

SURVIVAL: A Pulp Thriller

A Plan for Saving Forests and Climate

SUMMARY

2020–2030

canopy

Next Generation Action Plan

THE WORLD'S SCIENTISTS HAVE DELIVERED A SOBERING CHALLENGE TO HUMANITY: WE HAVE ONLY TEN YEARS TO TRANSFORM OUR METHODS OF PRODUCTION AND THE WAY WE CONSUME RESOURCES IF WE ARE TO KEEP GLOBAL TEMPERATURES BELOW AN INCREASE OF 1.5°C CHANGE AND PREVENT CATASTROPHIC BIODIVERSITY LOSS.

Maintaining and restoring forests has been identified as one third of the climate solution. With the scientific community calling for 30 – 50% of the world's forests to be conserved and/or restored by 2030¹, no new or existing pulp mills should be sourcing from the world's Ancient and Endangered Forests.

To address the question “what is the alternative for making paper, packaging and cellulosic fabrics such as viscose?”, Canopy researched and developed a Next Generation Action Plan.

THIS PLAN CONTRIBUTES TO THE GOAL OF PRESERVING NATURE AT THE SCALE NEEDED TO SUPPORT LIFE ON EARTH. IT PRESENTS AN AMBITIOUS BUT ACHIEVABLE SCENARIO TO REDUCE, BY 50%, THE AMOUNT OF FOREST FIBRE GOING INTO THE MANUFACTURING OF PULP FOR PAPER AND PACKAGING AND TO PRODUCE VISCOSE FABRICS, SUCH AS RAYON, FOR CLOTHING.

It proposes to transform the global wood pulp commodity sector and its supply chain at precisely the scope and scale of its current impact on Ancient and Endangered Forests². The gravity of the challenges we face today warrant nothing less than bold ambition; there is no point in embarking on cosmetic changes at this time in history. It will require ingenuity, determination and good will – and new infrastructure and investment. The investment needed is not inconsiderable, but it pales in comparison to the cost of inaction.

A forest is much more than the sum of its trees. Forests, including the soils they create and are anchored in, are massive carbon sinks. They provide homes to thousands of species, regulate the climate and act as rainfall generators, to name just a few ecological benefits of forests. Less than 20% of the world's original forests remain in tracts large enough to sustain their full range of ecosystem services³.

About Canopy

Canopy is a not-for-profit environmental organization dedicated to protecting forests, species and climate. Canopy has collaborated with more than 750 companies to develop innovative solutions and make their supply chains more sustainable to help protect our world's remaining Ancient and Endangered Forests. Canopy's brand partners include H&M, Penguin Random House, Scholastic, Stella McCartney, Target, TC Transcontinental, *The Globe and Mail*, The Guardian Media Group, UNIQLO/Fast Retailing, Zara/Inditex and many other well-known brands and giants in their sectors.

Canopy's forest conservation work focuses on the influential relationship between large corporate purchasers and the mills that supply them with pulp, print grade paper, paper packaging and Man Made Cellulosic Fibres (MMCF). In helping major purchasers develop and implement forest conservation policies we leverage forest protection in key regions, improve forestry practices and develop the market that draws Next Generation alternatives into production.

Canopy is funded by philanthropic foundations and individual donors who share our passion for the planet.

