

Initiative 9 Quick and efficient disposal of disaster debris

[Outline of Approach]

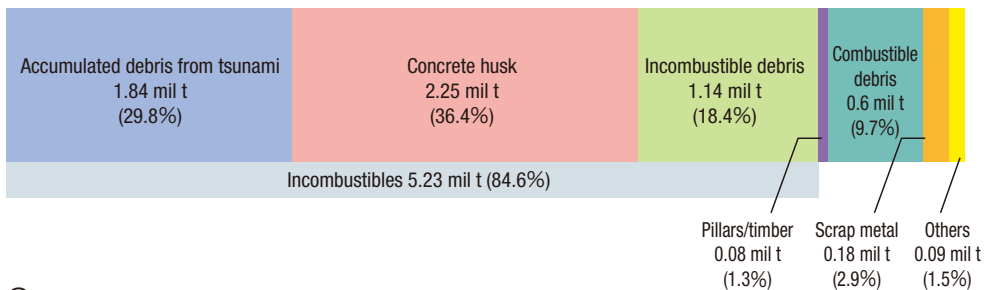
- The amount of disaster debris generated by the Great East Japan Earthquake and Tsunami in the prefecture reached approximately 6.18 million metric tons, which is equivalent to 14 years of household garbage for the whole prefecture. Therefore, as a first step towards recovery and reconstruction, the prefecture laid out a plan to complete the disposal of debris, which is a hindrance to the living environment, within 3 years of the disaster.
- With the cooperation of the national government and related organizations, and with the support of inland municipalities, the prefecture was able to work with the affected municipalities to dispose of the disaster debris. Debris that could not be handled within the prefecture was examined by national authorities and disposed of with the help of local governments and private companies outside of Iwate. (Approaches 1, 2)
- Disaster debris included collapsed buildings, home furnishings, soil and dirt, among various other types of material. The debris was processed by private companies using cutting-edge technology to crush and sort the debris. (Approach 3)
- Recycling was implemented (recycling rate: roughly 90%) by using disaster debris as raw materials for cement and reconstruction materials. (Approach 3)
- As a result, the goal of completing the disposal of disaster debris by the end of March 2014 was achieved.



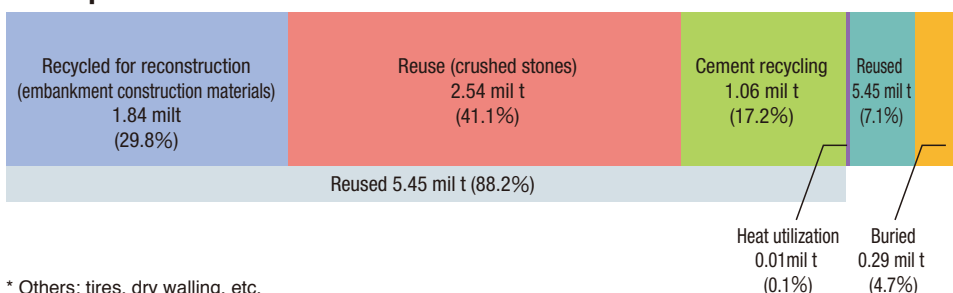
Otsuchi immediately after the disaster

[Disposal outcome of disaster debris]

○ **Breakdown of debris (6.18 million metric tons generated)**



○ **Disposal breakdown**

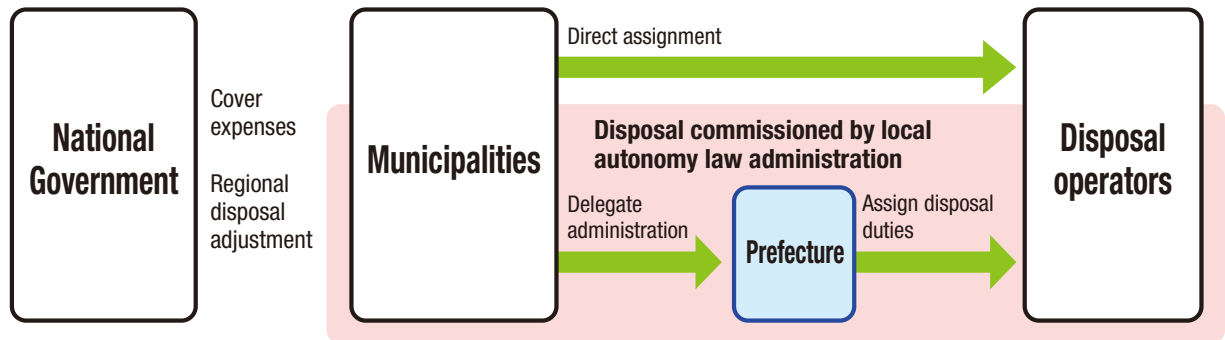


* Others: tires, dry walling, etc.

