



canopy Next Gen Solutions Snapshot



SPINNING WASTE INTO GOLD: Launching the world's first recycled textile mill for MMCF

Waste not, want not, Renewcell is thinking, as retrofitting a Swedish mill gets underway to create dissolving pulp from 100% waste cotton textiles. The resulting pulp will feed the fast-growing demand for 'greener' MMCF or viscose, called Circulose®. Household brands are already on board: KappAhl, H&M and Levi's WellThread jeans use Circulose®.

This is a story of collaborative co-creation. In January 2021 the company raised \$120-million in investments - enabled by viscose producer Tangshan Sanyou's off-take commitment to purchase nearly half of Renewcell's production over 5 years. That's a nice show of confidence!

The 'waste not, want not' trend is growing. Other commercial demonstration mills are also going ahead, proving that other forms of waste are also viable alternatives to using wood fibre. That includes one mill that's creating microbial cellulose from food waste, and others that are also turning waste textiles into new products. There are many approaches to circular manufacturing and there are exciting times ahead!

NEXT GENERATION TEXTILE SOLUTIONS ARE HERE!

YOU DON'T HAVE TO WAIT FOR SOME FAR-OFF MOMENT – YOU CAN ACT NOW! INCORPORATE THESE PRODUCTS INTO YOUR APPAREL DESIGNS TODAY

Liva Reviva, by Birla Cellulose.

Circular viscose fibre line using pre-consumer industrial cotton waste.

REFIBRA, by Lenzing.

Lyocell that's made of a mix of pre- and post-consumer recycled cotton waste.

ReVisco, by Tangshan Sanyou.

Viscose staple fibre made from post-consumer recycled textile content dissolving pulp.



CIRC SETS SIGHTS ON RECYCLING 10 BILLION GARMENTS BY 2030

Circ's goal is to recycle 10% of the annual global textile production into new clothing.

Fashion brands and investment partners* are lining up, and for good reason! Circ's proprietary technology extracts cotton and polyester from recycled and post-industrial textile scraps to make pristine polyester and man-made cellulosic fibres.

Imagine the impact if we had 10 times the capacity to recycle used garments? Canopy is excited to see this scale globally!

FOOTNOTES

* Circ successfully closed a USD 8 million Series A funding round with the support of Tin Shed Ventures (a funding arm of Patagonia), Marubeni America, Alante Capital, and Card Sound Capital in 2020.



Bag produced by Willamette Falls Paper Company with Columbia Pulp wheat straw and recycled content.

NEW NEXT GEN PULP MILLS POISED TO PRODUCE MORE PACKAGING

Perhaps for the first time in history, an environmental organization is writing the words “new pulp mills are now under construction” with relief!

Two new mills, Nafici Environmental Research (NER) in China and Columbia Pulp in the USA are poised to produce low footprint pulp for paper packaging made with annually available agricultural residues left after the food harvest, rather than using wood. For over 100 years the R&D and financing for pulp and paper drove all innovation towards cutting down more forests while agricultural fibre paper has been viewed as a niche alternative. Today about 12.5 million tonnes of the 430 million tonnes of paper produced in the world is made from alternative fibres such as wheat straw residues, sugar cane bagasse and hemp fibre. That’s going to increase a lot.

New processes for turning agricultural fibres into pulp, paper and packaging can have a much lower environmental footprint than paper made from wood. Several life cycle analyses (LCA’s) show that using agricultural residues can result in a 75% to 90% reduction of the carbon, water and biodiversity footprint compared to products made from wood fibre. Great news, right? Because brands can apply these savings towards reducing their Scope 3 emissions (e.g. e-commerce and shipping boxes from manufacturers) and at the same time feel good about saving forests.

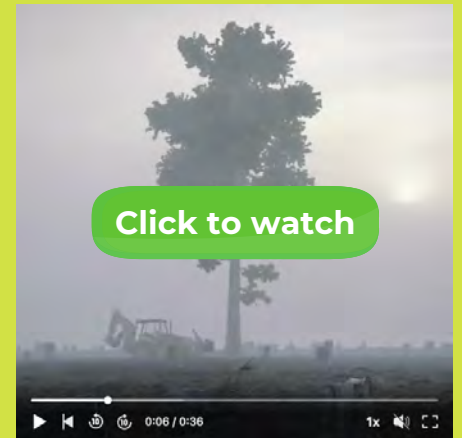
Agricultural fibres can be the virgin fibre component to refresh and strengthen recycled pulp when needed. Wheat straw fibre, for example, is like a hardwood. Using small amounts of hemp or flax fibre dramatically strengthens paper products as these fibres are longer and stronger than softwoods. Agricultural fibres can advance light-weighting of packaging by reducing required basis weights and, in many cases, they can be FDA compliant for food-based packaging.

