

Tissue Sustainability

Could Consumer Focus on Sustainability Disrupt the Tissue Business?

Presented by:

Bruce W. Janda
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Business Intelligence
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Tissue Sustainability



1. What is Tissue Sustainability?
2. What Does “Disruption” Mean?
3. Should I Care?



Is Sustainability Important to My Business?

20 years of talk by consumer products companies is now just seeing action on a small scale. Plastic is always cheaper! Will interest survive a recession?

The amount of plastic in the ocean is a lot worse than we thought, study says

Show Us Your Climate Risks, Investors Tell Companies

Companies are expected to face a record of 75 or more climate-related shareholder proposals at coming annual meetings

EU Parliament Backs Ban on Single-Use Plastic Products

War on plastics: Hawaii, New Jersey propose toughest bans in the country

March 28, 2019 - 18:05

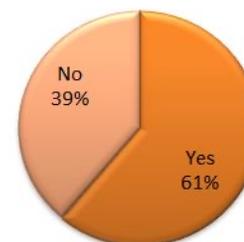
From H&M to Gucci, Fashion Rethinks Cashmere, Citing Environmental Harm

Millions of goats in China and Mongolia take a toll on grasslands

Climate Change Is Transforming the Economy. How Will Your Company Adapt?

“Until organizations learn to internalize the threat, they’re in danger of falling behind.”

1. Does your company have sustainability goals that impact your new product development approach?



2019 Internet Search on Sustainab

Tissue Sustainability in the News

“Issue With Tissue” Sustainability Scorecard Flunks Charmin and Other Toilet Paper Brands

Sofidel’s sustainable growth strategy is completely in line with “building an inclusive, sustainable and resilient future for people and planet”, the aim of the United Nations (UN) through the 17 Sustainable Development Goals (SDGs).

Sofidel Further Improves Performance in 2018 Carbon Disclosure Report

Sustainability has always been a business driver for **Essity**, in addition to contributing to a better world. By 2030, our ambition is to improve the well-being of two billion people every day and reduce the environmental footprint of our solutions by 33%.

P&G Announces New Global Commitment to Reduce Plastic
Wednesday, April 10, 2019 5:18 pm EDT

Kimberly-Clark Applies Innovative Tech to Address Risk in Global Water Scarcity

Georgia-Pacific Goals include increasing paper recovery for recycling; improving energy efficiency; reducing greenhouse gas emissions; increasing the amount of certified fiber procured; improving our safety incident rate with a vision of zero injuries; and reducing water use.



2019 Internet Search on Tissue Sustainability

Tissue Fiber Supply



Tissue Fiber Sustainability Headlines

Fight Climate Change: Use Recycled Toilet Paper and Less of It

Americans prefer the softness of virgin tree fiber, but at what cost?

America has a “tree-to-toilet” problem. That’s according to a study out Wednesday that says the largest U.S. makers of at-home tissue products—Procter & Gamble Co., Kimberly-Clark Corp. and Georgia-Pacific—use only virgin fiber in their major brands, and no recycled content, a vast sustainability gap compared to other brands that use all recycled fiber.

“Fortunately, solutions to the tree-to-toilet pipeline already exist,” the NRDC says, highlighting alternatives like recycled wood pulp, wheat straw and bamboo. It gave high scores to products from Green Forest, Whole Foods Market, Marcal, Trader Joe’s and Seventh Generation, which all use recycled fiber.

Tissue products such as toilet paper, paper towels, and facial tissue are cheap and convenient—but they cost the planet a great deal. The vast majority of the tissue products found in our homes are made from wood pulp, the use of which drives the degradation of forests around the world. Their everyday consumption facilitates a “tree-to-toilet pipeline,” whereby centuries-old trees are hewn from the ground, converted into tissue pulp, rolled into perforated sheets or stuffed into boxes, and flushed or thrown away. The consequences for Indigenous Peoples, treasured wildlife, and the global climate are devastating.

A BUYER'S GUIDE TO THE SUSTAINABILITY OF AT-HOME TISSUE PRODUCTS

TOILET PAPER		PAPER TOWELS		FACIAL TISSUE	
BRAND	GRADE	BRAND	GRADE	BRAND	GRADE
Green Forest	A	Green Forest	A	Green Forest	A
365 Everyday Value, 100% Recycled	A	365 Everyday Value	A	365 Everyday Value, 100% Recycled	A
Earth First	A	Earth First	A	Natural Value	A
Natural Value	A	Natural Value	A	Trader Joe's	A
Seventh Generation	A	Seventh Generation	A	Fluff Out	B
Trader Joe's Bath Tissue	A	Trader Joe's	A	Marcal Small Steps	B
Marcal 1000 [®]	B	Marcal	B	Seventh Generation	B
Marcal Small Steps	B	Marcal Small Steps	B	365 Everyday Value, Sustainability Soft	D
365 Everyday Value, Sustainability Soft	D	Wise	D	Kleenex Everyday	D
Comodek Ultra	D	Bounty	F	Kirkland	F
Scott 1000	D	Brandy	F	Puffs Ultra Soft	F
Scott ComfortPlus	D	Sparkle	F	Up & Up Soft	F
Trader Joe's Super Soft Bath Tissue	D	Up & Up	F	Up & Up Soft	F
Charmin Ultra [®]	F	Kirkland	F		
Kirkland	F				
Angel Soft	F				
Quilted Northern	F				
Up & Up Soft & Strong	F				

^a Due to a fire at their New Jersey paper plant in January 2019, Marcal is suspending manufacture of their at-home products, including all Marcal products listed in this report. However, they could become available again in the future.

