



# How does carbon offsetting work and what are carbon offset projects?

## Key points:

- Carbon offset projects have been developed as a way to reduce the costs of addressing climate change.
- It does not matter where greenhouse gas (GHG) reductions occur – a reduction anywhere in the world could contribute to climate change mitigation. This enables actors in developed countries to ‘purchase’ GHG reductions from projects in developing countries, where they are often cheaper.
- Carbon offset projects can be of two main types: (1) projects that reduce the emission of GHGs into the atmosphere (emissions avoidance); or (2) projects that remove GHGs from the atmosphere (sequestration).

The term ‘carbon offset’ is used to describe a mechanism for mitigating climate change which aims to lower the costs of reducing greenhouse gas emissions that are associated with causing climate change. Carbon offsetting works in the following way:

1. A project is implemented in a developing country which produces reductions in GHGs compared to the GHGs that would have occurred without the project. Such ‘carbon offset projects’ can include, for example, tree planting and avoided deforestation projects, energy efficiency projects, renewable energy project such as wind power or solar power and the capture of some types of industrial gases.
2. The reductions associated with the project are quantified in terms of tonnes of carbon dioxide equivalent (a measure of how much the GHGs contribute to climate change). Each tonne is equal to one carbon ‘credit’.
3. The certified carbon credits are purchased by governments, companies or individuals in developed countries and used to meet their emissions reductions objectives. This can be instead of, or in addition to, their own implementation of emissions reducing activities.

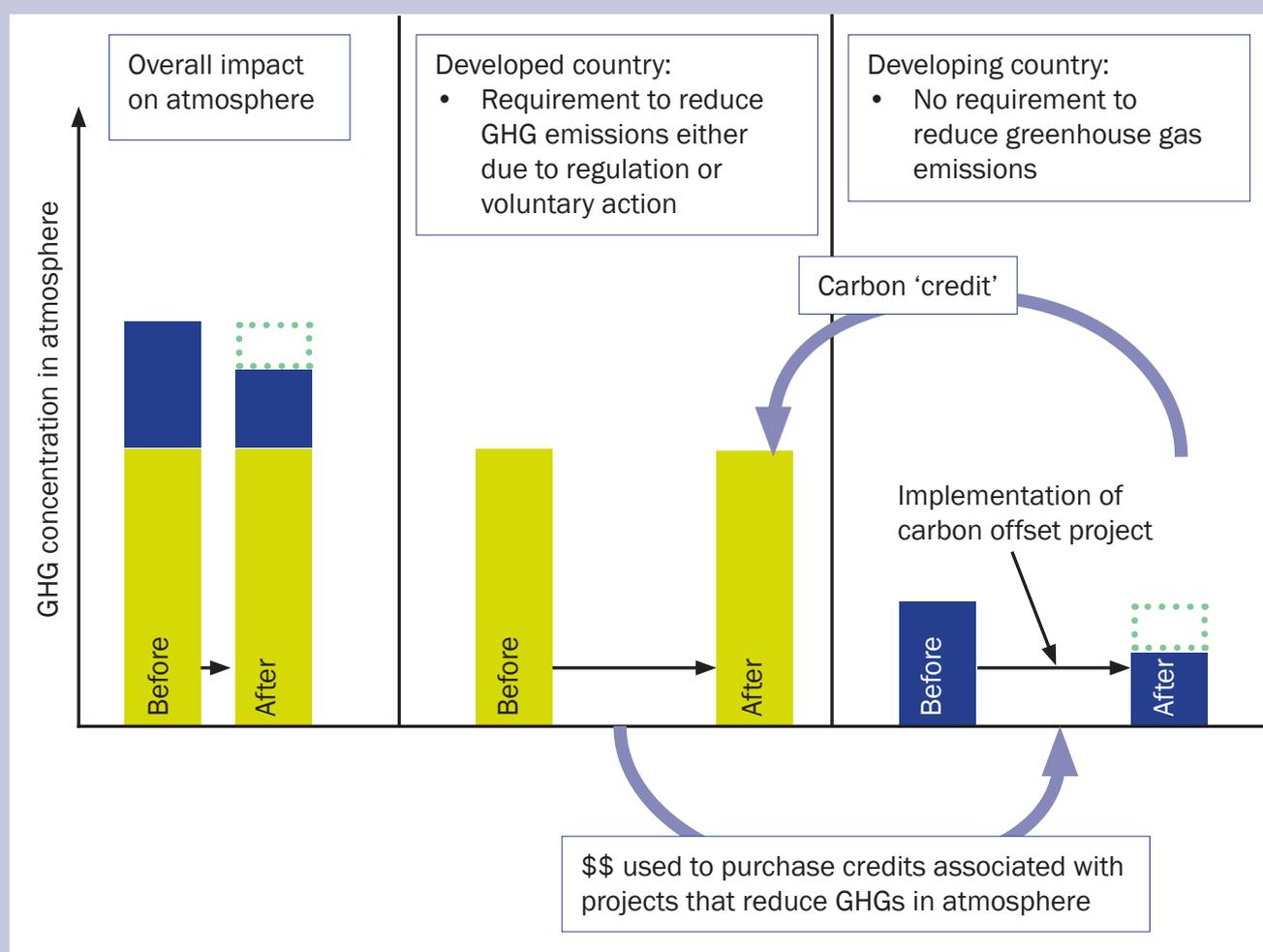
## Infosheet 1: How does carbon offsetting work and what are carbon offset projects?

This system works because developed countries have historically emitted much larger volumes of GHGs than developing countries and they have obligations under the Kyoto Protocol to meet emissions reductions targets. It is also possible because it does not matter where GHG reductions occur – a reduction anywhere in the world could contribute to climate change mitigation. Because the implementation of projects is generally cheaper in developing countries, the system is in theory cost effective compared to making reductions exclusively in developed countries. It is also argued that the investment in such projects could contribute to sustainable development in developing countries.

Carbon offset projects can reduce GHGs in the atmosphere in two different ways:

1. **Avoiding GHG emissions in the first place.** This can be achieved, for example, through replacing electricity generators that use fossil fuels such as oil, with generators powered by renewable energy, such as wind or hydro power. Burning or decaying trees can also release GHGs, so projects that prevent forests from being destroyed can also reduce emissions – these are often called 'Reduced Emissions from Deforestation and Degradation' (REDD) projects.
2. **Removing GHGs from the atmosphere.** This can be achieved, for example, by planting trees which draw carbon dioxide from the atmosphere during photosynthesis. This process is often called 'sequestration'.

Figure 1: How carbon offsetting works



The diagram shows greenhouse gas emissions (GHG) before and after the implementation of a carbon offset project in a developing country. Finance from developed countries is used to purchase the resulting emissions reductions or removals that can then be used to meet GHG reduction objectives which are set in developed countries. This means that the overall impact on the atmosphere is a reduction in GHGs, but that reductions are cheaper because of the lower costs of implementation in developing countries.