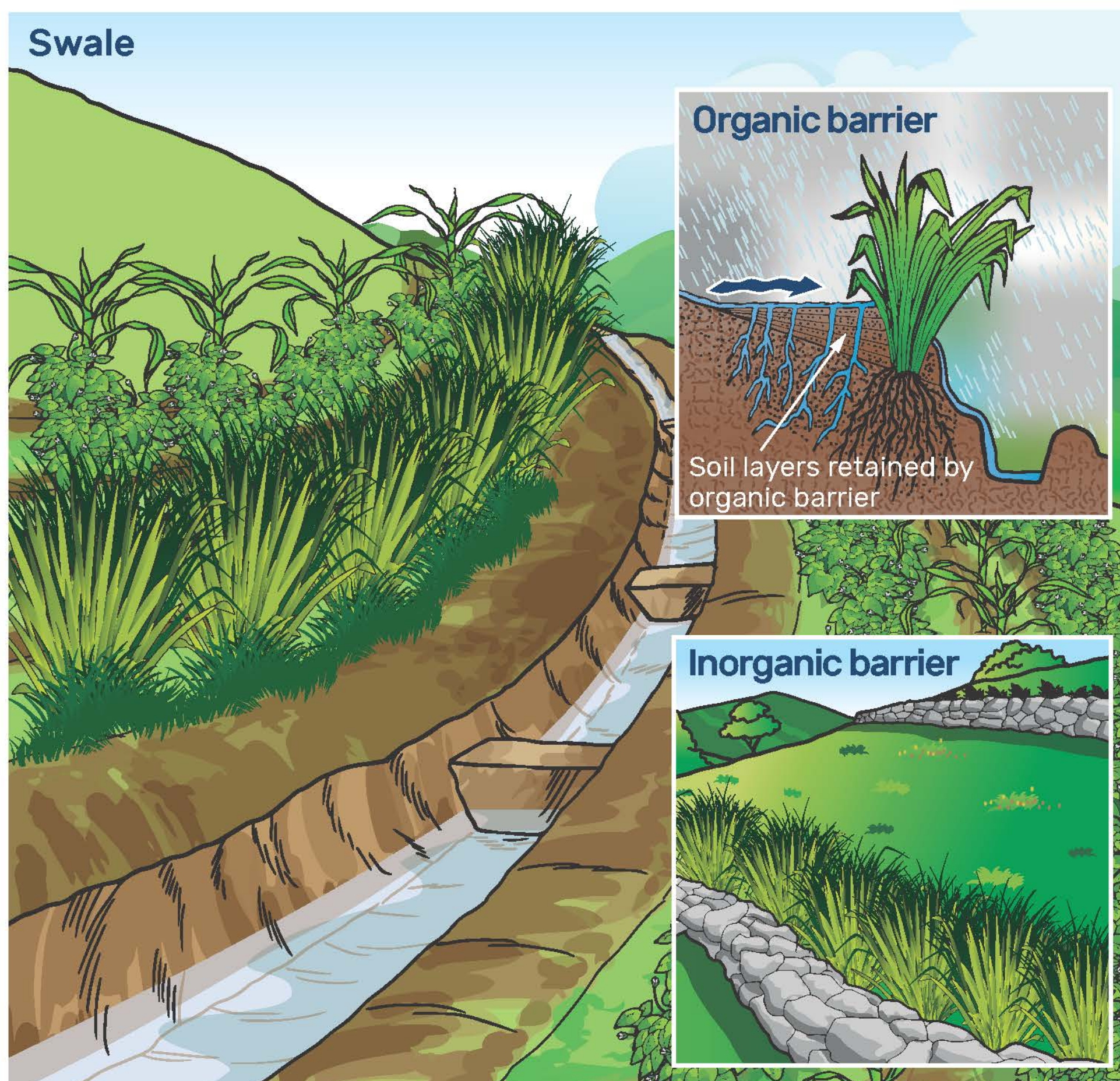


## Purpose of swales and barriers

- Swales or infiltration ditches are a way to harvest water during the dry season and stop strong rains from eroding the fertile topsoil. It's a channel that follows along a contour line so that the water doesn't run to one part of the channel, but rather collects and infiltrates into the ground.
- An organic barrier is a hedgerow using planted vegetation to retain soil following along a contour line.
- Inorganic barriers are low stone walls built on a contour line in very rocky terrains with a slope of over 30%. They're a good option for keeping rainwater from eroding the soil and at the same time clearing the cropland.