www.canopyplanet.org

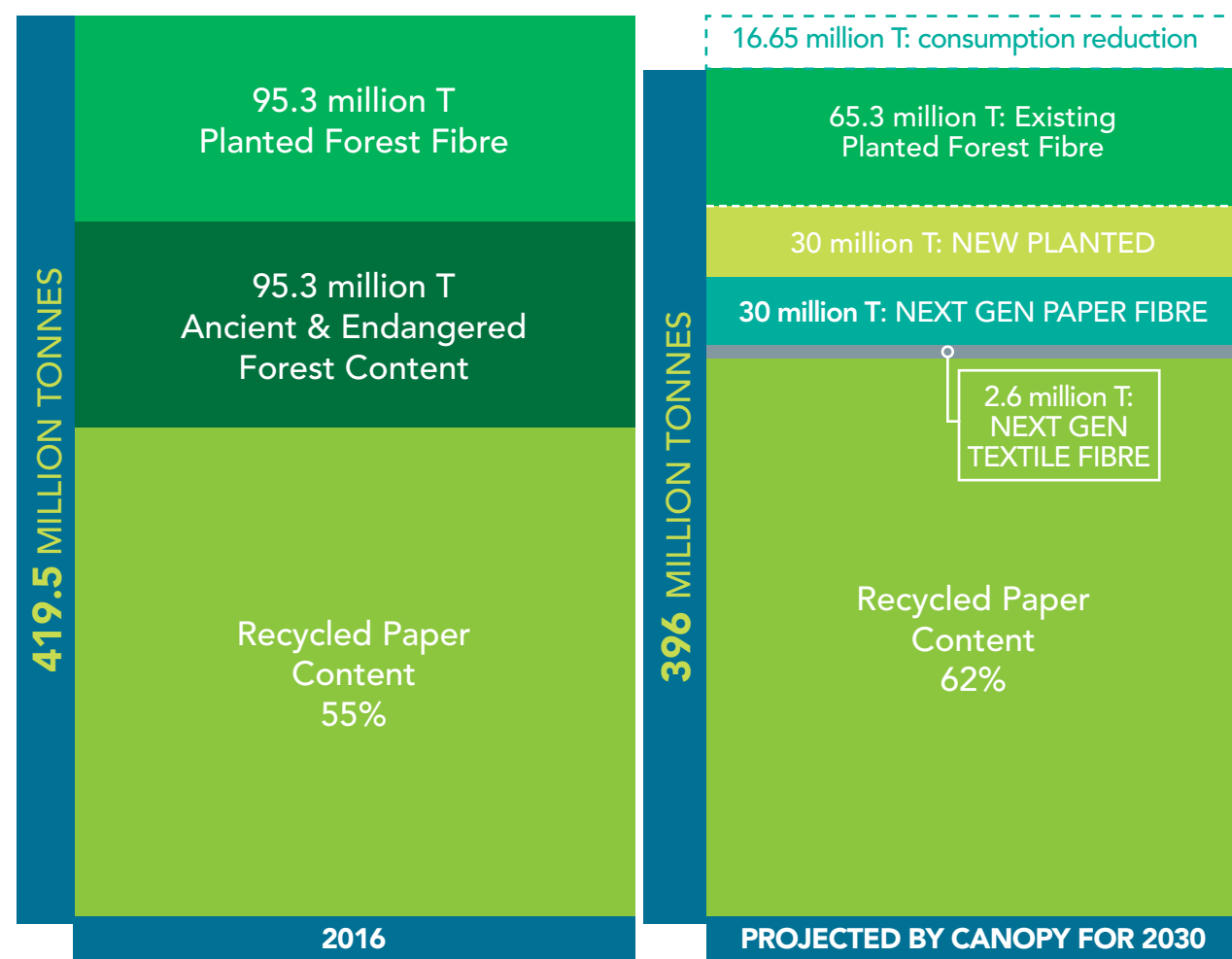


THE CONCLUSIONS IN 'SURVIVAL – A PULP THRILLER' ARE BASED ON RESEARCH EVALUATING THE PROPORTION OF PULP THAT IS CURRENTLY MADE FROM WOOD FROM HIGH CONSERVATION AND HIGH CARBON VALUE FORESTS AND THEN ESTABLISHING:

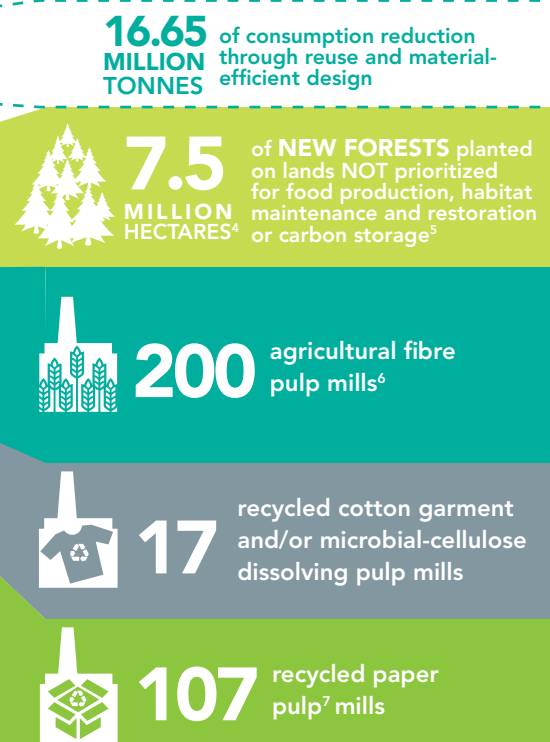
- The number of tonnes of forest fibre that can be replaced with alternative fibres, such as agricultural residues and cotton textile waste, and recycled textile and paper fibres
- The number of tonnes of forest fibre that can be reduced by simply extending the lifespan of a forest product, such as re-using cardboard shipping boxes multiple times
- The number of tonnes of forest fibre that can be reduced through better design and logistics systems that reduce the use of wood-based products overall
- The number of tonnes of pulp from new, truly sustainably planted forests needed to replace pulp that currently comes from plantations established in prime species habitat and/or critically important carbon-rich soils
- The investment required, globally, to build new mills and/or retrofit existing mills to utilize alternative fibres