^b This entry applies to both Charmin Ultra Soft and Charmin Ultra Strong.

Tree-free Paper Better for the Environment?

Americans Are Literally Flushing Canada’s Forests Down the Toilet - VICE

Greenpeace calls for a halt on logging in five key boreal forest areas in Quebec, Ontario, Manitoba



2019 Internet Search

Tissue Fiber Sustainability Corporate Headlines

UPM: Climate Heroes Caring For Their Forests

In Finland, there is more forest than ever, and forests are growing faster than ever. Despite this, due to climate change, one of the hottest topics in recent months has been preserving forests as carbon sinks through harvesting restrictions.

The discussion has become stuck on the smaller details of different scenarios. People tend to forget the big picture.

The big picture is that since the emergence of climate awareness, the entirety of Finland's forests have already been harvested once. In 1990, when climate reporting began, Finnish forests contained 1.9 billion cubic metres of wood, and the same amount was harvested between 1990 and 2017.

However, the forests now contain a record 2.5 billion cubic meters of wood.

The forests' increasing growth can mainly be attributed to good forest management. This, in short, means sensible harvesting, without neglecting the importance of ditching and fertilization. Forest management—from the clearing of seedling stands, to thinning and regeneration cutting, to light selection harvesting—involves the planned removal of wood to improve the quality and growth of the forest's remaining trees.

Harvesting restrictions would mean restrictions on forest management. That would slow down the growth of forests and carbon sinks.

Final felling is a part of the managed cycle of commercial forests. Lessening the trade of sturdy wood undermines not only forestry, but also carbon sink management.

A forest stand where final felling has been carried out emits carbon for a period of time. This is an undeniable fact, but the fact that forest management and harvesting has improved Finnish forests' carbon storage capacity is equally undeniable.

Politicians do not decide how much wood is harvested. This is decided by sellers and buyers on the market.

Restrictions on harvesting will probably only be introduced in political rhetoric. At least no one has yet suggested preventing investments in wood-related businesses or scrapping commercial forestry.

In the end, the discussion on carbon sinks, led by researchers and the media, only shows that we know our forests inside out. This makes debate and discussion of different scenarios possible. Thoroughly considered facts are the best raw material for decision-making for forest owners, forest companies and politicians.

While some are engaged in climate discussion, others are, even today, taking climate action by clearing, thinning and renewing their forests. **These climate heroes should not be accused of destroying forest sinks but thanked for growing these sinks in a sustainable way.**

Wood and Non-Wood Based Paper Can Be Equally Sustainable

- Does it remove incentives to keep the landscape forested?
- Do the environmental advantages persist when the production expands to the necessary scale, or does it result in more negative environmental impacts (i.e., consider water use, chemical inputs, energy requirements, climate effects, etc.)?
- What is the risk that forest land will be converted to agriculture?
- What effects, both positive and negative, would this have on local communities and indigenous peoples?
- Is independent, third-party certification available to ensure environmental, social, and economic baselines are being met?

Saving American Trees—with Paper

Ahead of the Curve North America's First Tree-Free Pulp Mill



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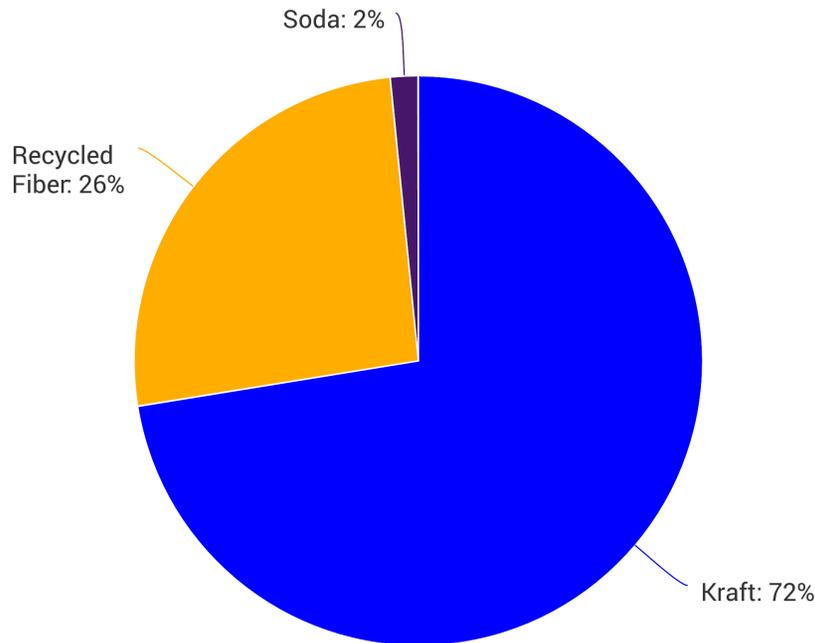
World Wildlife Fund Identifies 'Deforestation Fronts'

