



# CHANGING HABITS FOR OUR CHANGING CLIMATE

How leading brands can shape our everyday behaviours to protect the planet

October 2021



# WELCOME

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## THIS REPORT

This report summarises a behavioural science study conducted by Reckitt, and Teneo, the global advisory firm. The materials for the study featured the leading hygiene brand Dettol.

The study, undertaken in three countries in August and September 2021, was designed to test the effectiveness of different forms of behavioural messaging intended to encourage pro-environmental habits related to handwashing.

## OUR PURPOSE

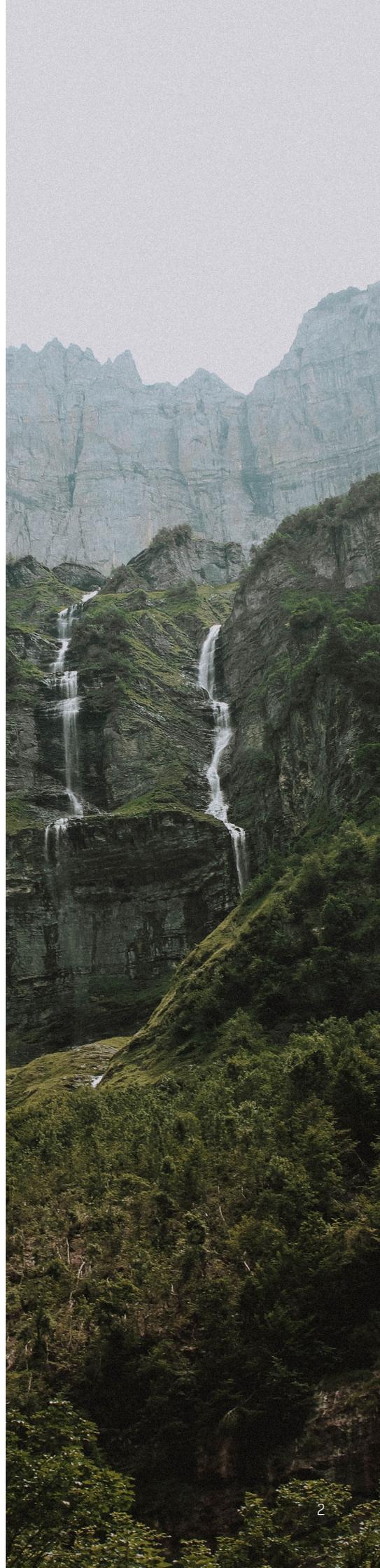
At Reckitt we are determined to protect, heal and nurture in our relentless pursuit of a cleaner, healthier world. Along with our partners we are dedicated to improving health, hygiene and nutrition for everyone, everywhere. And as a Principal Partner of COP26 we want to help people make everyday changes to protect the environment. Our aim for 2030 is to engage 2 billion people in our partnerships, programmes and campaigns. We want to build awareness and create a positive impact on society.



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 To learn more visit: [www.reckitt.com/cop26](http://www.reckitt.com/cop26)

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# EXECUTIVE SUMMARY

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**If we combine forces now, we can avert climate catastrophe. But... there is no time for delay and no room for excuses. I count on government leaders and all stakeholders to ensure COP26 is a success.**

**António Guterres**  
UN Secretary General  
August 2021

By some estimates, the majority of emissions reductions necessary to achieve Net Zero will require behavioural change, both in the adoption of new technology and the adaptation of habits. Governments alone will not be able to tackle this challenge, especially when many of these habits relate to what we do at home.

Against this backdrop, now is the time for owners of the world's leading brands to step up. These brands have the privilege of being in our homes — they're with us at times when no one else is. They have a connection with people all around the world in different walks of life. Wouldn't it be amazing if brands could use that attention to help shape lives in a more sustainable way?

The Covid-19 pandemic has underscored the importance of preventing the spread of disease, and washing our hands properly is one of the most important tools we have to protect ourselves and others. But we have choices in the way we wash our hands. We know that it's not necessary to keep the tap running whilst scrubbing, for example.

**Studies also show that so long as we wash our hands with soap and scrub them properly for the right amount of time, the temperature of the water makes no difference to germ removal.<sup>2</sup>**



This means millions of people are heating water unnecessarily, wasting energy and contributing to harmful greenhouse gas emissions. Though the amount of energy used to heat water for each individual handwash seems trivial, added together it has a big impact. The total amount of CO<sub>2</sub> emissions from heating water for handwashing in the United States has been estimated to be six million metric tonnes every year — that's the equivalent to the CO<sub>2</sub> emissions of 1,25 million cars.<sup>3</sup>

**Our research estimates the greenhouse gas emissions from heating water for handwashing in the UK is 1.33 million metric tonnes of CO<sub>2</sub>e, equivalent to that of 285,000 cars<sup>4</sup>, or**

**3.3bn** miles driven

That's about 50% more than all the traffic in Glasgow in a year.

This paper summarises a behavioural science study conducted by Reckitt, and Teneo, the global advisory firm. The materials for the study featured the leading hygiene brand Dettol. The study, undertaken in three countries, was designed to test the effectiveness of different forms of behavioural messaging intended to encourage pro-environmental habits related to handwashing.

Overall, the results were very positive. We saw:

- Large increases in intended behaviours that are good for the environment
- Positive shifts in broader attitudes towards the environment
- Consumers were more open to hearing about how to protect the planet from brands after seeing the messaging
- Positive impacts across all countries, with the most profound and consistent impacts in the United Kingdom.

