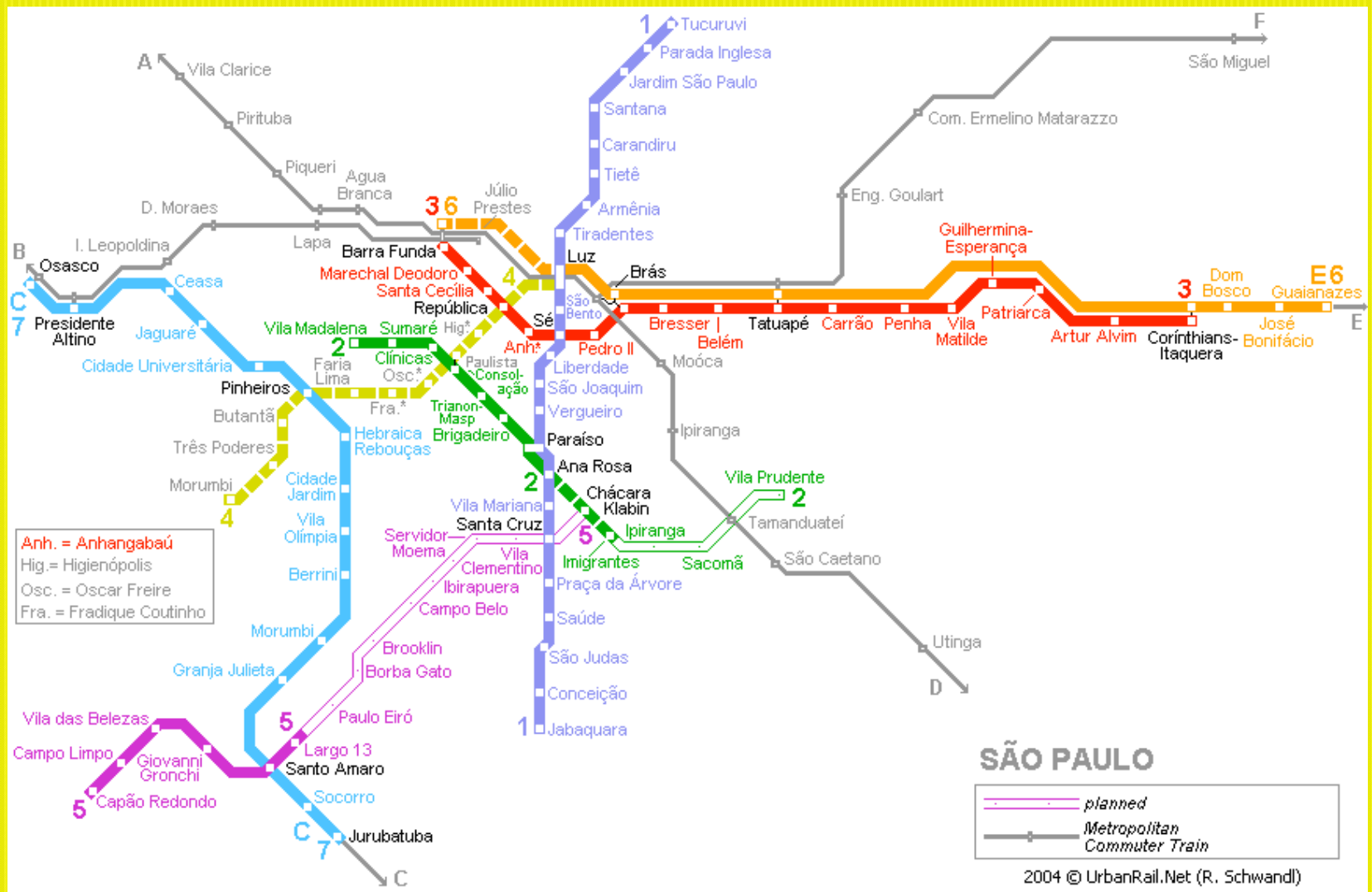


- Regarded as a big mistake, unsustainable at merely all aspects, except maybe one:
infinite amount of energy

Deforestation



Metro Sao Paulo



Metro Sao Paulo



Metro Sao Paulo



- Sustainable at all aspects !

TAV - Sao Paulo - Rio



TAV - Sao Paulo - Rio



TAV Rio-SP



- Sustainable at all aspects!

