Bamboo and climate change

As bamboo covers an estimated 30 million hectares throughout the tropics in Africa, Asia and the Americas, it can provide a significant contribution to combatting climate change in the developing world.

September 2019

SEQUESTERING CARBON

Bamboo is one of the fastest growing plants in the world. This makes it particularly suitable as a tool for carbon sequestration. Given its fast growth rate, bamboo can be harvested regularly, creating a large number of durable products which store carbon over several years, in addition to the carbon stored in the plant itself. Over time, this means that bamboo can sequester more carbon than some tree plantations.

This is particularly important when bamboo's potential to create durable products is taken into account. Industrial bamboo products, including flooring, decking, cladding, panels and beams, are long-lasting, recyclable, and can replace a variety of emissions-intensive materials, such as PVC, steel, aluminium and concrete. Due to their hardness, dimensional stability and aesthetic appearance, bamboo could also be a favourable substitute for hardwoods, even FSC-certified ones, in terms of carbon footprint and eco-costs.

PROVIDING CLEAN ENERGY

Bamboo can provide a sustainable source of bioenergy for the many people who rely on solid biomass for cooking, as charcoal or briquettes. It can also be converted into gas or pellets, to provide a source of electricity and heating. (Pictured: a bamboo gasifier set up by INBAR in Madagascar.)

Because it regrows quickly and matures faster than most types of tree, bamboo can take pressure off other forest resources, reducing deforestation. Bamboo charcoal and gas boast a similar calorific value to commonly used forms of bioenergy: a community of 250 households require only 180 kg of dry bamboo to generate sufficient electricity in 6 hours.

Importantly, bamboo energy and its byproducts also offer opportunities to create an income, particularly for smallholder farmers who grow it for household use.

A bamboo gasifier in Madagascar.

A GREEN CONSTRUCTION MATERIAL

Bamboo can make a range of durable products. Photo: MOSO BV.

Bamboo is used more and more as a sustainable, green interior design material, and can be seen across theatres, shopping malls and airports around the world. Bamboo composite is also being developed for use in the production of pipes, shells for transport vehicles, blades of wind turbines, shipping container flooring and even housing units.

HELPING COMMUNITIES ADAPT

Bamboo and rattan can help communities and individuals adapt to the negative impacts of climate change. The flexibility and lightness of bamboo makes it an excellent construction material for earthquake-resistant buildings in areas vulnerable to natural disasters, including Colombia, Ecuador and Nepal. Bamboo bends but rarely breaks, earning it the nickname "vegetal steel" among architects around the world.

Bamboo can also help prevent desertification, another important slow-onset impact of climate change. Its extensive underground root systems mean that bamboo binds earth and restores soil health. The plant is already being used across a number of countries to restore degraded lands.

As well as this, bamboo and rattan provide a sustainable alternative source of income to millions of people around the world. Self-replenishing, locally growing, and easy to process without the need for large machines or capital investment, bamboo offers rural communities more security in a changing climate.

IN ACTION…

China is arguably the first country to realise the full potential of bamboo for climate change mitigation and adaptation. In 2013, the government approved a new methodology for estimating emissions reduction through bamboo afforestation projects, and may include bamboo afforestation as part of its new Emissions Trading Scheme. Meanwhile, in rural areas of China, local governments are planting bamboo as part of a move towards more climate-smart agriculture. In Chishui County, Guizhou Province, the introduction of climate-smart farming helped to increase farmers' incomes by almost RMB 9000 [USD 1300] per hectare for bamboo shoots.

ABOUT THE INTERNATIONAL BAMBOO AND RATTAN ORGANISATION

The International Bamboo and Rattan Organisation (INBAR) is an intergovernmental organisation which promotes the use of bamboo and rattan for sustainable development.