Sendai city waterworks bureau

Current status and challenges of asset management in Sendai

Osamu Arakida

Planning and finance section

2014 US-JP Symposium and Workshop on International Research, Development, and Implementation in Water System for Disaster Prevention & Preparedness

January 28, 2015

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Moving Forward As One
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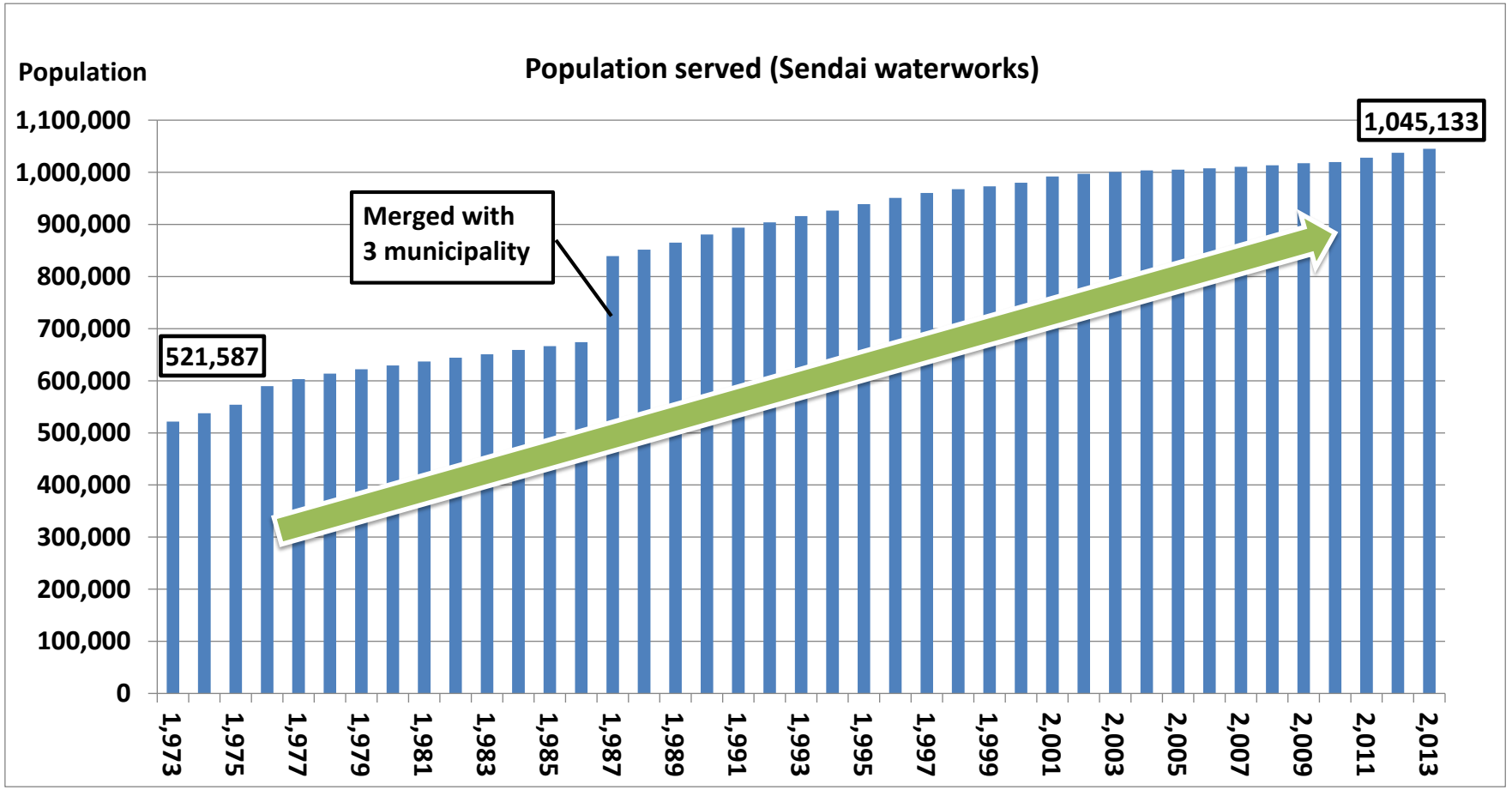
1 Outline of Sendai waterworks bureau