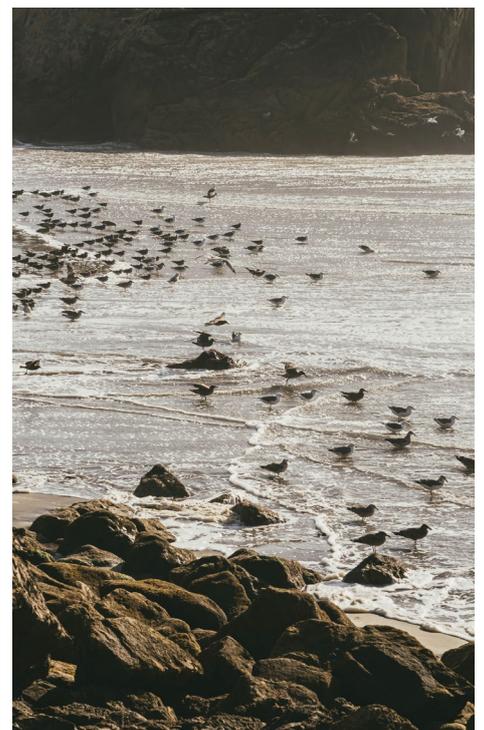
This study was designed as a randomised controlled trial. A 6,000-person survey was undertaken across the United Kingdom, Australia, and India. The population samples within each country were randomly assigned to one of four groups. Each group was exposed to a different message, one of which was a placebo message. We then compared the survey outcomes of each group. The messaging in the UK and Australia focussed on water temperature choice; the focus in India was saving water.

As well as giving us a comparison against which we can measure the effectiveness of the different messages, the placebo group gives us a baseline measurement of those outcomes captured in our survey, which can be compared across countries (though we caveat the representativeness of the Indian sample). We find different approaches to handwashing in all three countries. For example, most people usually wash their hands in unheated water in India (71%) whereas few do in the UK (23%). Australia is somewhere between the two (47%).

The content of the messages drew on insights from published behavioural science studies of handwashing and comparable, pro-environmental behaviours. The messages

were similar to each other but with important differences, such as the presence of the Dettol logo. This allowed us to measure the effect that specific aspects of each message had on each of the outcomes observed.

Though we're not able to assess longer term effects as part of this study, the results suggest that, if similar messaging was rolled out at scale as part of a broader behaviour change campaign, there is the potential for real environmental benefits.



# INTRODUCTION

Though Governments and businesses have been making progress in cutting emissions, debates persist in the run-up to COP26 as to how further progress towards Net Zero will be made. Different economies, geographies and sectors face different challenges. In the UK, recent analysis from the Climate Change Committee shows that, whilst the overwhelming majority (87%) of emissions reductions achieved between 2009 and 2019 required no behavioural change<sup>5</sup>,

**MORE THAN HALF OF THE EMISSIONS REDUCTIONS REQUIRED BETWEEN 2020 AND 2035 WILL NEED CHANGES IN INDIVIDUAL BEHAVIOUR TO TAKE EFFECT.<sup>5</sup>**

The behavioural changes we all need to make include both adopting new technologies and adapting our lifestyles. Some of these adaptations may feel disruptive and some of us may feel less able to make them than others. But there are also gains to be made by thinking about things that we can all do differently — and with relative ease.

These opportunities — like wearing a jumper instead of turning up the heat, or opening a window instead of turning on the air conditioning — may seem trivial to us as individuals but scaling energy efficient behaviours across populations can lead to big savings in energy usage. Accepting that these savings are worth pursuing — alongside the more substantial reforms that must occur at the national and international level — the questions then become: which habits can we adapt to save energy? What will the impact be? And who will be responsible for driving change?

Much has been written about the ability of big brands to engage consumers and drive purchases. Reckitt does a lot of work in this area, making a positive impact through brands such as Finish, Vanish and Harpic to name a few. To what extent can the world's biggest brands now step up and positively influence our habits? And do they have the legitimacy among consumers to do so?

The Covid-19 pandemic has highlighted the importance of handwashing as a means of preventing disease. Unsurprisingly, state health agencies and NGOs have provided information to ensure that we all know how to wash our hands effectively, focusing on the use of soap and water, our scrubbing technique and the length of time we lather for. But little has been said about the ideal temperature at which we should wash our hands.

The temperature of the water might make a difference to our comfort, but it has no impact on the effectiveness of germ removal.<sup>6,7,8,9</sup> If anything, it might be an advantage to use cold water.



**The temperature of the water does not appear to affect microbe removal; however, warmer water may cause more skin irritation and is more environmentally costly.<sup>10</sup>**

**The Centers for Disease Control and Prevention**

So how many of us are using energy unnecessarily when we wash our hands? And at what environmental cost? What would it take to change our behaviour? And would lowering the water temperature — or even turning the tap off whilst soaping — lead to us washing our hands less?

Reckitt, the official hygiene sponsor of COP26, has teamed up with Teneo to find out answers to these questions. Brands like Dettol, Reckitt's leading hygiene brand, have the privilege of being in people's homes all around the world — it's there even when no one else is, even when we're washing our hands.

Wouldn't it be amazing if we could prevent disease and fight climate change?

# HOW DO YOU WASH YOUR HANDS?

Changing behaviour at scale, and sustaining those changes so they become habits, is rarely straightforward. Road safety is a challenge common to all countries. Getting drivers and passengers to wear seatbelts is one way of confronting that challenge. Taking the UK as example, even encouraging this seemingly simple behaviour, where the benefits are clear and the costs negligible, took decades of persuasion — including legislation, enforcement and mass communication campaigns — to achieve their use by the majority of the public.

There are cultural and geographical differences when it comes to handwashing. Research has suggested a “strong cognitive connection” between water temperature and hygiene in Western Europe and the United States. However, in other countries like Japan, this connection is different – with hot water often having a greater association with comfort rather than health and hygiene. Additionally, other factors like the availability of hot water and ambient water temperatures, may affect people’s choices.

Within our study, we see that across the three countries of interest, there are differences in temperatures used for handwashing.

Whilst over half of those in the UK report using heated water most or all of the time, in India, seven in ten people surveyed usually or always use cold water. Australia sits somewhere between the UK and India.

