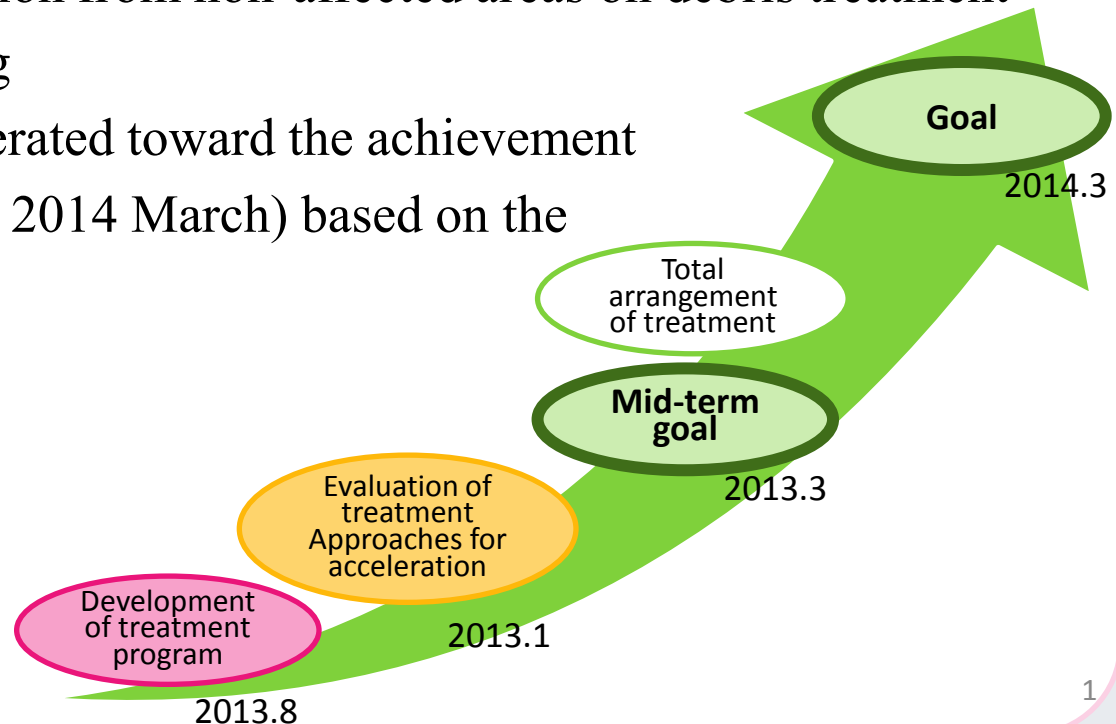


# Treatment of debris in coastal municipalities of the three most affected prefectures by the Great East Japan Earthquake

2013.1.25 Ministry of the Environment

## Summary

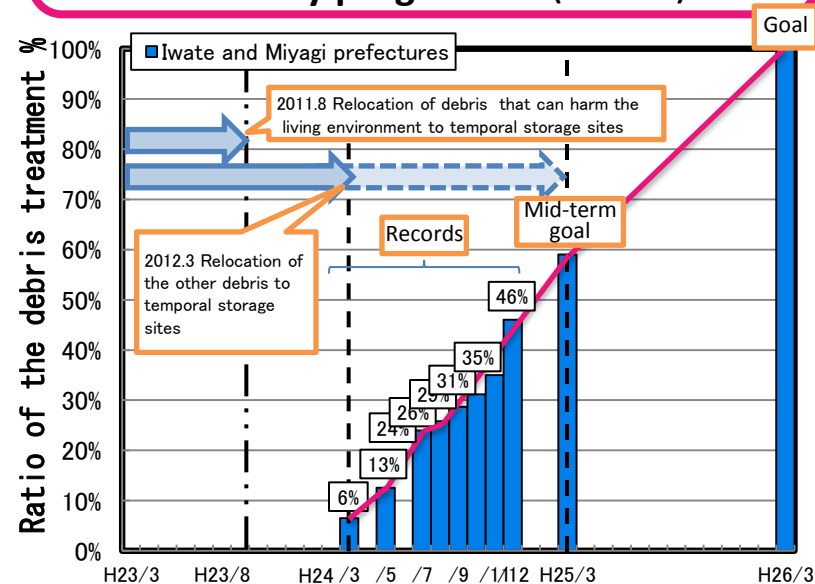
- The Ministry evaluated the progress on treatment as of the end of December, 2012 with a view to completing the treatment by March, 2014.
  - 1) Treatment in affected areas
  - 2) Promotion of cooperation from non-affected areas on debris treatment
  - 3) Promotion of recycling
- Treatment should be accelerated toward the achievement of the goal (completion by 2014 March) based on the above evaluation.



