

This initial quantification of earthquake generated debris selected towns and villages in Aleppo is derived from building footprint data and damage assessments from Microsoft. This data was combined with an above surface height model, derived from the difference between a Digital Terrain Model (SRTM) and a Digital Surface Model (ALOS World 3D). For visualization and modeling purposes, results were aggregated into an rectangular grid.

Two scenarios have been developed: Scenario 1: 100% of debris is disposed of at disposal facilities.

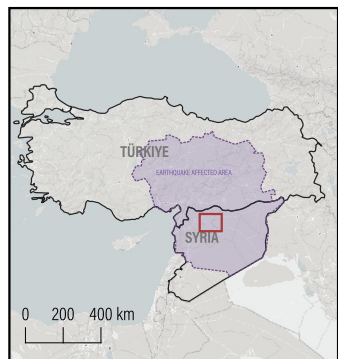
Scenario 2: 50% of debris is recycled at a centralized recycling facility and remaining 50% is disposed of.

For modelling purposes, disposal and recycling facilities are assumed to be at a 10km distance from source of debris. Cost assumptions are based on local debris management costs provided by UNDP, and results will need to be refined based on local parameters.

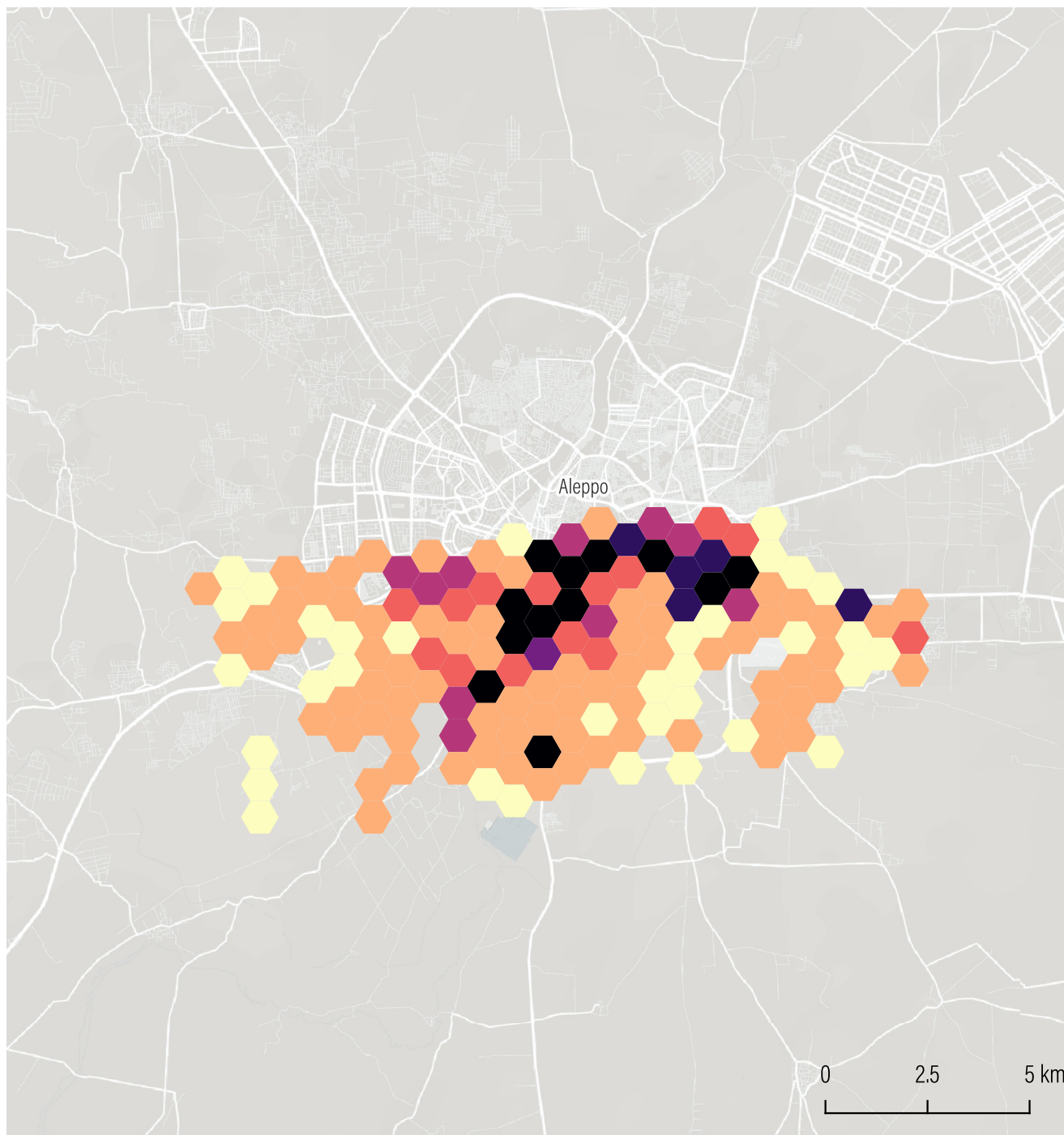
Estimated debris quantities (tonnes)

- < 500
- 500 - 10,000
- 10,000 - 20,000
- 20,000 - 30,000
- 30,000 - 40,000
- 40,000 - 50,000
- > 50,000

Total debris quantity **1,645,000 t**



Datum: WGS 1984
Coordinate System: Universal Transverse Mercator 37N



Debris management - Preliminary outputs

| | | |
|---|--------------------|------------------|
| Total debris quantity | 1,645,000 t | |
| | Scenario 1 | Scenario 2 |
| Time to clear (months) | 6 | 6 |
| Time to recycle (months) | 0 | 20 |
| Total time to clear and recycle (months) | 6 | 20 |
| Total cost (US\$) | 6,321,875 | 7,766,875 |
| Revenue from recycling (US\$) | 0 | 4,267,266 |
| Cost less revenue (US\$) | 6,321,875 | 3,499,609 |
| <hr/> | | |
| Total distance covered (km) | 903,000 | 903,000 |
| CO2e from trucking (tCO2) | 1,240 | 1,240 |
| Cost of haulage (US\$) | 6,321,875 | 6,321,875 |
| <hr/> | | |
| Material recovered for reconstruction * | 0 | 505,750 |
| Cost of processing of debris (US\$) | 0 | 1,445,000 |
| Value of recovered material in market (US\$) | 0 | 4,267,266 |
| Total cost saving of natural raw materials substituted (US\$) | 0 | 7,112,109 |
| <hr/> | | |
| Material disposed (tonnes) | 1,445,000 | 939,250 |
| Total space required for disposal (ha) | 18 | 11.7 |

* 70% recycling rate (t) of debris brought for recycling