The Idea of Public Private Partnership

„Public Private Partnership get things moving which would otherwise get stuck in the investment backlog.“

- Are putting infrastructure projects on the map more quickly
- Shorter planning and construction times
- Lower overall lifecycle cost
- Easing the burden on public coffers
- Assumption of more risks by the private partner
Who is taking the Risk?
Structure of Infrastructure PPP-Projects

Client

- Concession agreement
- Direct agreement

Project Company (SPV)

- Shareholders agreement
- Finance agreement

Sponsors

- Shareholders agreement

Contractors

- D&C contract

O & M Company

Lenders

- O&M contract

Direct agreement
Insurer's Role

- **INSURER**
- **Client**
- **Project Company (SPV)**
- **Sponsors**
- **Lenders**
- **Contractors**
- **O & M Company**
What are the Risks?
Development Risk

- All expenses to be borne by the private sponsor at the developments stage before financial close
- No lenders or other parties committed at that stage

- No insurance protection available at that stage
Design Risk

- Structural damage during construction and operational periods (collapse, water leakage)
- Damage by natural perils due to inappropriate design during construction and operational periods (flooding, earthquake, windstorm)

- Design cover under Contractors‘ All Risk Insurance (CAR)
- Professional Indemnity Insurance
Construction Risk

- Structural damage (collapse, subsidence, fire)
- Theft
- Third party property/bodily injury
- Cost overruns, delays, penalties

- Material damage cover under Contractors’ All Risk Insurance
- Third Party Liability under CAR
- No performance guarantee cover
Causes of Underground Construction Failures

- Design Errors: 41%
- Force Majeure: 18%
- Insufficient Ground Investigation: 12%
- Defective Construction: 21%
- Lack of Communication: 8%

Source: TU Hannover
Force Majeure

- All Natural Hazards (Earthquake, windstorm, flood, lightning, etc.)
- Aircraft impact
- Nuclear radiation

✓ Cover for Natural Hazards under CAR and operational fire policies
✓ Adverse weather coverage
✗ No insurance protection available for aircraft impact and nuclear radiation
Performance deficits during construction due to malfunctioning of key equipment (e.g. TBMs)

Performance deficits during operation (e.g. unproven technology etc.)

No insurance protection available at that stage
Performance Risk

- Cessation of construction works due to bankruptcy of contractor or subcontractors
- Failure of concessionaire to comply with his contractual obligations

✓ Performance or completion bonds
✓ Concession bonds
Initial Revenue Risk

- Delays of the construction period due to insured accidents
  - Delay in Start-Up insurance
- Loss of revenue due to performance-related delays
  - No insurance protection available
- Traffic volume does not meet expectations
  - Traffic volume insurance
<table>
<thead>
<tr>
<th>Year</th>
<th>Project</th>
<th>Cause</th>
<th>Loss</th>
<th>Delay</th>
</tr>
</thead>
<tbody>
<tr>
<td>1994</td>
<td>Munich Metro, Germany</td>
<td>Collapse</td>
<td>US$ 4 million</td>
<td>10 months</td>
</tr>
<tr>
<td>1994</td>
<td>Heathrow Airport, UK</td>
<td>Collapse</td>
<td>US$ 141 million</td>
<td>14 months</td>
</tr>
<tr>
<td>1999</td>
<td>Hull Sewage Tunnel, UK</td>
<td>Collapse</td>
<td>US$ 55 million</td>
<td>26 months</td>
</tr>
<tr>
<td>1999</td>
<td>Bolu Tunnel, Turkey</td>
<td>Earthquake</td>
<td>US$ 115 million</td>
<td>36 months</td>
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<tr>
<td>2000</td>
<td>Taegu Metro, S. Korea</td>
<td>Collapse</td>
<td>US$ 24 million</td>
<td>9 months</td>
</tr>
<tr>
<td>2002</td>
<td>Autoroute A86, France</td>
<td>Fire</td>
<td>US$ 8 million</td>
<td>6 months</td>
</tr>
<tr>
<td>2003</td>
<td>Shanghai Metro, China</td>
<td>Collapse</td>
<td>US$ 80 million</td>
<td>47 months*</td>
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<tr>
<td>2004</td>
<td>Circle Line, Singapore</td>
<td>Collapse</td>
<td>t.b.a.</td>
<td>36 months*</td>
</tr>
<tr>
<td>2005</td>
<td>Barcelona Metro, Spain</td>
<td>Collapse</td>
<td>t.b.a.</td>
<td>24 months*</td>
</tr>
<tr>
<td>2005</td>
<td>Kaohsiung Metro, Taiwan</td>
<td>Collapse</td>
<td>t.b.a.</td>
<td>24 months*</td>
</tr>
</tbody>
</table>