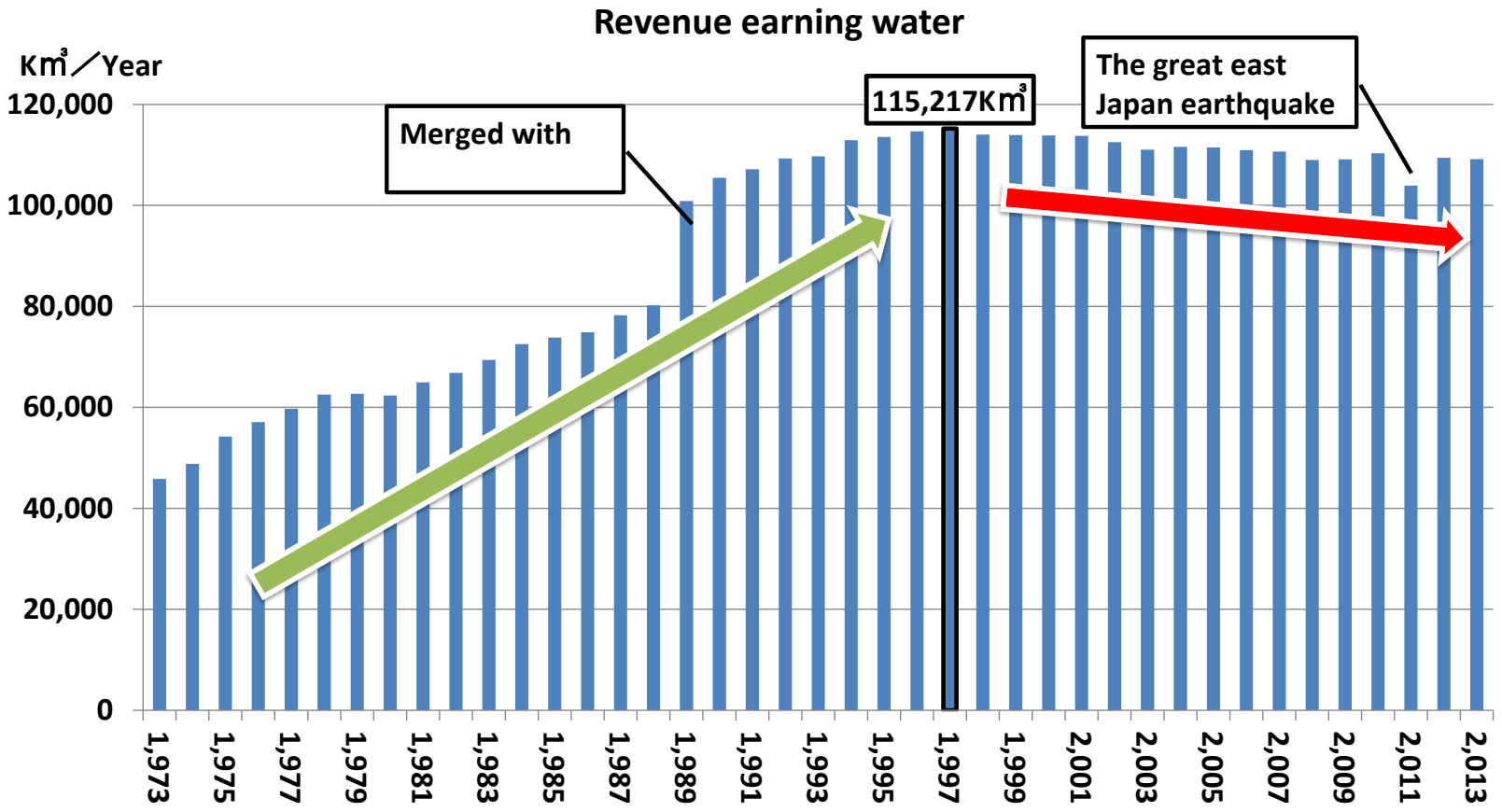
(1) Change of population in Sendai



The population has doubled in the last 40 years.

