SUSTAINABLE STEAM FOR CAMBODIAN GARMENT FACTORIES

RICE HUSK BRIQUETTE TO FIGHT DEFORESTATION AND CLIMATE CHANGE
IN THE CAMBODIAN GARMENT SECTOR

THE ISSUE

With the increasing demand for firewood, the pressure on natural forest resources is rising. This leads to an increase in the price of wood and a greater risk of having more wood illegally sourced from protected areas for ironing, washing, and dyeing. It is estimated that 70% of it is sourced either from forest conversion for agriculture or from illegal harvesting and therefore contributes to deforestation and climate change. This represents 388,000 MT of CO₂ emissions per year and the equivalent of 3,500 hectares of forest every year.

Currently, more than 760,000 MT (Metric tons) of wood are burnt every year by the industrial sector in Cambodia to produce heat and steam, including at least 300,000 MT by garment factories only, mostly for ironing, washing, and dyeing. It is estimated that 70% of it is sourced either from forest conversion for agriculture or from illegal harvesting and therefore contributes to deforestation and climate change. This represents 388,000 MT of CO₂ emissions per year and the equivalent of 3,500 hectares of forest every year.

Until 2035, there will not be enough firewood from plantations to satisfy the industrial demand. If nothing changes, more unsustainable forest wood will be used to fill the gap.

Today only 30% of the industrial demand can be satisfied by firewood from cashew nut and rubber plantations. More than 300,000 MT of wood are burnt every year by garment factories, and to produce heat and steam at least 300,000 MT of CO₂ emissions per year.

With the increasing demand for firewood, the pressure on natural forest resources is rising. This leads to an increase in the price of wood and a greater risk of having more wood illegally sourced from protected areas for ironing, washing, and dyeing. It is estimated that 70% of it is sourced either from forest conversion for agriculture or from illegal harvesting and therefore contributes to deforestation and climate change. This represents 388,000 MT of CO₂ emissions per year and the equivalent of 3,500 hectares of forest every year.

Until 2035, there will not be enough firewood from plantations to satisfy the industrial demand. If nothing changes, more unsustainable forest wood will be used to fill the gap.

Today only 30% of the industrial demand can be satisfied by firewood from cashew nut and rubber plantations. More than 300,000 MT of wood are burnt every year by garment factories, and to produce heat and steam at least 300,000 MT of CO₂ emissions per year.

With the increasing demand for firewood, the pressure on natural forest resources is rising. This leads to an increase in the price of wood and a greater risk of having more wood illegally sourced from protected areas for ironing, washing, and dyeing. It is estimated that 70% of it is sourced either from forest conversion for agriculture or from illegal harvesting and therefore contributes to deforestation and climate change. This represents 388,000 MT of CO₂ emissions per year and the equivalent of 3,500 hectares of forest every year.

Until 2035, there will not be enough firewood from plantations to satisfy the industrial demand. If nothing changes, more unsustainable forest wood will be used to fill the gap.

Today only 30% of the industrial demand can be satisfied by firewood from cashew nut and rubber plantations. More than 300,000 MT of wood are burnt every year by garment factories, and to produce heat and steam at least 300,000 MT of CO₂ emissions per year.

With the increasing demand for firewood, the pressure on natural forest resources is rising. This leads to an increase in the price of wood and a greater risk of having more wood illegally sourced from protected areas for ironing, washing, and dyeing. It is estimated that 70% of it is sourced either from forest conversion for agriculture or from illegal harvesting and therefore contributes to deforestation and climate change. This represents 388,000 MT of CO₂ emissions per year and the equivalent of 3,500 hectares of forest every year.

Until 2035, there will not be enough firewood from plantations to satisfy the industrial demand. If nothing changes, more unsustainable forest wood will be used to fill the gap.

Today only 30% of the industrial demand can be satisfied by firewood from cashew nut and rubber plantations. More than 300,000 MT of wood are burnt every year by garment factories, and to produce heat and steam at least 300,000 MT of CO₂ emissions per year.

With the increasing demand for firewood, the pressure on natural forest resources is rising. This leads to an increase in the price of wood and a greater risk of having more wood illegally sourced from protected areas for ironing, washing, and dyeing. It is estimated that 70% of it is sourced either from forest conversion for agriculture or from illegal harvesting and therefore contributes to deforestation and climate change. This represents 388,000 MT of CO₂ emissions per year and the equivalent of 3,500 hectares of forest every year.

Until 2035, there will not be enough firewood from plantations to satisfy the industrial demand. If nothing changes, more unsustainable forest wood will be used to fill the gap.

