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# **The maintenance of national road network in Japan**

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# Today's Presentation: Contents

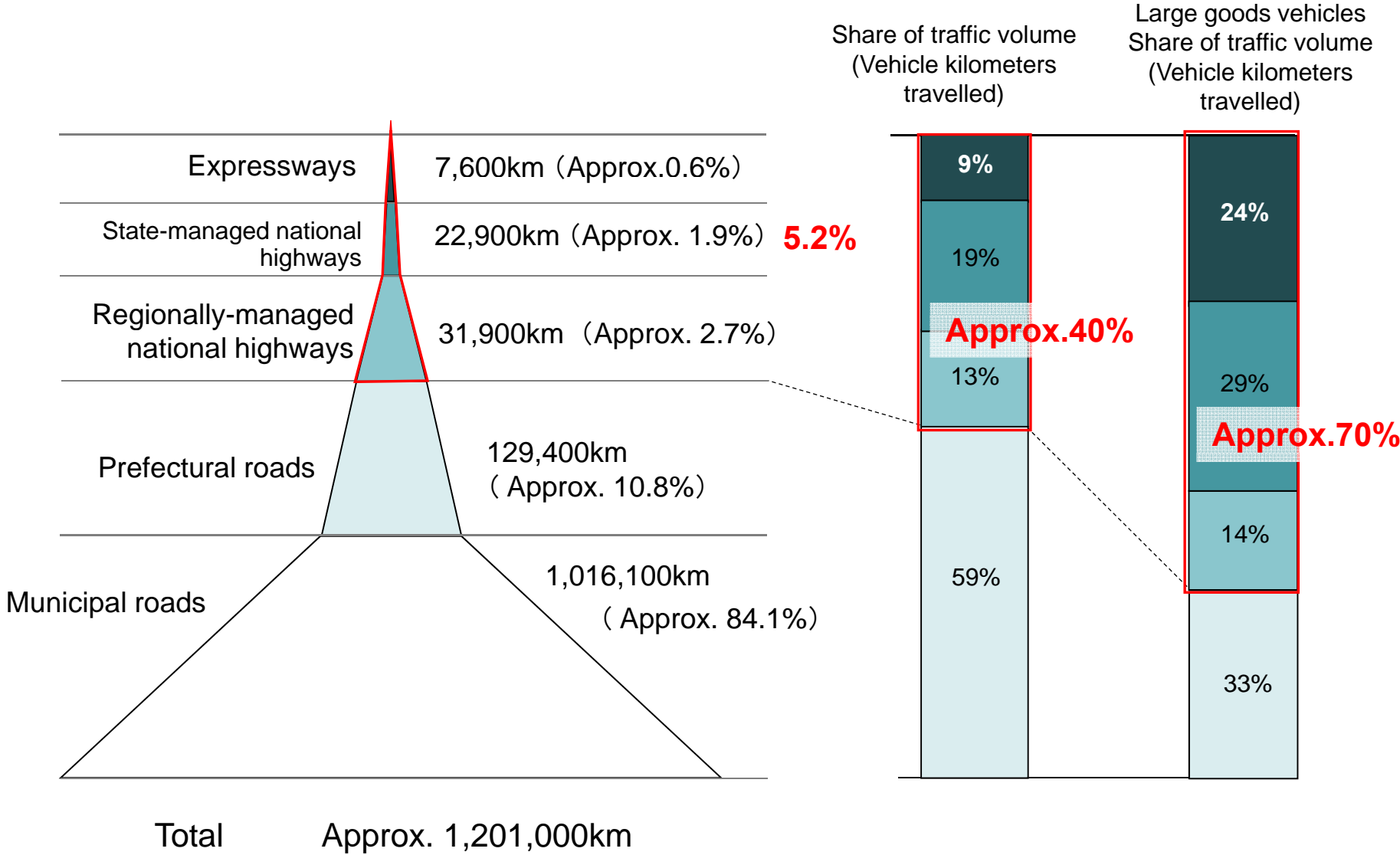
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1. Japan's road stock
2. Financial situation
3. Issues in the maintenance and management of road stock