Improving Life



Housing projects

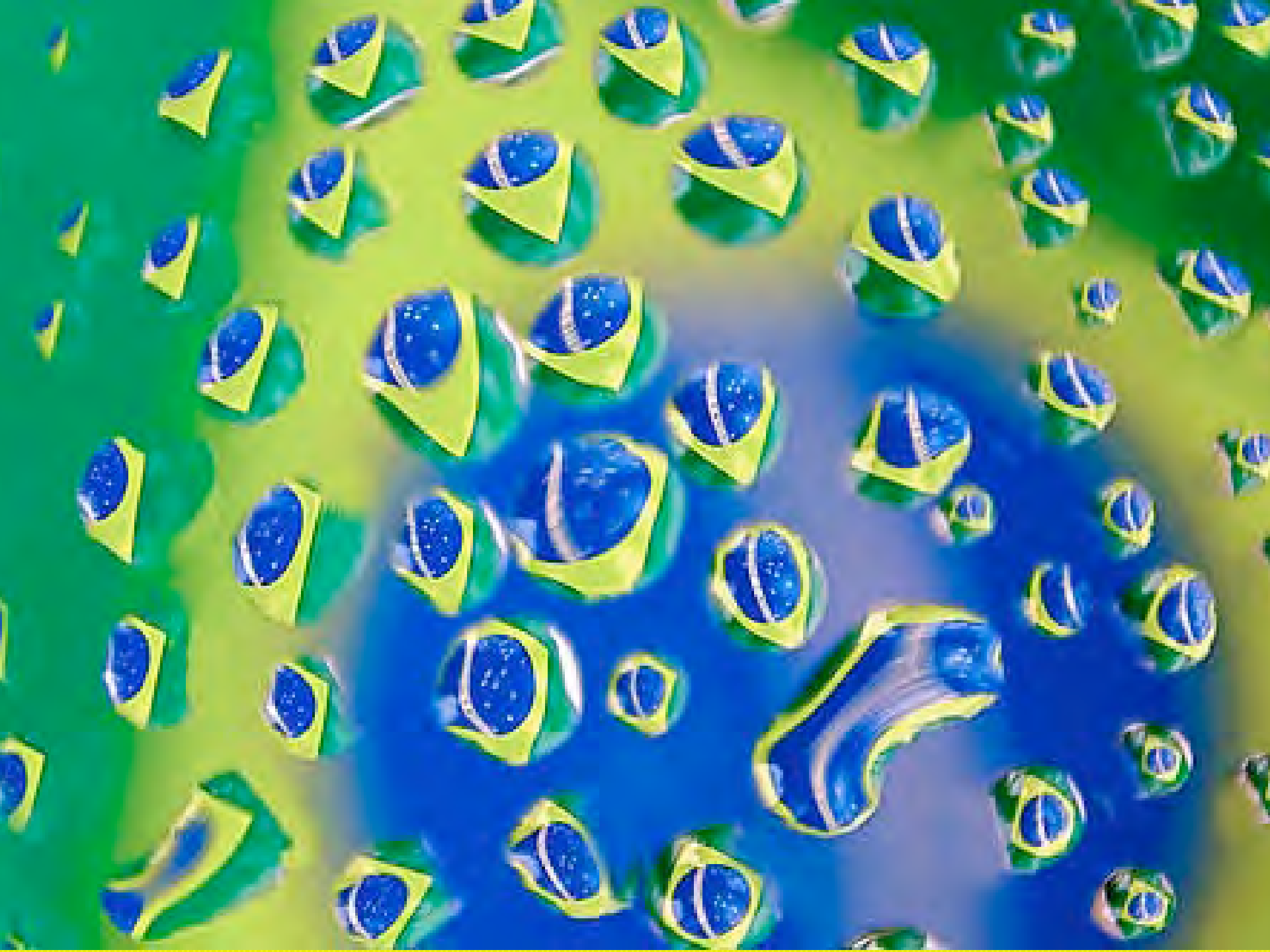




Housing



- Sustainable , except for profit!





Water



- Cleanup of Guanabara Bay
- LOGOS Engenharia Coast Sanitation Project

Water



- No sense of urgency
- Clearly planet and people benefit, but financing is a problem
- Only tourism and the mega events may serve as a catalyser

Favela



Conclusion



- On Brazil problems concerning sustainability are larger than they have ever been in the Netherlands
- In the Netherlands we are optimizing the existing, in Brazil they are constructing what was not there before

Conclusion



- Sustainability does play a role in Booming Brazil, maybe even a bigger role than in the Netherlands
- The Brazilian attitude is myopic. Since sustainability mainly deals with long term effects this is a potential problem

Conclusion



- Transport
 - Public transport is and will remain important
 - Problems concerning motorized private transport are enormous: massive congestion, sharp increase in car ownership, also motorbikes, huge problems concerning traffic safety and air quality
- Water & Construction
 - Little public awareness and little sense of urgency
 - Financing is a major problem.
 - Enforcement may be a good solution

Conclusion



- Sustainability has many faces
 - How to deal with the Amazon: economic development or not.
 - A booming economy in the major urban areas will increase many of the already existing problems concerning transport, water and housing. Brazil has not found an answer yet, but neither have we.

Propositions



1. Social inequity is the main obstruction for Brazil to become a sustainable booming country
2. Brazil would never be sustainable without the World Cup and the Olympic Games
3. Since Brazil is under construction and the Netherlands are under maintenance, the odds for Brazil to become sustainable are way better than for the Netherlands.