

A hint on debris estimation

Waste from Internally Displaced Person (IDP) camps. If people are moved to IDP camps the majority of waste will be produced there, and special measures for waste management must be put in place since camp waste may include new items with increased packaging such as plastic bottles.

Generally, IDP camp per capita waste generation corresponds to urban waste generation before the disaster.

Rubble. Forecasting the amount and types of rubble generated during disasters helps planners to understand the scope of effort that will be required to ensure effective handling. These estimates can be based on previous experience or be made using forecast tools. Due to the unpredictable nature of disasters, no tool will be completely accurate.

The USACE Hurricane Debris Prediction Model helps determine the approximate volume of debris from a storm event using the formula:

$Q = H*(C)*(V)*(B)*(S)$ where:

Q = estimated debris total generated in cubic yards equal to cubic metres

H = number of households, or population/3 (household = population divided by 3)

C = hurricane category factor (cat1 = 2, cat2 = 8, cat3 = 26, cat 4 = 50, cat5 = 80)

V = density of vegetation (1.1 for light, 1.3 for medium, 1.5 for heavy)

B = percentage of commercial structures (1.0 for light, 1.2 for medium, 1.3 for heavy)

S = precipitation factor (1.0 for none to light, 1.3 for medium to heavy)

The predicted accuracy is $\pm 30\%$. This is a US model and will be even more approximate when used elsewhere but can provide a sense of the volume of rubble to be expected.

The following can also be used as a guide for the amount of rubble that be expected per building”

Wooden house 80 kg/m²

Single storey modern brick house 736 kg/m²

Single storey commercial building 746 kg/m²

Multi-storey commercial building 817 kg/m²

Using these figures, a modern brick house with 86 m² floor area will generate an estimated 63 tons of debris and rubble.