# 1. Japan's road stock



# Classification of roads and total length of the road network



As of April 1, 2009

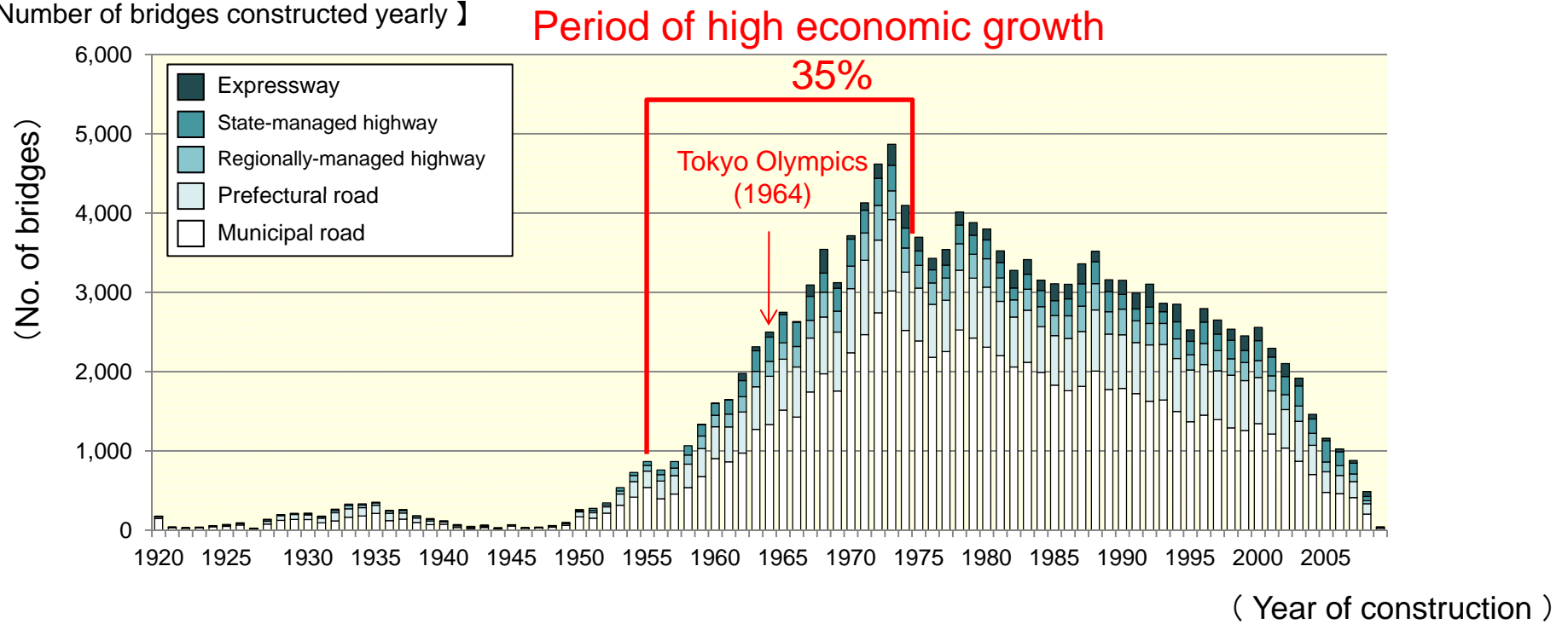
## Breakdown of road structure stock

	Length [km]	Structure				Paving [km <sup>2</sup> ]
		Bridge		Tunnel		
		No. of locations	Length[km]	No. of locations	Length[km]	
Expressway	7,642 (1%)	6,813 (4%)	1,175 (12%)	801 (9%)	780 (21%)	103 (2%)
State-managed highway	22,874 (2%)	11,902 (8%)	1,414 (15%)	1,257 (13%)	701 (19%)	218 (4%)
Regionally-managed highway	31,916 (3%)	13,227 (9%)	939 (10%)	2,325 (25%)	1,011 (27%)	219 (4%)
Prefectural road	129,377 (11%)	33,730 (22%)	2,566 (27%)	2,494 (27%)	789 (21%)	788 (15%)
Municipal road	1,016,058 (84%)	89,487 (58%)	3,504 (37%)	2,497 (27%)	412 (11%)	3,850 (74%)
National total	1,207,867 (100%)	155,159 (100%)	9,598 (100%)	9,374 (100%)	3,693 (100%)	5,179 (100%)

As of April 1, 2009

# Road bridge stock

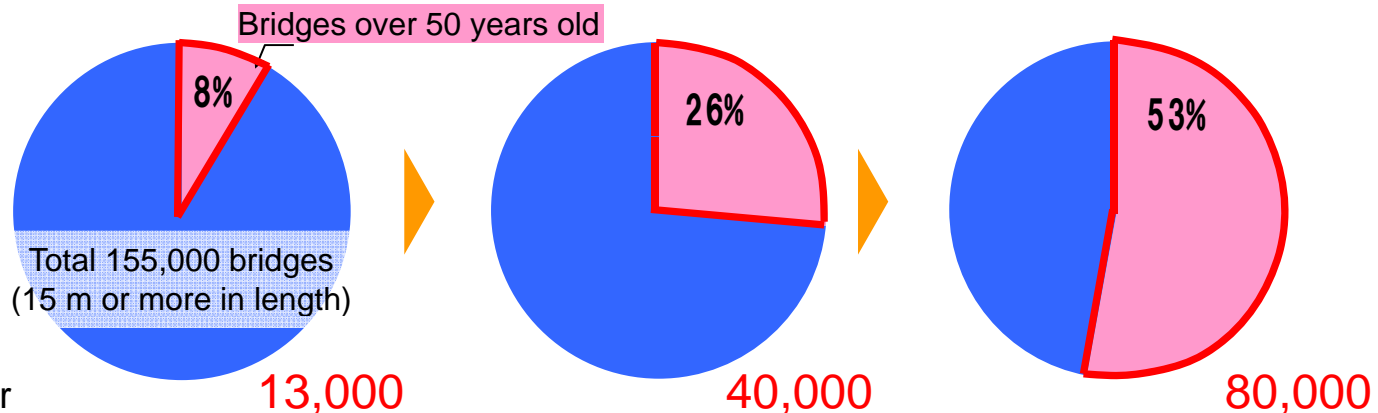
【 Number of bridges constructed yearly 】



Now (2010)

10 years from now (2020)

20 years from now (2030)

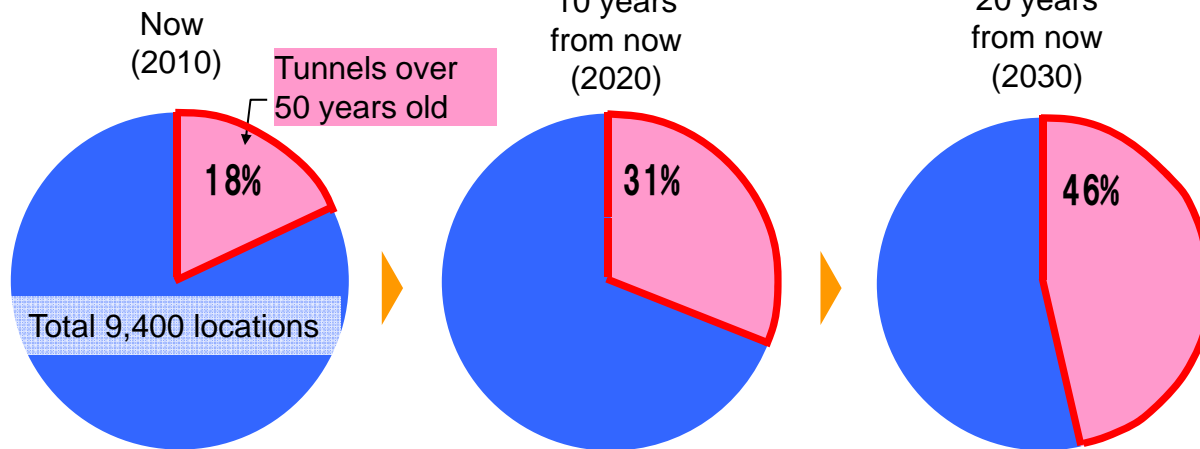
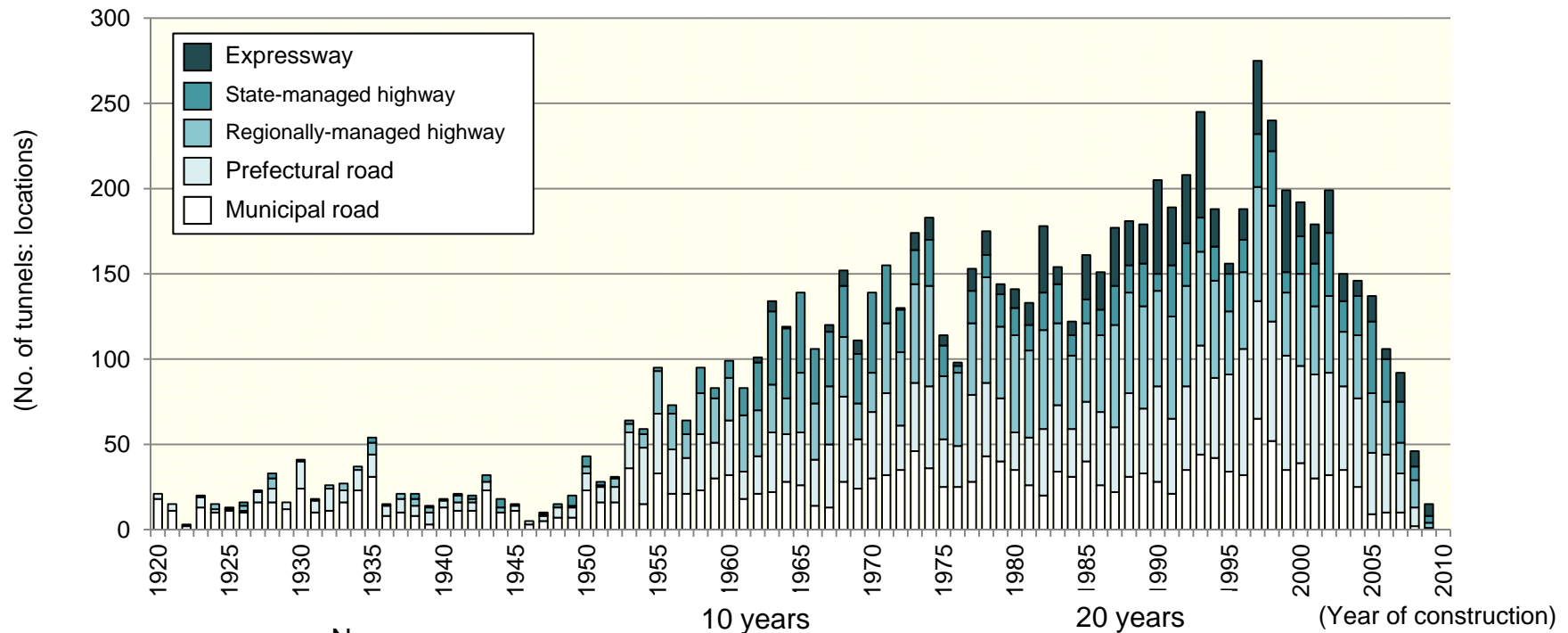