No.	WWF 'Deforestation Fronts'	Location	Type	Issues
1	Amazon	Latin America	tropical	a new wave of deforestation for agriculture underway
2	Atlantic Forest and Gran Chaco	Latin America	temperate	up to 97% of the forest has been lost to development
3	Borneo	South Asia	tropical	deforestation due to a new culture and fires
4	Cerrado	Brazil	tropical	the forest riation due to unsustainable agriculture
5	Choco-Darien	Latin America	tropical	one-third of the area has been cleared
6	Congo Basin	Africa	tropical	unsustainable resource extraction
7	East Africa	Africa	tropical	Slash and burn clearing
8	East Australia	Australia	tropical	Deforestation in the northern ecoregions is a substantial contributor of sediment pollution affecting the Great Barrier Reef.
9	Greater Mekong	South Asia	tropical	Illegal and unsustainable logging and conversion of forests for agriculture are the direct causes of deforestation and biodiversity loss in the Greater Mekon
10	New Guinea	Oceania	tropical	Already, more than 2% of Papua New Guinea (PNG) forests have been felled,1 with forestry concessions covering most of the country
11	Sumatra	Indonesia	tropical	Sumatra's Riau Province, nearly 10.5 million acres of tropical forests and peat swamp, has been cleared in the last 25 years. Significant species loss is imminent.



Tissue Fiber Composition

Global Tissue Fiber Furnish

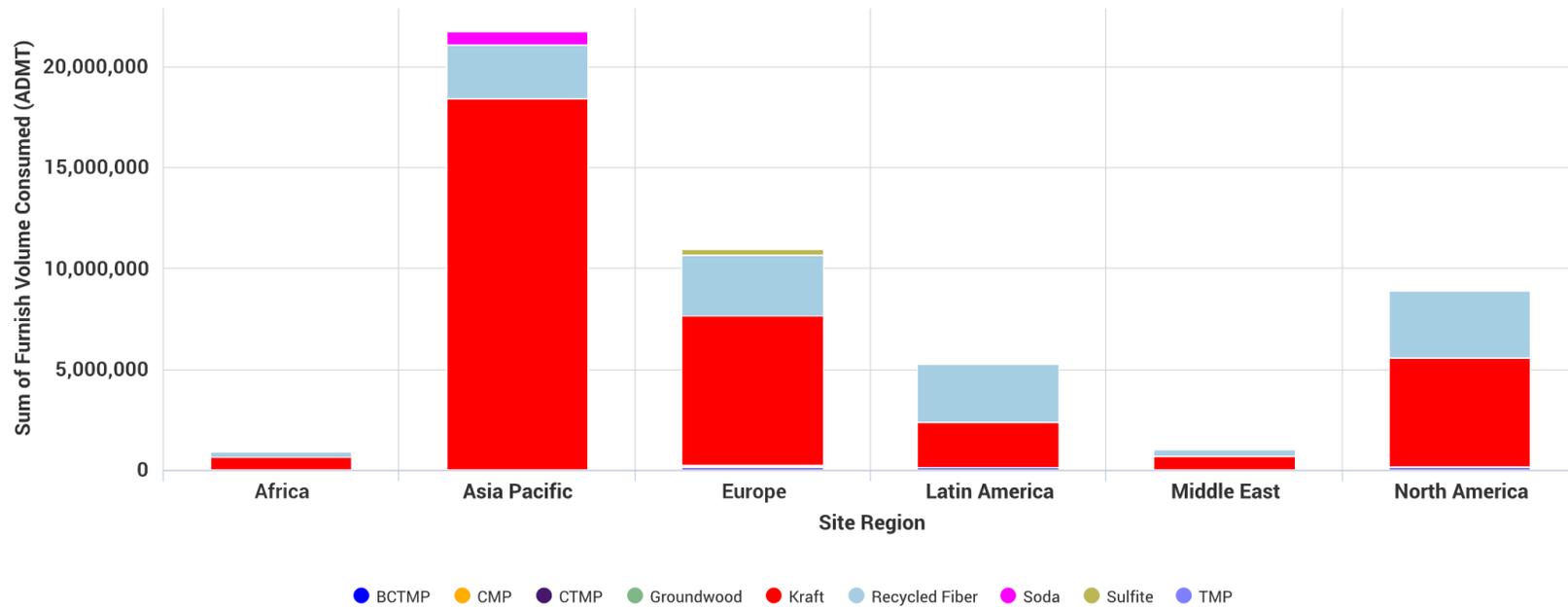


- Tissue Furnish is 26% recycled.
- Non-wood utilization is less than 2%
- Is Green Peace campaign in North America focused on the right thing?
- WWF focus will drive sustainable forestry certification.
- Do we need to measure sustainable forest certification of pulps?
- New Non-wood pulp sources coming online may change mix and offer sustainable alternative.



Global Tissue Fiber Furnish

Global Tissue Furnish by Region



North America has the greatest proportion of recycled fiber in tissue products



Source: FisherSolve Next™ © 2019 Fisher International, Inc.

Is there a New Pulp Game in Town?

Stuart Sharp, Fisher International https://www.fisher.com/images/features/insights/Fisher_Analysis_Is_There_a_New_Pulp_Game_in_Town.pdf

Can “Tree-Free Fiber” Disrupt The Tissue Fiber Supply?