1 Outline of Sendai waterworks bureau

(2) Change of the revenue earning water in Sendai



The amount of revenue earning water peaked out in 1997.

1 Outline of Sendai waterworks bureau

(3) Facilities

Facility	Number		Note
Purification plant	Main plant	4 Plants	Moniwa plant (Capacity 190,500㎥/day) Kunimi plant (Capacity 97,300㎥/day) Nakahara plant (Capacity 34,500㎥/day) Fukuoka plant (Capacity 60,600㎥/day)
	Small scale plant	4 Plants	Sakunami plant (Capacity 2,000㎥/day) Kumagane plant (Capacity 1,100㎥/day) Nojiri plant (Capacity 190㎥/day) Takihara plant (Capacity 160㎥/day)
Distribution reservoir	65 Places		
Pumping station	49 Stations		
Office building	4 Buildings		
Pipeline	Raw water transmission main	43.9km	Total 4,477.7km
	Transmission main	143.7km	
	Distribution pipe (75㎜≦)	3,613.8km	
	Distribution pipe (≦50㎜)	676.3km	

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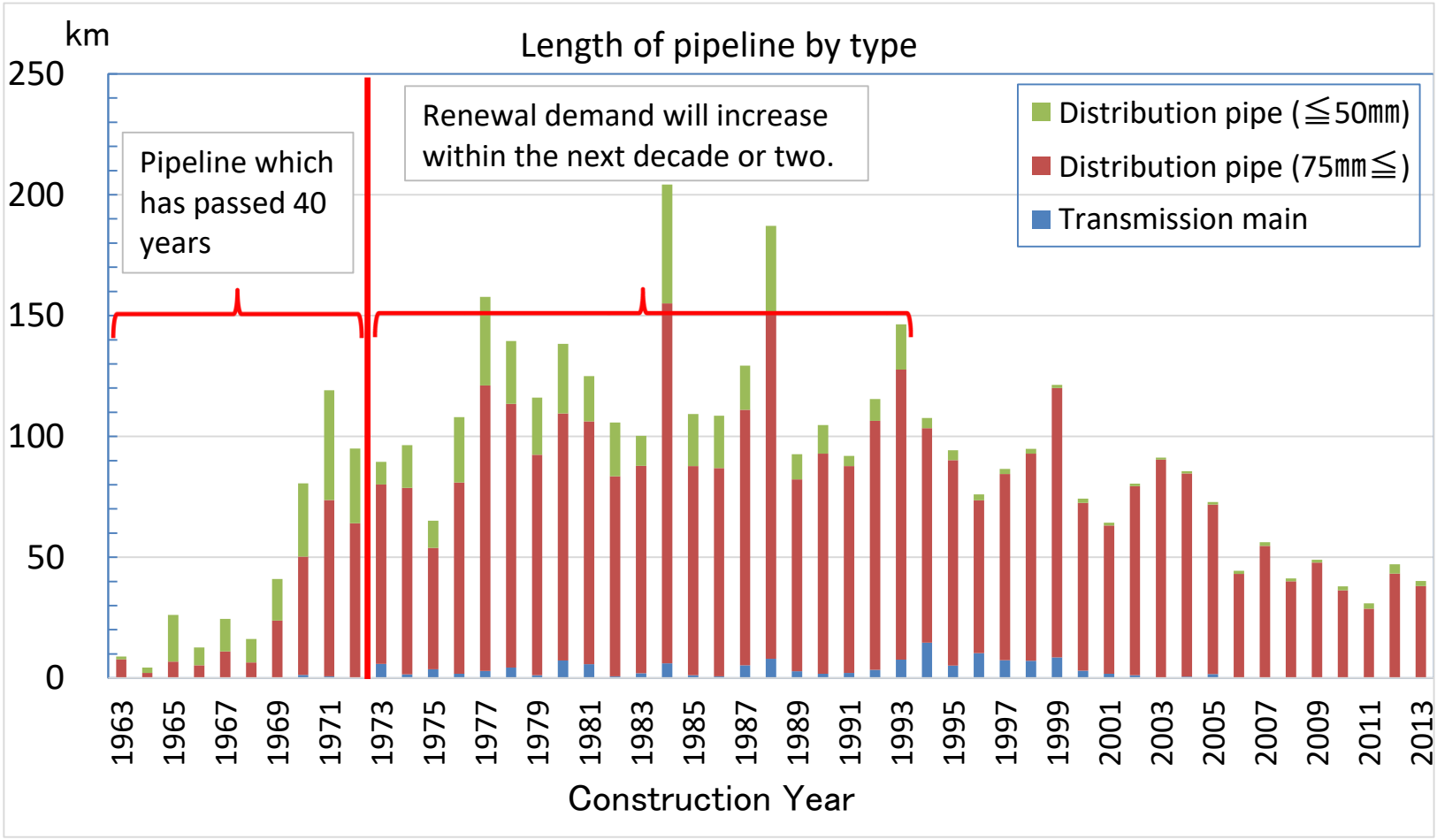
2 Current status and concern