No of bridges over  
50 years old

As of April 1, 2009

# Tunnel stock

【 Number of tunnels constructed yearly 】



No. of tunnels over 50 years old:

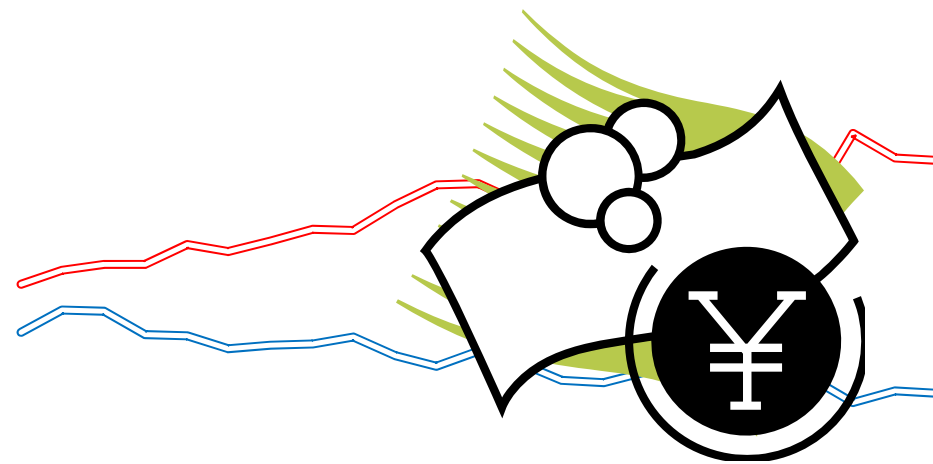
1,700

2,900

4,400

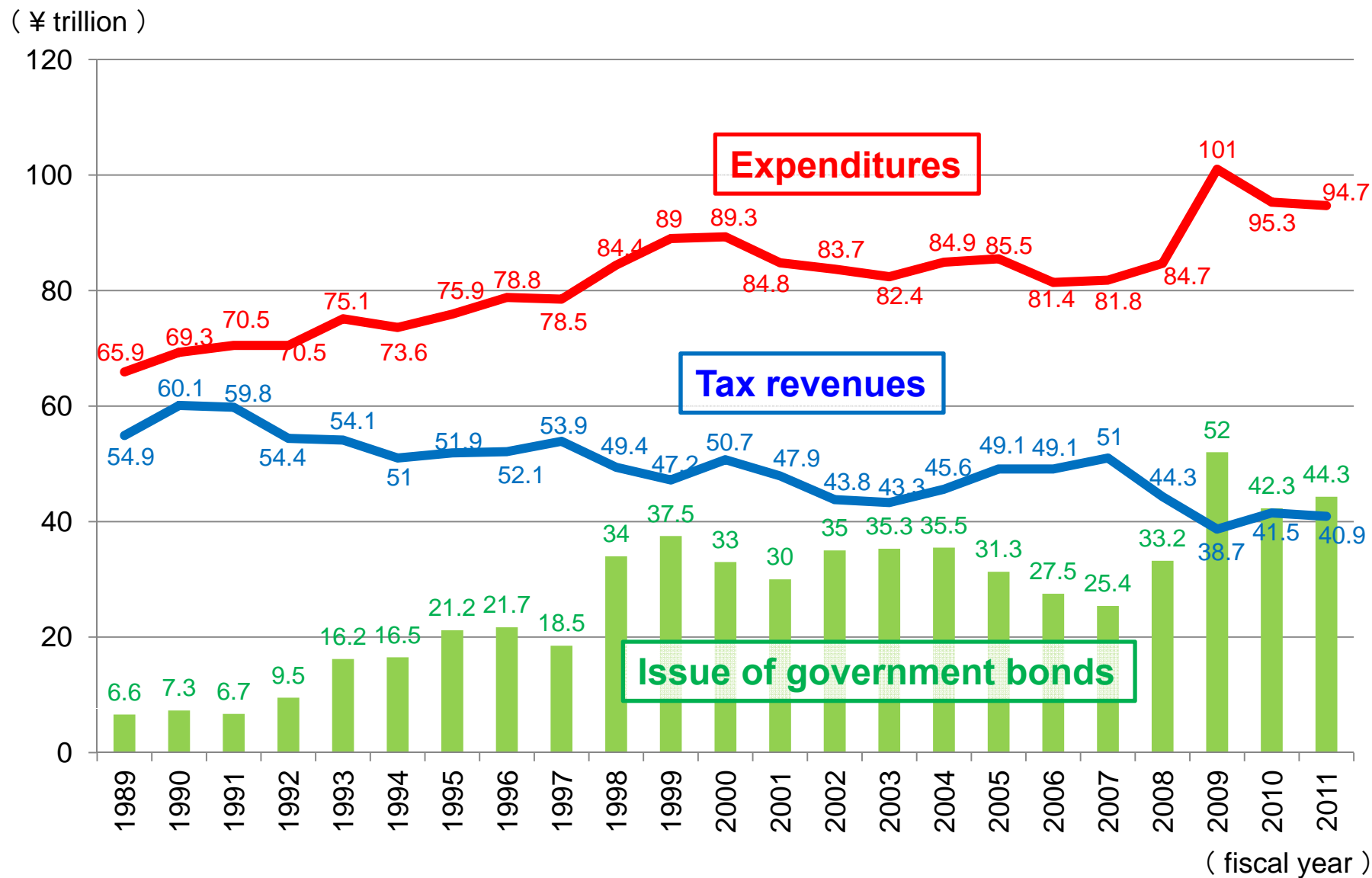
