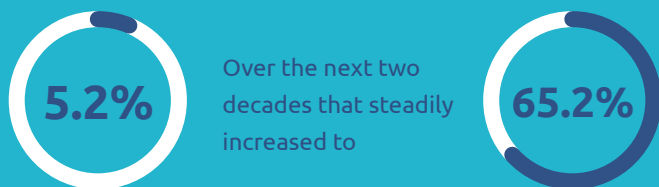# Behavioural Science in Practice and Policy:

Household Recycling

Behavioural Science in Practice and Policy: Household Recycling

In 2000, the percentage of household waste that was recycled was:

5.2%

Over the next two decades that steadily increased to

65.2%

with Wales consistently having the highest recycling rate for household waste in the UK.

What has influenced the increased rate of household recycling over the last two decades?

Different types of interventions, from communication campaigns to financial incentives, have been used to change our capability, opportunity and motivation to recycle our household waste

The COM-B model states that we must have the capability, opportunity, and motivation in order to change our behaviour.

Different intervention functions can influence the capability, opportunity and motivation to change behaviour:

Education
Informing, explaining, and showing in order to increase knowledge and understanding

E.g., providing information to each household about what can be recycled, providing information to residents about which types of recycling go into which colour bag/bin/box, nationwide communications campaign outlining the benefits of recycling

Persuasion
Highlighting, arguing, discussing, proposing, requesting, pleading, or helping to imagine in order to influence attractiveness

Eg., showing pictures of how plastic has been recycled/reused, showing the positive impact of recycling on nature and wildlife

Modelling
Providing examples of behaviour for people to aspire to or imitate

E.g., local authorities and local organisations showing how they are recycling on regular basis via social media

Incentivisation
Introducing payment, some other extrinsic reward, or an expectation of a desired outcome, for a behaviour to increase motivation

E.g., competitions between households or neighbourhoods run by the local authority, cost-incentives for returning plastic packaging for refills.

Coercion
Introducing a cost or expected negative outcome to prevent a behaviour or to induce someone to enact a behaviour to help influence motivation

E.g., being charged for plastic bags when shopping, charging local authorities and commercial businesses for taking waste to landfills, charging residents for not disposing of rubbish and/or recycling correctly

Environmental Restructuring
Introducing, removing, or altering objects in the physical environment or shaping the social environment to prompt, facilitate or prevent behaviours

E.g., the provision of different types of bins, bags, and boxes to allow households to organise their recycling waste, provision of smaller black bins to reduce landfill waste

Restriction
Creating boundaries around what behaviours are and are not acceptable by setting rules

E.g., controlling what can and can't be taken to a recycling centre, introducing rules for which types of recycling goes into which type of box, bin, or bag, introducing legislation that encourages people to recycle more and/or put less into landfill

Enablement
Providing or improving psychological, social, or physical resources or treatments to support enactment of a behaviour

E.g., neighbours help to remind each other when bins are collected, and support those who have difficulty moving their recycling bins/bags/boxes around for collection, encouraging communities to find ways to help reduce the amount they are sending to landfill with feedback data from waste collection

Training
Demonstrating, supervising, providing feedback, and supporting practice in order to improve mental or physical skills, or build habits

E.g., upskilling community champions to advocate for correct recycling behaviours, providing training to children at school allowing them to practice sorting recycling items and providing feedback

Our willingness to 'do' climate-positive behaviours:

What can we learn from household recycling?

Applying behavioural science to household recycling:

What different types of interventions have been used to help increase household recycling?

Conclusion

Behavioural Science in Practice and Policy: Household Recycling

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Behavioural Science Unit:

The Public Health Wales Behavioural Science Unit provides specialist expertise on behavioural science, and enables and supports the application of it, to improve health & wellbeing in Wales. The Unit is part of the World Health Organisation (WHO) Collaborating Centre on Investment in Health and Wellbeing.

For further information, or support around the application of behavioural science to improve and protect health and wellbeing in Wales please get in touch.