Today only 30% of the industrial demand can be satisfied by firewood from cashew nut and rubber plantations. More than 300,000 MT of wood are burnt every year by garment factories, and to produce heat and steam at least 300,000 MT of CO₂ emissions per year.
A global challenge for all sectors of the economy

Climate change can dramatically impact the economy and the wellbeing of people in Cambodia and around the world. It is mainly caused by greenhouse gases (GHG) emissions that provoke global warming which in turn increases the severity of floods, droughts, windstorms, and seawater intrusion. The productivity of most of the economic sectors would be seriously impacted by such changes.

Natural forest stores CO₂ from the atmosphere. Burning wood from non-sustainably managed forests releases this CO₂ into the atmosphere thus contributing to climate change.

However, using agricultural residues such as rice husk can be considered carbon neutral since the CO₂ released during the combustion is reabsorbed every year by the crops during the next growing season.

International brands require a greener supply chain

International apparel companies are also pushing towards GHG emissions reduction. Among them, H&M Group is developing renewable energy targets to drive its transition towards a carbon-neutral supply chain by promoting energy efficiency and renewable energies.

The Royal Government of Cambodia is pushing towards the reduction of GHG emissions

In the frame of the Paris agreement and growing concerns about climate change and deforestation, the Royal Government of Cambodia enacted its Climate Change Strategic Plan 2014-2023 containing measures to enable businesses, NGOs, government administrations and communities to respond to climate change through adaptation and mitigation activities.

The objective of the Cambodian government is to reduce by 7% the GHG emissions in the country (compared to 2010).
Why using Rice Husk Briquettes?

Rice Husk Briquette (RHB) is one of the cheapest fuels for steam production and has the lowest CO₂ emissions.

Two types of briquettes

There are two types of Rice Husk Briquettes: the piston press briquettes and the screw press briquettes. Usually the screw press briquettes are denser, larger and burn very slowly, they are also more expensive as their production is energy intensive. The piston press briquettes are usually cheaper, however they are less dense and tend to crumble if they are not solid enough. Both have usually the same calorific value and moisture content.

More efficient than wood

Rice Husk Briquettes are usually more effective than wood thanks to their lower moisture content. Rice Husk Briquettes will always have a stable moisture content lower than 10%, whereas firewood is often between 20% and 40%. Humidity decreases considerably the calorific value of the fuels.

A solution widely used in Asia

Rice Husk Briquettes are already used in many countries and in different industries that need steam in their production process particularly in places where wood fuels are less available than in Cambodia.

Available all year round

1.5 million tons of rice husk are produced every year in Cambodia, from January to December, which is much more than what the industry would need.

Easy to store and transport

Rice Husk Briquettes are produced by compressing the rice husk into a cylindrical briquette to improve its combustion performance and reduce the storage and transportation costs.

Mixing fuels is possible

If necessary it is possible to use wood and rice husk briquettes alternatively or to mix both fuels in the combustion chamber.

*credit: C.F Nielsen
Upgrade your steam system and maintain it

Many factories in Cambodia have flaws in the design and installation of their steam system. It is critical to make sure that the steam system is well designed and does not have broken steam traps or separators. The steam pipes must be well insulated and the whole steam system must be regularly well maintained. Investing in proper steam condensate recovery is also necessary.

Monitor your energy consumption

Measuring energy consumption is the first step before making the right decision (investment in a new boiler, switch to new fuels).

Use efficient boilers

About 40% of the boilers used in Cambodia have an energy efficiency under 40%. A switch to a boiler with 80% efficiency usually results in important savings with short payback period (less than 2 years).

Keep it Dry

High moisture content critically reduces biomass fuel efficiency: firewood with 40% of moisture content is 30% less efficient than wood with a moisture content of 20%. This must be taken into account when buying biomass fuel. The fuel must be stored in a sheltered place to avoid the rain.
Since June 2016, GERES, with the support of H&M Group and the Cambodia Climate Change Alliance, has been researching solutions to reduce the use of unsustainable firewood in the manufacturing industries.

Ongoing cooperation and mutual feedbacks with garment factories and rice millers allowed GERES to propose appropriate solutions to reduce the impact of the industry on climate change and deforestation. GERES did several tests in laboratories and in factories to confirm the technical feasibility and the performance of a switch from forest wood to rice husk briquettes to produce steam in Cambodia.

GROUP FOR THE ENVIRONMENT, RENEWABLE ENERGY AND SOLIDARITY

Southeast Asia Regional Office: Building #7B (3rd Floor), Street 81 corner Street 109, Sangkat Boeung Raing, Khan Daun Penh, Phnom Penh, Cambodia

E-mail: contact@geres.eu
Tel: +855 78 767 499 / +855 16 600 617

More information on www.geres.eu