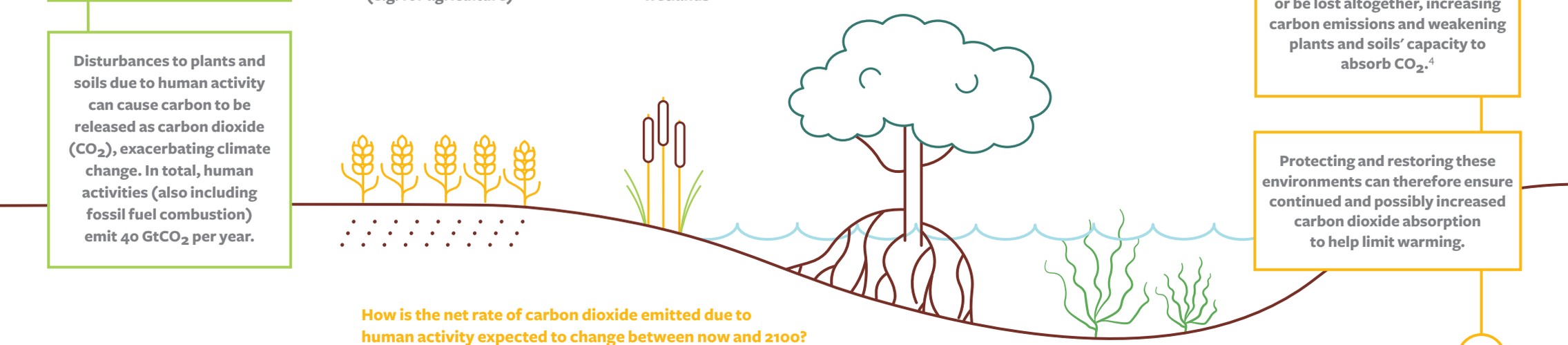
HOW DO HUMAN ACTIVITIES CAUSE PLANTS AND SOILS TO EMIT MORE CARBON DIOXIDE (CO_2)?

Large amounts of carbon are stored as organic matter in plants and soils, both on land and in shallow seas. Terrestrial environments take up more CO_2 than they emit, resulting in a net absorption of 6.2 $GtCO_2$ per year[2] currently.

Disturbances to plants and soils due to human activity can cause carbon to be released as carbon dioxide (CO_2), exacerbating climate change. In total, human activities (also including fossil fuel combustion) emit 40 $GtCO_2$ per year.

At what rate is carbon dioxide currently[1] being emitted due to human activity?

Managed land (e.g. for agriculture)	Tidal saltwater wetlands	Mangroves	Seagrass meadows
1.5 – 5.0 ($GtCO_2$/yr)	0.02 – 0.24 ($GtCO_2$/yr)	0.073 – 0.45 ($GtCO_2$/yr)	0.05 – 0.33 ($GtCO_2$/yr)



If current trends in sea level rise, pollution and commercial land development continue, many of these environments will decline or be lost altogether, increasing carbon emissions and weakening plants and soils' capacity to absorb CO_2.[4]

Protecting and restoring these environments can therefore ensure continued and possibly increased carbon dioxide absorption to help limit warming.

How is the net rate of carbon dioxide emitted due to human activity expected to change between now and 2100?

	Managed land (e.g. for agriculture)	Tidal saltwater wetlands	Mangroves	Seagrass meadows
Outlook including climate change but also assuming appropriate policy support will be put in place.[3]	Decreased emissions	Increased emissions	Increased emissions	Increased emissions
Outlook under current policies only and including effects of climate change.[3]	Decreased emissions	Increased emissions	Increased emissions	Increased emissions

If appropriate policy support is put in place for these environments then the outlook would change to reduced emissions.

1. Annual rates refer to the past decade available (2005–2014). (Gt = 1 billion tonnes)
2. Taken from Figure 6.1, AR5 WGI Chapter 6.
3. The different outlook parameters arise due to the range of different studies drawn on for this infographic.
4. Estimates of the size of this effect vary widely.

Note: Non-managed terrestrial land (forest, grasslands etc) and permafrost environments are not included here since human activity does not directly affect their emission rates. This means that issues related to deforestation of primary forest are not represented in this infographic.

AVOID 2
Can we avoid dangerous climate change?