Our ultra premium bath tissue is 100% tree-free. Our proprietary blend of bamboo and sugarcane results in a product that has a soft, luxurious feel. Two-ply construction means we can create a tissue that feels soft but does not compromise strength. Our bath tissue has 500 sheets per roll and features a light emboss to provide some texture, but does not take away from its natural softness

- Maybe, but not as a Green Wash niche product with boutique fibers
- Fibers must be sustainably grown and pulped
- Not being from wood or recycled paper is not enough to drive disruption
- **Sustainable Fiber Technologies Phoenix Process™** is specific for non-woody fibers is known to be non-pressurized and to use no sulfur

https://www.fisher.com/images/features/insights/Fisher_Analysis_Is_There_a_New_Pulp_Game_in_Town.pdf

- Wheat straw and other cereal straws are either plowed under by the farmer where possible, or literally burned in the fields. Both methods of disposal have issues associated with them.



Is Bath Tissue Really Wiping Out North American Forests?

Joanna Wilhelm, Senior Consultant, Business Intelligence, Fisher International

[Internationalhttps://www.fisher.com/images/features/insights/Fisher_Analysis_Is_Bath_Tissue_Really_Wiping_Out_North_American_Forests.pdf](https://www.fisher.com/images/features/insights/Fisher_Analysis_Is_Bath_Tissue_Really_Wiping_Out_North_American_Forests.pdf)

- Northern bleached softwood kraft (NBSK) accounts for 23% of the purchased market pulp used by North American commercial and retail bath tissue producing mills.
- North American bath tissue mills are already using at least 60% recycled and eucalyptus furnish for their production, as are European mills.
- Recycled papers already account for over 25% of the furnish used in North America and Europe and about 55% in Latin America for Bath Tissue production



Sustainable Fiber Source Certification



The Forest Stewardship Council® or FSC® provides a fibre sourcing certification label. The FSC includes members with interests in economic, environmental, social and individual groups. The economic groups represent the for-profit companies involved in fibre sourcing.



The Rainforest Alliance provides certification of goods from agriculture forestry and tourism insensitive rainforest areas.

<https://www.rainforest-alliance.org/fags/what-does-rainforest-alliance-certified-mean>

Greenpeace has expressed one significant difference from WWF. Greenpeace has targeted Resolute Forest Products and the Canadian Boreal Forest (<http://www.greenpeace.org/usa/forests/boreal/>). Please note that the term “boreal” is simply Latin for northern but represents a good marketing spin.



Key Sustainability Issues: Tissue Fiber Supply:

1. Tissue products tend to permanently remove fiber from the recycle stream
2. Global availability of recovered paper fiber to tissue makers may decrease with decreasing graphic paper consumption.
3. Corrugated boxes and paperboard used in industrial and consumer packaging can be recycled back into the same formats with higher relative sustainability scores than tissue from recovered fiber
4. Cutting old or older growth forests in northern climates will be seen as less sustainable than plantations in temperate or sub tropical zones (such as USA southern pine or Brazilian eucalyptus). At the same time, monoclonal silviculture runs a risk from pests and climate change that may not be seen as sustainable.
5. Destruction of tropical rainforests to build plantations at the cost of biodiversity and endangered species will not be sustainable.
6. Growing fiber as annual crops either on land currently used for food production or expanding fiber production to lands that are not currently used for agriculture risk sustainability scrutiny.



The Future of Tissue Manufacturing to 2023, Bruce Janda, Smithers Pira 2018

Water Sustainability



Tissue Water Sustainability News

BREAKING NEWS

Kimberly-Clark Takes Action on Clean Water

Company helps communities develop sustainable water management

Cascade Tissue Group's Kingsey Falls, Quebec mill claims a leadership position in water reduction by a factor of five in tissue making. They have reduced water consumption from 50 cubic meters of water per ton to 10 cubic meters per ton of tissue paper produced.

How 5 manufacturers reduce water use, <http://sustainablemfr.com/water/5-manufacturers-reduce-water-use>

UPM Recognized For Its Water Efficiency Efforts In China (Friday, January 12, 2018)

(China) UPM has been recognized as a water efficiency frontrunner in Jiangsu province under a Chinese government initiative, in eastern China. In total, 11 companies received the water efficiency recognition nationwide. UPM is the first company to obtain the highest recognition in Jiangsu province. UPM produces uncoated woodfree grades and specialty grades on three PMs at its Changshu mill in Jiangsu. The initiative was launched by the Ministry of Industry and Information Technology, the Ministry of Water Resources, the National Development and Reform Commission and the General Administration of Quality Supervision, Inspection and Quarantine in 2016.

<http://www.upm.com/About-us/Newsroom/Releases/Pages/UPM-recognised-as-a-Water-Efficiency-Frontrunner-in-China-001-Fri-12-Jan-2018-11-03.aspx>

The world is facing a water crisis. In the developed world, increasing demands for water—for cities, for industry, for agriculture, and for the extraction of fossil fuels—are straining an already burdened system. In the developing world, nearly 1 billion people lack access to safe drinking water and sanitation because of the absence of distribution systems for clean water.

Climate change may increase risk of water shortages in hundreds of U.S. counties by 2050

[“Projecting Water Withdrawal and Supply for Future Decades in the U.S. under Climate Change Scenarios”](#)
Environmental Science & Technology

More than 1 in 3 counties in the United States could face a “high” or “extreme” risk of water shortages due to climate change by the middle of the 21st century, according to a new study in ACS's *Journal of Environmental Science & Technology*. The new report concluded that 7 in 10 of the more than 3,100 U.S. counties could face “some” risk of shortages of fresh water for drinking, farming and other uses. It includes maps that identify the counties at risk of shortages.



