



# Removal of Nicotine to Recycle Machine Wash Water

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# BAT's Environmental and Social Governance

“Our corporate purpose puts ESG front and centre, with a principal focus on reducing the health impact of our global business in order to build A Better Tomorrow™.”

“[...] we retain a strong emphasis on other ESG priorities – including addressing climate change and excellence in environmental management.”

Water conservation is one of the top ESG priorities

By 2025 reduce total amount of water withdrawn by 35%

**ESG**  
What ESG means at BAT



“Creating shared value for our stakeholders isn't just the right thing to do, it makes sound business sense and is central to our strategy to deliver A Better Tomorrow.”  
Jack Bowles, Chief Executive

Our ESG agenda creates shared value for our shareholders and broader stakeholders including our consumers, society and employees. Our corporate purpose puts ESG front and centre, with a principal focus on reducing the health impact of our global business in order to build A Better Tomorrow™.

Along with our principal focus, we retain a strong emphasis on other ESG priorities – including addressing climate change and excellence in environmental management. At the same time, we remain committed to delivering a positive social impact and ensuring robust corporate governance across the Group.

Outlined below are the priority areas identified in 2019 and which form the core of our Sustainability Agenda:

<b>H</b> Reducing the HEALTH Impact of our business	<b>E</b> Excellence in ENVIRONMENTAL management	<b>S</b> Sustaining a positive SOCIAL Impact	<b>G</b> Robust corporate GOVERNANCE
Consumer choice World-class science Standards and regulation	Climate change Water Waste Biodiversity and afforestation	Human rights Farmer livelihoods Health and safety People and culture	Business ethics Responsible marketing Regulation and policy engagement

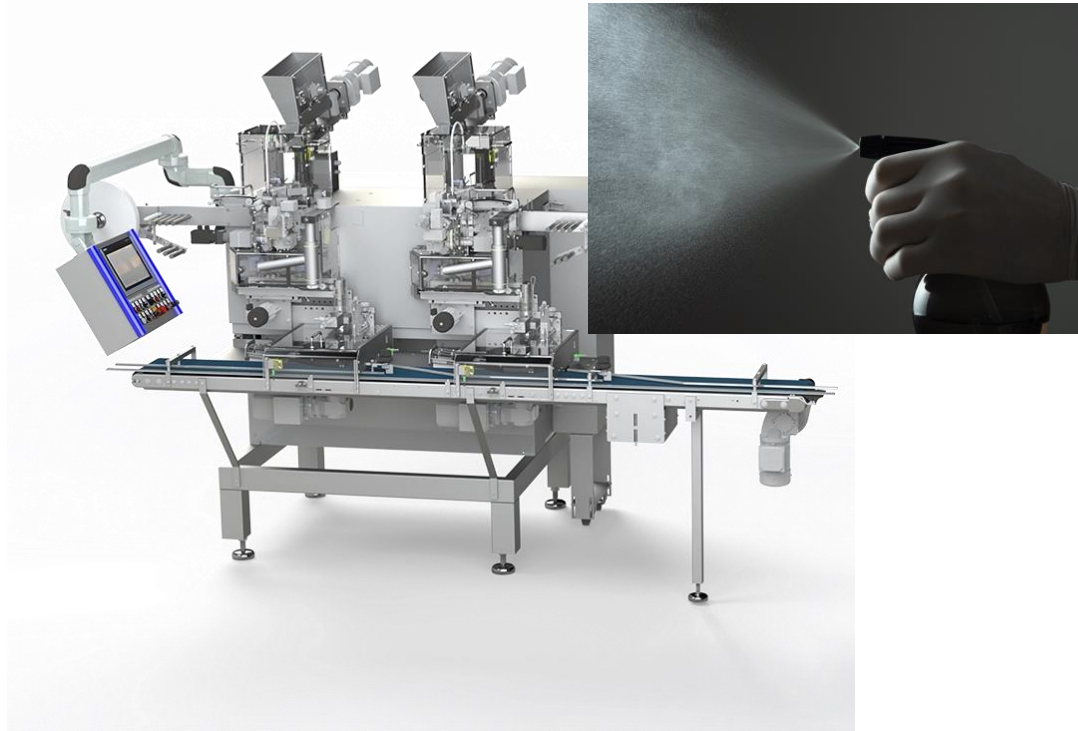
**Creating shared value for**

Consumers    Society    Employees    Shareholders

We have set stretching targets against these priorities:

<b>H</b> Harm reduction	<ul style="list-style-type: none"> <li>• £5 bn by 2025 in New Categories revenues</li> <li>• 50m by 2030 consumers of our non-combustible products</li> </ul>
<b>E</b> Climate change	<ul style="list-style-type: none"> <li>• Net Zero achieves carbon neutral operations (Scope 1 and 2 CO<sub>2</sub>e emissions) by 2030 and net zero emissions across our value chain by 2050</li> <li>• 30% by 2025 of total energy from renewable sources</li> <li>• 100% by 2030 of electricity sourced for operations sites that is renewable</li> </ul>
Waste	<ul style="list-style-type: none"> <li>• 100% by 2025 of operations sites to achieve zero waste to landfill</li> </ul>
Water	<ul style="list-style-type: none"> <li>• -35% by 2025 of total amount of water withdrawn (vs 2017 baseline)</li> </ul>
Biodiversity & afforestation	<ul style="list-style-type: none"> <li>• Net Zero Deforestation by 2025 aiming for net zero deforestation of managed forests in our supply chain and net positive impact on forests in our tobacco supply chain</li> </ul>

# Main Issue: Machines after making products



Collection in  
container

# Why Water Recycling?

## Current situation:

- Manufacturing equipment requires washing after each product run.
- Water that contains higher nicotine concentration is disposed of as hazardous waste.
- Some facilities have paid to dispose of water by incineration.
- Incineration of water is energy intensive, expensive, and NOT environmentally friendly.
- Depending on local laws, water recycling is the key.



# Can Decrease Carbon Footprint.



Waste disposal involving transportation increases carbon footprint especially if only specific waste sites accept large volumes of liquid waste.

# Water Remediation

## Lab Scale



	Simulated Wash Water (mg/L)		Manufacturing Wash Water (mg/L)	
	Ion Exchange Column	Carbon Column	Ion Exchange Column	Carbon Column
Before	16.8 ± 3.3	13.5 ± 1.0	8.63 ± 0.1	8.63 ± 0.1
After	0.05	0.05	<LOQ	0.05
% Reduction	99.6	99.6	99.5	99.6

LOQ = 0.05 mg/L

	Simulated Wash Water (pH)		Manufacturing Wash Water (pH)	
	Ion Exchange Column	Carbon Column	Ion Exchange Column	Carbon Column
Before	4.5	4.5	3.4	3.4
After	2.2	7.8	2.1	7.5

- There are more sources of water not just wash water.
- Choose location for implementation based on total water usage and potential for improvement.
- Decide how water is going to be used.
- Implement engineering design plans.
- Any Improvement in water recycling is a win!



# Acknowledgments

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