



## Congestion in Urban Areas

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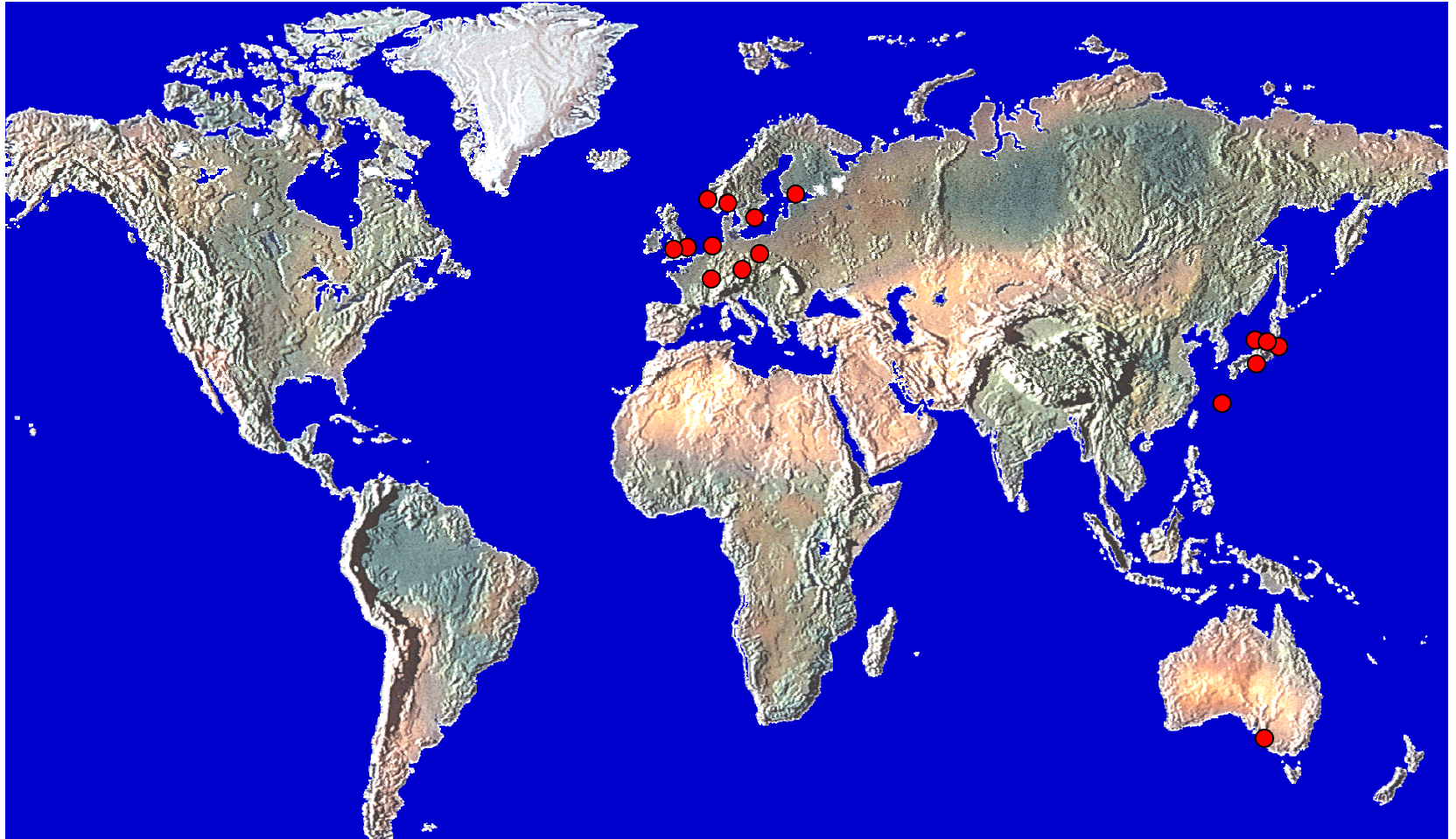
## Purpose of the study

How to mitigate congestion in urban areas?

Scope of work

- Literature overview on congestion
- An inquiry to members of PIARC Committee 2.3
- An analysis of different measures and their effectiveness on decreasing congestion in urban areas

## 20 cases from 16 cities



## Definition of congestion

“Traffic congestion exists when the demand exceeds road capacity.”