(1) Purification plant status

Purification plant (Capacity)	Operation start year	Elapsed years
Kunimi plant（97,300㎥/day）	1961	54 years
Moniwa plant（190,500㎥/day）	1970	45 years
Nakahara plant（34,500㎥/day）	1977	38 years
Fukuoka plant（60,600㎥/day）	1983	32 years

2 Current status and concern

(1) Pipeline status



1 Outline of Sendai city waterworks bureau

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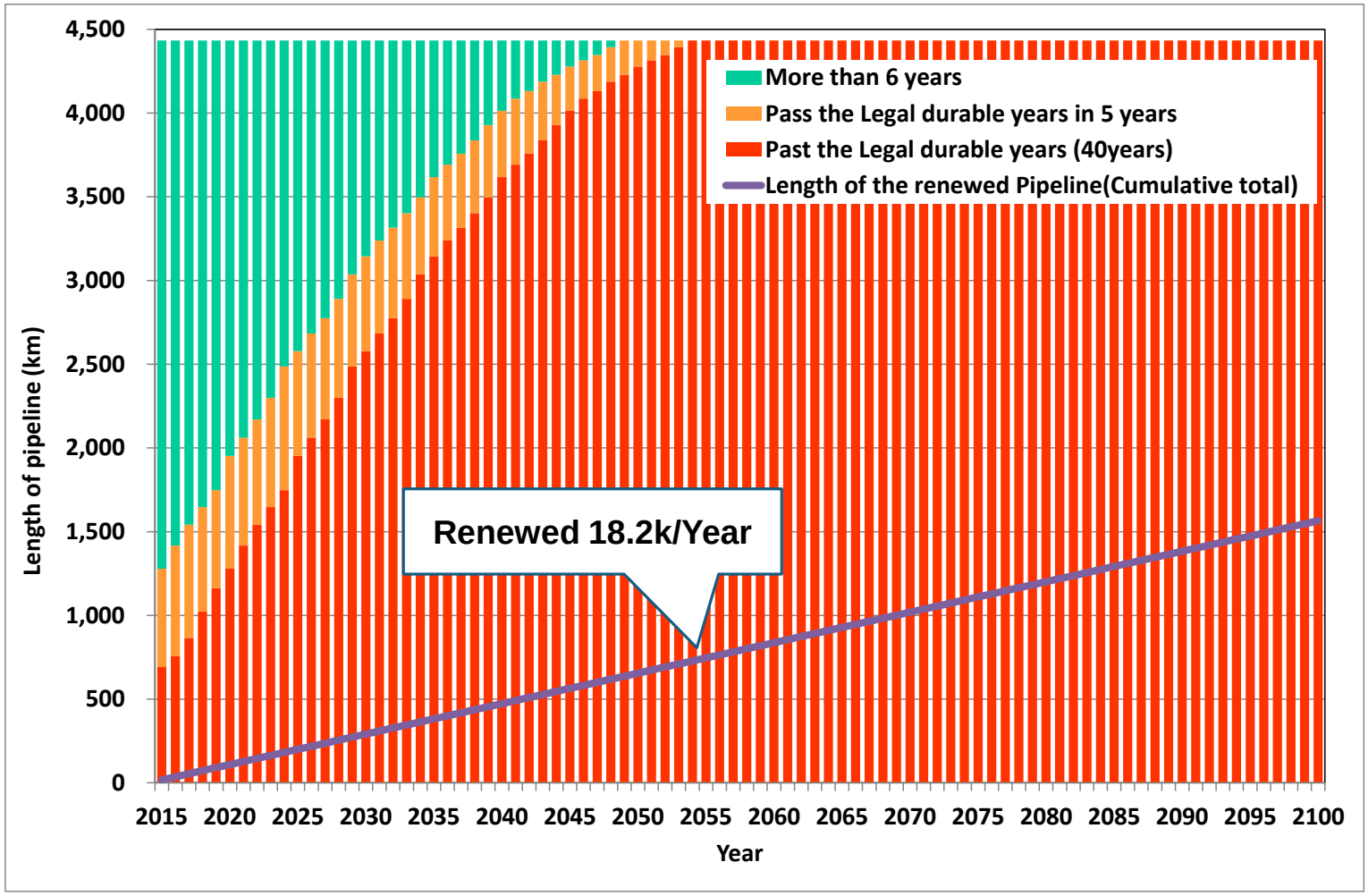
3 Asset management

- Established a new organization.
- Rationalization of the business scale.
- Make a long-range renewal plan of pipeline.
- Development of an information management system.

3 Asset management

(1) The aging pipeline ratio.(Legal durable years (40years))