These differences can have big impacts on the resulting energy used. Based on our study, our estimates suggest that the greenhouse gas emissions resulting from people in the UK washing their hands with heated water is 1.33 million metric tonnes of CO<sub>2</sub>e, equivalent to 285,000 cars<sup>11</sup> on the road per year... or 3.3 billion miles driven, which is about 50% more than all the cars on the road in Glasgow in 2019.

## Habitual hot water users

% reporting always / usually using\*



## Habitual cold water users

% reporting always / usually using\*



\*Weighted data N = 1,543. Base: Nationally representative samples in UK, Australia and India. Fieldwork 31<sup>st</sup> August to 9<sup>th</sup> September 2021.

When it comes to changing habitual behaviours to save energy, there are lessons we can draw on from academic and industry research. Even among the energy-saving conscious, people tend to think about more salient issues like lighting over hot water use as a drain on energy, even though hot water use has a much larger impact.<sup>12</sup> In fact, research has shown that rational arguments alone are unlikely to persuade consumers to adopt more environmentally friendly behaviours.<sup>13</sup>

Fortunately, empirical studies from the behavioural sciences give us clues as to how we can overcome the barriers to adapting routine

behaviours, like changing the water temperature we use when washing our hands or turning the tap off while soaping. To unlock these insights, Teneo reviewed the evidence base on handwashing and broader pro-environmental behaviours (including recycling, turning lights off, turning the tap off whilst brushing teeth and more). These insights then fed into the design of behaviourally informed messaging which were then tested against a 'control group' to assess their effectiveness in changing intended behaviours and attitudes to climate change. The methodology for this research is described on page 16.

## OUR METHOD



The evidence review highlighted the well-known "intention to action gap"<sup>14</sup> which is seen across a wide range of issues and populations.<sup>15</sup> Some studies showed the disconnect often found between people's attitudes towards the environment and their behaviours which affect the environment<sup>16</sup> (though even in a Europe wide study which did find correlations between environmental concern and pro-environmental behaviour, water saving behaviour was not affected<sup>17</sup>).

The review also demonstrated the considerable potential contribution of behavioural science to improve energy saving behaviour.<sup>18</sup> For example, helping individuals understand their own water usage habits led to reduced hot water wastage in Switzerland<sup>19</sup> and household water consumption in California.<sup>20</sup> Messages drawing on the power of 'social norms' and 'collective efficacy' successfully reduced water wastage when people were brushing their teeth in the UK.<sup>21</sup> Social comparison messaging reduced littering in the Netherlands<sup>22</sup> and domestic energy use in parts of the United States.<sup>23</sup> Generally speaking, multichannel approaches have been effective, combining mass market communications with reminders at important touchpoints, as is making the pro-environmental choice as easy as possible.<sup>24</sup>

The following sections summarise the impacts of different behaviourally informed messages on a range of outcomes. Though this was designed to simulate real world conditions and to assess the relative potential of different messages to affect behaviour, testing any initiative to change behaviour in the real world would give greater confidence in its impact on behaviour, not least due to the potential for attenuation over time (which we were not able to observe in this study). In addition, we recognise that there will be other factors that affect behaviour, for example the type of tap (mixer or individual taps) and type of soap (bar or liquid). It is worth noting that, though encouraging people to turn off the tap whilst soaping would also reduce heat energy, initial exploratory research suggested a better chance of saving energy by encouraging people in the UK to lower their water temperature than to turn off the tap, due to various factors. In addition, exploratory research suggested there is less to gain by encouraging people in India to lower their water temperature for handwashing (partly due to the mainly higher ambient temperatures of water when it comes out of the tap). For these reasons, our study focussed on water temperature in the UK and Australia, and water saving in India.

# LOWERING WATER TEMPERATURE IN THE UK AND AUSTRALIA

## KEY FINDINGS FROM THE STUDY

Teneo reviewed the academic literature on what has and has not worked to affect handwashing and other analogous behaviours. Combining these insights with a renowned behaviour change framework<sup>25</sup>, three behaviourally informed messages were designed.

	Treatment 1	Treatment 2	Treatment 3
<b>Behaviourally informed messaging</b>	Rationale + Reference Points + Scientific Messenger	Rationale + Reference Points + Scientific Messenger	Rationale + Easy + Scientific Messenger + Injunctive norm
<b>Branding</b>	Unbranded	Dettol branded	Dettol branded

Overall, all three treatments were effective, though Treatment 3 – with the addition of a values based injunctive norm, consistently performed best. We provide further breakdown of the results below.

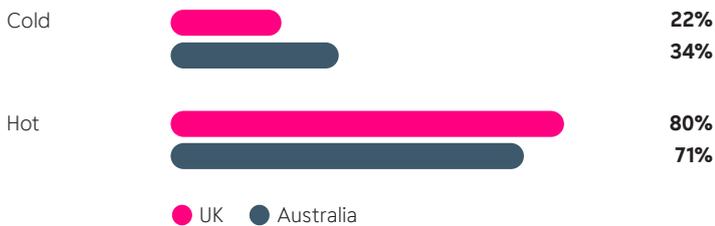


## Consumers think heated water is more effective than cold water

Consumers are far more likely to think that hot water is effective at cleaning hands with soap than they are cold water. Only a minority of respondents cited cold water as an effective temperature in both the UK and Australia, while at least seven in ten said that hot water was effective. A range of factors including comfort and convenience may influence the temperature of water we use to wash our hands. But the perceived lack of efficacy of cold water is likely to lead consumers to use far higher temperatures than is necessary – and in turn lead to unnecessary carbon emissions.

