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MANAGEMENT OF CONGESTED AREAS AND ROAD CORRIDORS

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MANAGEMENT OF CONGESTED AREAS AND ROAD CORRIDORS

Overview

- Corridor definition
- What is congestion?
- Causes of congestion
- Case studies
- Strengths and weaknesses
- Success factors
- Lessons learnt

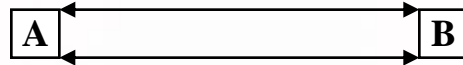


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Definition of a 'Corridor'

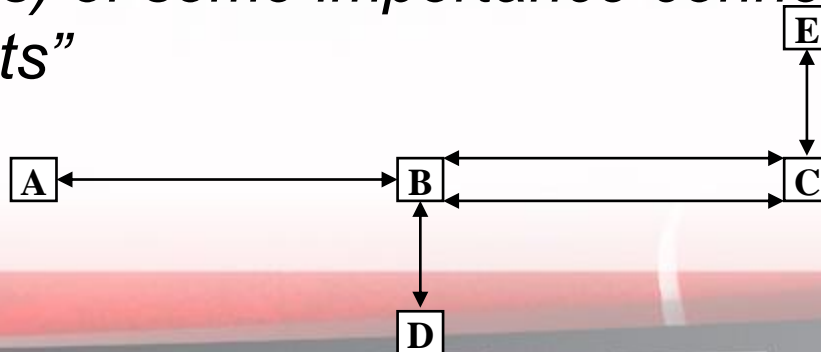
- PIARC defines a road traffic corridor as:

“A set of essentially parallel roads connecting two points”



- Given multiple possible variations, the definition could be:

“road(s) of some importance connecting two or more points”



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Corridor Characteristics

- Volume
- Traffic diversity
- Multi-modal
- Jurisdictional boundaries
- International borders
- Urban and rural
- Ownership
- Quality of infrastructure
- Adjacent land use



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What is congestion?

- No unique definition.
- Is generally a result of an imbalance between supply (capacity) and desired use (demand).
- From the point of the user:

Congestion is the gap between the road network performance expected by users and how the road network actually works.

- Congestion can be recurring or non-recurring.



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Causes of congestion

- Inadequate base capacity (e.g. bottlenecks)
- Recurring demand spikes (e.g. commuter traffic)
- Work zones
- Incidents (e.g. crashes)
- Special events/emergency needs
- Weather
- Poor signal timing/coordination



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Case Studies

- Over 50 case studies have been collected
- From over 15 countries
- Both successful and unsuccessful initiatives
 - Description and type of application
 - Objectives and challenges
 - Results and measures of effectiveness
 - Funding arrangements
 - Lessons learnt



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Addressing Congestion (a) Non-Recurring Congestion

- Traffic incident management
- Planned special events traffic management
- Work zone management
- Real time traveller information



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Addressing Congestion (b) Recurring Congestion

- Congestion pricing
- Arterial management & traffic signal timing
- Physical capacity expansion / bottleneck mitigation
- Managed lanes / maximizing existing capacity
- Encouraging alternative modes
- Legal/regulatory measures



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Addressing Congestion

(b) Recurring Congestion (con'd)

- Institutional integration and coordination
- Behavioural initiatives
- Intermodal connectivity
- Integration with land use planning



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Example

Traffic Incident Management

- Finland and Sweden
- Weather related variable speed limits
- Automated road weather stations and roadside cameras enable speeds to be reflective of the prevailing road weather conditions



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Example

Planned Special Events Traffic Management

- Germany
- Tidal flow system in Hannover during large events such as EXPO 2000 or the FIFA World Cup
- In a semi-automatic system with over 1,000 single dynamic parts, hydraulic beacons, automatic barriers and video support a 16 km long area can be switched within 20 minutes



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Example

Work Zone Management

- Germany
- DORA (Dynamic Localisation of Maintenance Works)
- The GPS location of on-site warning sign trailers is transmitted to the traffic control centre to effectively enable network control



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Example

Real Time Traveller Information

- France
- Trial of travel time information in the Oisans Valley
- Can have severe congestion problems especially during winter weekends
- Uses cameras to calculate travel times at relatively low cost



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Example

Financial Incentives / Disincentives

- USA
- Implementation of High Occupancy Toll (HOT) lanes during peak hours on the I-35W in Minneapolis
- Conversion from High Occupancy Vehicle (HOV) lanes
- Reduce congestion, improve transit service and provide choice to drivers



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Example

Managed Lanes / Maximizing Existing Capacity

- United Kingdom
- Active Traffic Management on the M42
- Use of the hard shoulder during peak periods in conjunction with variable speed limits



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Example

Encouraging Alternative Modes

- Australia
- Requirement to licence all parking (except private residential) within the Perth central business district
- Revenue raised through a parking tax is used to fund the free Central Area Transit (CAT) bus system and the Perth Free Transit Zone (FTZ)



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Example

Institutional Integration / Coordination

- Austria/Slovenia/Croatia
- Traffic Management Plans (TMPs) have been established for rerouting/shifting traffic between two parallel corridors (Tauern, Pyhrn) across the Alps
- This includes incident classification, trigger thresholds, communication/coordination between countries



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Example

Behavioural Initiatives

- Australia
- TravelSmart initiative
- Large scale project involving direct contact with households to explore travel options and encourage the use of alternative modes
- Tools included local activity guides, journey planners, and maps showing walking, cycling and public transport routes



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Strengths and Weaknesses

- Different initiatives have different characteristics and outcomes.
 - Some case studies were a success, some failed.
- The specific characteristics and outcomes being sought for a given corridor/area will vary.
 - eg efficient freight movement, efficient border crossings, shorter commute times, etc.
- Given this, the suite of measures needed for any given situation will be unique.



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Key Success Factors

- Clear Objectives
- Thorough Analysis / Good Planning
- Complementary Measures / Strategy Integration
- Transparency
- Behavioural Change / Long Term
- Quick Win
- Provision of Information to the User
- Expandable / Flexible
- Lower Cost / Finance / Resources



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Key Success Factors (cont'd)

- Use of Existing Infrastructure
- Perceived Benefits
- Agency Cooperation
- Community Consultation
- Public / Government Acceptance
- Real Time / Automated
- Multi-modal
- Choice



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Lessons Learnt

- Congestion is caused by many sources.
- Multiple strategies must be employed to mitigate its effects.
 - e.g. capacity increases, behavioural change, maximising existing capacity, etc
- Selection of these strategies is dependent upon individual circumstances.
 - e.g. congestion pricing



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Lessons Learnt (cont'd)

- One recurring theme - reach out to the public.
 - inform drivers as to why a particular strategy is being considered/implemented, and/or
 - provide drivers with the necessary road information to allow them to make better trip decisions.
- This element is essential in moving congestion management from a 'passive' activity to an 'active' operations paradigm which maximises the efficiency and effectiveness of the infrastructure.



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Thank you

Gracias

Merci