## Recommendations

### Swales

- Every linear metre of the swale can hold the equivalent of a barrel of rainwater.
- Recommended plants that trap soil well are those that have a strong root system such as valerian (or vetiver grass) and lemon grass.
- Building swales takes a lot of work. For example, on a one-manzana (0.7 hectares) plot with a 30% slope, you're going to need a total of 850 metres of swales.
- Every time a swale fills up with dirt, you have to clear it out to get it to its original depth.



### Organic barriers

- The plants need to have a well-developed root system in order to trap the soil. They need to be planted close together, and should have some added usefulness (medicinal plants, repel insects, food). For example lemongrass or valerian, pineapple or piñuela (Bromelia Pinguin).
- The spacing between each organic contour barrier will depend on the percent slope of the terrain.



### Inorganic barriers

- You must avoid leaving empty spaces between the rocks where water could flow through and demolish the wall.
- As to maintenance of the wall, fallen rocks must be replaced.



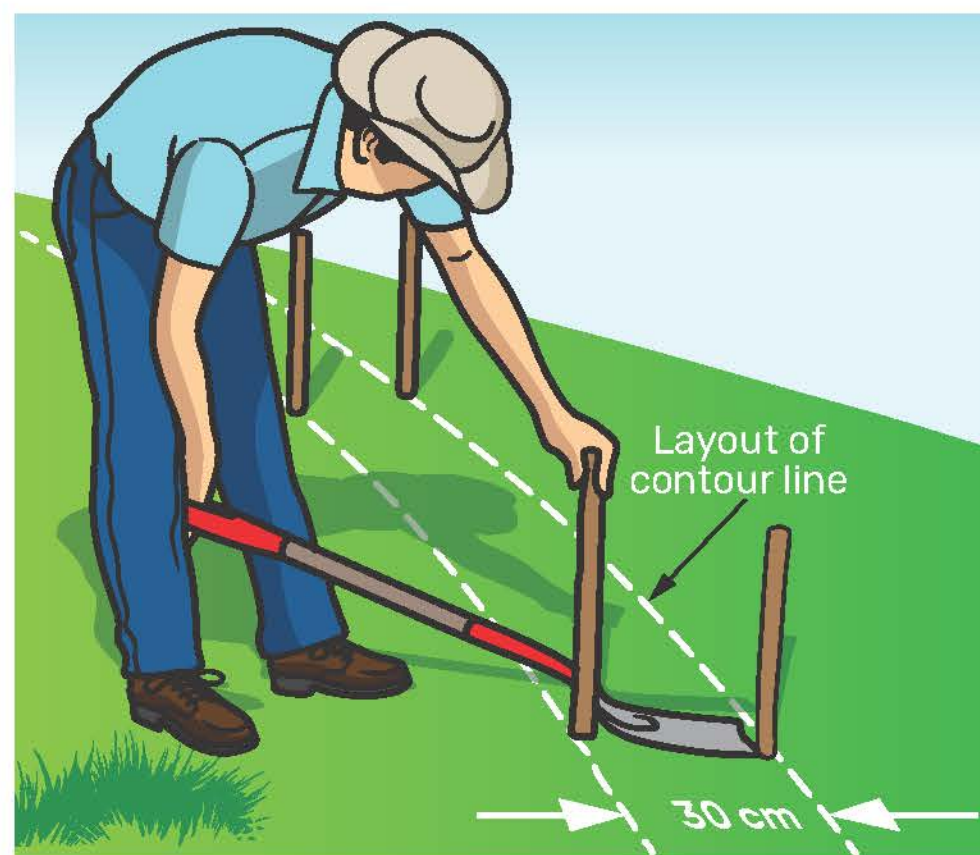


# Step by step: Constructing swales and inorganic barriers

## Swales

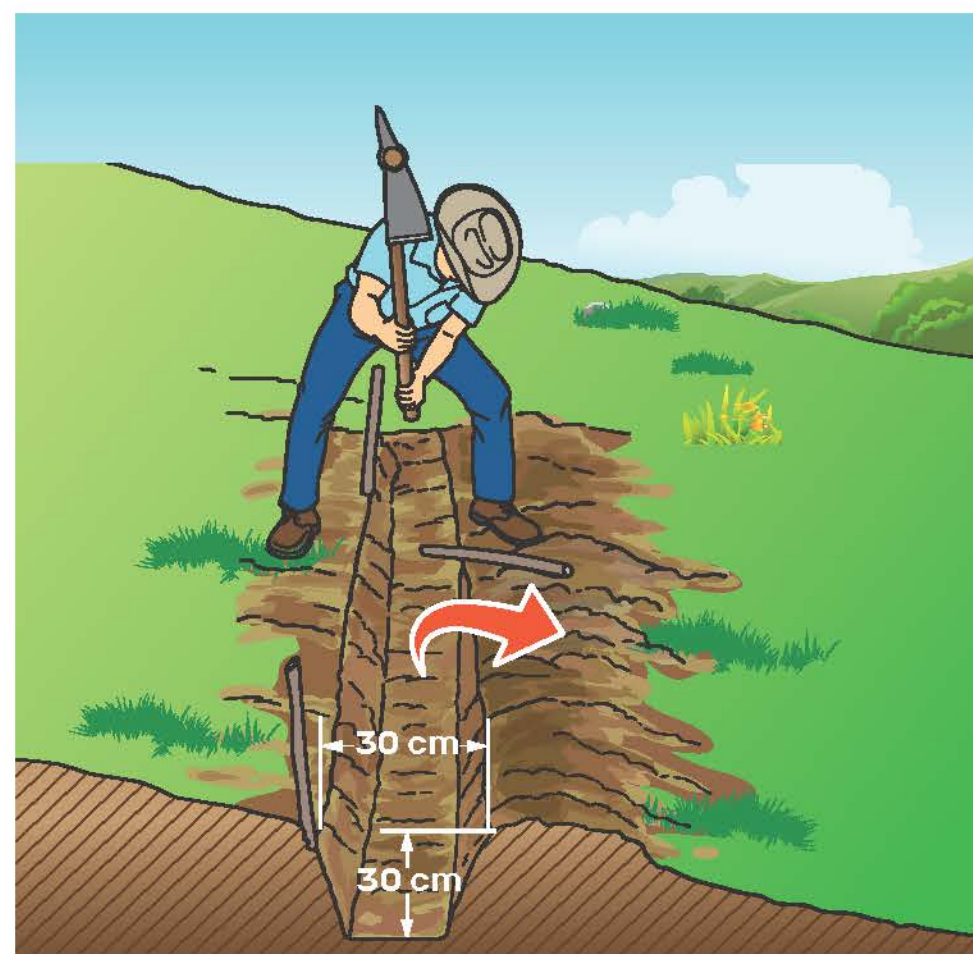
### 1. Staking

The bottom of the ditch should be about 30 centimetres wide, so place stakes some 30 centimetres above the previously laid out contour line.



### 2. Digging

Using a pick, dig the trench to a depth of about 30 centimetres (measured from the lower part of the ditch). Mound the dirt on the downhill side.



### 3. Cutting the rim

The rim is the sloping edge that needs to be cut above the ditch. The width of the rim depends on the slope, but it should be the same as the height of the ditch on the upper side. Just like with the ditch, mound the soil on the downhill side.



### 4. Making check dams

Check dams are little mounds, half the height of the ditch, which are left in place every 6 to 8 metres when building the swale. They serve to better distribute the rainwater along the channel, since water runoff is not uniform throughout the whole plot.