### Perceived effectiveness of different water temperatures — by country\*

% selecting 4 or 5 on a 5-point effectiveness scale for cleaning hands with soap

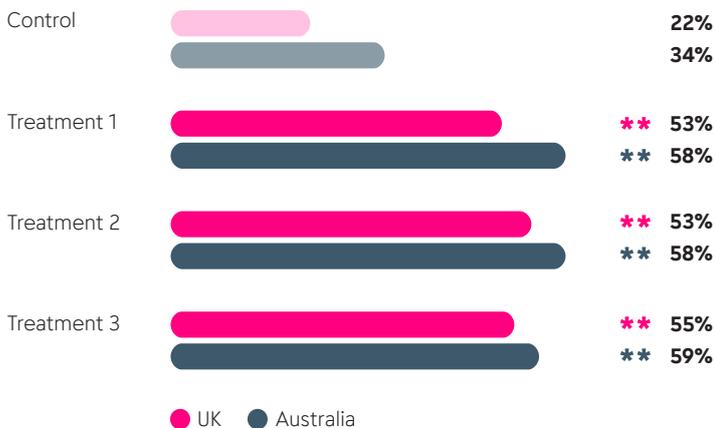


## We can challenge misperceptions through our messaging

We saw large increases in the proportion of those believing that cold water was an effective temperature for cleaning hands with soap in the UK. In Australia, we also saw statistically significant shifts, even though respondents there started from a higher baseline.

### Perceived effectiveness of cold water — by country and treatment\*

% selecting 4 or 5 on a 5-point effectiveness scale for cleaning hands with soap



\*\* Denotes a statistically significant difference from the control group at the 95% confidence level

\* Denotes a statistically significant difference from the control group at the 90% confidence level

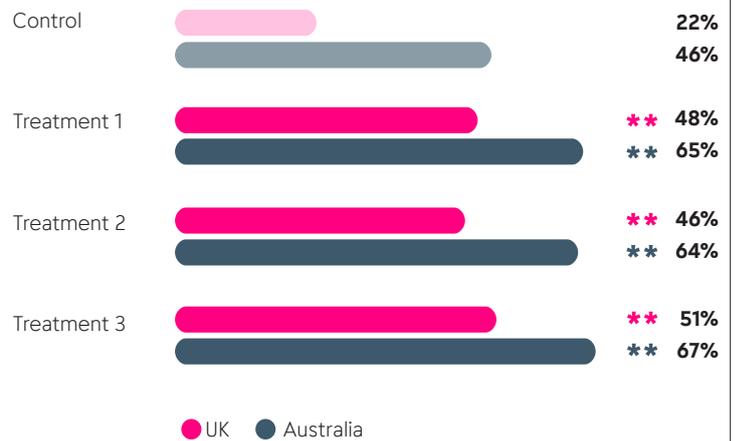
## And we can encourage consumers to adopt more environmentally friendly behaviours

All treatments were effective in shifting intended behaviour in both the UK and Australia.

The messaging leads to an increase in the number of respondents who say they will usually or always use cold or cool water to wash their hands. The most effective treatment, Treatment 3, led to a rise to 51% of UK respondents saying they will use colder water temperatures, up from 22% in the control group. In Australia, two thirds of those who saw Treatment 3 said they will usually or always use cold/cool water in the coming week, up from 46% of the control. We found no effect of the presence of the Dettol logo compared to the unbranded treatment.

### Intended behaviour: Use of cool or cold water — by country and treatment\*

% reporting they will usually or always use cool / cold water when washing hands on a typical day next week



\*\* Denotes a statistically significant difference from the control group at the 95% confidence level

\* Denotes a statistically significant difference from the control group at the 90% confidence level

### \*all graphs on this page are based on:

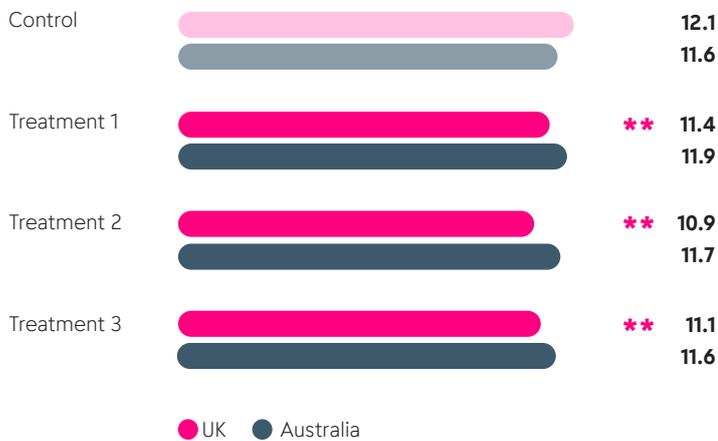
Unweighted data N = 4,081. Base: Nationally representative samples in UK and Australia. Fieldwork 31<sup>st</sup> August to 9<sup>th</sup> September 2021.

### There is potential for a small backfiring effect which could be mitigated with adapted messaging

It is important to consider the potential backfiring effect of messaging - for example, would some people wash their hands less with stronger understanding of the energy used to heat water? Understanding any unintended consequences associated with this work is crucial to ensure any gains in reducing carbon are not undermined by a negative impact on hygiene. Fortunately, we saw no backfiring effect in Australia and only a small (but statistically significant) effect in the UK.