As of April 1, 2009

## 2. Financial situation

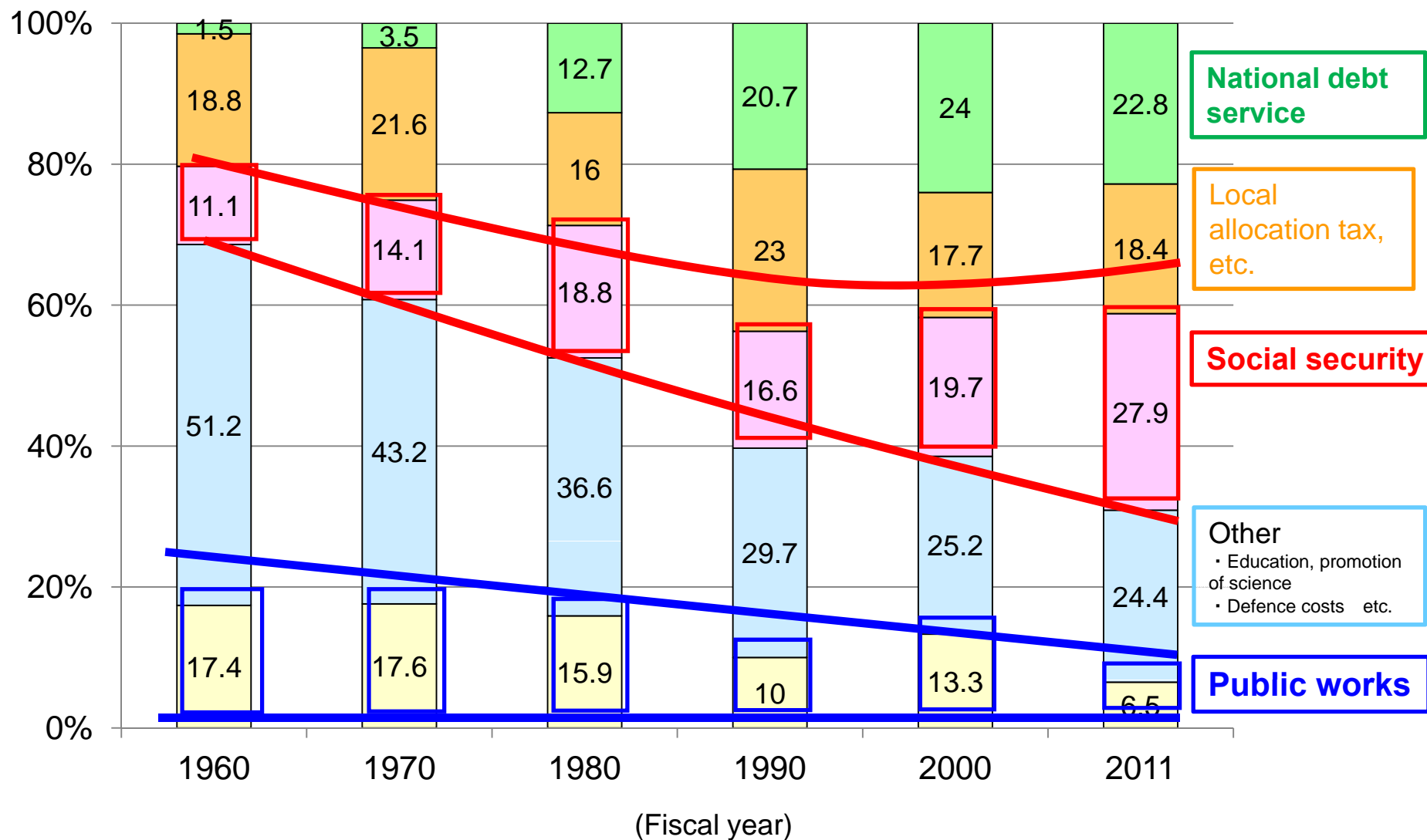




# General account budget expenditures and revenues



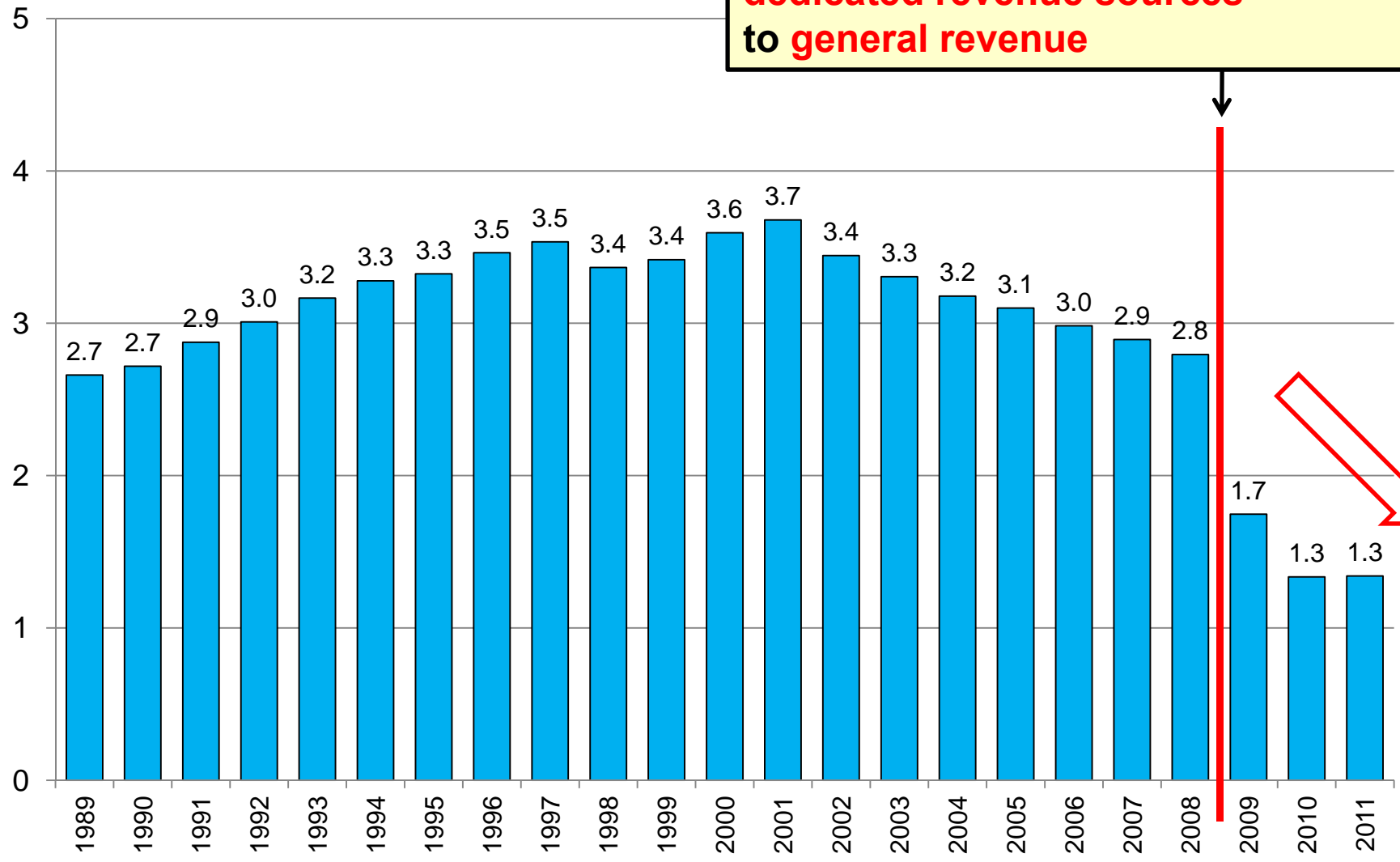
# Major expenses making up general account expenditures