GLOBAL PULP COMPOSITION

Pulp for Paper and Dissolving Pulp for MMCF Textiles

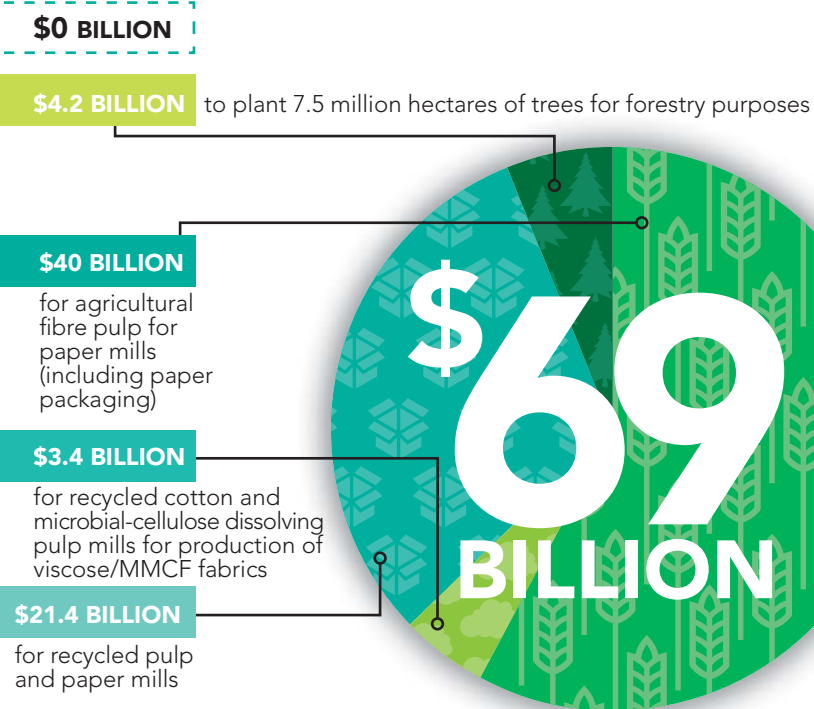


SOLUTIONS



TARGET INVESTMENT FOR 2030

The investment required over a 10-year period will be \$64.8 Billion⁸ to build the mills and approximately \$4.2 Billion⁹ to plant new plantations, for a total of \$69 billion.



TO PUT THIS 10-YEAR, \$69 BILLION PRICE TAG INTO PERSPECTIVE, the maker of Botox sold for \$63 billion in 2018. More pertinently, in 2018, \$140 billion in investment from private, public and development finance institution (DFI) sources was committed to infrastructure development in 41 low- and middle-income countries¹⁰.

DURING THE COURSE OF RESEARCHING THIS REPORT, WE HAVE CONCLUDED THAT SHIFTS TOWARD CIRCULAR ECONOMY PRODUCTION ARE NOT ONLY ABSOLUTELY NECESSARY BUT ALSO ACHIEVABLE.

SUPPLY SIDE SHIFTS

Supply-side shifts to the responsible production of pulp will require the utilization of existing agricultural and textile waste streams as the raw resource inputs – and the growing of new forests for wood on truly sustainable sites (i.e., not on high-carbon peat soils or in prime species habitat). Clean technology to utilize these materials is already emerging into the market via alternative-fibre pulp mills that use far less water, chemicals and energy than conventional wood pulp production. Given the uncertainty about future wood supply, diversifying the fibre basket for pulp is a salient business proposition as well as an environmental strategy.