#### Intended hand washing frequency — by country and treatment\*

Average reported number of handwashes expected on a typical day next week



\*\* Denotes a statistically significant difference from the control group at the 95% confidence level  
 \* Denotes a statistically significant difference from the control group at the 90% confidence level

#### \* all graphs on this page are based on:

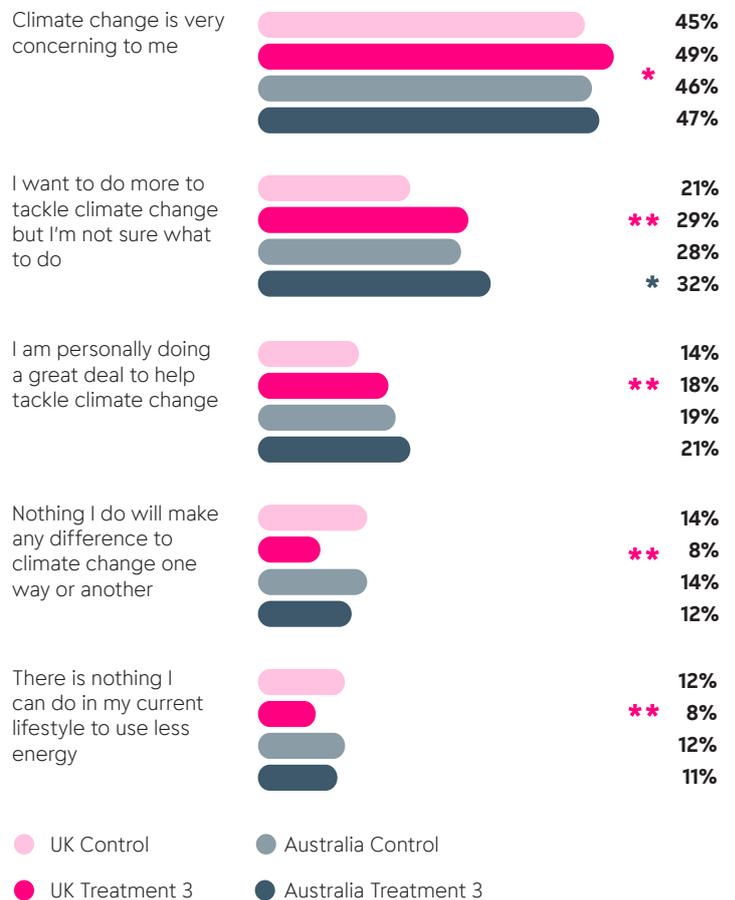
Unweighted data N = 4,081. Base: Nationally representative samples in UK and Australia. Fieldwork 31<sup>st</sup> August to 6<sup>th</sup> September 2021.

### The messaging had a broader impact on climate attitudes

Interestingly, the effect of the messaging was not limited to intended behaviours and beliefs. We found that, particularly in the UK, the messaging had a spillover effect on broader attitudes towards climate change. The messaging led to increased concern, self-efficacy and the desire to do more individually to tackle climate change. In the UK, all three treatments were effective in influencing climate attitudes, while in Australia, there was no statistically significant impact from Treatment 2.

#### Climate attitudes — by country and treatment\*

% selecting score of 6 or 7 on a 7-point agreement scale

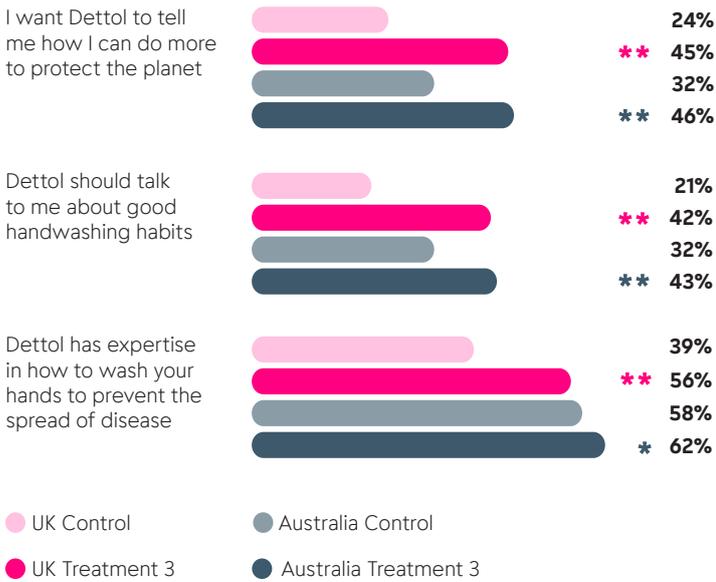


\*\* Denotes a statistically significant difference from the control group at the 95% confidence level  
 \* Denotes a statistically significant difference from the control group at the 90% confidence level