Demand and Supply

You can help tip the scales. With clear demand from the marketplace, packaging boxes, bags and trays made with Next Gen alternatives will increasingly replace virgin wood-based papers. Let your paper and packaging suppliers know you want them to protect Ancient and Endangered Forests and invest in low-footprint alternatives.

IMAGINE...

...If every shipping box was used at least twice - half as many trees would be logged for boxes. Now imagine we eliminate all the over-packaging - another big benefit to the world’s forests. And then imagine alternative fibres, like wheat straw waste that’s currently burned being used to make the paper for boxes, instead of using trees from Ancient and Endangered Forests. The solutions are staring us in the face.



FALLEN LEAVES – REBORN!

One of Canopy’s innovation partners in the packaging space has inspired us. RE-leaf Paper, the brainchild of 19-year-old Valentyn Frechka, based in Ukraine, uses a patented, chemical-free process to turn fallen leaves from urban centres into packaging and paper bags. The fibre can also be blended with other agricultural fibres for speciality molded applications such as food trays. Re-leaf is working with a cardboard manufacturer to scale up commercial production





© Image by Andrew Wright

ISSUES TO FOLLOW



© Image by TJWart



YOUR SCOPE 3 OPTIONS

As corporate CEOs announce their company's intention to be carbon-neutral, their senior staff lie awake at night, worrying about how to get there. With most greenhouse gas (GHG) emissions coming from materials, manufacturing and transportation of the goods brands have produced for them (Scope 3 includes all other indirect emissions that occur in a company's value chain) it's not easy – few companies want to slash production, do they?

One quite simple step that enables companies to make significant emission savings is this: switch from wood-based products to Next Gen paper and fabrics. On average, Next Gen materials have a much smaller carbon footprint than wood-based materials – 75%* less, in fact! That goes a long way to reducing Scope 3 emissions and getting your company to meet your carbon-neutral ambitions.

EYES WIDE OPEN - THE EU CIRCULAR ECONOMY ACTION PLAN

Here's something to watch for. The EU is developing a Circular Economy Action Plan which should outline an agenda for sustainable growth and create green jobs, while achieving climate targets and 'halting biodiversity loss'. It will 'direct investment, research and innovation' in textile solutions and packaging waste reduction and, ultimately, affect regulation and taxation. This could provide positive incentives for increased recycled content as well as Next Gen alternative fibre use – OR, the EU could decide to count wood products and fibre as 'carbon neutral', as it's done before. Wood products derived from carbon rich ancient forests will never be carbon neutral - so it is critical to keep your eyes wide open about the source of your wood products.

BY THE NUMBERS

92 MILLION TONNES

Amount of rice & wheat straw India burns annually. These fibres can make low footprint papers and packaging instead of smoke.

3:1

Ratio of tonnes of wood needed to make 1 tonne pulp for MMCF.

1 ¼ :1

Ratio of tonnes of used cotton textile to make 1 tonne pulp for MMCF.

17

Number of Canopy's Next Gen Innovation partners, with clean technology for alternative MMCF textiles and for agricultural residue for paper and packaging.

433,000

Tonnes of Next Gen MMCF and paper/packaging demand in Letters of Interest to Purchase by Canopy partners