DEMAND SIDE SHIFTS

Brands and retailers have the capability to influence and choose the materials that go into their goods. They also have the ability to innovate systems to reuse, reduce use and extend the lifespan of materials and products they use and sell. These purchasing and design decisions have high quality ecological outcomes and create cost savings. Reusing shipping boxes, shipping lighter-weight packaging and capturing an additional round of value from second-hand or rental clothing are choices that are gaining traction as business decisions that also serve environmental objectives.

ENABLING CONDITIONS – POLICY AND INVESTMENT

Design and product innovation does not happen magically, especially at the scale envisioned. Policy and investment needs to be mobilized to bridge the gaps to sector-wide shifts in production. By working

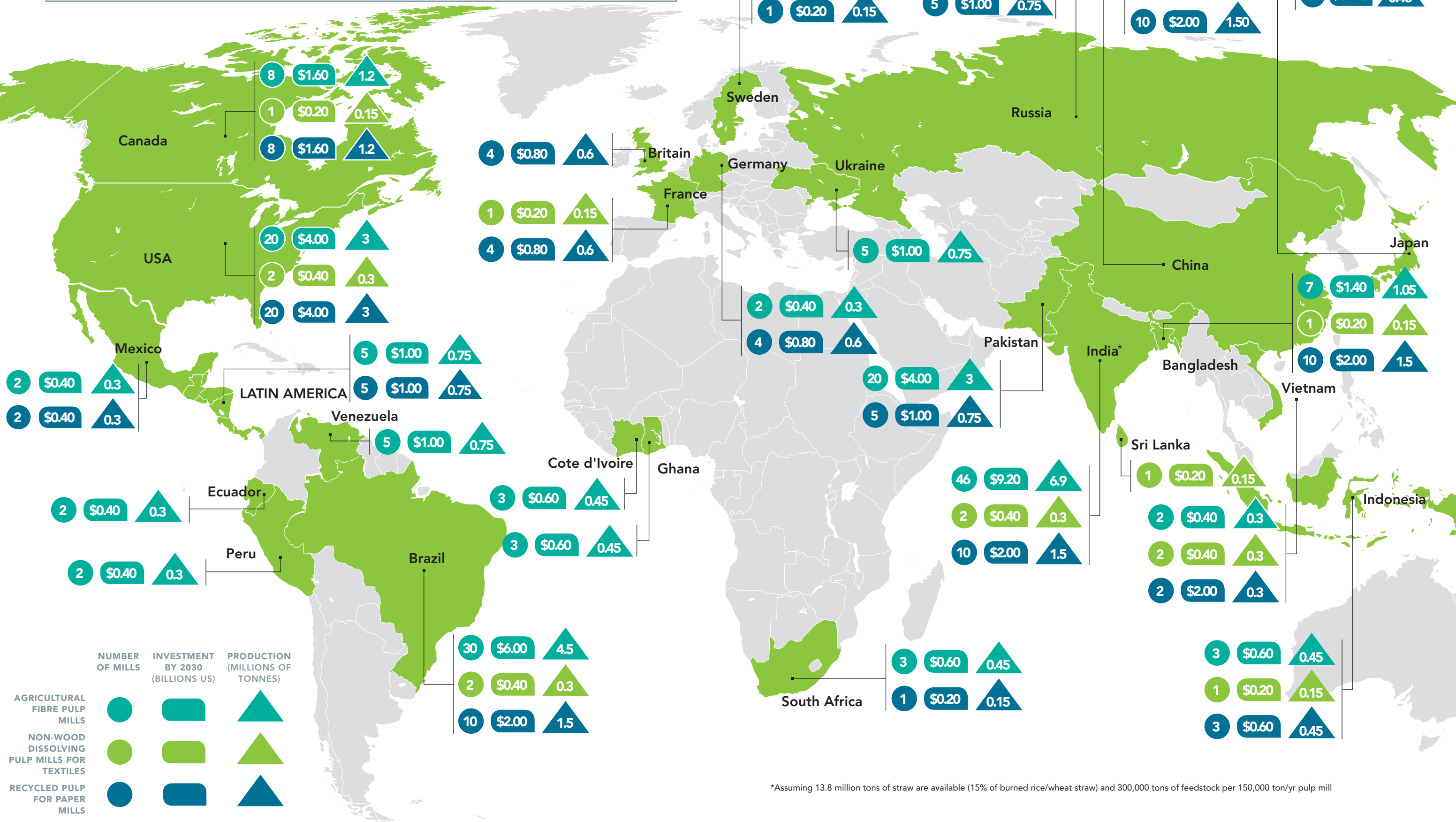
together strategically, investors, innovative technology ventures, pulp producers, paper/packaging/viscose manufacturers, governments and corporate buyers of wood pulp-derived products can make this vision a reality by 2030. Policies and investments that drive this forward are consequential to both a stable planet and a stable economy.

