



## The science

Climate change impacts due to GHG develop with time in different ways depending upon the gas. They have different “potencies” and decay at different rates. Furthermore, many real systems have emissions and absorptions of GHG that occur at different points in time.

The **dynamics** of the climate change impacts caused by some systems **cannot be conveyed** with a single metric such as CO<sub>2</sub>e based on GWP<sub>100</sub>

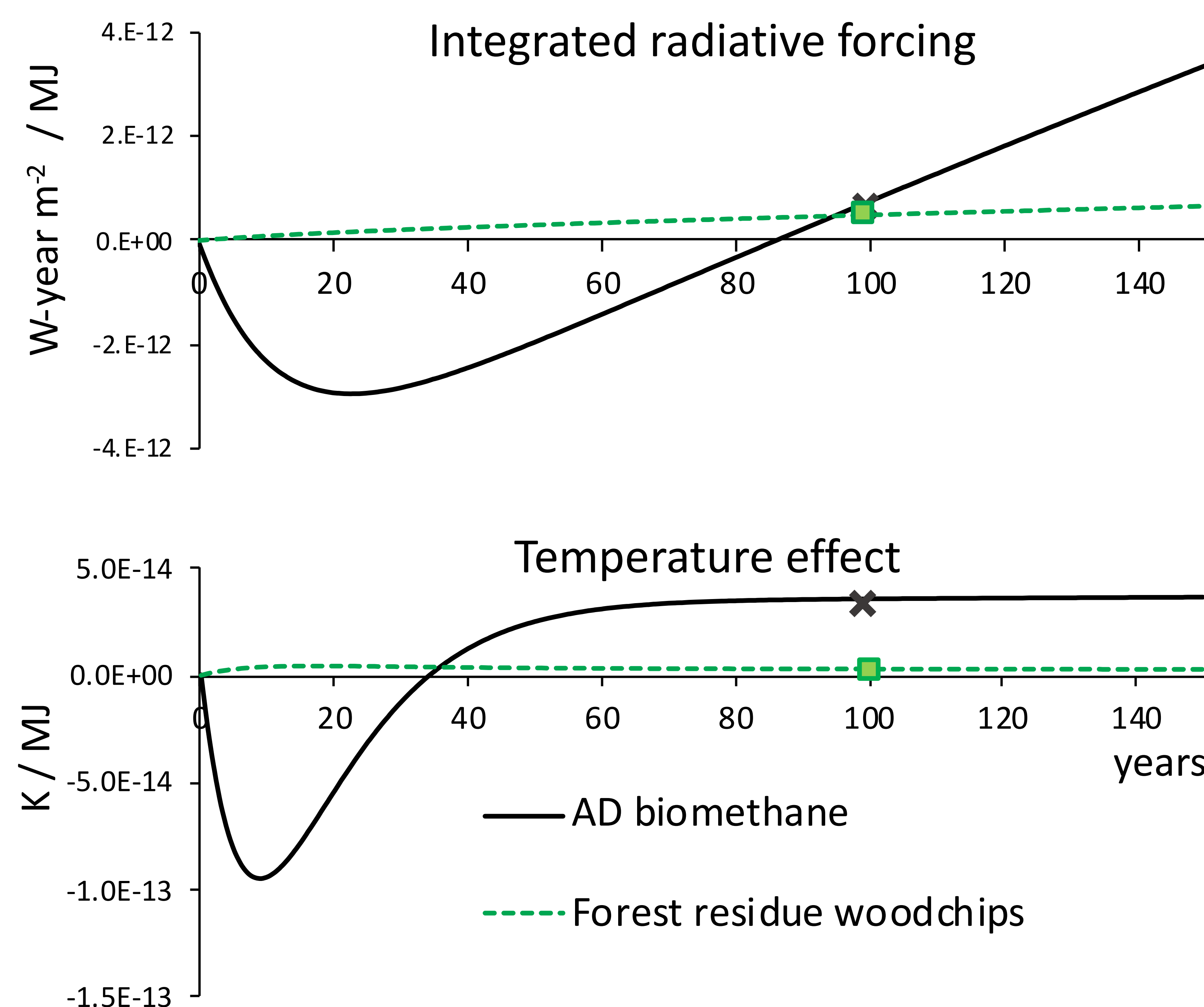
Does a single CO<sub>2</sub>e figure adequately represent your system?

Many systems, including Renewable Technologies and Battery Electric Vehicles often have upfront emissions but low emissions during the lifetime – therefore timing matters. Biobased systems are also complex due to the uptake and release of CO<sub>2</sub>.