2019 Internet Search

AQUEDUCT Water Risk Atlas

Water, Water Everywhere. Or, Is It?

Subhash Deodhar

Senior Consultant

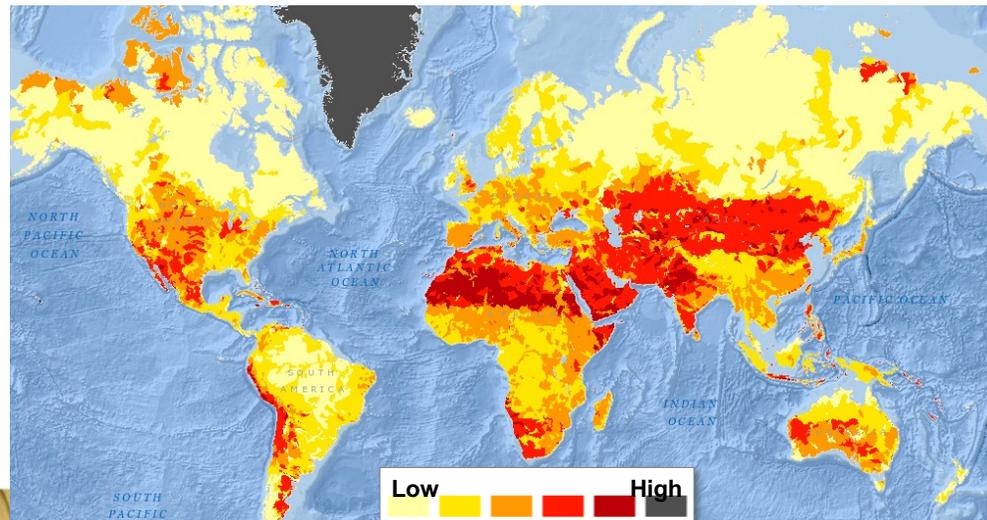
Fisher International

<https://www.fisheri.com/?portfolio=water-water-everywhere-or-is-it>

All Water Risk is Local

Local availability of fresh water may change

- Changes in demand
- Climate change
- Seasonal changes in precipitation
- Water risk at mill site location?

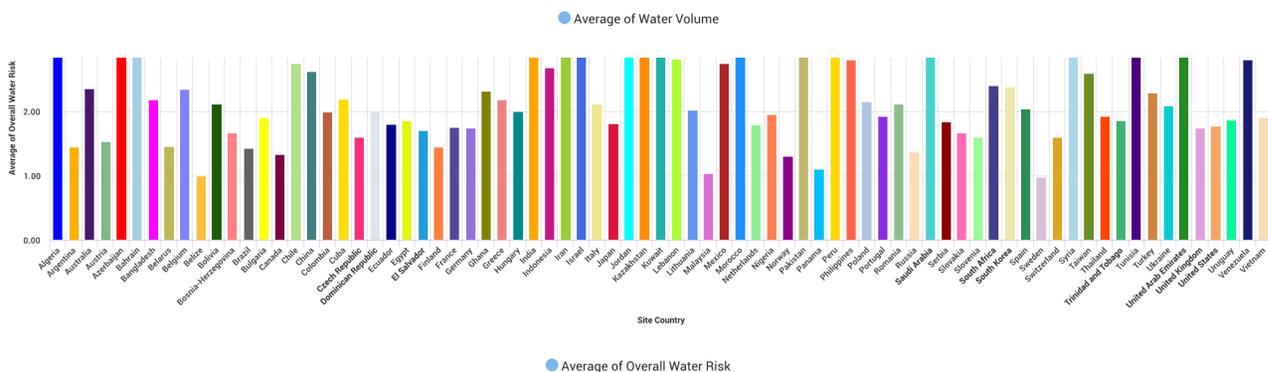
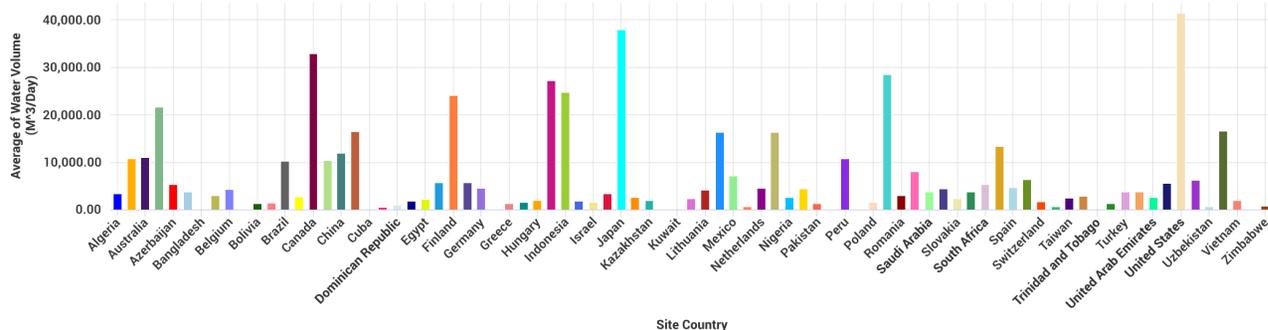


