GCSE Geography Knowledge Organiser – 3.2.1b What are the impacts of tectonic processes? – Volcanoes

When we refer to the impacts of tectonic hazards, we are mainly focussing on the effect they have on **health**, **infrastructure** (buildings, transport, power etc.) and the **economy**.

Volcanoes vs earthquakes? Although both can be devastating, typically, volcanoes give you some **warning** before they erupt and so people are less likely to be caught by surprise. This also means there is **time to prepare** or **evacuate** which can help reduce the impact of volcanic hazards.

When large volumes of **rainwater** or **melted snow** mix with volcanic ash on **steep slopes**, lahars (mudflows) are formed. They move rapidly down valleys like rivers of concrete and can travel over 200 km in distance, destroying everything in their path. They can occur many weeks **after** an eruption, during times of heavy rain.

Lava flows flow too slowly to pose any real threat to people, but they do destroy anything stationary in their path such as transport links, businesses, hospitals and farmland. This can lead to famines and forced migrations.

Pyroclastic flows are fast moving, super-heated clouds of gas and ash. With speeds of over 120 kph, unpredictable paths and temperatures of up to 600°C, they can be deadly. They carry rock fragments large enough to **demolish buildings and other infrastructure** and have temperatures high enough to **start fires** and cause horrific burns.

Mt Merapi is a stratovolcano located on Java, close to one of the most **densely populated** areas in Indonesia. The 2010 eruption was a magnitude 4 on the VEI scale and created devastating **pyroclastic flows, ash falls and lahars**.

Ash clouds are formed when tiny lava droplets are blasted into the air and quickly cool into sharp and abrasive ash. This can be a danger to passing aircraft and so flights will have to be cancelled, resulting in financial loss ($700 million in the case of the Merapi eruption). Waterways can be polluted forcing people to drink dirty water and spreading diseases such as **cholera** (as happened on Java after the Mt Merapi eruption). The ash can also cause lung damage if inhaled (after the Mt Merapi eruption, people 20 km away were breathing in ash). Ash collects on buildings and power lines causing them to collapse, the result of which can lead to homelessness and blackouts.

LICs may be more vulnerable to volcanic eruptions as they have a lower standard of **healthcare** and thus cannot look after all of those who are injured. They may rely on produce from farmland more than HICs and so the destruction of crops is more likely to cause increased food prices (as in the case of the Merapi eruption), **famine** and **forced migrations**. Poorer members of the population may be forced to live in hazardous areas such as the **steep slopes** of the volcano or in the **valleys** leading from it. Despite warnings of an eruption, some of the population may **not hear** them and even if they do, they may not have the **resources** available to move. Poorer populations are more likely to rely on open sources of clean water which are at risk of being **contaminated** by ash fall.