## Inorganic barriers

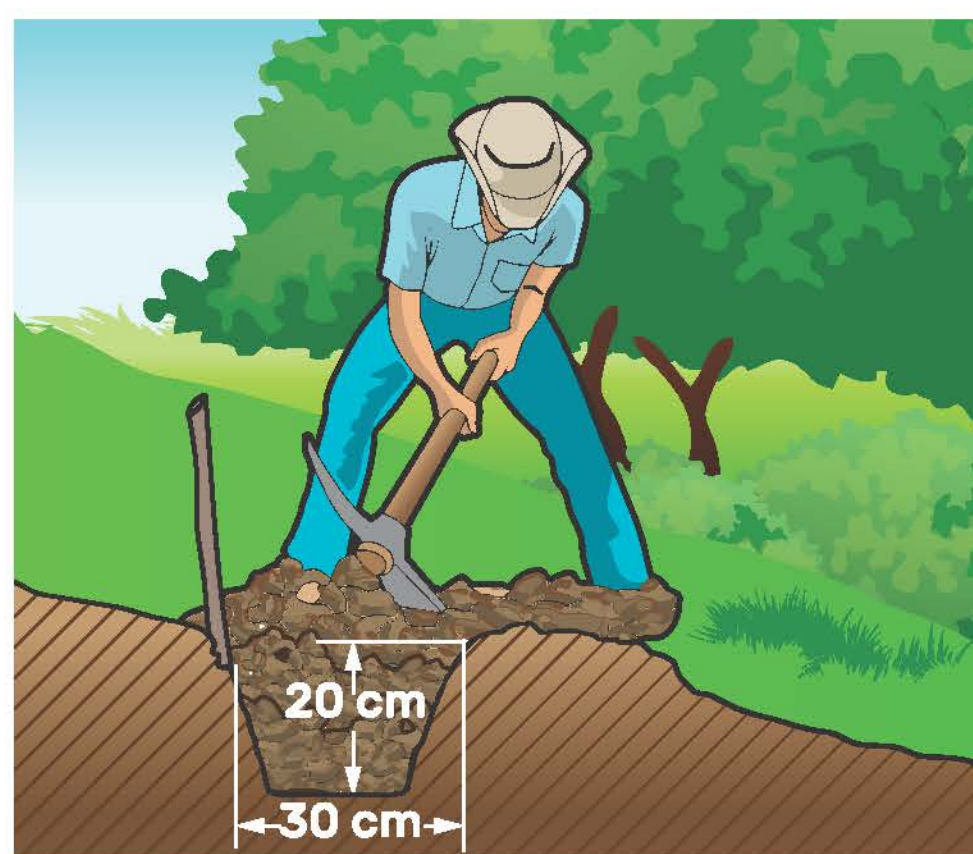
### 1. Collecting material

Once the contour line is laid out, gather up the rocks scattered throughout the plot.



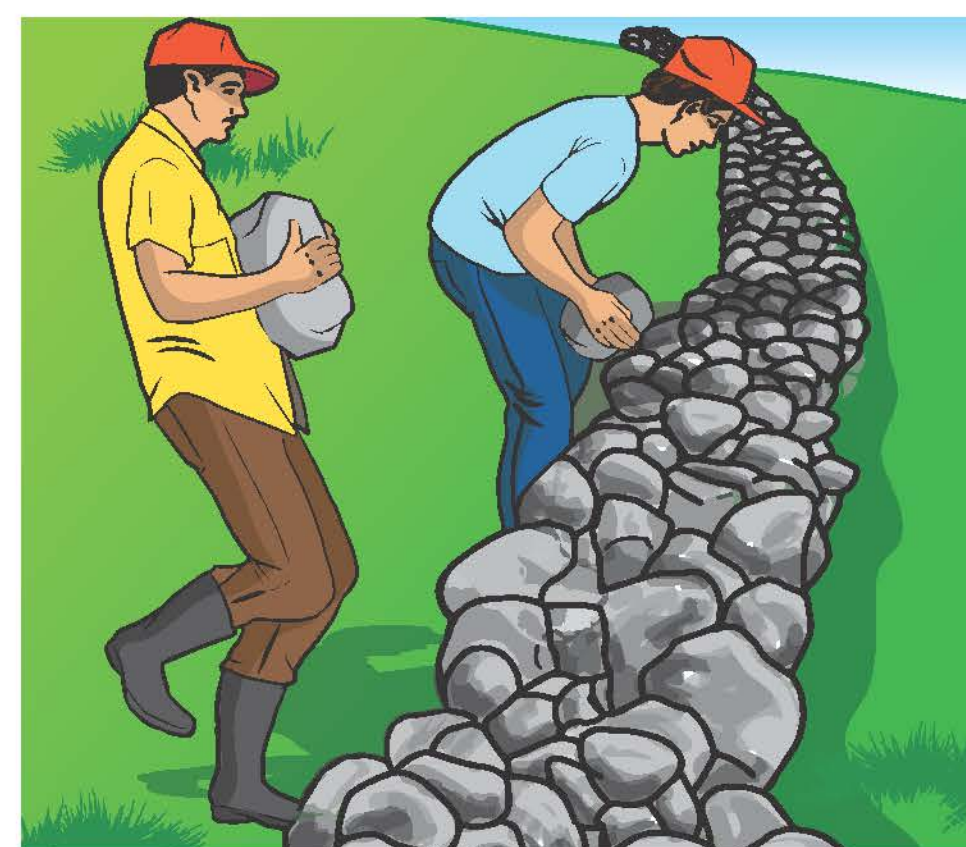
### 2. Digging

Make a trench about 30 centimetres wide by 20 centimetres deep as a foundation, to ensure the stone wall is well-established.



### 3. Building

Build the inorganic barrier just as you would any other stone wall, placing the larger, flatter rocks on the bottom.



The height of the wall depends on the slope and the amount of stones available.



This publication has been produced with the support of the European Union. The content is the sole responsibility of the author and in no case should be considered as reflecting the views of the European Union.

SCIAF is the official overseas aid and development charity of the Catholic Church in Scotland and a proud member of the Caritas family. Registered in Scotland No: SC012302 Company No: SC197327