**Consumers were more open to hearing from brands about how to protect the planet after seeing the messaging**

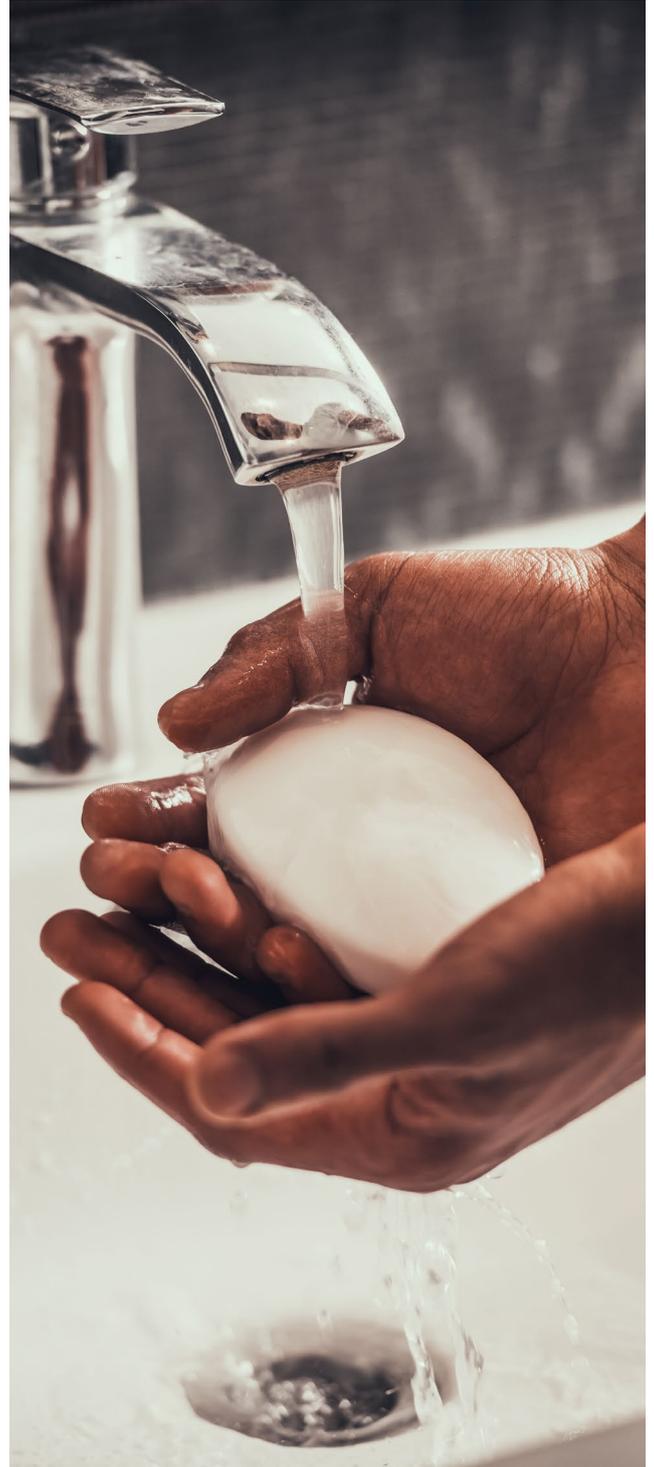
Legitimacy is an important concern for brands reaching outside of their core interactions with consumers. We hypothesized that consumers would give Dettol permission to speak about saving energy whilst handwashing since the behaviour is so closely related to some of Dettol's core products. In fact, the treatments increased appetite for the brand to help consumers tackle climate change: those who saw the messages wanted more. While this effect was seen across all treatment groups, the presence of the Dettol logo made a difference. Our most effective Dettol branded treatment showed a significant increase in respondents agreeing with the statement 'I want Dettol to tell me how I can do more to protect the planet'. In addition, the treatment increases the appetite of respondents to hear more from Dettol about good handwashing practices in general, and perceptions of Dettol as an expert in handwashing.

**Dettol brand legitimacy — by country and treatment**  
% selecting score of 6 or 7 on a 7-point agreement scale



**\*\*** Denotes a statistically significant difference from the control group at the 95% confidence level  
**\*** Denotes a statistically significant difference from the control group at the 90% confidence level

Unweighted data N = 4,081. Base: Nationally representative samples in UK and Australia. Fieldwork 31<sup>st</sup> August to 6<sup>th</sup> September 2021.





# REDUCING WATER USE IN INDIA

## KEY FINDINGS FROM THE STUDY

The way we wash our hands is deeply rooted in our social, cultural and physical environments. For this reason, Reckitt and Teneo wanted to look at handwashing in a very different context. India was chosen due to its importance in the battle against climate change, the necessity of effective handwashing to prevent diseases, and the challenges of drought and water shortages faced in many parts of the country, which are likely to worsen with higher global temperatures. We set out to answer this question: can a brand lower the amount of water during handwashing while maintaining effective hygiene practices? Drawing on the literature review, three behaviourally informed messages were designed.

	Treatment 1	Treatment 2	Treatment 3
<b>Behaviourally informed messaging</b>	Rationale + Reference Points + Loss aversion + Planetary health message	Rationale + Reference Points + Loss aversion + Planetary health message	Rationale + Easy + Loss aversion + Human health message
<b>Branding</b>	Unbranded	Dettol branded	Dettol branded

All three treatments were effective, but Treatment 2, with its focus on planetary health and Dettol branding was most effective in driving legitimacy as well as influencing behavioural intention. The results are discussed in more detail below.

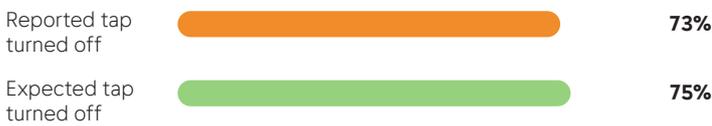


### Most people claim to turn off the tap when they wash their hands

The majority of respondents in India indicate they turn off the tap when they soap their hands during handwashing (73%). This is a high baseline and could indicate high levels of awareness of water scarcity issues in the country. By comparison, baselines in the UK and Australia show a much lower propensity to turn off the tap, at 30% and 36% of respondents respectively.

#### Reported and intended behaviour: Turning off the tap whilst soaping hands

% reporting they do and/or intend to wash their hands "With soap, and not leave the water running while I am soaping my hands"



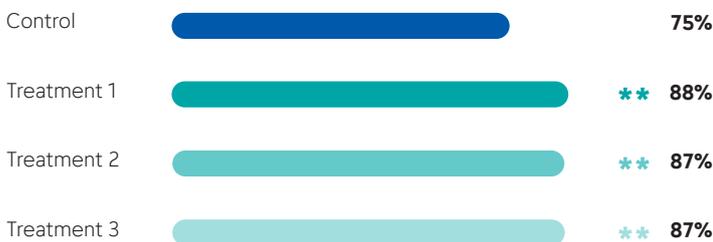
Unweighted data. N=516. Nationally representative India sample. Fieldwork 31<sup>st</sup> August to 9<sup>th</sup> September 2021.

### Despite a high baseline, we can still move more consumers to adopt environmentally friendly behaviours

All three treatments were effective in significantly increasing the proportion of respondents who said they intended to wash their hands 'with soap, and not leave the water running while I am soaping my hands'. There was no significant difference in effectiveness when the Dettol brand logo was present on the messaging.

#### Intended behaviour: Turning off the tap whilst soaping hands — by treatment

% reporting they intend to wash their hands 'With soap, and not leave the water running while I am soaping my hands'



\*\* Denotes a statistically significant difference from the control group at the 95% confidence level

\* Denotes a statistically significant difference from the control group at the 90% confidence level

Unweighted data. N=2,007. Nationally representative India sample. Fieldwork 31<sup>st</sup> August to 9<sup>th</sup> September 2021.