Source: World Resources Institute



Tissue Machine Water Consumption and Risk

Tissue Machine Average Water Risk and Consumption by Country



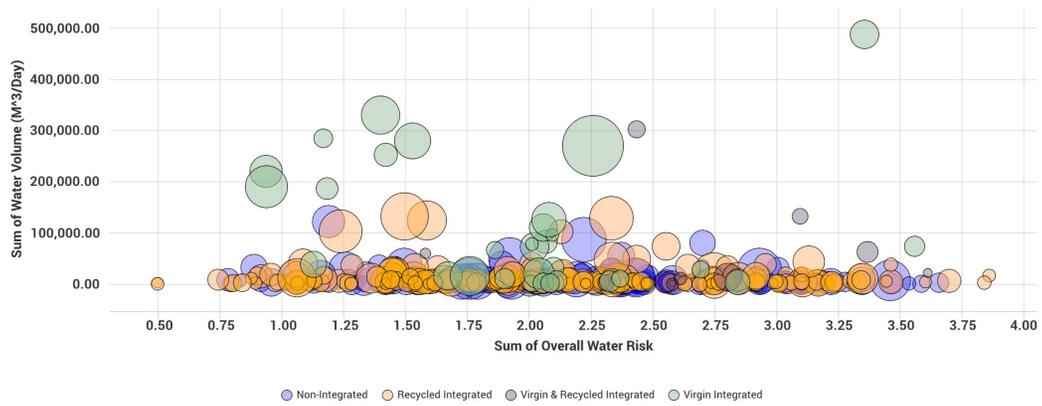
Average water statistics by country will not always predict local mill risk



Source: FisherSolve Next™ © 2019 Fisher International, Inc.

Tissue Machine Water Status

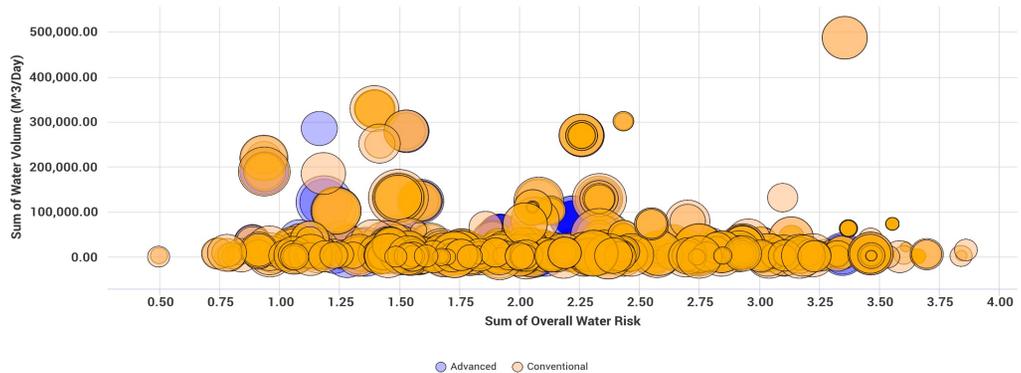
Tissue Machine Water Status by Technology and Fiber Source



Each mill location is a unique case

Virgin and Virgin/Recycled Integrated fiber sites have highest water use.

They tend to be located by large water source.



Advanced structured or TAD processes do not use more water.



Carbon Footprint



Benchmarking Paper Mill Energy

Efficiency and GHG Emissions for Major Producer Countries

Subhash Deodhar, Senior Consultant, Fisher International <https://www.fisher.com/?portfolio=benchmarking-paper-mill-energy-efficiency-and-ghg-emissions-for-major-producer-countries>

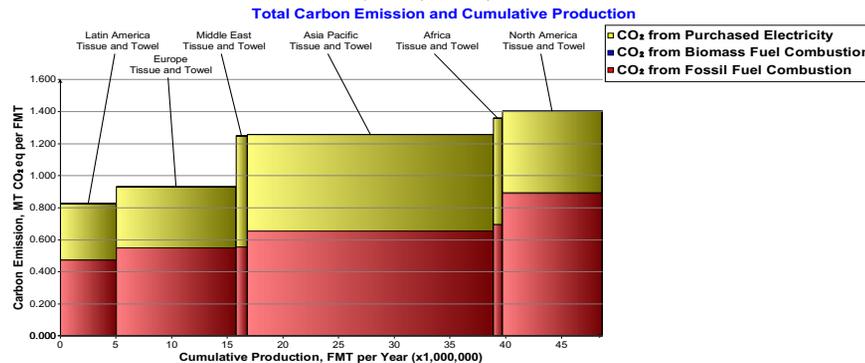
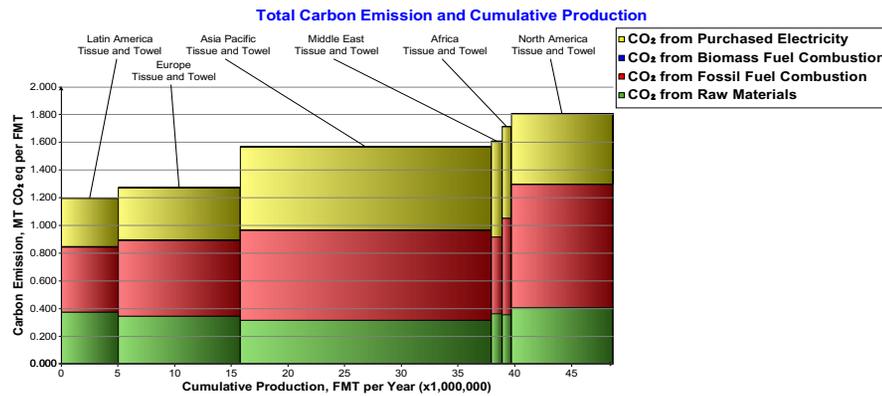
Observations and Conclusions