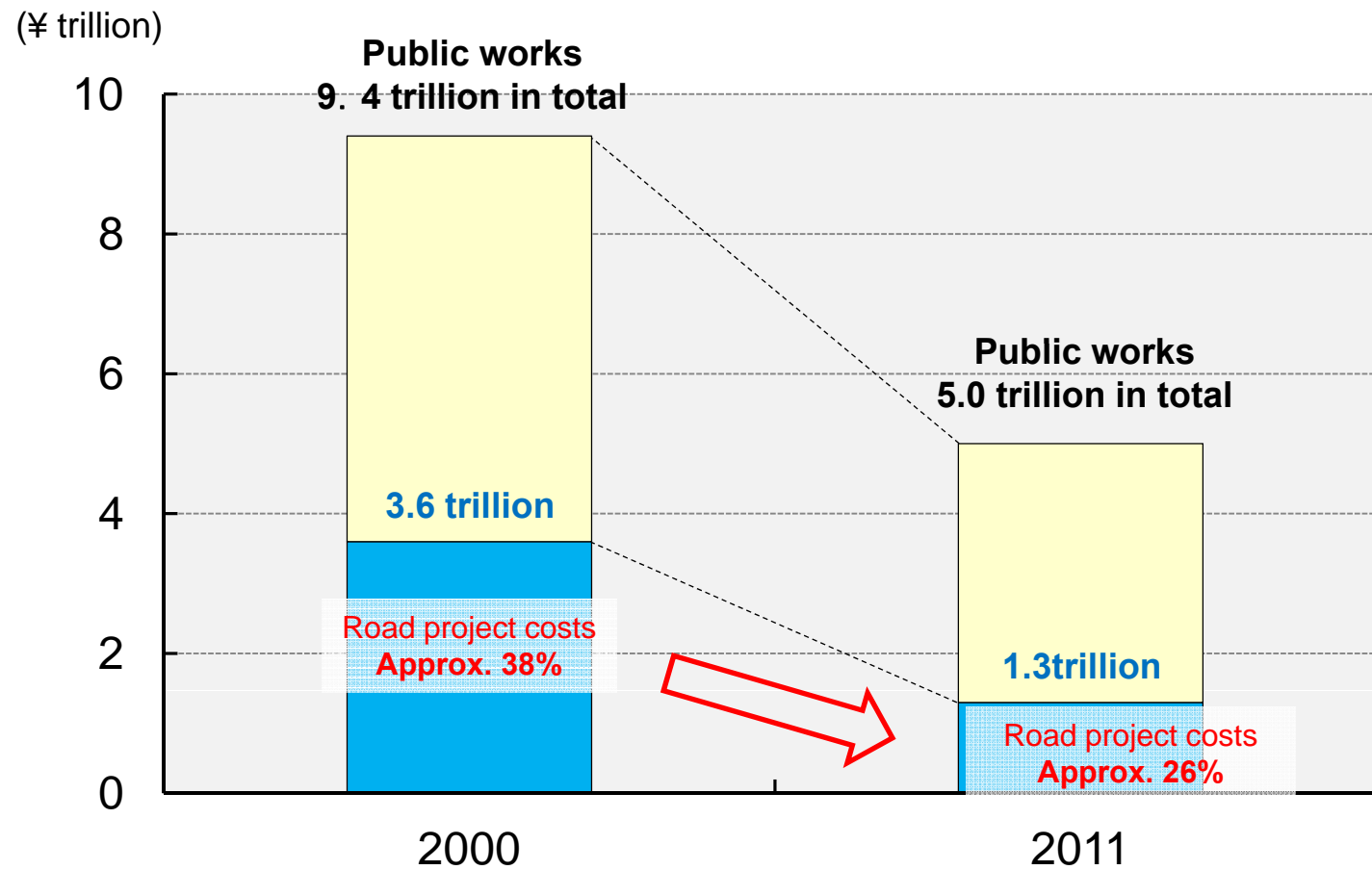
# Road project costs

(¥ trillion)