4

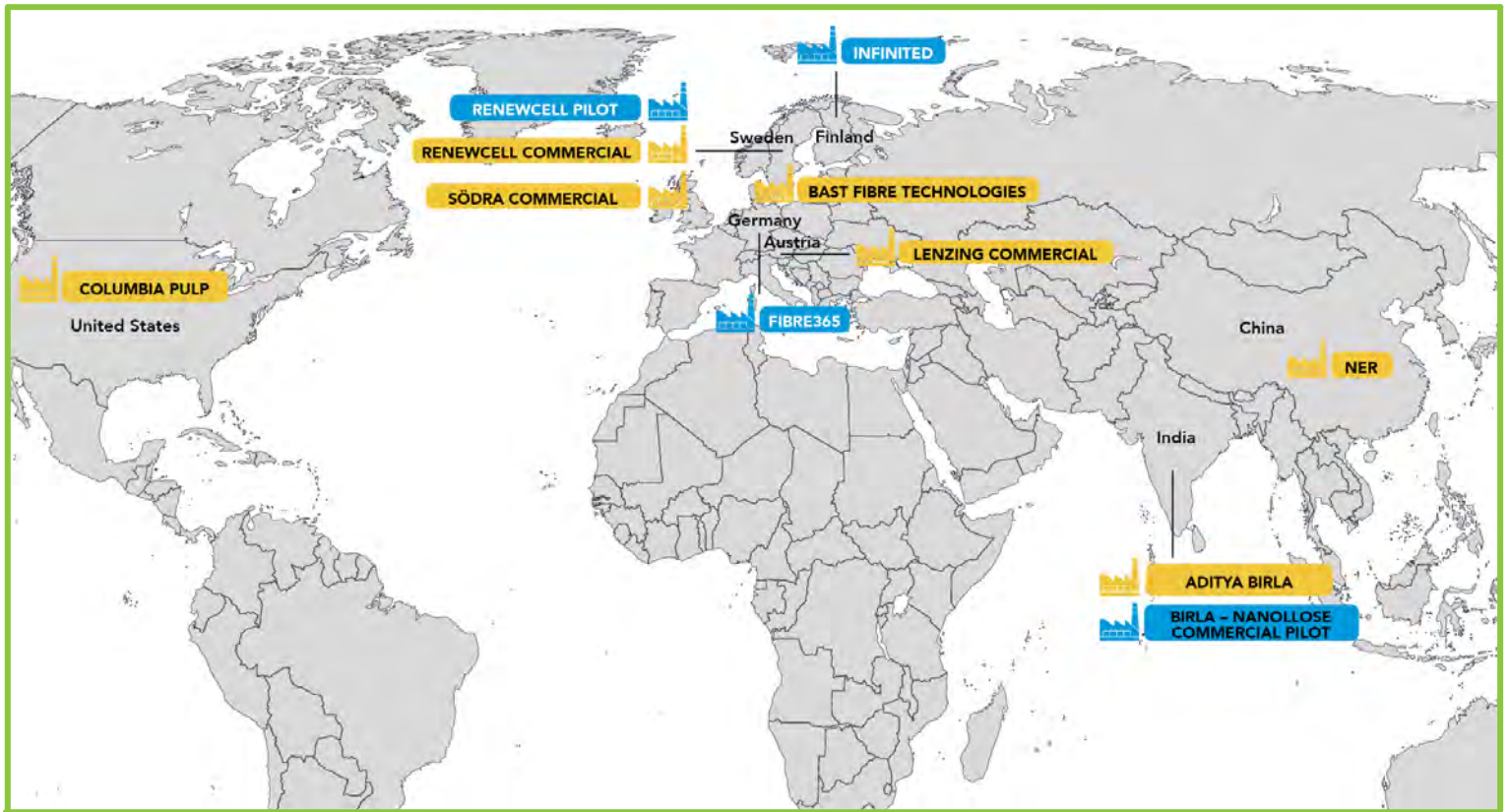
Number of Canopy's Next Generation Innovation Partners that have recently secured financing to scale-up production.

[Click to see partners](#)

FOOTNOTES

* Median percentage based on review of LCAs commissioned by Next Gen innovators.

NEXT GEN MILLS POPPING UP AROUND THE WORLD



COMMERCIAL SCALE MILL



DEMONSTRATION SCALE PILOT MILL

**Canopy's
success is
always a
shared
success**

“No one has done more to drive the shift to Next Generation Solutions for man-made cellulose than our friends at Canopy. They have supported our work to scale Renewcell over several years, helping us gain exactly the kind of industry exposure and connections that a young innovative business needs to become successful. With their solutions-oriented advocacy for the protection of Ancient and Endangered Forests globally, Canopy has been a key ally to Renewcell on the journey from a campus lab to a billion-dollar market cap.”

Patrik Lundström, CEO of Renewcell



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Do you have questions about Next Gen Solutions for your company?

Feel free to email us at nextgensolutions@canopyplanet.org