- The papermaking process and technology is uniform all over the world, benchmarking against similar paper mills in other countries helps in identifying areas of opportunity. **Many paper mills have significant potential for improvement in their energy efficiency.** Various small and large initiatives to reduce energy usage have been identified and implemented over the years by papermakers all over the world.
- Cogeneration is a win-win option from every angle. Reduction in GHG emission is good for the earth, but it can also be good for the paper mill's bottom line if the results come via improvement in energy efficiency.
- Coal will remain the dominant fuel in India, Indonesia and China. But it is worthwhile looking at alternate biomass fuels. Most biomass fuels can be burned in coal fired boilers.



Tissue Production Carbon Emissions

Total Carbon Emission and Cumulative Production by Region



Cradle to Gate measure includes fiber

- North America = highest rate
- Probably counts carbon twice as raw material and production elsewhere

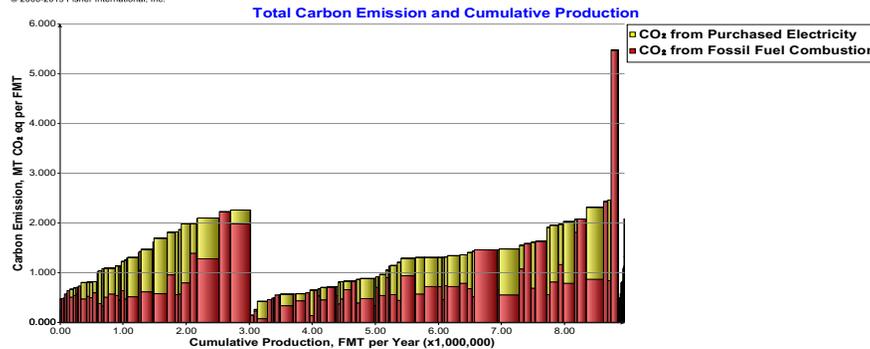
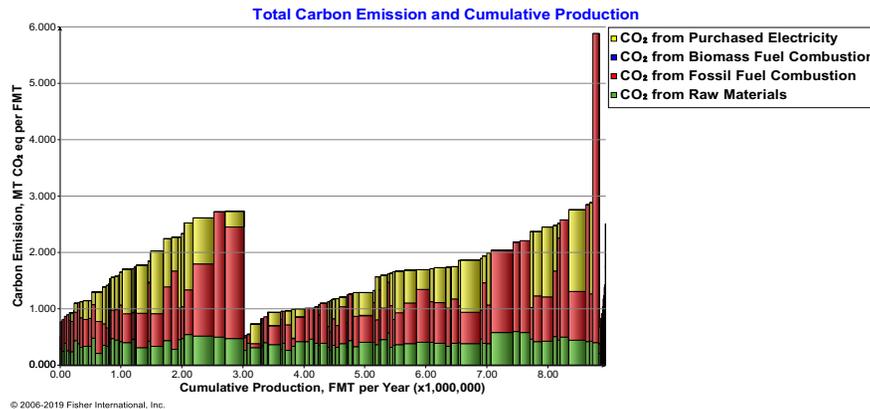
Gate to Gate measure excludes raw materials

- North America still highest rate
- This is probably the base for carbon tax
- Carbon tax likely to be regional or national based
- Will this separate Mills by cost?



North America Total Emissions versus Mill Contribution By Mill and Tissue Grade

Total Carbon Emissions per Ton by Mill



Cradle to Gate includes pulp fiber emissions.

Commercial grade curve is very steep

- Mostly integrated recycled recycled fiber
- Carbon tax or emission cap could quickly disrupt the cost order for this market

Consumer Tissue is mostly non integrated purchased pulp

- Curves are not as steep but could easily be disrupted
- Do integrated virgin tissue mills have an advantage?



Does the Through Air Drying Tissue Process Really Use More Energy?

Bruce Janda, Business Intelligence Consultant, Fisher International

<https://www.fisher.com/?portfolio=does-the-tad-tissue-process-really-use-more-energy>

- TAD tissue processes always use more energy per ton of tissue produced.
- Both electrical and thermal energy consumption is increased by TAD
- They may use less energy per sheet or consumer use depending on the product format and consumer application. The product furnish cost determines the overall economic impact as extra fiber can be used in a conventional dry creped tissue process to improve consumer performance.
- Do “Structured Tissue” alternatives to TAD make sense?
 - Maybe



Tissue Product Design



Tissue Product Designs for Sustainability or Greenwashing?



Now go up to ONE MONTH before changing your roll. Looking for an irresistibly soft toilet paper that seems to last forever? Charmin has got you covered. With Forever Roll, you can go longer between roll changes without sacrificing your comfort. It's super convenient and long-lasting, so you have one less thing to think about!

