

**LISBOA 2010**  
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**16th World Meeting**

**Introduction of performance-based maintenance contract in expressways in Japan**

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# 1. Introduction

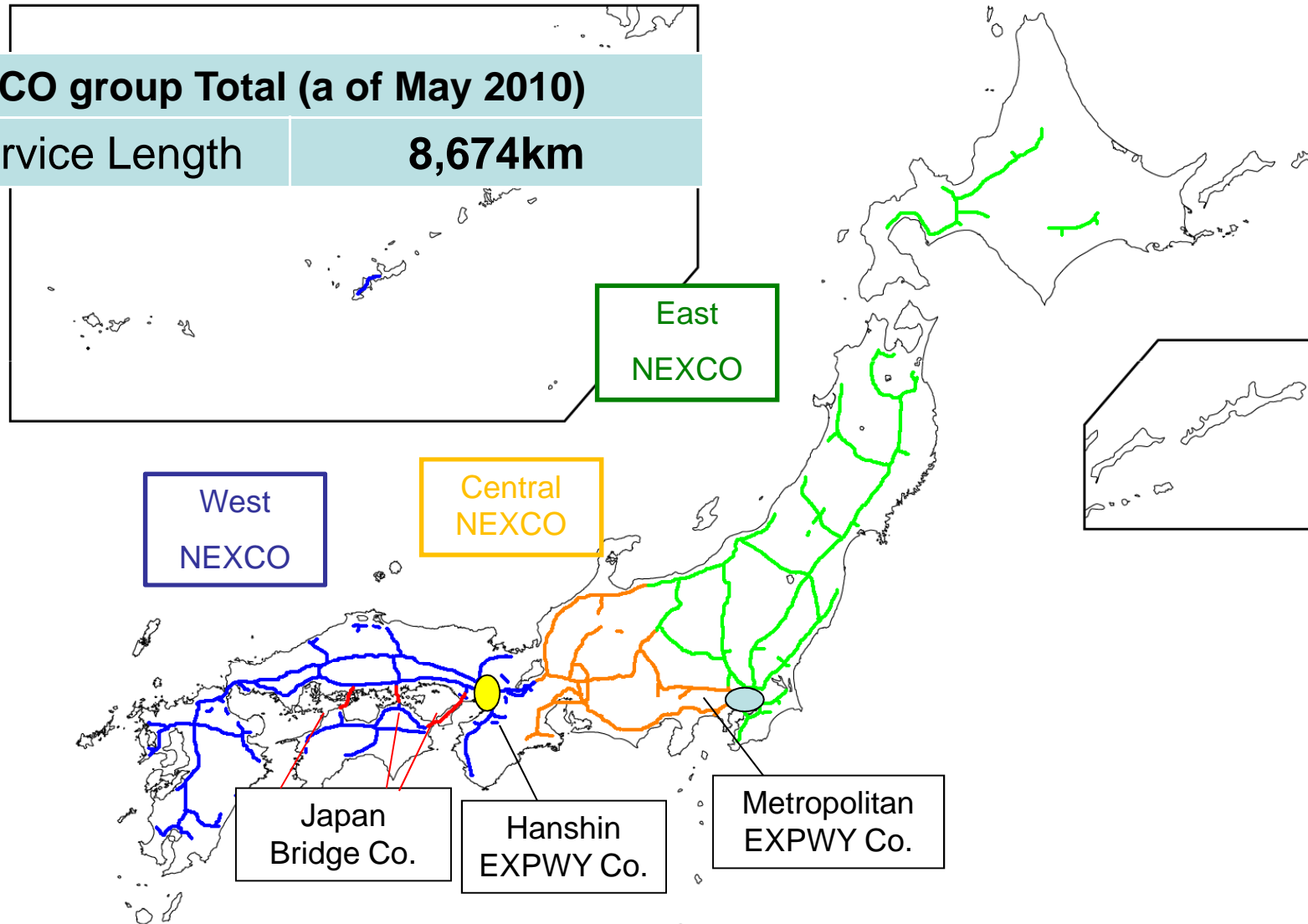
# Expressways in Japan



Sharing  
16th  
World

**NEXCO group Total (a of May 2010)**

Service Length	<b>8,674km</b>
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# Background



- We aim to ensure complete safety and reliability
- Efficient maintenance and management of deteriorating highway structures under severe budgeting restriction are becoming serious issues
- One of the solutions is to apply Performance-Based Contracting (PBC) method for routine highway maintenance



# Traditional and PPP-based Contracts



Table 1 Traditional Contract and PBC

	Traditional Contract	Performance-Based Contract
Items specified in Contract	Techniques, technologies, materials and quantities of materials to be used, time period	Performance criteria throughout the period
Decision-making	Client	Contractor
Payment	Based on "Inputs"	Based on "Outputs"