## Examples of systems for which it matters:

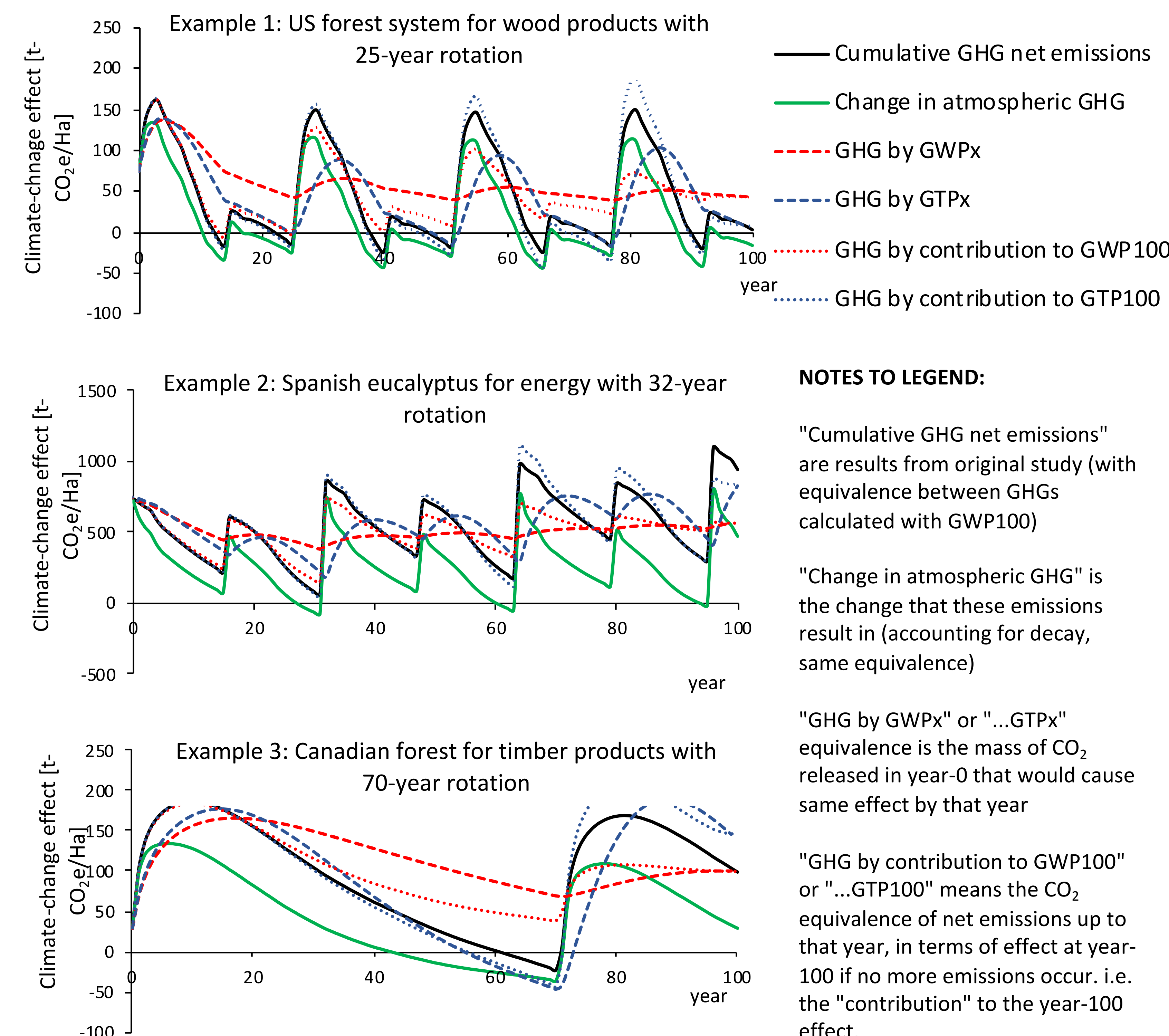
### Bio Based Heating Systems

Impacts are due to mix of CO<sub>2</sub>, CH<sub>4</sub>, & N<sub>2</sub>O.



### Forestry and Timber

CO<sub>2</sub> is absorbed and released at different times.



If you're not sure, you can enter the emissions into this simple spreadsheet tool and see how the associated climate change impacts vary with time.

<https://doi.org/10.15125/BATH-00923>

## Read more...

Briefing

note: <https://researchportal.bath.ac.uk/en/publications/greenhouse-gas-emissions-timing-matters>

Research article:

<https://doi.org/10.1016/j.biombioe.2020.105778>