Mae'r ddogfen hon ar gael yn Gymraeg / This document is available in Welsh

We are really interested to hear about your experience of applying behavioural science – in the spirit of all share – all learn, so please do share your quick reflections on using this tool with us via : **PHW.behaviourchange@wales.nhs.uk**

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Purpose:

In order to effectively change climate-related behaviours, we must:

• Be clear and specific about the behaviour that we're hoping to change. Who, needs to do what differently? When do they do it, where do they do it?

• Understand the barrier(s) and/or faciliator(s) to the target behaviour

• Implement a broad range of interventions to address and/or enhance the identified barrier(s) and/or facilitator(s)

Using household recycling as an example, the purpose of this case study is to show how applying behavioural science can help to identify and implement a range of different intervention types that can help to effectively address behavioural determinants and influence behaviour. The learning of which can be used to help inform future efforts which aim to address climate-related behaviours. If you're interested in changing behaviour in order to help tackle the impact of climate change you might find our 'ACT NOW' resource helpful too, you can find it **here.**

Our willingness to 'do' climate-positive behaviours:

A report written by the UK Environment and Climate Change Committee in 2022 stated that 'behaviour change across the whole population is essential to meet net zero and reduce environmental harms'[1]. Examples of climate-positive behaviours that are likely to make a difference, and that we need to start, stop, or adapt include:

Reducing our use of single use plastic

Switching to an electric car

Eating locally produced, in season fruit and vegetables

Flying less frequently

Walking, cycling, or using public transport instead of driving

Making our homes more energy efficient (by adding insulation, solar-panels, heat pumps)

Buying clothes that are second-hand or from charity shops

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However, a recent study conducted by YouGov[2] identified that we are less willing to do the behaviours that have the biggest impact on climate change:

Climate-related behaviours and our willingness to do them[2]

Creating green space in your home (e.g., grow plants in garden, add pots to balcony)
- 48%
- 8%

Eat fruit and vegetables that are in season
- 59%
- 15%

Switch to an energy provider who only using renewable energy
- 49%
- 11%

Walk, cycle, or use public transport rather than driving
- 21%
- 47%

Buy clothes from second-hand or charity shops
- 22%
- 49%

Never fly for leisure
- 15%
- 51%

■ Would be willing to do this   ■ Would not be willing to do this

The climate crisis presents a persistent and growing environmental burden of disease, with significant public health consequences. Using a behavioural science lens helps us to focus in on each climate-positive behaviour, and to understand the barriers and facilitators behind each one, so that we can deliver a range of different interventions that appropriately address each behavioural determinant, increasing our likelihood of eliciting a change in behaviour.

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What can we learn from household recycling?

In 2000, the household recycling rate for Wales was

5.2%[3]

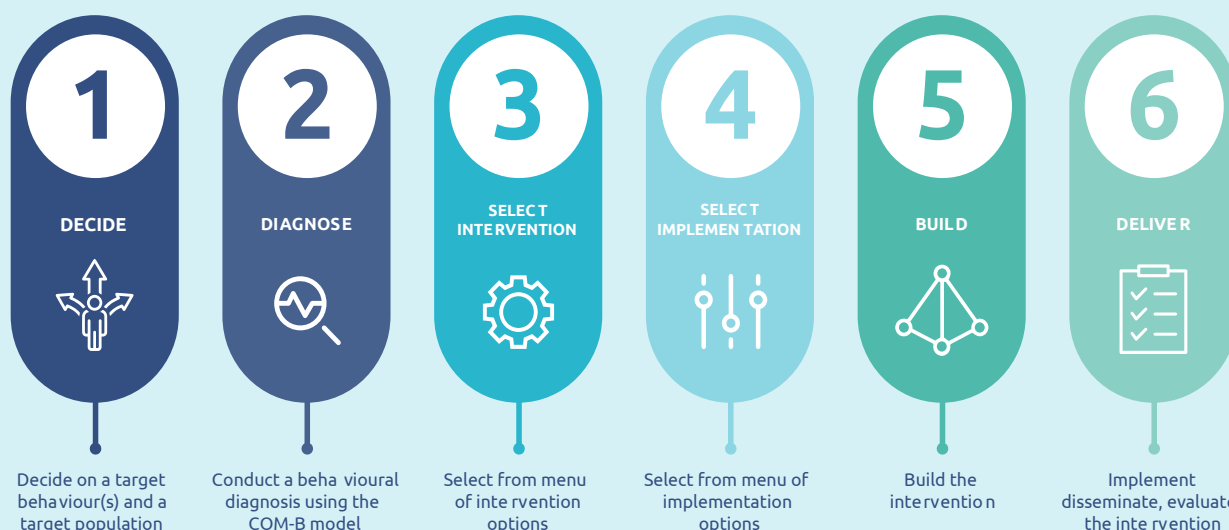Over the next two decades that steadily increased to