## Assessment of congestion

Economic impacts

Environmental impacts

- ✓ Energy consumption
- ✓ Impacts on air quality
- ✓ Traffic noise

Impacts on road safety

Social and structural impacts

# Congestion preventive measures

- Traffic and transport policy
- Infrastructure construction
- Regulatory measures
- Soft and technical measures



## Measures reported by city

	Prague	Warsaw	Helsinki	Geneva	Rotterdam	Kanazawa	Bergen	Oslo	Yokohama	Tokyo	Osaka	Naha	Stockholm	London	Bristol	Adelaide
<b>Transport policy</b> <ul style="list-style-type: none"> <li>Traffic and transport policy</li> <li>Comprehensive traffic and transport plans (including land use planning)</li> <li>Redistribution of road network</li> <li>Utilizing park-and-ride</li> </ul>	●	●														
<b>Infrastructure construction</b> <ul style="list-style-type: none"> <li>Enlarging the capacity of the road network</li> <li>Removing bottlenecks</li> <li>Enlarging capacity of rail network</li> </ul>							●	●	●	●	●					
<b>Regulatory measures</b> <ul style="list-style-type: none"> <li>Parking policy</li> <li>Pricing</li> <li>Traffic management</li> <li>Different use of the capacity of the infrastructure network</li> <li>Time management</li> </ul>			●										●	●	●	●
<b>Soft and technical measures</b>																●



## 1. Traffic and transport policy

- Coordinated transport- and land use policy
  - Reduction of travel demand
  - Promote public transport, walking and cycling
- Modal shift policy
- Redistribution of road network
- Utilizing park-and-ride

Brussels



## 2. Infrastructure construction

- Enlarging the capacity of the road network
- Removing bottlenecks
- Enlarging capacity of rail network

Yokohama Bay Bridge, Japan

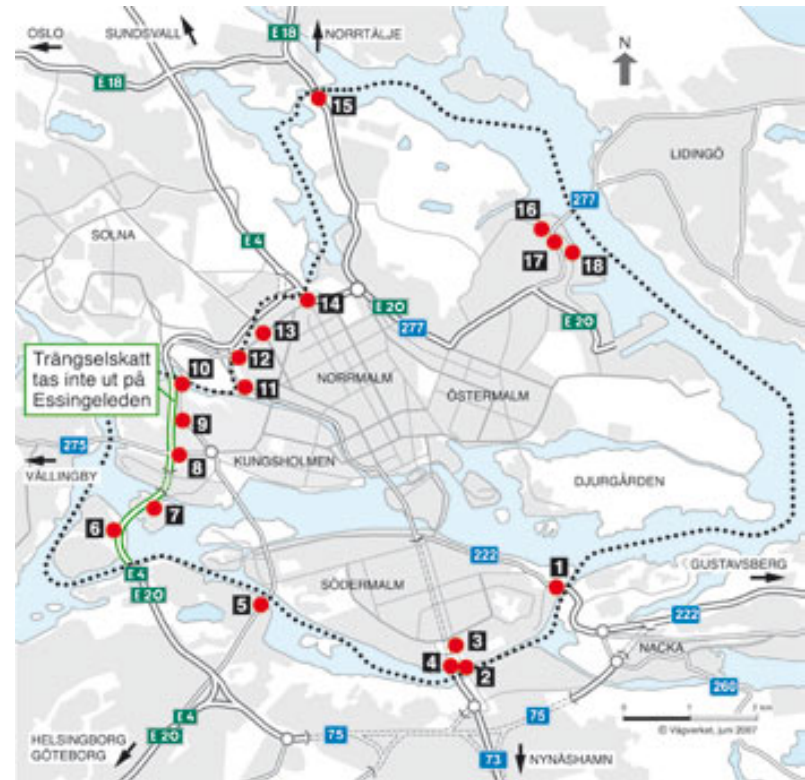


## 3. Regulatory measures

- Parking policy
- Pricing
- Traffic management
- Time management



Congestion tax in Stockholm  
Map of control points



## 4. Soft and technical measures

- Traffic signal coordination
- Ramp metering
- VMS (variable message signs) for alternative routing
- Dynamic speed control
- Lane control and use of hard shoulders
- Tidal flow systems
- Traffic information systems (mostly by Internet)
- In-vehicle information systems

## Recommendations

- Need for efficient transport policy
  - A consistent mix of measures
  - City specific
- Transportation and land use, mutual dependency
- Regulatory measures to meet long term challenges
- Infrastructure construction still necessary - but with limitations
- More focus on capacity of public transport infrastructure
- Soft and technical measures - great possibilities