## Treatment of debris and tsunami deposit

- 7.14 millions (approx. 44% out of 16.28 million tons) has been treated in coastal municipalities of the three most affected prefectures.
- Approx. 46% of debris and 18% of tsunami deposit has been treated in Iwate and Miyagi prefecture.
- Treatment of debris has progressed steadily (e.g. 48% in Miyagi).
- Treatment of tsunami deposit in Iwate and Fukushima is not sufficient, not having begun full operation yet.

**38% in Iwate, 48% in Miyagi, and 29% in Fukushima of generated debris has been treated. Treatment of tsunami deposit is not sufficiently progressed. (2012. 12)**



Goal and records of treatment of debris in coastal municipalities in Iwate and Miyagi prefectures

- **Progress on treatment of debris from 37 coastal municipalities in the three prefectures (Iwate, Miyagi, Fukushima) as of the end of Dec. 2012**

Prefecture	Estimated quantity of debris and tsunami deposit (10 thousand t)	Debris				Tsunami deposit				No. of Temporary storage sites
		Estimated quantity (10 thousand t)	Treatment			Estimated Quantity (10 thousand t)	Treatment			
			Quantity (10 thousand t)	Ratio (%)	Midterm goal (%)		Quantity (10 thousand t)	Ratio (%)	Mid-term goal (%)	
Iwate	525	366	139	38	58	159	3	2	50	63
Miyagi	1,829	1,103	530	48	59	726	157	22	40	108
Fukushima	313	160	46	29	—	153	3	2	—	31
<b>Total</b>	<b>2,667</b>	<b>1,628</b>	<b>715</b>	<b>44</b>	<b>—</b>	<b>1,039</b>	<b>163</b>	<b>16</b>	<b>—</b>	<b>202</b>

Estimated debris quantity has reduced by 1.27 million ton and tsunami deposit has increased by 0.83 million ton, based on the results of careful quantity review in Iwate and Miyagi.

※Figures for Fukushima excludes those for the Contaminated Waste Countermeasure Areas, where the national gov. conducts treatment directly.

## Treatment in affected areas

**Start full operation of treatment facilities by March, 2013 in Iwate and Miyagi.  
Coordinate with affected municipalities for construction of additional facilities in Fukushima**

- 20 sorting and shredding facilities and 27 temporary incinerators are in full operation in Iwate and Miyagi.
  - Additional treatment facilities for concrete debris and tsunami deposit were developed for recycling of non-combustible waste in Iwate prefecture.
  - Ash granulation and solidification facilities were developed for the reduction of disposal quantity in Miyagi prefecture.
- The construction of three temporary incinerators has progressed by central government as alternate implementer in Fukushima, and full operation will start from February, 2013.
- Treatment facilities will be enhanced by the end of March, 2014 for the acceleration of treatment in Iwate and Miyagi prefecture  
(2 treatment facilities of tsunami deposit in Iwate, 4 temporary incinerators and 1 sorting and shredding facilities in Miyagi)
- Ministry of the Environment will start steady operation of the facilities and coordinate with affected municipalities for additional facilities in Fukushima prefecture.



Treatment facility for concrete debris in Yamada town, Iwate (2012.12.11)



Temporary incinerator in Kesenuma city, Miyagi (2012.12.23)



Temporary incinerator in Souma city, Fukushima (2013.1.16)

		Number (plan)	2012.8	2013.1	2013.3
Iwate	Temporary incinerators	2	2	2	2
	Sorting and shredding facilities	9	9	9 (4 additional facilities*1)	9 (2 additional facilities*2)
Miyagi	Temporary incinerators	29	15	25 +10 incinerators in operation	29 +4 additional incinerators in operation
	Sorting and shredding facilities	12	8	11 +3 facilities	12 +1 facility

\*1: Treatment facilities for concrete debris and tsunami deposit were added.

\*2: Treatment facilities for tsunami deposit will be added.