65.2%[4]
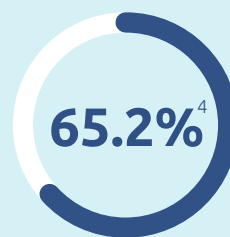
with Wales consistently having the highest recycling rate for household waste in the UK. In 2020, 87% of UK households said they recycle regularly, with only 4% saying they never, or rarely, recycle[5].

What has contributed to the steady increase in household recycling behaviour? The COM-B model states that we must have the capability, opportunity, and motivation in order to change our behaviour[6]. We can therefore assume that since 2000 our capability (our knowledge, decision making and skills), motivation (our intentions and beliefs) and opportunity (our environment, resources, and social influences) have changed, which has in turn elicited a change in our behaviour.

This case study will show how different types of interventions, from communication campaigns to financial incentives, have been used to change our capability, opportunity, and motivation. Which, in doing so, has increased household recycling behaviour.

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Applying behavioural science to household recycling:

1 DECIDE

2 DIAGNOSE

3 SELECT INTERVENTION

4 SELECT IMPLEMENTATION

5 BUILD

6 DELIVER

Decide on a target behaviour(s) and a target population

Conduct a behavioural diagnosis using the COM-B model

Select from menu of intervention options

Select from menu of implementation options

Build the intervention

Implement disseminate, evaluate the intervention

There are 6-steps to consider when applying behavioural science to policy or practice, outlined here. This case study will take a closer look at steps one, two and three. Deciding on a behaviour, diagnosing a behaviour and selecting intervention functions. You can read more about steps 4, 5 and 6 in our 'deep dive tools' availabe here.

Step one, identifying, prioritizing, and specifying the behaviour and population to be influenced is important. If we don't gain a thorough and accurate understanding of the problem, we are less likely to develop interventions that would have the precision and impact to achieve the desired outcomes[7]. We are a diverse population, and there are many different behaviours that we can do to reduce the impact of climate change. We therefore need mulitple different types of interventions that aim to address different capability/opportunity/motivation barriers, in order to achieve the greatest impact. It's important that we're clear about who needs to do what differently, when, and where.

For example, when thinking about **household recycling** we may define the behaviour as:

• Who? Children and adults within a household
• What? Appropriately dispose of waste via the correct recycling bin, bag, or box
• When? Each time an item is no longer needed and cannot be reused
• Where? At home

Step two, a behavioural diagnosis, involves identifying what makes the specified behaviour harder (barriers) or easier (facilitators) to do[8]. The COM-B model states that we must have the capability, opportunity, and motivation in order to change our behaviour[9]. It can therefore be helpful to identify whether barriers and/or facilitators relate to capability, opportunity and/or motivation.

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A COM-B behavioural diagnosis of the barriers and facilitators to household recycling within the UK[10,11,12,13,14]

2000

COM-B Domain

Barriers

We've included the barriers and facilitators to household recycling identified in the literature from 2000 to 2023. We can see that the behavioural determinants change over time. In the early 2000s for example, barriers related to physical opportunity but over time as those barriers were addressed, other barriers have emerged relating to things like psychological capability instead.