### There was no evidence of a backfiring effect

There was some concern that an unintended consequence of highlighting the need to reduce water usage while handwashing could lead to consumers washing their hands less. However, this research showed that the environmental benefits of the behaviour change through exposure to the messaging did not come at a cost to handwashing frequency.

#### Intended hand washing frequency — by treatment

Average reported number of handwashes expected on a typical day next week



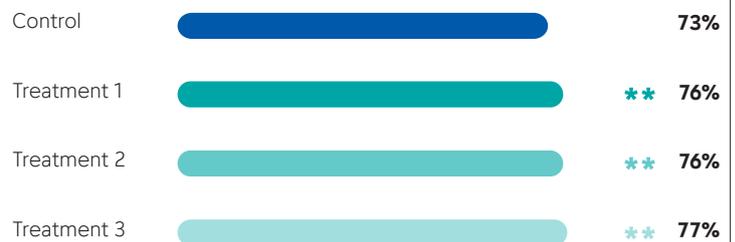
Unweighted data. N=2,007. Nationally representative India sample. Fieldwork 31<sup>st</sup> August to 9<sup>th</sup> September 2021.

### The messaging led to greater concern about climate change

Exposure to the three treatments resulted in consumers expressing greater concern about climate change. These increases were seen despite an already high baseline of concern.

#### Climate attitudes — by treatment

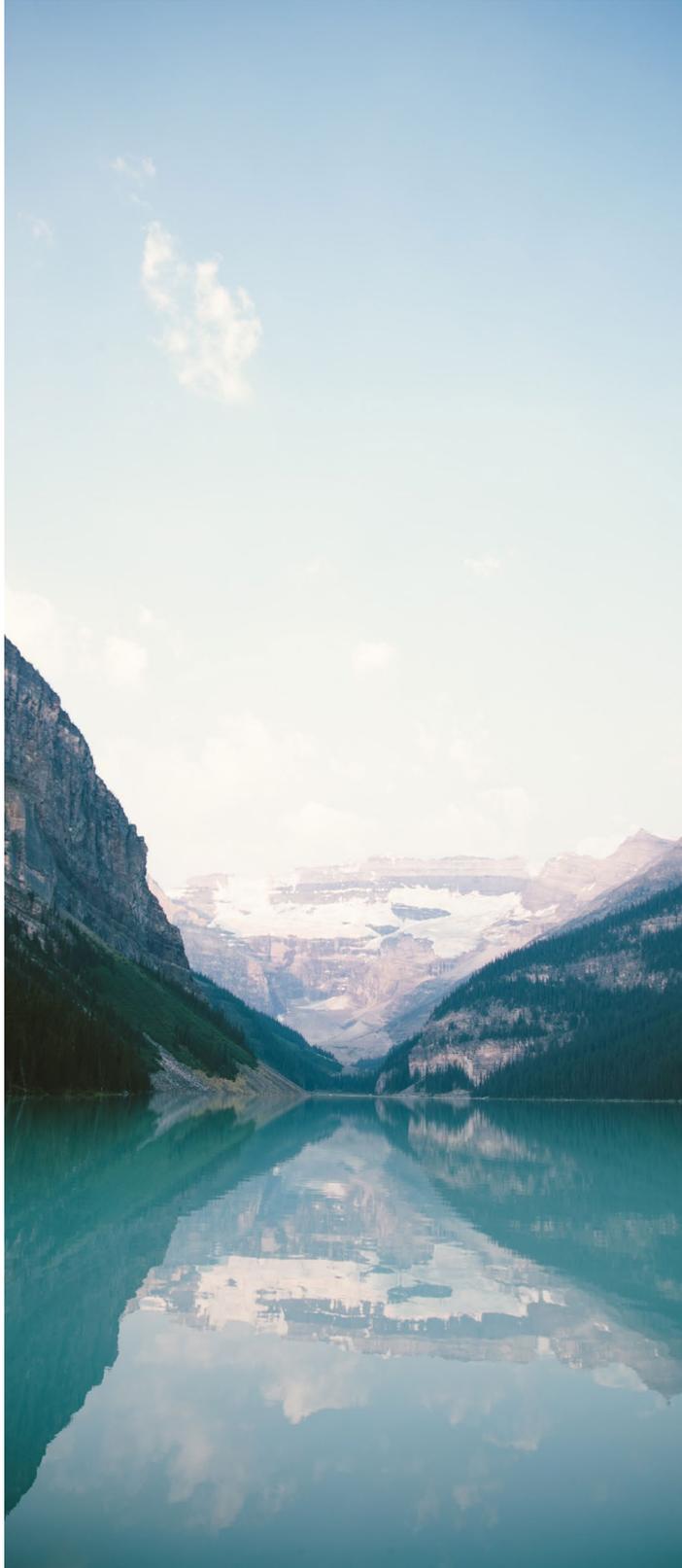
% selecting score of 6 or 7 on a 7-point agreement scale for "Climate change is very concerning to me"



\*\* Denotes a statistically significant difference from the control group at the 95% confidence level

\* Denotes a statistically significant difference from the control group at the 90% confidence level

Unweighted data. N=2,007. Nationally representative India sample. Fieldwork 31<sup>st</sup> August to 9<sup>th</sup> September 2021.