* = estimate
Operational Risk

- Fire, flooding, collapses
- Traffic accidents
- Business interruption
- Third party liability

- Property All Risk insurance (PAR)
- Business interruption insurance
- Third party liability insurance
# Business Interruption (B.I. and Repair Cost)

<table>
<thead>
<tr>
<th>Year</th>
<th>Tunnel</th>
<th>Cause</th>
<th>B.I.</th>
<th>Repair Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>1996</td>
<td>Eurotunnel, France/UK</td>
<td>Lorry Fire</td>
<td>€ 204 million</td>
<td>€ 48.5 million</td>
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<tr>
<td>1999</td>
<td>Mont Blanc, France/Italy</td>
<td>Lorry Fire</td>
<td>€ 203 million</td>
<td>€ 189 million</td>
</tr>
<tr>
<td>1999</td>
<td>Tauerntunnel, Austria</td>
<td>Car Collision</td>
<td>€ 20 million</td>
<td>€ 8.5 million</td>
</tr>
</tbody>
</table>

* = estimate
Political Risk

- Change in legislation and law
- Confiscation, dispossession
- Strike, riot, civil commotion (SRCC)
- Denial of access
- Terrorism

- SRCC under CAR and PAR policies
- Terrorism cover available
- Political risk coverage
Insurance Aspects
Status Quo

- Insurance procurement for PPP/BOT projects typically towards the end of the project development stage.
- Demand for Delay in Start-Up insurance (DSU) has strong influence on availability of sufficient insurance capacity.
- Multi-line property and liability policies available.
- Comprehensive cover for entrepreneurial and political risks more problematic.
- Lenders' requirements sometimes critical (Wide coverage!)
Typical Project Insurance Products

Marine Cargo

Contractors’ All Risk Insurance
Third Party Liability/Professional Indemnity

Maintenance Cover

Guarantee Insurance

Delay in Start-Up

Workmen's Compensation Insurance

Fire Ins. and Fire Loss of Profit

Machinery Ins. and MLOP

Electronic Equipment Ins.

Public & Product Liability Ins.

Concession Bond

Performance Bond/Completion Bond

Operation

Maintenance

Design & Construction

Testing

Storage

Transport

Marine Loss of Profit
Risk Management
Set minimum standards for risk assessment and on-going risk management procedures for tunnelling projects.

- Define clear responsibilities to all parties involved in tunnel projects.
- Reduce the probability of losses happening.
- Reduce the size of claims when they happen.
- Set minimum standards for risk assessment and on-going risk management procedures for tunnelling projects.

A CODE OF PRACTICE FOR RISK MANAGEMENT OF TUNNEL WORKS

The International Tunnelling Insurance Group

16 January 2006
Operational Phase

- Structural fire protection
- Organizational fire protection
- Structures for traffic safety
- Fire detection
- Fire fighting
Conclusion

- High demand for PPP/BOT infrastructure projects particularly in developed countries or countries with low financial strength
- Large number of risks involved in development, construction and operation of such projects
- Wide range of insurance products available for risk transfer
- Professional risk management standards prime requirement for availability of comprehensive insurance cover
Thank you for your attention!

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