Physical Capability

Psychological Capability

Physical Opportunity

Social Opportunity

Reflective Motivation

Automatic Motivation

Distance to recycling facility

Recycling facilities are inadequate

Limited provision/services provided to recycle regularly

Lack of recycling bin/bag/box provision

Not enough time to recycle

It's too difficult

There is too much effort involved

Concerns about vermin and flies

Concerns about smell and hygiene of food waste bins

Uncertainty about what can and cannot be recycled

Unsure which/what type of recycling services are available

Uncertainty whether recycling is recycled once collected

Confusion regarding different coloured boxes/bins/bags

Facilitators

Confusion over logos on packaging

To avoid items going into landfill

Ability to move recycling bags/boxes/bins outside for collection

To preserve the planets resources

Forgetting to consider toys, cosmetics, garden items

To address climate change

Lack of space to store recycling bins inside

To reduce carbon footprint

Not removing/dismantling film from recyclable items

Wanting to 'do my bit' for the environment

Not separating or rinsing food from recyclable item

Beliefs that recycling is 'the right thing to do'

No purpose-built storage for recycling in flats/apartments

Beliefs about the benefits of recycling

Running out of space in recycling bin/bag/box

Beliefs about the environmental benefits of recycling

Lack of space to store recycling bins outside

Recycling at home has become a routine habit

Weekly collection not collecting certain items

2023

Once a behavioural diagnosis has been completed, **step three** is to identify suitable intervention functions that can effectively address the barrier(s) or enhance the facilitator(s) in order to elicit a change in behaviour. Interventions are likely to be more effective when they use behaviour change models and frameworks. The Behaviour Change Wheel is an example of a behaviour change framework that helps to identify possible intervention functions based on the COM-B domains, as illustrated by the matrix below:

COM-B Component	Education	Persuasion	Incentivisation	Coercion	Training	Restriction	Environmental Restructuring	Modelling	Enablement
Physical Capability					✓				✓
Psychological Capability	✓				✓				✓
Reflective Motivation	✓	✓	✓	✓					
Automatic Motivation		✓	✓	✓	✓		✓	✓	✓
Physical Opportunity					✓	✓	✓		✓
Socail Opportunity						✓	✓	✓	✓

What different types of interventions have been used to help increase household recycling?

The 6-steps to applying behavioural science are iterative, one informs the next. Your behavioural diagnosis should help to inform the intervention function(s) you go on to deliver. This case study is retrospective, and therefore we are unable to say with certainty if the interventions below were systematically developed and implemented, in order to address a specific barrier and/or facilitator identified using a behavioural diagnosis. Instead, our aim here is to show the wide variety of intervention functions that have been used to address the behavioural determinants of the target behaviour. We've used different examples from across Wales to help illustrate each intervention function. Brilliant work is happening across the system and we recognise that there are many examples that aren't included, if you'd like to share your work with us please get in touch (PHW.BehaviourChange@wales.nhs.uk).

Education

Informing, explaining, and showing in order to increase knowledge and understanding

E.g., providing information to each household about what can be recycled, providing information to residents about which types of recycling go into which colour bag/bin/box, nationwide communications campaign outlining the benefits of recycling

Applied in Practice: Circular Communities Cymru have launched a 'Precious Plastic Cymru' project which involves members of the community making use of a shared space to learn more about different types of plastic, alongside the opportunity to turn their unwanted plastic into something more useful. The project aims to help increase knowledge and help Wales to become plastic literate[15]. An evaluation into the implementation of 'Precious Plastic' schemes indicate that they hold an important role as knowledge brokers, which have the potential to change behaviour, benefiting the environment and local communities too. [16].