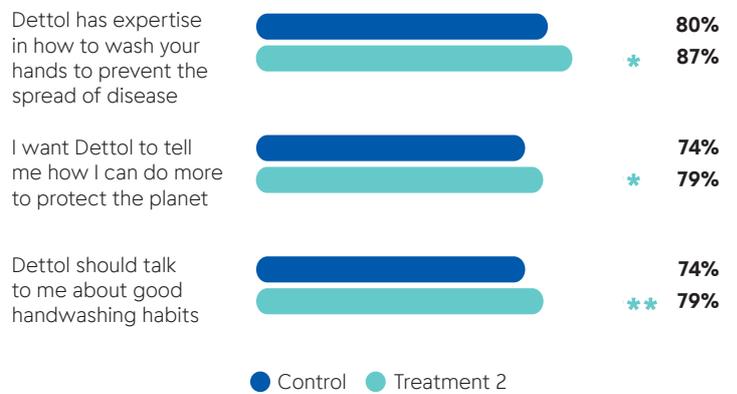


### The messaging — especially planetary health — increased consumer appetite for direction from brands

Finally, this research showed that consumers are receptive to hearing from brands about pro-environmental behaviours. After seeing the messaging, consumers were more likely to want to hear from Dettol about how they could protect the planet, as well as on handwashing practices. This suggests there is a role to play for brands in helping consumers to tackle climate change. Both branded treatments had positive impacts, but Treatment 2 performed more strongly.

#### Dettol brand legitimacy — by country and treatment

% selecting score of 6 or 7 on a 7-point agreement scale



\*\* Denotes a statistically significant difference from the control group at the 95% confidence level

\* Denotes a statistically significant difference from the control group at the 90% confidence level

Unweighted data. N=2,007. Nationally representative India sample. Fieldwork 31<sup>st</sup> August to 9<sup>th</sup> September 2021.

# NEXT STEPS

This study shows there is great potential for leading brands to make a difference in tackling climate change. Saving energy whilst handwashing alone will not do enough to stop sea levels rising — there are more important battles to be won. But the idea that a brand can help us to do the things we're going to do anyway with greater energy efficiency — and with no further cost in time, money, cleanliness or even effort — is a powerful one. It is clear that we will not know how impactful initiatives like this can be until they are tested in the field over a period of time, so we can understand — relative to a counterfactual — whether or not any observable effect attenuates. This should be the next step. And for other brands, what energy saving behaviours can you legitimately speak to? How much can you help your consumers to tackle climate change?



# METHODOLOGY

## Study design

This study followed a randomised controlled trial (RCT) design to test the effectiveness of different messaging on a range of outcome measures. The messaging was informed by a literature review of the evidence base on handwashing and broader pro-environmental behaviours.

Respondents in each market were randomly assigned into one of four groups and exposed to either a control text, or one of three treatments. Following exposure to control or treatment messaging, all respondents were asked the same questions on handwashing knowledge, practice and behavioural intention, climate attitudes and Dettol brand metrics.

The research was designed to simulate real world conditions as far as possible, but a real-world trial would give greater confidence in its impact on behaviour. In particular, this study was not able to observe the potential for attenuation of effect over time. In addition, we recognise that there will be other factors that affect handwashing practice, for example the type of tap (mixer or individual) and type of soap (bar or liquid).

## Fieldwork and analysis

Fieldwork was conducted via Yonder's online panel between 31st August and 9th September 2021, with a nationally representative sample of adults in each market by age, gender and region. A series of data quality checks were conducted on the data, including assessing the logic of responses to check questions. The survey included questions to check engagement and cognition; the results demonstrated high levels of both, with cognition rates of 79% to 90% across treatments and markets.

The table below sets out the number of respondents who took the survey, the number who were excluded following quality checks, and final sample size for analysis in each market.



**Table 1: Sample size by market**

	Survey completions	Exclusions	Sample size for analysis
<b>UK</b>	2,086	75	2,028
<b>Australia</b>	2,148	95	2,053
<b>India</b>	2,330	323	2,007

The table below gives further detail on the structure of the study sample across markets. While efforts were made to target a nationally representative sample, because the survey was completed online, the sample cannot be considered representative of all demographic criteria. For example, as shown in Table 2, the sample surveyed in India has a higher rate of university education than the overall Indian population.

**Table 2: Demographics by market**

Country	Gender	Age	Working status	Education	Dettol use
<b>UK</b>	49% female 51% male	18-24 – 11% 25-34 – 17% 35-44 – 15% 45-54 – 18% 55-64 – 15% Over 65 – 24%	39% in fulltime work (30 hours or more per week)  17% in part time work (8-29 hours per week)  44% retired / not working	45% further education / university	20% daily Dettol users
<b>Australia</b>	52% female 48% male	18-24 – 12% 25-34 – 16% 35-44 – 19% 45-54 – 17% 55-64 – 15% Over 65 – 21%	36% in fulltime work (30 hours or more per week)  20% in part time work (8-29 hours per week)  44% retired / not working	62% further education / university	30% daily Dettol users
<b>India</b>	44% female 56% male	18-24 – 20% 25-34 – 27% 35-44 – 22% 45-54 – 16% 55-64 – 10% Over 65 – 6%	64% in fulltime work (30 hours or more per week) 14% in part time work (8-29 hours per week)  21% retired / not working	83% further education / university	83% daily Dettol users

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- <sup>3</sup> Carrico, A.R., Spoden, M., Wallston, K.A. and Vandenbergh, M.P. (2013), Environmental cost. *International Journal of Consumer Studies*, 37: 433-441.
- <sup>4</sup> To determine the CO<sub>2</sub> emitted as a result of heating water for handwashing in the UK, we first calculated the volume of water used for an average handwash (using our survey data on time spent handwashing and HM Government data on UK tap flow rates). We then estimated the energy and fuel required to heat that amount of water (required energy = water mass X (setpoint – inlet temperature) X 4.186 (kJ/kg°C), which is the amount of energy required to heat 1 litre of water by 1 degree. Real energy required = required energy / boiler efficiency). We then extrapolated that to the UK population, using our survey data on how frequently people say they wash their hands at various temperatures. This was then converted to CO<sub>2</sub>e using DEFRA's GHG conversion factors. This method followed closely the method used Carrico et al. (2013), but using UK data.
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