Bamboo for Climate Change

The UN 2019 Climate Summit identifies six transformative areas. Bamboo could play a role in several of these, but all interventions would be captured under nature-based solutions.

The International Bamboo and Rattan Organisation (INBAR) is a multilateral development organisation which promotes environmentally sustainable development using bamboo and rattan. It is currently made up of 44 Member states, mainly from the Global South. In addition to its Secretariat headquarters in China, INBAR has regional offices in Ecuador, Ethiopia, Ghana and India, and will open a regional office for Central Africa in Cameroon in 2019.

INBAR has played an especially strong role in promoting South-South cooperation for the last 20 years. Since its founding in 1997, it has been making a real difference to the lives of millions of people and environments around the world.

INBAR could help to present striking examples where bamboo could play a role in climate change mitigation and adaptation. The following are some key suggestions.

Landscape restoration and reforestation

Bamboos are giant grasses, meaning that their extensive root and rhizome systems can bind soil and allow for annual regrowth after harvesting. A recent FAO-INBAR publication illustrated the opportunity that bamboo provides for land restoration and reforestation;[i] individual cases could be presented at the 2019 Climate Summit.

INBAR Member states have pledged commitments to restore almost 6 million hectares of degraded land with bamboo. Bamboo is included as a key component of Ethiopia's recently approved land management strategy. Similarly, Cameroon has pledged to restore 12 million hectares of degraded land by 2030, and this will include bamboo. Ghana is planning to use bamboo as a means to restore land that has been devastated through unsustainable gold mining. Bamboo is also included in China's efforts to reforest 14 million hectares by 2020.

Ministers from any of these countries, all of which are Members of INBAR, could be asked to speak about this during the 2019 Climate Summit.

Creating natural climate sinks

Bamboo is one of the fastest growing plants in the world. This makes it particularly suitable as a tool for carbon sequestration. Because bamboo grows back quickly after being harvested, it can store carbon in a large number of durable products, as well as in the plant itself. Over time, this means that bamboo can sequester more carbon than some tree plantations. [ii,iii]

The International Bamboo and Rattan Organisation
8 Fu Tong Dong Da Jie, Beijing 100102, P.R. China
www.inbar.int

This is particularly important when bamboo's potential to create durable products, is taken into account. Bamboo products are long-lasting, recyclable, and can replace a variety of emissions-intensive materials, such as PVC, steel, aluminum and concrete. When you combine bamboo's potential displacement factor with bamboo's carbon storage rate, bamboo can sequester enormous sums – from 200 to almost 400 tonnes of carbon per hectare.[iv] As bamboos grow throughout the tropics in Africa, Asia and the Americas, they can provide a significant contribution to combatting climate change in the developing world.[v]

Pablo van der Lugt from Delft University in the Netherlands has given a TED talk about this,[vi] and he could present the findings of his research during the 2019 Climate Summit.

Food and fodder

Bamboo shoots are both a delicacy and part of the local diet in many Asian countries. In China, the annual production of fresh bamboo is about 3 million tons and the export value of bamboo shoot products is about 300 million USD annually.[vii]

With relatively high nutritive and evergreen characteristics, bamboo leaves can also be a useful supplementary fodder for livestock, small stock and even fish farms,[viii] as INBAR has illustrated through our South-South Cooperation between Ethiopia, India and Madagascar.[ix]

Renewable energy

INBAR has carried out research to provide that charcoal manufactured from bamboo has similar calorific values to teak or eucalyptus,[x] but burns with little or no smoke, smell or sparks. Bamboo charcoal has successfully substituted for wood charcoal in Tanzania, where logging wood for making charcoal is one of the biggest deforestation drivers. Using bamboo charcoal reduces pressure on the remaining forests in the country, while a rural household could earn over USD 1000 per year from producing bamboo charcoal.[xi,xii]

We have helped to establish community-based enterprises in Ethiopia, Ghana and Tanzania, and could ask the CEOs of these enterprises to speak at an event. The Ghana company is managed by Gloria Adu, a Ghanaian businesswoman, and she could be asked to speak at the 2019 Climate Summit.

INBAR supports communities in Madagascar for the generation of off-grid electricity through bamboo gasification. On average, a 25 kWh bamboo gasifier could power a training facility and around 250 local households.[*] Off-grid electricity from bamboo gasification is carbon neutral and can substitute for fossil fuel-based electricity generation.