## Cooperation from non-affected areas on debris treatment

**Complete arrangement of cooperation from non-affected areas by the end of March 2013. Finish cooperation of treatment of combustible waste and wood waste early.**

- Iwate and Miyagi prefectures have requested other prefectures to cooperate in the disposal of a part of their debris. 58 projects in 13 prefectures have already started and treated 0.21 million tons of debris in total.
- Requested quantity has reduced to 0.69 million ton through careful review of quantity and expansion of treatment in the two prefectures.

(Breakdown: Combustible waste: 0.32 million ton, Waste wood: 0.12 million ton, Non combustible waste: 0.23 million ton, Fishing equipment: 0.02 million ton)

- Cooperation on combustible waste and wood waste will finish by the following dates (including cooperation projects):

- 1) Combustible waste, Iwate: Dec. 2013
- 2) Wood waste, Iwate: March 2013
- 3) Combustible waste, Miyagi: March 2013

Cooperation in operation and (under coordination)  
(Combustible waste and wood waste)

	Recipient prefectures
Iwate	Aomori, Akita, Fukushima, Gunma, Tokyo, (Niigata), (Toyama), (Ishikawa), Shizuoka, Osaka
Miyagi	Aomori, Yamagata, Fukushima, Ibaraki, Tochigi, Tokyo, Fukuoka

※Saitama and Fukui finished cooperation

- The treatment of non-combustible waste and fishing equipment will be promoted by the reduction of disposal quantity through recycling and finding disposal site within the affected areas as well as cooperation from non-affected areas.



(2012.5.2)



(2013.1.7)

Matsushima town, Miyagi  
(Land cleared by cooperation from Yamagata prefecture, etc.)

## Recycling

**Enhance the use of recycled materials in reconstruction projects and take measures to secure storage sites for recycled materials if necessary**

- Recycled materials from debris are being used in public works implemented by the central government, prefectures, and municipalities.
- Recycling will be accelerated further more through approaches written below
  - Enhance the use of recycled materials by prescribing it in the specifications of public works directly managed by the related ministries.
  - Start the treatment by landfill of debris, etc. in the embankment of Ishinomaki Port (Volume: 0.8 million m<sup>3</sup>) (From Feb. 2013).
  - Take measures to secure storage sites for recycled materials if the coordination of the timing of public works and treatment is found difficult.

Major public works using recycled material from debris

	Projects	Recycled material	Quantity (including plan)
Iwate	Disaster prevention forests restoration (Miyako city and Yamada town)	Tsunami deposit	21
	Coastal embankment restoration (Miyako city and Yamada town)	Concrete debris	21
	Agricultural field restoration (Yamada town)	Tsunami deposit Concrete debris	10
Miyagi	Coastal embankment restoration (Sendai city and Natori city)	Tsunami deposit Concrete debris	49
	Disaster prevention forests restoration (Sendai city, etc.)	Tsunami deposit Concrete debris	39
	National park restoration (Kesenuma city)	Concrete debris	3
Fukushima	Coastal embankment restoration (Sendai city and Natori city)	Concrete debris	9

Conversion factor (t/m<sup>3</sup>) : Concrete debris (2.35), Tsunami deposit(1.8) Unit : 10 thousand ton



Disaster prevention forests restoration (Settai region, Miyako city, Iwate, started from October, 2012)

## Approaches toward the goal

**Accelerate treatment of non-combustible waste and tsunami deposit in particular. In Fukushima prefecture, accelerate treatment by the central government as the alternate and direct implementer.**

- Complete arrangement of all debris treatment including cooperation from non-affected areas by March 2013.
- Manage progress through monthly review.

### 【Iwate, Miyagi prefecture】

- Treatment of non-combustible waste and tsunami deposit needs to be accelerated. Therefore, treatment facilities are planned to be enhanced, and the use of recycled materials in reconstruction projects are promoted, with taking measures to secure storage sites of recycled materials if necessary.
- The treatment of combustible waste, etc. will be accelerated through full operation of facilities in affected areas (temporary incinerators in Miyagi prefecture) and the start of cooperation projects that is currently being proposed by other prefectures.

Treatment ratio by type

	Combustible, Wood waste	Non-combustible (including fishing equipment)	Concrete, metal debris	Sum	Tsunami deposit
Iwate	36%	29%	45%	38%	2%
Miyagi	47%	18%	67%	48%	22%

### 【Fukushima prefecture】

- Treatment by central government as the alternate and direct implementer needs to be accelerated.
- Structure of the Ministry's Fukushima Office will continuously be reinforced.
- All efforts should be made for the coordination with affected municipalities to establish temporary storage sites and incinerators.