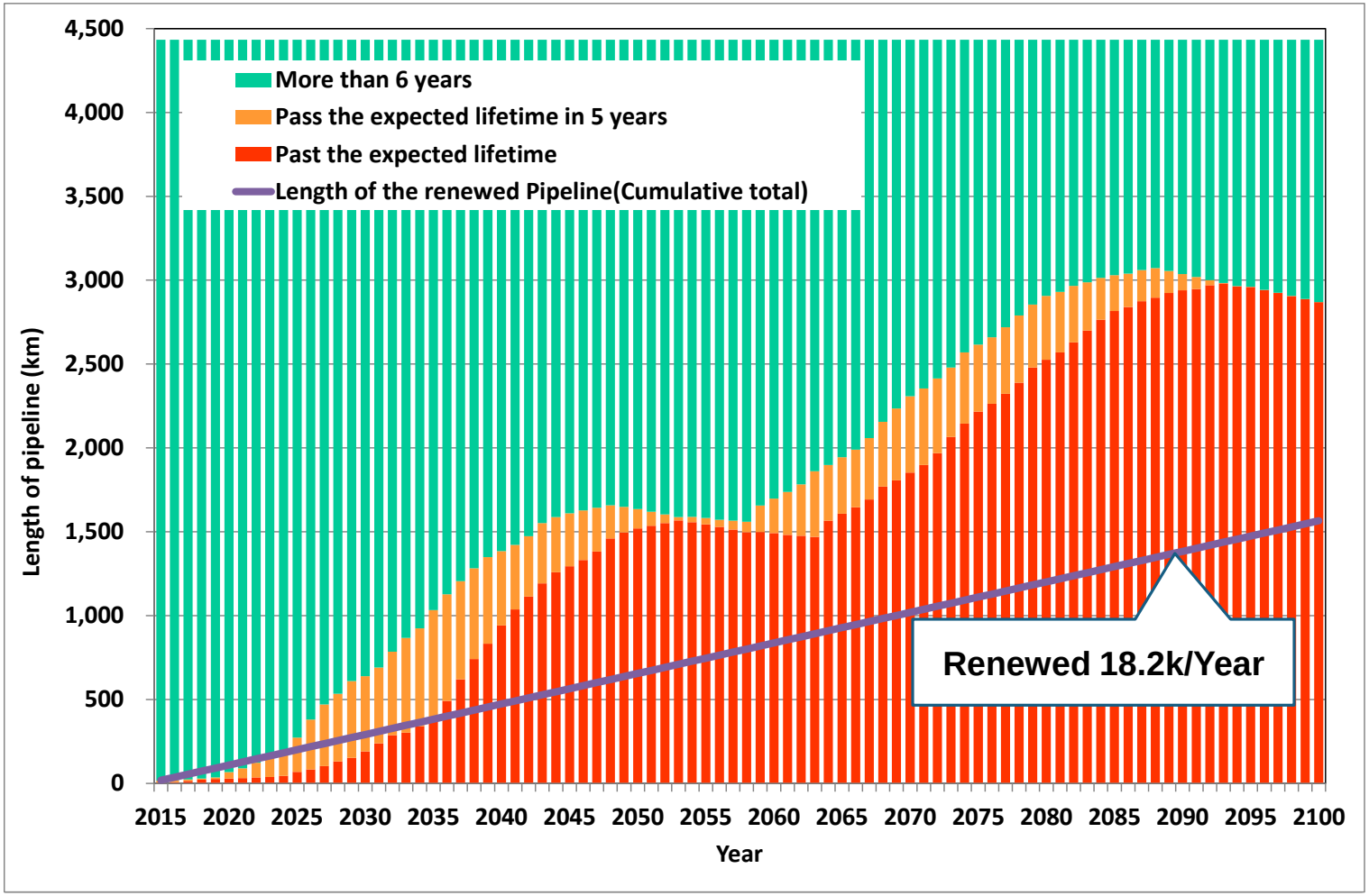
3 Asset management

(2) The aging pipeline ratio.(Expected lifetime)

Material	Technical factor	Expected lifetime
CIP (Cast-iron pipe)	-	40 years
DIP (Ductile iron pipe)	Non Polyethylene sleeve	60 years
	Polyethylene sleeve	80 years
	GX joint	100 years
SP (Steel pipe)	Laid before 1975	60 years
	-	80 years
SUSP (Stainless steel pipe)	Welded joint	100 years
VP (Hard(-type) PVC pipe)	TS joint (laid before 1979)	40 years
	TS joint (laid after 1980) or RR-type joint	60 years
PP (Polyethylene pipe)	-	60 years
Other/Unknown	-	40 years