With free shipping and a money back guarantee, all you have to lose is the hassle!

- ✓ Brushed stainless steel roll holder included with Starter Kit
- ✓ Comes in the Charmin Ultra Soft you know and love
- ✓ Available in both Multi-User (12" diameter) and Single-User (8.7" diameter) sizes
- ✓ Free delivery on all products, right to your doorstep
- ✓ Subscribe and save 20% off all orders
- ✓ Clog-safe and septic-safe



TOSS THE TUBE

Every year 17 billion TP tubes are thrown away. To lessen the environmental impact, we created Scott® Tube-Free TP, an innovative product that doesn't use a cardboard tube.



Tissue Product Replacements/Substitutions



Eco-friendly alternatives

Family cloth

This might be an option that is out of most people's comfort zone, but in the spirit of cloth diapers comes family cloth — wiping with fabric swatches, which are then placed in a wet-dry bag and laundered so they can be reused.

Bidet attachment

For some reason, Americans haven't fallen in love with alternatives like bidets as many Europeans have. This is unfortunate, because bidets have amazing environmental benefits. Plus, they are great for personal hygiene.



Substantive Change versus Green Washing

Who Gives A Crap

This company began with crowdfunding back in 2012, and it has been growing ever since. It offers [eco-friendly toilet paper](#) made from 100 percent [recycled paper](#) as well as no added inks, dyes or scents. Who Gives A Crap claims its 3-ply is as “soft as unicorn kisses and as strong as 1,000 ponies,” and you can buy it in bulk at just \$1 per jumbo roll, which is 400 sheets. This company also donates 50 percent of profits to help improve sanitation and build toilets in developing countries.

2019 photos from Appleton, WI Starbucks



Photo taken at NA Perini



Greenwash:

- eco-friendly toilet paper
- High priced plastic water bottle includes water fund contribution
- Air dryer fueled with coal-based electricity vs. paper

Real Sustainability:

- Eliminate plastic wraps in packaging



Conclusions

1. Recycled versus virgin pulp is the wrong question. Fiber source certification will become the standard with stricter controls. Blockchain?
2. Should we be tracking certified vs. non-certified pulp separately in market? Is this the real sustainability factor? Is this a disruptor for Tissue production?
3. All water risk is local. Tissue production sites near water sources tend to use more. Advanced Tissue/TAD does not appear to use more water.
4. Water factors are potential disruptor only in water stressed local areas. Why doesn't the cost of water wasted get more attention in papermills?
5. Carbon tax or restriction could have a major disruptive impact on individual mills cost position within country or region. How will they be calculated?
6. Product Greenwashing is common by both manufacturers, facilities, and interest groups. Will consumer, government, and industry focus shift to real issues?
7. Plastic wrap replacement by paper is a potential disruptor that could come quickly in several markets.
8. Most Tissue ships by volume, not weight. Can product redesign reduce transport carbon footprint?
9. What is next? How will your mill(s) or product be affected?



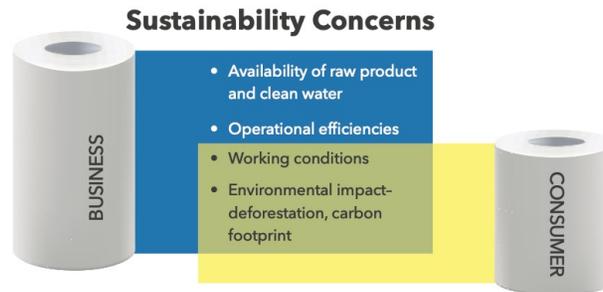
Questions?

Thank you

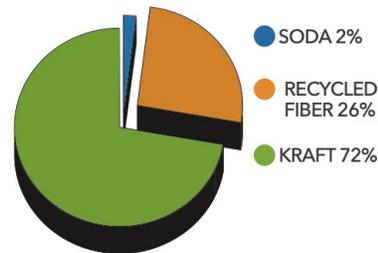
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Could Consumer Focus on Sustainability Disrupt the Tissue Business?



Global Tissue Fiber Furnish



RESPONSIVE PRODUCT DESIGN OPTIONS

- No cardboard tube
- Larger rolls
- Paper vs. plastic outer wraps

GREENWASHED ALTERNATIVES

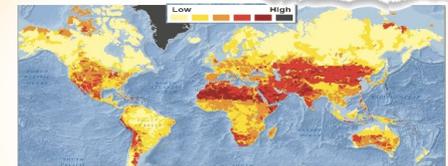
- Cloth toilet paper
- Bidets
- Air hand dryers

Your business could be prepared for sustainability disruption in the tissue paper industry, if you have the all the facts.
 To learn more, contact Fisher International at info@fisheri.com.

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Tissue Products Cannot be Recycled

Possible 'Replacements' for Pulp
 • Bamboo • Sugar cane • Cereal straws
 ...But these come with their own sustainability concerns



Water Risk is Region-Specific

- Usage vs. Availability
 - Population shifts
 - Climate change
 - Industrialization
 - Pollution
- Virgin and virgin/recycled integrated fiber sites have the highest water usage, but are typically located by large water sources

Carbon Footprint Concerns

- Coal - the dominant fuel in India, Indonesia and China
- North America - highest global rate of carbon emissions
- Carbon taxes/government restrictions - game changers?

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