**Shift from  
dedicated revenue sources  
to general revenue**



# Road project costs and public work costs

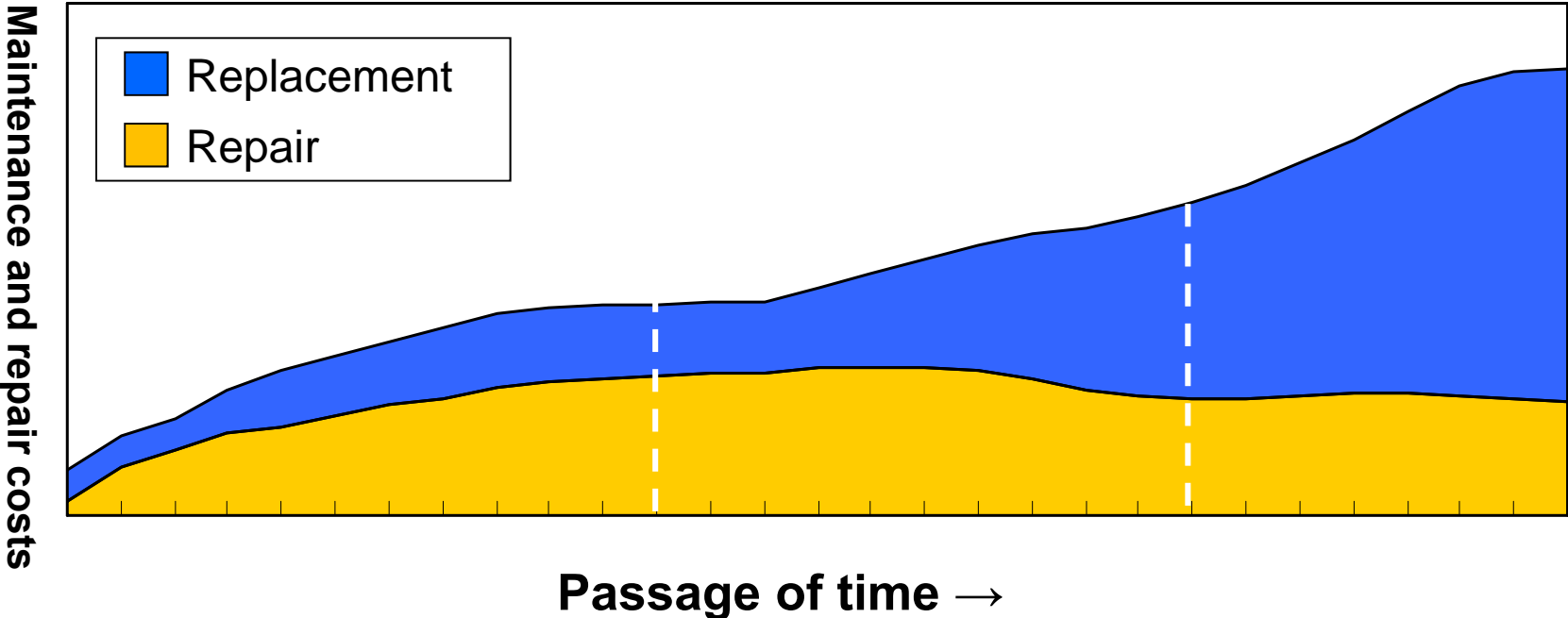


### 3. Issues in the maintenance and management of road stock



# Calculation of estimated future maintenance and repair costs

## ◆ Estimate of future maintenance and repair costs (impression)

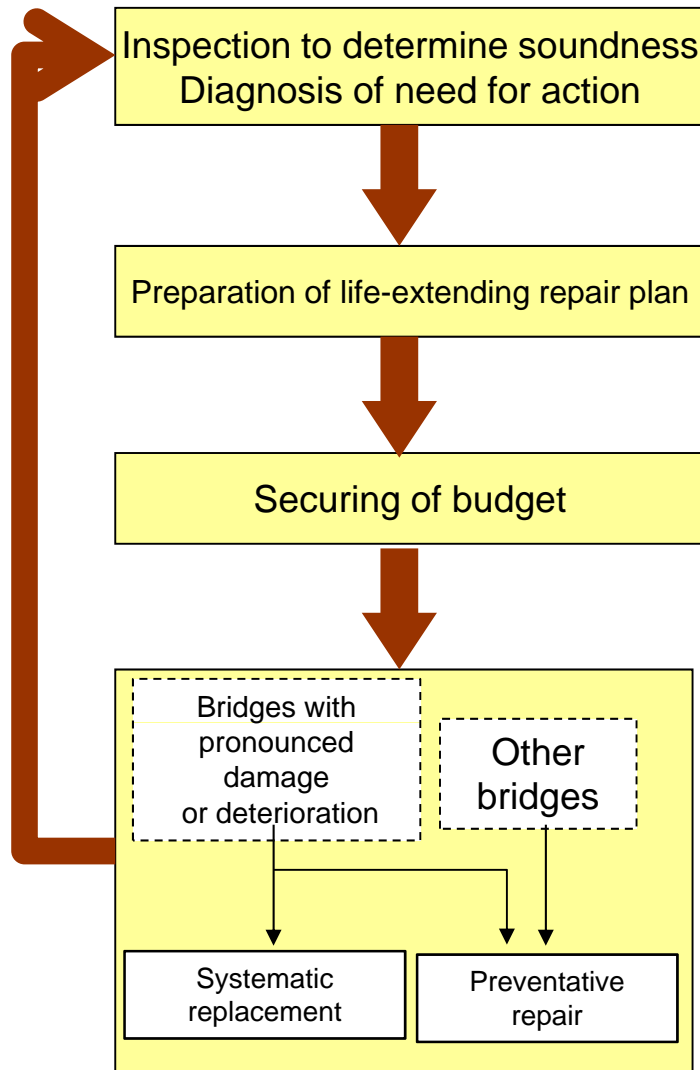


# The cycle of inspection-diagnosis-repair for bridges

## <Life-extending repair plan(impression)>

Bridge name	Road Name	Bridge length(m)	Year of construction	In-service period	Inspected year	Contents and time of measures					
						2009	2010	2011	2012	2013	2014
○○ Bridge	National highway No. ◆◆	80	1998	13	2006	← Cross-sectional repairs		◆ Inspection			
△△ Bridge	National highway No. ▲▲	50	1970	41	2004	◆ Inspection			← Repair of deck slab →		◆ Inspection(TBD)
◇◇ Bridge	Prefectural road No. ■■	40	1983	28	2005		◆ Inspection				
□□ Bridge	National highway No. ●●	80	1940	71	2007	← Replacement			◆ Inspection		
Estimated necessary budget						¥ ●●	¥ ●●	¥ ●●	¥ ●●	¥ ●●	¥ ●●

<Example of measures taken on directly-managed national highways (2m or higher, approx. 27,000 bridges)>



**【2010】**

- Bridges needing attention: 7,000 (a)  
(Initial figure, as of 2010 )
- Bridges attended to: 2,000 (b)
- Bridges inspected: 5,000 (c)
- Result of inspection: 1,500 (c)  
(Additional bridges found to need attention)
- Bridges needing attention in following or subsequent years: 6,500

$[(a)-(b)+(c)] = (d)$

↓

Review of life-extending repair plan

**【2011】**

- Bridges needing attention: 6,500 (d)  
(Initial figure, as of 2010 )
- Bridges attended to: 2,000 (e)
- Bridges inspected: 5,000 (f)
- Result of inspection: 2,000 (f)  
(Additional bridges found to need attention)
- Bridges needing attention in following or subsequent years: 6,500