# Performance-Based Contract (PBC)

- Routine maintenance works are contracted out to private sectors
- Targeted performance level and functional requirements are indicated
- The contractor is responsible for decision-makings on maintenance strategy in order to ensure required performance criteria



# Advantages of PBC

- Cost savings in managing and maintaining road assets
- Uniform (fixed) annual expenditure for highway agencies
- Decreasing the workload for agency engineers
- Better customer satisfaction with road conditions and services
- Applying long-term maintenance strategy



# World's Experience

- USA Virginia Department of Transportation  
(Cost saving effects 10%-40%)
- USA Florida Department of Transportation  
(Routine Maintenance and Asset Maintenance)
- Transit New Zealand  
(30% decrease in professional costs and 17% decrease in physical works with traffic growth by 53%)

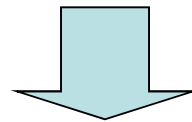


# 2. NEXCO-West Strategy



# NEXCO-West Routine Maintenance

- NEXCO-West's routine maintenance;
  - Executed by partner companies
  - Traditional contract (NEXCO-West orders partner companies “what to do”, “when to do” and “how to do”)
  - Partner companies don't have enough management ability



Innovative framework providing incentives to partner companies is required

# Advantages of Partner Company



Table 2 Partner Company and Outsourcing

	NEXCO-West -Partner Company	World's Experience -Outsourcing
Contract Period	Long	Short
Moral Hazard	Low Risk	High Risk
Cost Reduction	Low	High -Bid system
Sharing Common Goals	Good	Not good

- World's experience shows that outsourcing does well
- Few highway maintenance companies in Japan
- Partner company is better in the long term
- We made choice of the contract with partner company

# 3. The Pilot Project

# Pilot Project



Sharing the road



- Length 640 Lane km (two maintenance offices)
- Traffic Low
- Bonus No bonus (If above the criteria)
- Penalty No penalty (If below the criteria)
- Risk Contractor takes limited risk (e.g., No disaster risk)
- Payment Not Fixed
- Inspection Quarter annually
- Personnel Exchange Several engineers are dispatched from NEXCO-West

# Performance Criteria

Table 3 Performance Criteria for Each Asset Item

Items	Quantitative Criteria		Qualitative Criteria
	Routine Maintenance	Timeliness Requirement	
Road Sweeping and Cleaning	Amount of litters collected is 50t/year or greater	N/A	<ol style="list-style-type: none"> <li>1. No debris(sand,dirt) at roadside shoulder</li> <li>2. No litters or objects on roadways</li> </ol>
Vegetation Control	N/A	Complete trimming works for trees or vegetation affecting driver' safety within 6 hours of notification	<ol style="list-style-type: none"> <li>1. Ensure driver's visibility</li> <li>2. Delineators can be seen at nighttime</li> </ol>

# Performance Criteria

Table 3 Performance Criteria for Each Asset Item (continued)

Items	Quantitative Criteria		Qualitative Criteria
	Routine Maintenance	Timeliness Requirement	
Emergent Pothole Patching	N/A	Complete temporary patching and open traffic within 6 hours of notification	Temporary patching should function until the permanent repair
Attendance in Road Accidents	Recovery works shall be completed within 60 days	Response within 90 minutes of notification during normal business hours	(Non-emergency case) Temporary barrier shall be in effect until the permanent

- Target level of percentage satisfying the performance criteria is 80% for all asset items



Sharing the road



# Result of Survey

## Achievement and Target level of Performance Criteria

Items	Quantitative Criteria		Qualitative Criteria
	Routine Maintenance	Timeliness Requirement	
Road Sweeping and Cleaning	OK=100%/80%	N/A	OK=100%/80%
Vegetation Control	N/A	OK=99%/80%	OK=99%/80%
Emergent Pothole Patching	N/A	OK=100%/80%	OK=100%/80%
Attendance in Road Accidents	OK=99%/80%	OK=100%/80%	OK=100%/80%



# Lessons Learned



1. All performance criteria were achieved
  - Higher target performance criteria?
  - Seek optimal performance criteria
2. Improvement of efficiency in maintenance was less than expected
  - Improve management ability

# Next Actions



1. Seek Optimal target performance criteria
  - Check the relation between Outcome and Input
2. Improve management ability
  - NEXCO-West's engineers have been dispatched to the group company
  - Proper incentives (bonus & penalty)
3. Expand application of this project
  - Another nine offices carry out in FY2010
    - high traffic, urban area, many bridges

# Questions or Comments

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