Persuasion

Highlighting, arguing, discussing, proposing, requesting, pleading, or helping to imagine in order to influence attractiveness

E.g., using pictures that show landfill, showing how not recycling can impact the environment and wildlife

Applied in Practice: 'Wales Recycles' is the national educational campaign for Wales, adopted locally by councils, the campaign aims to encourages consumers to 'recycle more things more often from all around the home[17]'. The 'Be Mighty, Recycle' campaign was launched in September 2020 and encouraged us to recycle food waste, plastic and metal more often. More recently, Welsh Government launched their 'Climate Action Wales' digital hub, which proposes a number of different behaviours the public can do in order to help reduce the impact of climate change[18] . It is worth mentioning that some interventions, such as 'Climate Action Wales' for example, can come under a number of different intervention types. In this case, the campaign includes education, persuasion and modelling.

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Incentivisation

Introducing payment, some other extrinsic reward, or an expectation of a desired outcome, for a behaviour to increase motivation

> E.g., competitions between households or neighbourhoods run by the local authority, cost-incentives for returning plastic packaging for refills.

Applied in Practice: Conwy County Council and WRAP Cymru collaborated with PolyTag in 2021, which incorporated a digital deposit scheme into existing waste collection services. Once signed up for the pilot residents were given plastic bottles to use throughout the week. They received a 20p digital token for each plastic bottle that they scanned (via an app) and placed into the recycling. 325 households signed up and 90% of households scanned at least four out of six bottles[19].
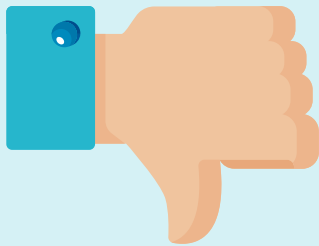
Coercion

Introducing a cost or expected negative outcome to prevent a behaviour or to induce someone to enact a behaviour to help influence motivation

> E.g., being charged for plastic bags when shopping, charging local authorities and commercial businesses for taking waste to landfills, charging residents for not disposing of rubbish and/or recycling correctly

Applied in Practice: In 2011, Wales introduced a 'Single Use Carrier Bag' charge, which saw a minimum charge of 5p for each bag sold to encourage shoppers to reuse their shopping bags[20]. In 2016, Welsh Government estimated that charge had resulted in a 78% reduction in single-use plastic bags. Also of note, is the £16.8 million donated to good causes, raised by the 5p charges[14].

Training

Demonstrating, supervising, providing feedback, and supporting practice in order to improve mental or physical skills, or build habits

> E.g., upskilling community champions to advocate for correct recycling behaviours, providing training to children at school allowing them to practice sorting recycling items and providing feedback

Applied in Practice: A number of local authorites across Wales have partnered with local recycling centres, allowing school children to visit and learn about waste reduction and recycling. On the trips, children are shown what happens to waste when it's recycled and have the opportunity to sort and organise recycling materials themselves.

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Restriction

Creating boundaries around what behaviours are and are not acceptable by setting rules

E.g., controlling what can and can't be taken to a recycling centre, introducing rules for which types of recycling goes into which type of box, bin, or bag, introducing legislation that encourages people to recycle more and/or put less into landfill

Applied in Practice: In October 2023, the 'Environmental Protection (Single-use Plastic Products) Act made it a criminal offence to supply or offer to supply specific single-use plastic products to consumers in Wales. Reducing single-use plastic has been a target behaviour for some time, this type of restriction is likely to elicit a change in our behaviour due to the limitation of availability, as seen with the plastic bag charge.

Environmental Restructuring

Introducing, removing, or altering objects in the physical environment or shaping the social environment to prompt, facilitate or prevent behaviours

E.g., the provision of different types of bins, bags, and boxes to allow households to organise their recycling waste, provision of smaller black bins to reduce landfill waste

Applied in Practice: In 2015, Cardiff City Council delivered a total of 110,000 new black wheelie bins across the city. The new bins were smaller than the old, holding 100 litres less. In 2014, the recycling rate in Cardiff City centre was 50% which rose to 58% in 2016[21]. Whilst the direct cause of this increase cannot be directly attributed to the change in black bin size, it is fair to assume the limited space within black bins may have encouraged residents to recycle more of their waste.