$[(d)-(e)+(f)] = (g)$

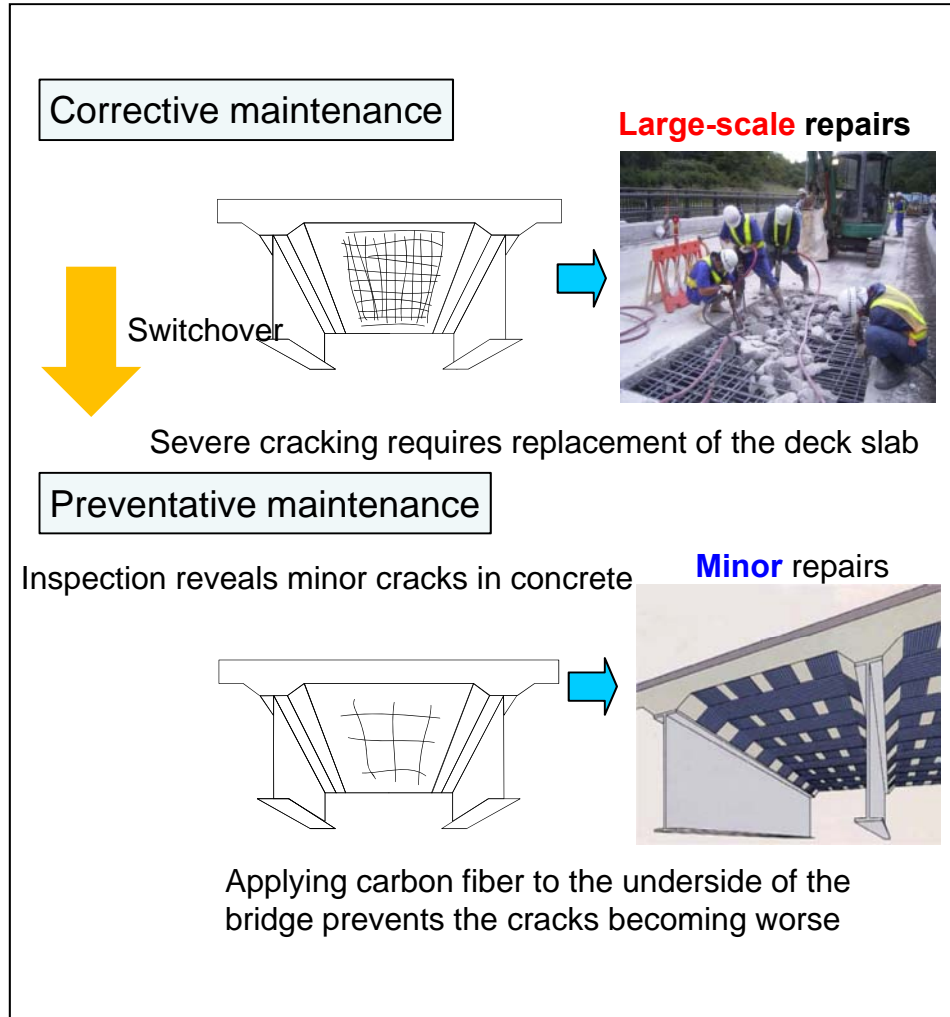
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Review of life-extending repair plan

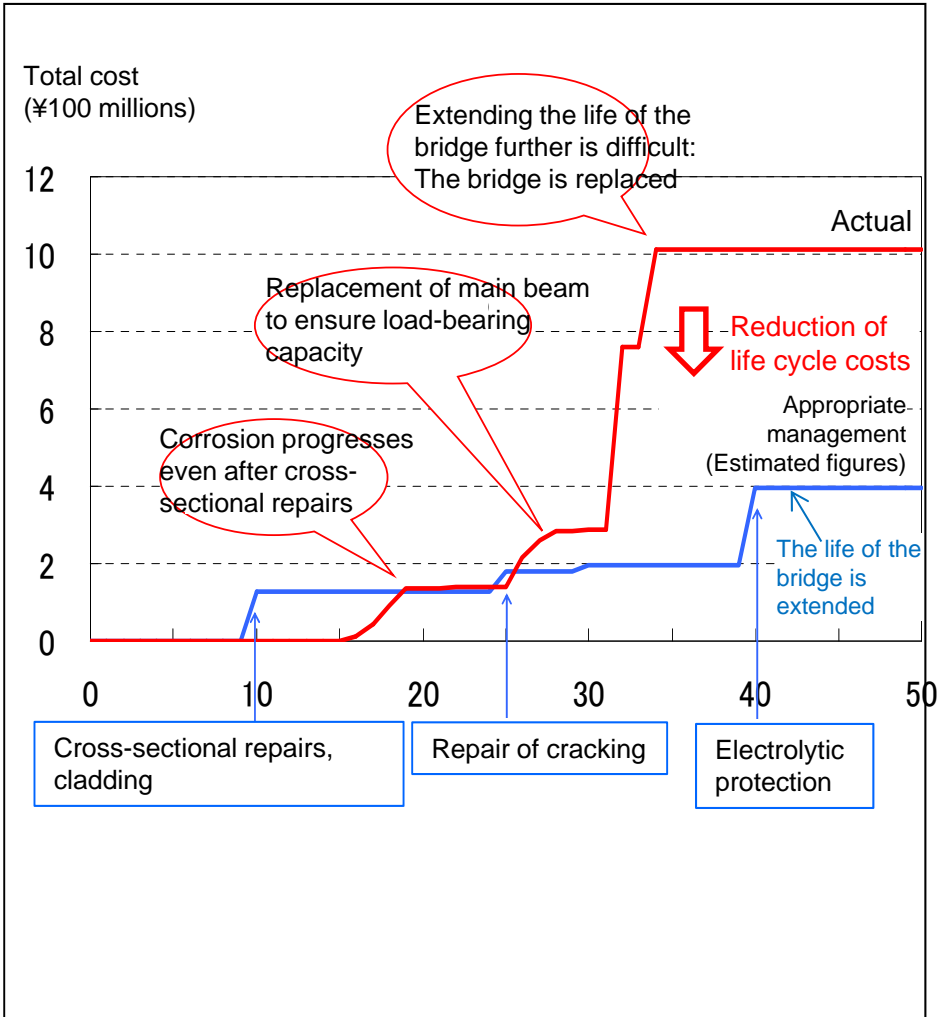
Securing of budget needed for following year