Approach 1: Prefecture entrusted with the administration of disaster debris disposal

The disposal of disaster debris had been the responsibility of the municipalities, but as the staff and offices of coastal municipalities were affected by the tsunami, debris disposal administration of the 12 coastal municipalities is now the responsibility of the prefecture after a nationwide agreement based on local autonomy laws. Disposal is carried out under the guidelines of the municipalities

[Administration Flow]



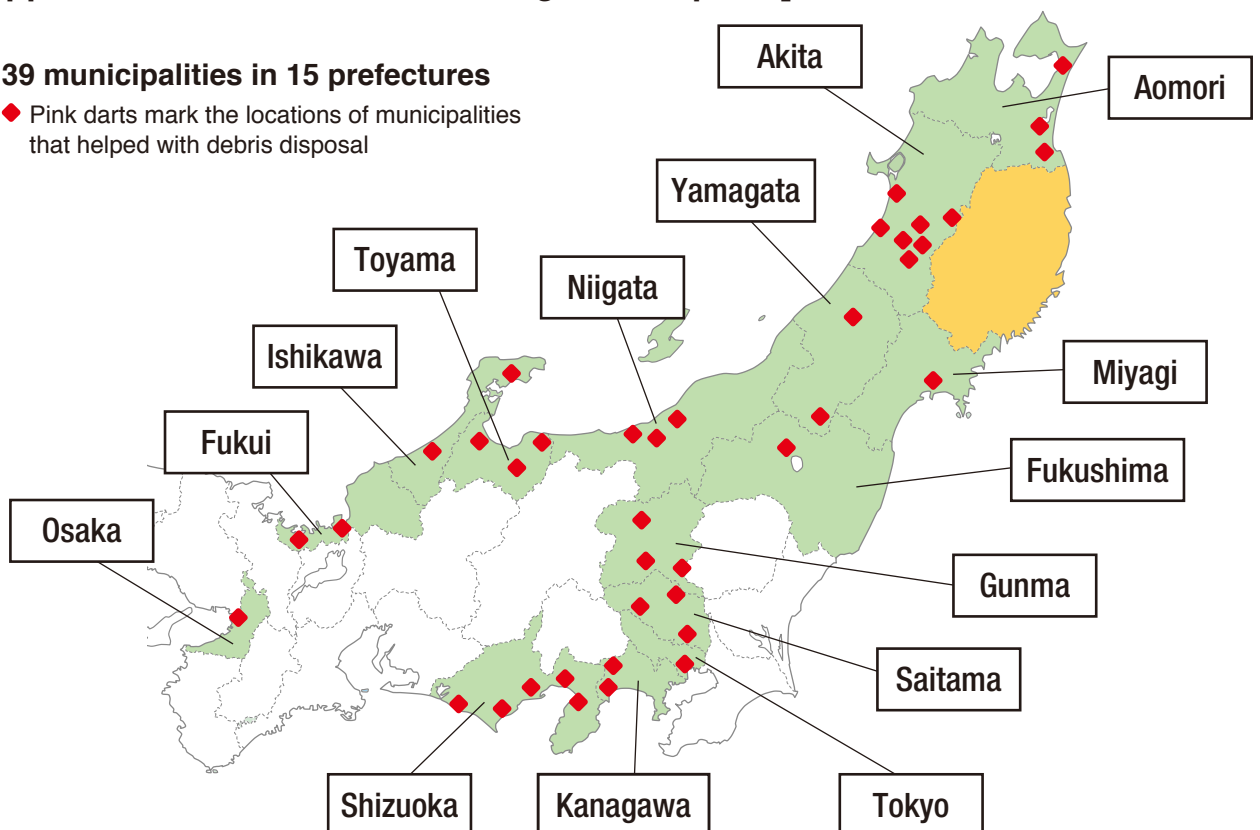
Approach 2: Regional waste treatment with support from national and local authorities outside Iwate

In order to complete the disposal of disaster debris by the end of March 2014, our prefecture sought support from the national government and from local authorities to dispose of debris that couldn't be processed inside the prefecture. Doing this allowed us to complete the disposal process within the planned deadline.

[Support from local authorities in regional disposal]

39 municipalities in 15 prefectures

◆ Pink darts mark the locations of municipalities that helped with debris disposal



Approach 3: Innovation by private business operators and high degree of recycling

(3) – 1 Crushing/Sorting

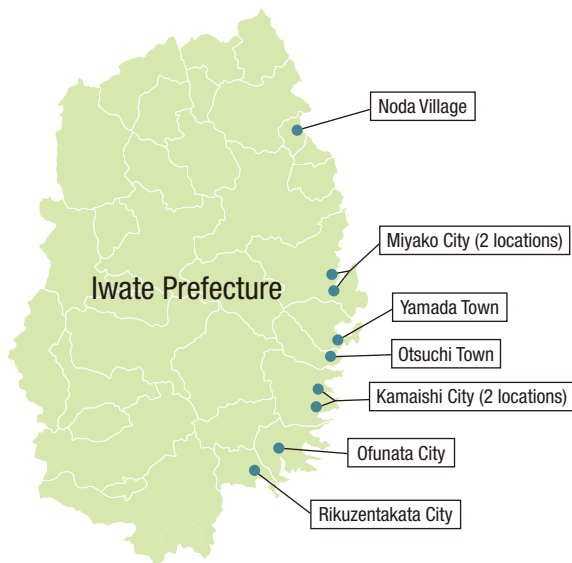
The amount of debris was not only huge but also varied due to the tsunami; hence, it could not be disposed of by the processing facilities. We assigned the crushing and sorting work to private firms possessing cutting-edge technology and knowledge, and they performed the task of disposal.