Canopy is dedicated to finding solutions at the scale at which the problems occur and in the timeframe that the best available science directs us to act. Our Next Generation Solutions Action Plan – described in greater detail in ‘Survival – A Pulp Thriller’ – outlines a combination of common-sense approaches, ground-breaking endeavours and technological innovation.

1 Dinerstein E, Olson D, Joshi A, et al. An ecoregion-based approach to protecting half the terrestrial realm. *Bioscience*. 2017 Jun 1; 67(6): 534–45. Published online 2017 Apr 5. Doi: 10.1093/biosci/bix014.
 2 Defined in A Quick Guide to Ancient and Endangered Forests (<https://canopyplanet.org/wp-content/uploads/2018/11/CanopyQuickGuideAncientEndangeredForests.pdf>).
 3 World Resources Institute. Global Intact Forest Landscapes Map (<https://www.wri.org/our-work/topics/forests>)
 4 The number of hectares is not exact because yields will be different depending on northern or southern hemispheres and whether areas are intensively managed plantations or agro-forestry management systems.
 5 Lewis SL, Wheeler CE, et al. Regenerate natural forests to store carbon. *Nature*. 2019 April 4; 568 (275).
 6 Averaging production of 150,000 tonnes of pulp per year. The size and output of the mills will vary depending on availability of feedstock within a 100-kilometre radius and other factors. More mills of a smaller size may be preferable in some regions or for some technologies.
 7 Recycled paper is not a Next Generation technology, but increasing the capture of recyclable paper and increasing recycled content in paper products are obvious parts of any strategy to reduce impacts on forests; therefore, we have included the amount of production and cost to build new milling capacity.
 8 All price figures throughout the report are listed in U.S. dollars.
 9 Assuming \$325–\$750/hectare planting costs.
 10 World Bank IBRD • IDA 2018 Private Participation in Infrastructure (PPI) Annual Report, pg.1

Investment in Non-wood Mills by Region 2020 - 2030 Potential

WORLD TOTAL INVESTMENT NEEDED



	NUMBER OF MILLS	INVESTMENT BY 2030 (BILLIONS US)	PRODUCTION (MILLIONS OF TONNES)
AGRICULTURAL FIBRE PULP MILLS			
NON-WOOD DISSOLVING PULP MILLS FOR TEXTILES			
RECYCLED PULP FOR PAPER MILLS			

*Assuming 13.8 million tons of straw are available (15% of burned rice/wheat straw) and 300,000 tons of feedstock per 150,000 ton/yr pulp mill

Statements of Support for Canopy's Action Plan

"This is an ambitious strategy: one that is welcomed by UBS given the task before us of addressing the climate and biodiversity emergencies."

— **Michael Baldinger, Global Head of Sustainable and Impact Investing at UBS Asset Management**

"Collaboration across supply chains, at scales beyond what has been considered before, is needed in order to address the climate and biodiversity challenges we face. We welcome Canopy's approach that breaks the action plan into components for producers, investors and corporate purchasers of pulp products."

— **Madelene Ericsson, Environmental Sustainability Business Expert at H&M**

"Canopy's call to action points to the essential role of the world's forests in mitigating the climate crisis and the growing sense of urgency to prevent further loss of biodiversity. In alignment with Canopy's ambitions, we are continuing the challenging work to diversify the fiber used in Kimberly-Clark's products, including progress toward our goal to replace 50% of the fiber we use from natural forests with alternative sources."

— **Lisa Morden, Vice President of Safety & Sustainability, Kimberly Clark**

"DWS believes that protecting global biodiversity and increasing carbon sinks from forests will play an instrumental role in sequestering carbon as a climate change mitigant on a global level. Approaches like Canopy's, targeting supply chain sustainability across the paper products and textiles industries, represent a critical component of this effort. DWS Group, with over 20 years of experience in impact investing, believes this represents another opportunity to deliver on circular economy-based investment solutions for corporate clients focused on minimizing their environmental footprint."

— **Andrew Pidden, Global Head of Sustainable Investing at DWS (DWS formerly know as Deutsche Asset Management).**

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