

# Research on the estimation of disaster waste generation potential and generation intensity

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### 1. Introduction



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Estimation of the scale of damage and the amount of disaster waste generation in advance is crucial for enabling systematic processing of disaster waste once a disaster occurs. We estimated the potential disaster waste generation in the Asia-Pacific countries where storm and flood events are increasing due to climate change.

IN REAL PROPERTY.

Disaster waste in Rikuzentakata City, Iwate Prefecture (Scars viewed from the air "Tohkaishimpo")

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Life Investigation Agency

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# 2. Disaster waste estimation2.1 Basic concept

**Disaster waste generation potential due to collapsed buildings =** 

Unit of generation (generation potential per square meter of floor area,  $t/m^2$ ) × floor area (m<sup>2</sup>) × number of damaged buildings (Qty)

# Disaster waste generation potential due to damaged public infrastructure:

estimate based on population and GDP, as well as the actual data on damage caused by the disaster.

Generation potential of naturally derived disaster waste (fallen trees, driftwood, sediment, etc.):

estimate based on the amount of green infrastructure and the actual processed amount of waste by disaster type.

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### 2.2 Disaster waste generation units in Japan

The potential amount of disaster waste generated due to building collapse can be estimated by setting the units of generation per floor area per building structure, and by multiplying them by the total building floor area.



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### 3. Estimating waste generation and compiling per unit generation data in the Asia-Pacific countries

**3.1 Estimation of the disaster waste generation potential** 

Identify the area with artificial structures

Obtain population distribution in the target area Estimate no. of households

Estimation of generation potential (total floor area)

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#### **3.2 Compiling data of disaster waste generation intensity**

### Per unit disaster waste generation by building structure (unit: t/m<sup>2</sup>)

	Japan	Shanghai	Indonesia
wooden buildings	0.48	<b>0.85</b> (Brick-wood)	0.080
non- wooden buildings	1.20	<b>1.47</b> (Brick-concrete:1.38,1.42) (Concrete:1.44,1.49) (Steel:1.61)	<b>0.75</b> (Single modern brick house0.736) (Single storied commercial establishment0.746) (Multi storied commercials establishment0.817)

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### **3.3 Compiling disaster waste composition data**



## 4. Conclusion



- By utilizing satellite information, we demonstrated a way to estimate the potential amount of disaster waste generated from collapsed buildings.
- However, this approach will yield building floor area. To convert it to weight-based estimation, it is necessary to understand per floor area waste generation by building structure.
- Furthermore, by estimating hazard information prior to a disaster event, for example, in case of flooding, by estimating the number of flooded buildings, it is possible to estimate the amount of disaster waste to be generated.
- Disasters are becoming more frequent due to climate change. While the GDP in the Asia-Pacific region is increasing and its sanitation level is improving, there are many areas where securing space for final disposal is a challenge.
- Regions with high disaster risk need to develop a disaster waste management plan and establish a system for solid waste disposal that takes into account disaster occurrence in order to achieve efficient and sustainable management of treatment facilities.

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### Thank you ! !

I can't speak English well. If you have any question, please send E-mail !

(My prof. SHIMAOKA is in hospital)

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