# Preventative maintenance of bridges

## ✓ The switchover to preventative maintenance



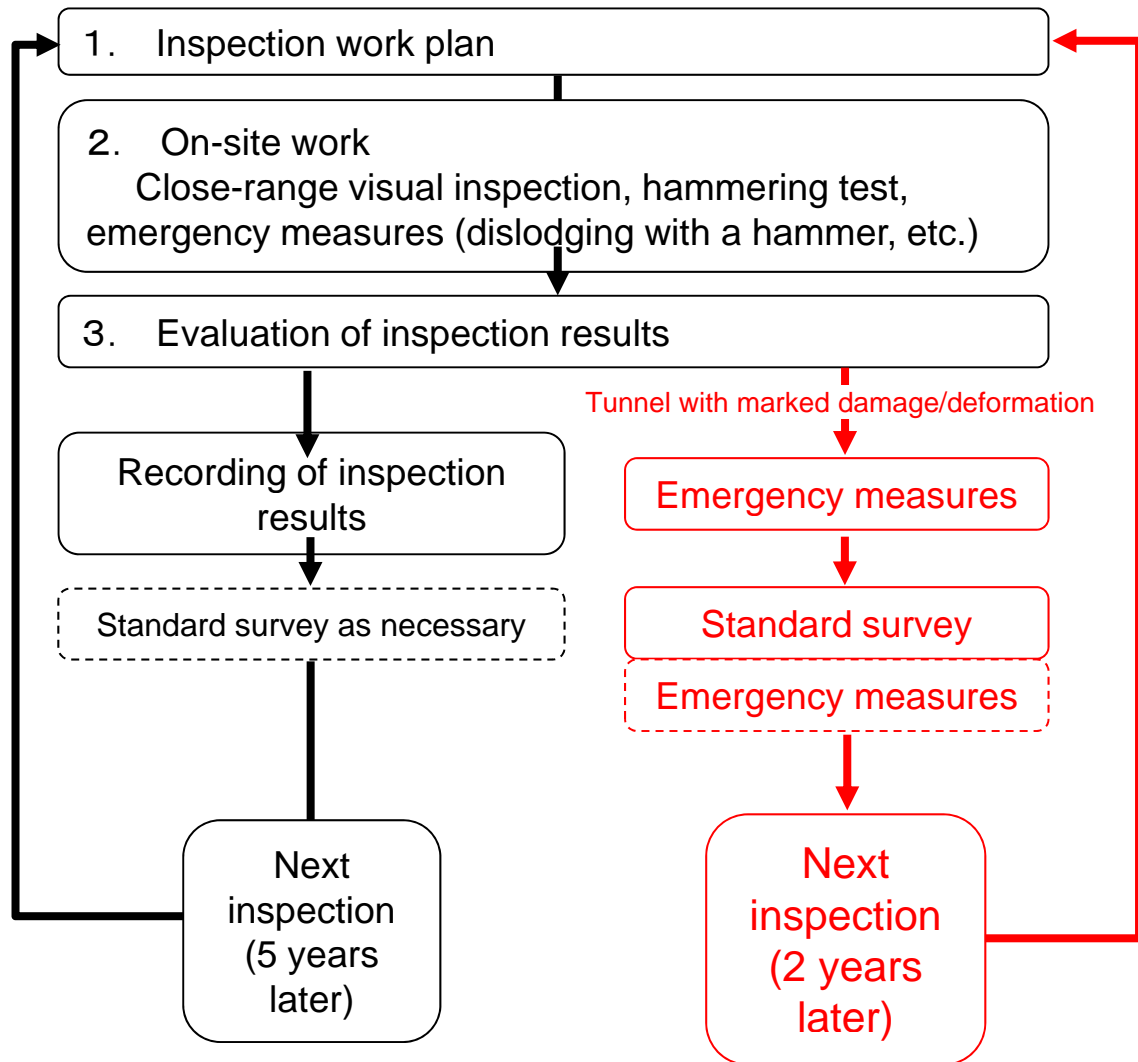
## ✓ Reduction of life cycle costs





# The cycle of inspection-diagnosis-repair for tunnels

## 【 Inspection flow-chart】



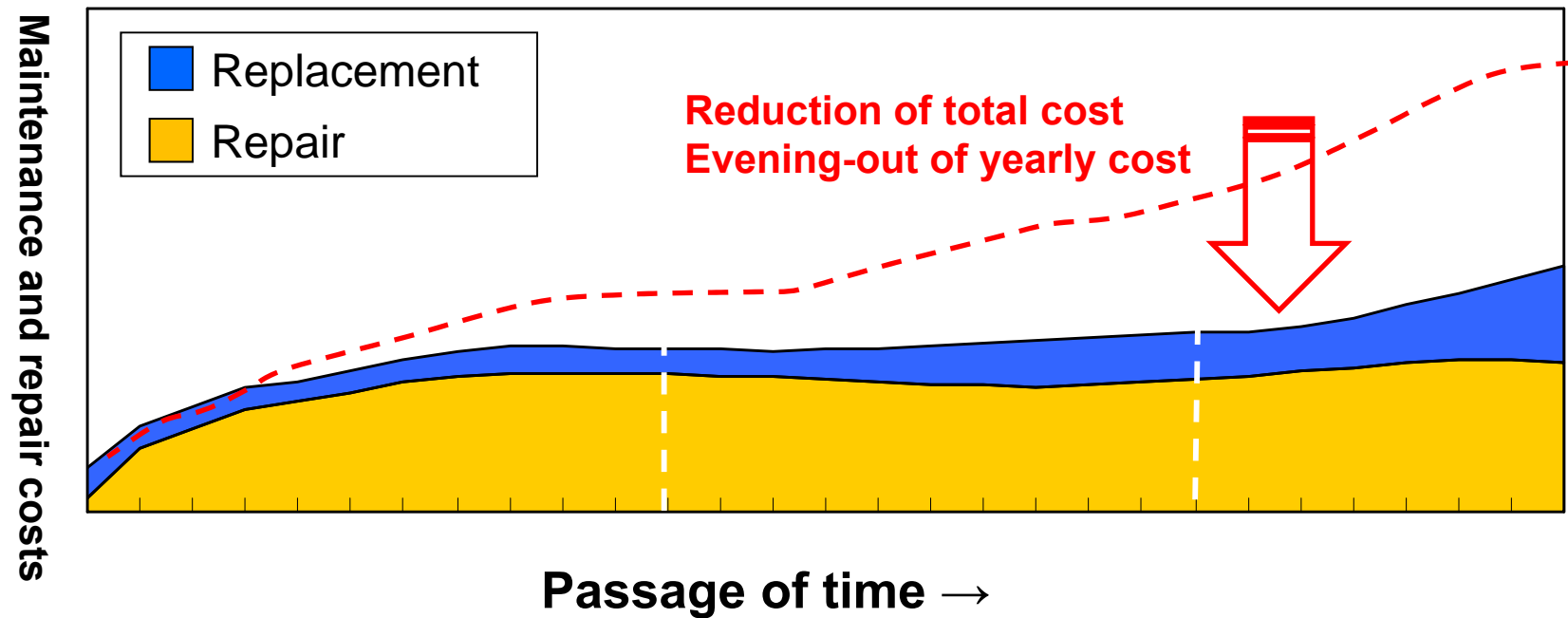
Close-range visual search for cracking



An inspection vehicle carries out non-destructive testing

# Calculation of estimated future maintenance and repair costs

## ◆ Estimate of future maintenance and repair costs (impression)



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*Thank you very much for your kind attention*