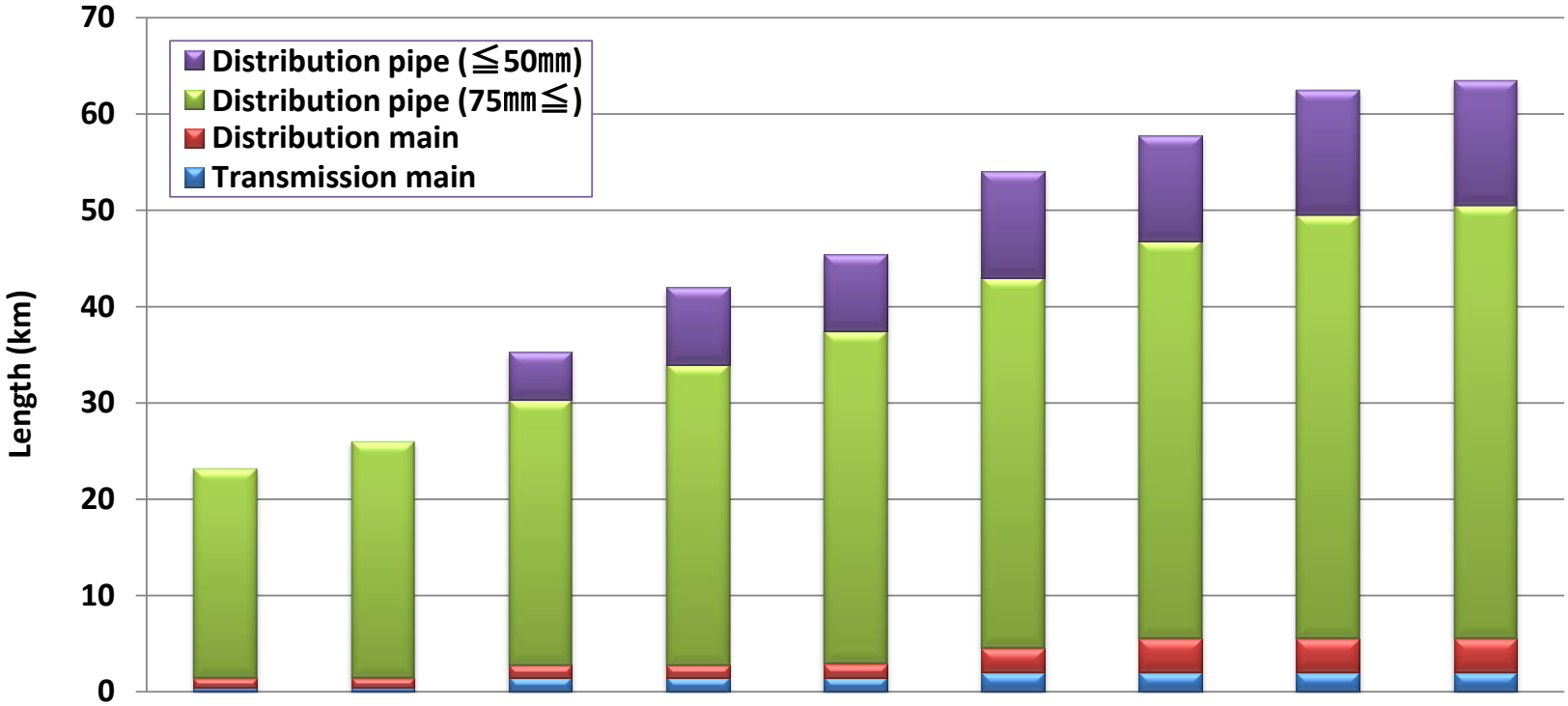
3 Asset management

(2) The aging pipeline ratio.(Expected lifetime)