The APEASE criteria provides a helpful framework to consider throughout the decision-making process. You can use the criteria to think through acceptability, practicability, effectiveness, affordability, and spill-over of the prospective or pilot intervention. . In this case, it may be that an intervention such as changing the size of black bins has positive spill-over effects (e.g., the bins may be easier to take out, and take up less space) or they make have negative spill-over effects (e.g., they may increase instances of fly-tipping).

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Modelling

Providing examples of behaviour for people to aspire to or imitate

> E.g., local authorities and local organisations showing how they are recycling on regular basis via social media

Applied in Practice: In February 2023, Welsh Government launched a 'Net Zero Skills Action Plan' which aims to grow a skilled workforce that will help to support a net zero future. Whilst building skills would be classified as 'training', Welsh Government provide clear examples of how organisations have engaged with the training alongside examples of how they are using their newly acquired skills in practice[22]. The case studies include a wide variety of organisations from different sectors, including the public, transport and agriculture.

Enablement

Providing or improving psychological, social, or physical resources or treatments to support enactment of a behaviour

> E.g., neighbours help to remind each other when bins are collect, and support those who have difficulty moving their recycling bins/bags/boxes around for collection, encouraging communities find ways to help reduce the amount they are sending to landfill with feedback data from waste collection

Applied in Practice: In 2003, the 'Household Waste Recycling Act' became law across the England and Wales. The act instructed local authorities to provide a collection of at least two types of recyclable waste from every household by the year 2010[23]. At the time, many households were not receiving any type of kerbside collection for their recycling, meaning if they wanted to recycle, they were required to drive to a recycling centre.

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This case study has outlined the value of applying behavioural science to policy and practice. Defining your target behaviour, conducting a behavioural diagnosis and developing your intervention based on the insight helps to enhance our behaviour change efforts.

We know that household recycling involves a range of behaviours across various different populations. The behavioural diagnosis identified a number of barriers and facilitators relating to capability, opportunity and motivation. As interventions were developed and the system changed and adapted, new barriers and facilitators emerged.

As part of the system-wide change to support household recycling in behaviours, Welsh Government has provided over £1 billion in funding since 2000. This has enabled local authorities to provide a comprehensive recycling collection service, including food waste and compostable waste, whilst also reducing general waste collections. We have seen a number of national campaigns being introduced, targeting specific materials and populations to help increase awareness and knowledge of the importance of recycling. In addition to restrictions that have acted to deter non-compliance, allowing household recycling to be seen as standard practice.

Implementing a number of different interventions, aimed at different target behaviours, in different populations, that not only aimed to increase knowledge but also made recycling behaviours easier to do through changing legislation and the environment for example, meant that motivation and willingness to recycle has increased across household in Wales over the last two decades.

> Efforts to change household recycling behaviour show us that implementing a range of different interventions that address the identified barriers and facilitators are effective for changing behaviour. In order to change climate-related behaviours, we must be clear and specific about the target behaviour and the behavioural determinants (barriers/facilitators), before using behaviour change frameworks to develop a range of effective interventions to address them.

The Importance of Evaluation

Changing behaviour can be a challenging and lengthy process, and it's important we work together to share our learning of what does and does not work. Evaluating and reporting behaviour change efforts help to support the identification of interventions that are effective at changing behaviour. Evaluations don't always have to be resource intensive, they're invaluable for developing our knowledge and understanding of what works when it comes to behaviour change. We've developed an interactive tool to support efforts in this area, which you can find here. If you've been doing work in this space and you'd like to share your work with us, we'd love to hear from you – PHW.BehaviourChange@wales.nhs.uk.

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Further Reading/Resources

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Further Reading/Resources

Resources - Behavioural Science Unit (phwwhocc.co.uk)