Incorporating automobile makers' "Kaizen" (production management techniques that eliminate waste), the processing of concrete debris in the town of Yamada proved to be more efficient and the planned amount of disposal was completed without extra costs for upgrading of facilities and human resources.

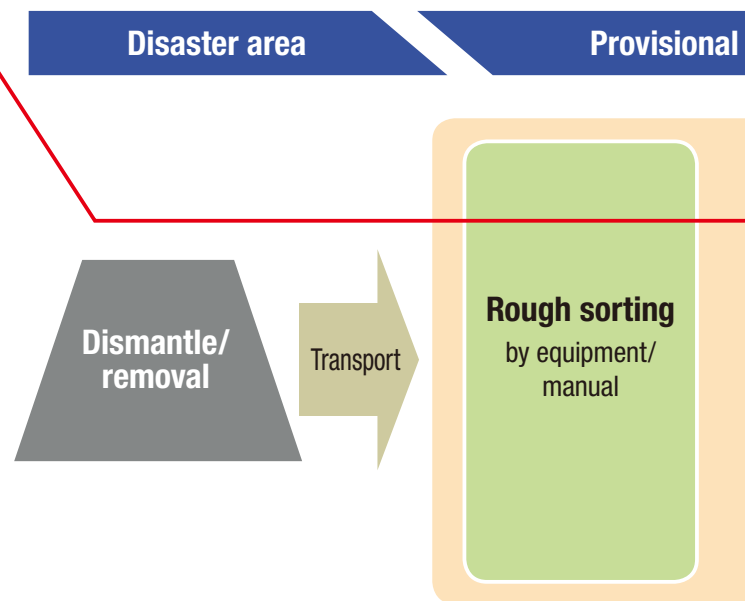


Crushing and sorting line established in Miyako (Kashima JV)

[Crushing/sorting facilities allocated]



[Disposal flow]



[Mixed debris before crushing/sorting]



Combustible debris



Incombustible debris

(3) - 2 Cement Plants

As the debris can be processed as fuel and raw materials for cement, does not leave ash, and does not require other disposal sites, the cement plants in Iwate and Aomori prefectures became key areas for debris disposal.

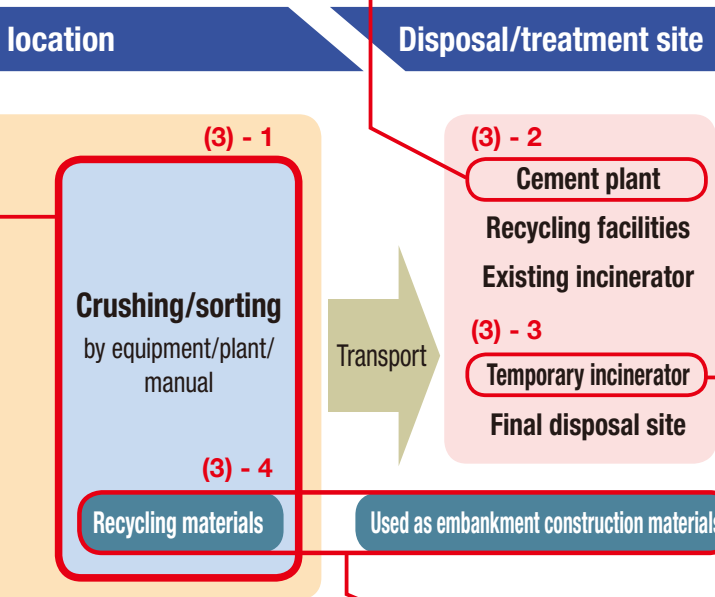
The cement products standards set a maximum limit on salt content, so technology had to be incorporated to wash and remove the salt in disaster debris that was filled with seawater.



Taiheiyo Cement Corporation's Ofunato factory



Salt removal facility



(3) - 3 Temporary incinerators

The existing facilities for thermal treatment were lacking hence temporary incinerators were set up in Miyako and Kamaishi cities. These facilities were utilized with the cooperation of the officials and residents in the area.



Temporary incinerator (Miyako)

(3) - 4 Recycling as reconstruction materials

Concrete remains from dismantling the disaster-affected buildings and accumulated debris from the seabed after the tsunami accounted for 70% of the total debris. These were then sorted and foreign materials were removed as much as possible and reused as embankment construction materials.



Soil classification treatment facilities at Rikuzentakata (Joint venture with Rematec. Ltd.)