3 Asset management

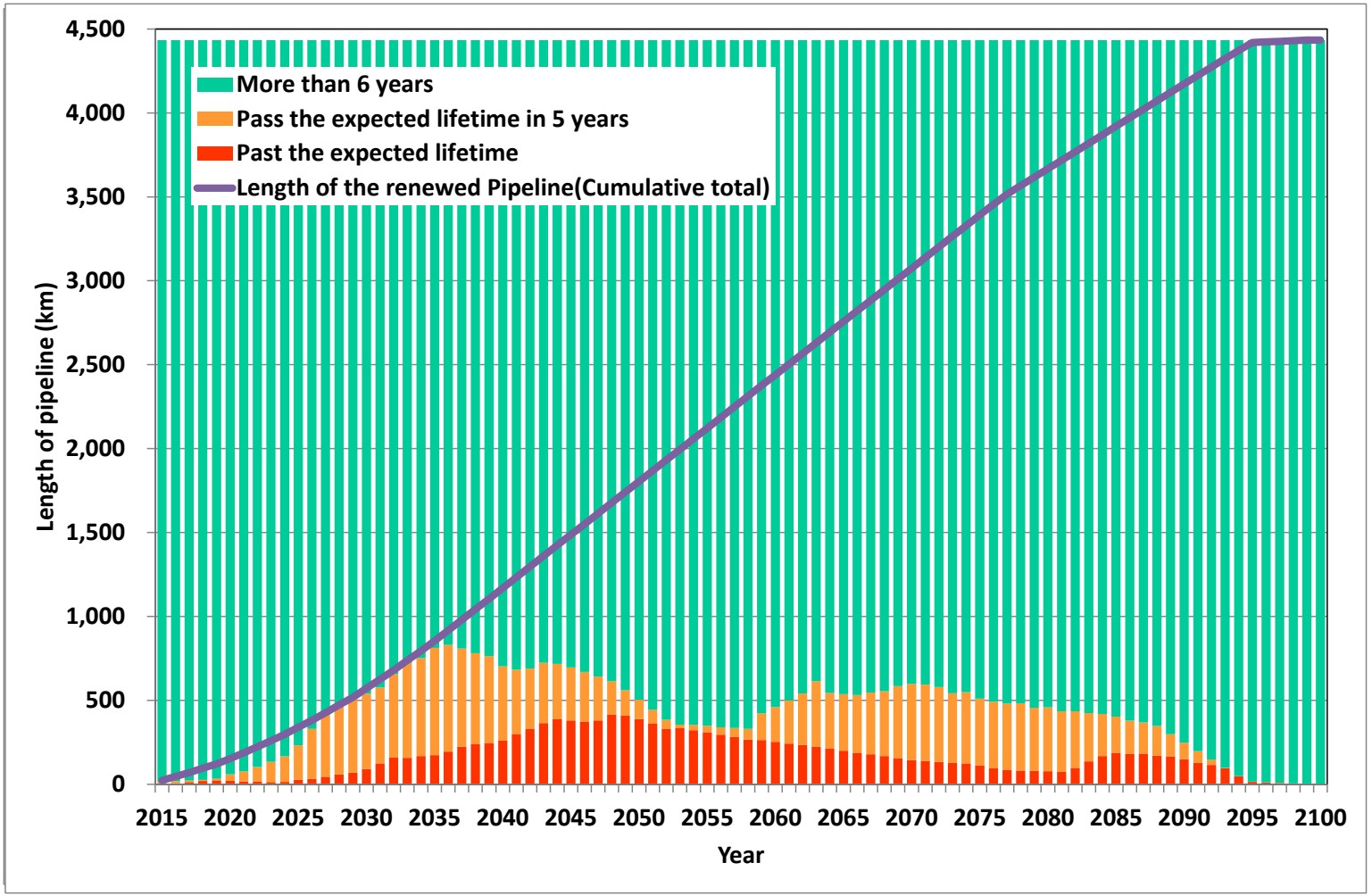
(3) The aging pipeline ratio.(Picked up the renewal pace)



	2015-2017	2018-2020	2021-2023	2024-2026	2027-2029	2030-2032	2033-2035	2036-2038	2039-
Transmission main	0.4	0.4	1.5	1.5	1.5	2	2	2	2
Distribution main	1	1	1.3	1.3	1.4	2.5	3.5	3.5	3.5
Distribution pipe (75㎜≦)	21.7	24.6	27.5	31.2	34.5	38.5	41.3	44	45
Distribution pipe (≦50㎜)	0	0	5	8	8	11	11	13	13
Total	23.1	26	35.3	42	45.4	54	57.8	62.5	63.5

3 Asset management

(3) The aging pipeline ratio.(Picked up the renewal pace)



4 Summary

- Improve evaluation method to decide the expected lifetime of pipeline.

- Develop the system to store the information for evaluation method.

Thank you for your attention.