In Indonesia, bamboo is used as the feedstock for gasifiers on the Mentawai Islands. Mr Jaya Wahono can talk about this and provide the business case for bamboo as a source of bio-energy.

[*] *Calculation based on the assumption the gasifier will work eight hours a day for 264 operational days per year, based on the initial level of electricity consumption for rural households (0.7kWh/day, UN SE4ALL).*

Bamboo fibre as a green alternative construction material

Bamboo is used more and more as a sustainable, green interior design material. The ceiling in Terminal 4 of Madrid Airport, the Green School in Bali, Wuxi theatre in China, the Panyaden International School sports hall in Chiang Mai, and the interior of CityLife shopping mall in Milan are all examples of the use of engineered bamboo for modern interior design.[xiii] In several Latin American countries, bamboo is recognised as a means of constructing earthquake-proof buildings, and internationally acclaimed architect Simón Vélez or the 2016 Nobel Laureate and former President Santos from Colombia could be asked to speak about this.

Bamboo composite is also being developed for use in the production of pipes, shells for transport vehicles, blades of wind turbines and even housing units. This research is predominantly carried out in China, and we could invite an appropriate speaker from China to present the most recent innovations.

Verified Carbon Standard

Because of bamboo's huge potential for long-term carbon sequestration, the plant can become an important part of countries' carbon offsetting and emissions trading schemes. China already has a domestic carbon offsetting scheme in place for bamboo plantations.[xiv] In addition, bamboo-based carbon sequestration is being used by the China Green Carbon Foundation. Based on this Chinese framework, INBAR and the Chinese government are developing two Verified Carbon Standard (VCS) methodologies that can be applied worldwide under voluntary carbon markets. The first draft will be ready in early 2019, and we could present the findings of this initiative at the 2019 Climate Summit.

The secretariat of UNFCCC, the China Meteorological Administration, INBAR and the World Meteorological Organisation are collaborating on using atmospheric measurements to improve the carbon sequestration impact of bamboo plantations. This will enable the better integration of bamboo forests and plantations into national climate change mitigation plans. We hope to have the first findings of this partnership ready by mid-2019, and we could present this at the 2019 Climate Summit.

The importance of certification

The development of certification standards for bamboo is an important way to realise the importance of nature-based solutions for climate change. Certification helps identify, monitor and ensure the sustainable development and use of bamboo and forest resources. China is a leading country in the world in developing an independent certification standard of bamboo forest management, and we can provide experts to discuss the importance of certification for bamboos' and forests' role in climate change.

Participation in the 2019 Climate Summit

These are all examples where we can show how bamboo can help with climate action. INBAR would be very happy to work with the office of the UN Deputy Secretary-General to bring some of the proposed speakers mentioned above to New York in September 2019, to report on their experiences and to share their success stories.

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[vi] Pablo van der Lugt. 2017. 'Bamboo to Save the World.' TEDxErasmusUniversityRotterdam. Online at: https://www.youtube.com/watch?v=wI_fdwCU_oc [Accessed 16 October 2018]
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[viii] Partey ST, Sarfo DA, Frith O, Kwaku M, Thevathasan NV. 2017. Potentials of Bamboo-Based Agroforestry for Sustainable Development in Sub-Saharan Africa: A Review. *Agricultural Research*. 1:22-32.
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[x] Partey ST, Frith OB, Kwaku MY, Sarfo DA. 2017. Comparative life cycle analysis of producing charcoal from bamboo, teak, and acacia species in Ghana. *The International Journal of Life Cycle Assessment*. 22:758–766.
[xi] INBAR. 2008. Technical Advisory Note. *Rural Enterprise Development for Livelihood Enhancement: Awareness Raising, Policy Development; Demonstrations – Mozambique*. INBAR, Beijing, China.
[xii] Seboka Y., Duraisamy J. 2008. Charcoal supply chain study in Ethiopia. In Kwaschik (ed.), *Proceedings of the Conference on Charcoal and Communities in Africa*, *16-18 June, 2008, Maputo, Mozambique*.
[xiii] Van der Lugt, P. 2017. *Booming Bamboo*. Materia: Naarden, the Netherlands.
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