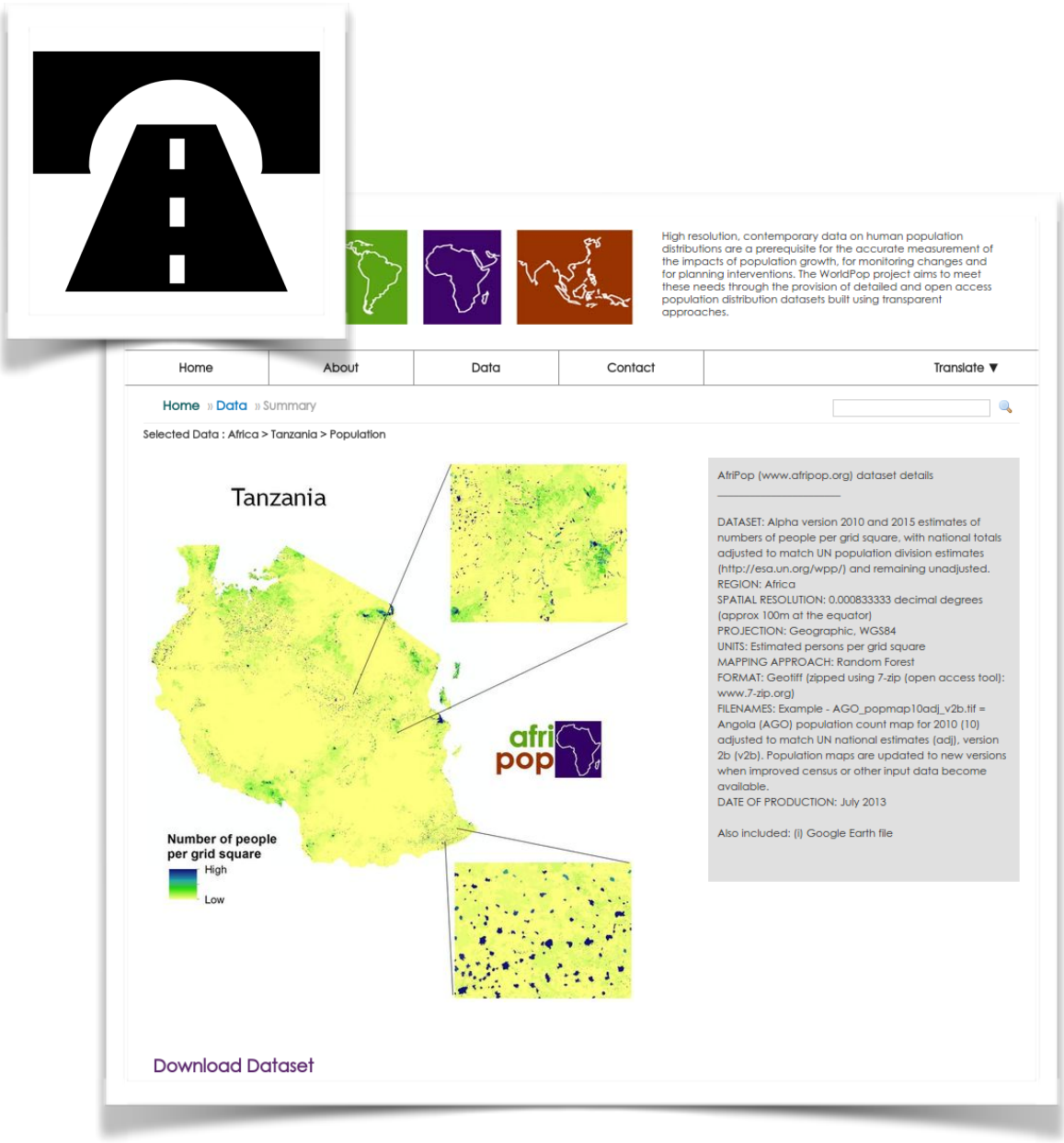
In the context of InaSAFE, exposure refers to people, infrastructure or land areas that may be affected by a disaster. Currently InaSAFE supports three kinds of exposure data:
population / people

- roads
- buildings
- Population data

- Population data can often be obtained by your census bureau or through various online data sources. One problem with population data is that it is often quite coarse (represented using a raster with a large pixel size) and so analysis at large scales (e.g. a small neighbourhood) using population data may not always be the best idea. Currently InaSAFE only supports raster based census data, but in the near future we will be releasing a version that supports assigning population estimates to buildings using census data. One of the nicest online resources for population data is 'WorldPop' - a project that aims to provide population data for anywhere in the globe produced in a standardised and rigorous way.

There are two common representations for raster population data:
Density: In this representation each cell in the population dataset contains the number of people per measurement unit - for example people per m^2.

i. **Counts**: In this representation each cell contains the actual number of people thought to be resident in that cell.
ii. Understanding if your population data is density or counts is important as the processing of density data needs to be done differently if the cells contain density compared to if they contain counts. For example If you are resampling the dataset (reducing or enlarging the pixel sizes), count data would first need to be converted to a density (e.g. 50 people / m^2), the resampling carried out and then converted back to a count.
iii. **Note:** The data provided by WorldPop contains **counts** of people per cell and the cell size is approximately 100m.
iv.



Key notes for population data	
Format	Raster ‘cell’ data
Requirements	Currently the data should be in EPSG:4326 CRS
Notes	Be sure you know whether you are dealing with density or count data.
Sourcing	WorldPop or from national government datasets.

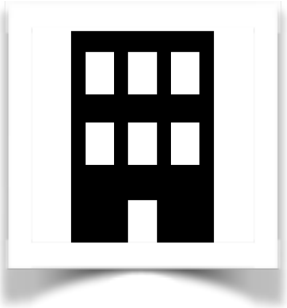
Roads data

Roads / streetline datasets are a useful datasource when you want to understand the impact of a flood on roads infrastructure. With the InaSAFE flood on roads impact functions, you can calculate which roads of which type might be impacted by a flood.

Very often there will be national datasets available for roads. In this case you should contact your national mapping agency for up-to-date datasets.

The OpenStreetMap project is an excellent source of exposure data.The data is freely available, generally well maintained and a vital resource for contingency planners. There are numerous ways to download OpenStreetMap roads data, but our recommended way is to download the data using the baked-in tool provided with InaSAFE.

Key notes for roads	
Format	Vector line data
Required fields	A field representing road type
Notes	Topologically correct data is ideal - that is road intersections should converge properly
Sourcing	Can be sourced from community mapping efforts in OSM (using the built in tool in InaSAFE makes this easy) or from national government datasets.



Buildings (structure) data

Like roads, buildings footprints can be a useful dataset to have for understanding the impacts of a flood. For example you may wish to know ‘how many buildings might be flooded and what types of buildings are they?’.

In InaSAFE you **do not need** to use engineering quality data. We are more concerned with the numbers and types of structures affected by a disaster and do not work at engineering tolerances needed when, for example, planning a new water mains system.

Key notes for buildings	
Format	Vector polygon data
Required fields	A field representing building type
Notes	InaSAFE does not need ‘engineering quality’ data.
Sourcing	Can be sourced from community mapping efforts in OSM (using the built in tool in InaSAFE makes this easy) or from national / local government datasets.