Circular Economy Webinar Series
Session 1 Summary: Biochar as a Circular Solution for Sustainable Agriculture and Poverty Reduction

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Speaker: Heloise Buckland, CEO and Founder, HUSK, Cambodia
HUSK is a social enterprise committed to improving smallholder livelihoods by transforming rice husk into biochar to improve soil quality, increase farming yields, and sequester carbon.

Key Takeaways

1. **Intensive agriculture practices have degraded soil quality through excessive application of synthetic fertilizers, especially nitrogen and phosphorus.** This has depleted organic matter and led to soil erosion affecting food security and ecosystem services. Over the last 70 years, Asian soils, in particular, have absorbed the highest amounts of nitrogen and phosphorus than any other global region.

2. **Without adequate organic matter to fertilize soil, smallholder farmers, who grow 80% of the food in Asia, depend more on synthetic fertilizer which is easier to apply and requires less labor.** This means they are more heavily impacted by rising fertilizer prices and supply chain instability.

3. **HUSK transforms rice husk into biochar, a soil enhancer, and fertilizer.** Rice husk is a significant biomass resource, with 150 million tons produced annually worldwide. Biochar is a traditional agricultural practice, where rice husk is burnt to create carbon-rich matter, which improves soil fertility and softens hard clay soils. HUSK aims to scale up biochar production using pyrolysis technology and finance.

4. **The process of making biochar from rice husk does not produce carbon emissions.** The process uses pyrolysis technology to heat the husk to high temperatures, between 550 and 650 degrees centigrade, without oxygen.

5. **Biochar is a 100% organic product with many environmental benefits including soil regeneration, reduction of chemical pesticides and fertilizers, and long-term carbon sequestration.** Biochar acts as a sponge, retaining water effectively, which is beneficial in dry seasons and reduces water use. It also holds essential nutrients like nitrogen, phosphorus, and potassium, improving fertilizer efficiency by up to 50%. Biochar provides a habitat for microorganisms, which is crucial for plant growth and nutrient transportation in the soil.

6. **Biochar has the potential to increase crop yields.** HUSK has conducted over 250 trials on different crops and has achieved an average yield increase of 30% across horticulture crops—case studies on kale, lettuce, and cucumber show an increase in yield and income improvement.

7. **HUSK has pioneered this solution in Cambodia and** has **regenerated almost 250 hectares of soil.** They have sequestered 522 tons of carbon and improved over 345 farming families' livelihoods.

8. **HUSK has created a regional network of distributors, primarily working with agricultural cooperatives and input suppliers, that has been highly effective for capacity building.** They provide training, resources, and marketing materials to these distributors.

9. **HUSK is also pioneering a Women's SuperPharma Network where provincial distributors gather women farmers interested in selling the product.** These women farmers are trained in the benefits of biochar and its applications. They sell the product and receive incentives for each product sold.

Watch the Recording here