



# Increasing Appliance Efficiency in UK Homes Towards a Net Zero Carbon Future

Position statement

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## 1 Executive summary

The new energy labels being introduced for washing machines, washer-dryers, dishwashers, fridges and freezers on 1 March 2021 come at a pivotal time. They throw into sharp focus the eco-efficiencies already achieved by improved machines over the last decade and provide room for even more efficient appliances in the future. They are the guides which will help people and businesses make more eco-conscious purchase choices now and in the future. The nation's carbon neutral 2050 goal, depends on such eco-friendly behaviour because domestic water and energy use is such a significant part of overall consumption. For the very budget-conscious, whether individuals, private and social landlords, or builders and developers, cost – and not the environment – has been and continues to be the driving force when making purchases. It is for this reason this paper argues there is now a need for a concerted approach from government to bring forward measures to encourage or reward more eco-aware buying habits.

## 2 Introduction

This paper looks at current energy and water efficiency in the home, why appliance efficiency improvements prompted new labelling and who makes appliance purchasing decisions. It examines the environmental considerations relating to appliances, the stock of appliances in homes, as well as previous and potential incentives to improve the environment, and contribute towards a net zero carbon future.

By assessing the current situation, the report aims to show why domestic appliances will be key to greening the future and represent an opportunity to drive further significant reductions in carbon and emissions.

## 3 Energy and water efficiency in homes today

Over the past decade, householders have embraced energy efficiency. They are using more efficient appliances and insulating their homes to a greater degree, reducing costs and emissions. New homes are also being built to far higher energy efficiency standards than before. Smart electricity meters are in operation in 16 million domestic locations<sup>1</sup> and around half of households<sup>2</sup> have a water meter. Appliance efficiency has increased greatly over the last decade and has played a positive role in keeping household running costs down.

- Now 80% of washing machines sold are, under the outgoing labelling scheme, A++ or A+++<sup>3</sup>
- As many as 90% of fridges and freezers sold are A+ or A++<sup>4</sup>
- Today's most commonly purchased fridge freezer<sup>5</sup> uses 40% less energy than those in use in homes a decade ago<sup>6</sup>
- Washing machines now use 6.5 litres of water per kg versus 10 ltr/kg 15 years ago<sup>7</sup>
- New washing machines can detect half and quarter loads of laundry and fill accordingly<sup>8</sup>

<sup>1</sup>[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/887809/Q1\\_2020\\_Smart\\_Meters\\_Statistics\\_Report\\_FINAL.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/887809/Q1_2020_Smart_Meters_Statistics_Report_FINAL.pdf)

<sup>2</sup> <https://www.water.org.uk/advice-for-customers/water-meters/>

<sup>3</sup> AMDEA members 2020

<sup>4</sup> AMDEA members 2020

<sup>5</sup> Appliance Average Consumptions 2020, Energy Saving Trust on behalf of AMDEA, based on typical A+ model

<sup>6</sup> Average consumption of Appliances 'Energy Consumption in the UK (ECUK)', 2020, BEIS

<sup>7</sup> AMDEA members

<sup>8</sup> 2019/2014 EC.

## 4 Increased efficiency of appliances drive label changes

Continuous efficiency advancements in appliances over the decade mean the outgoing rating system, with many new products clustered at the top (A+++, A++) can expand no further and has become an unclear comparison tool. The new energy labelling scaling of A-G will clarify differences in energy efficiency and provide room in the top tiers for future advances in efficient technology.

A new sound rating of A to D gives a comparison of relative ambient noise output between appliances, reflecting the huge developments in noise reduction technology. In addition, the revised labelling of washing machines highlights a clear indicator – a new ‘Eco 40–60’ programme - of how householders can use their appliances in the most eco-friendly way.

The new rating calculations deliberately allow for very few appliances at the top of the scale, creating space for further advances in the future. Washing machines will mainly be rated C or D on the new labels, and most fridges will be F. These unfamiliar ratings still represent the same high performance and low consumption: the ratings have merely been adjusted downwards to ensure clearer comparison with future generations of technology.

## 5 Recycling & recovering resources

The recycling of old machines, when a new appliance is bought or rented, is a critical element of a circular economy.

The UK’s track record in this is good, with the recovery cost financed by manufacturers through the Waste Electrical and Electronic Equipment (WEEE) scheme for safe disposal:

- For every three large appliances bought in the UK, two are recycled
- 85% of the materials in every large appliance are recycled
- The UK is one of the highest performers in Europe<sup>9</sup>

## 6 Who buys appliances and how do they choose?

Householders generally want to buy the most efficient machine within their budget when replacing their machines. Examples of the savings achieved from newer appliances include:

- A family would save £300 in running costs over the decade with today’s most frequently purchased fridge-freezer compared to the average model in use in homes 10 years ago<sup>10</sup>
- While a 2010 chest freezer costs £51 more to run each year than today’s most popular model<sup>11</sup>
- If all the fridge freezers, bought in 2019 or earlier were replaced by a model rated A+ or higher under the old ratings or F in the new ones, enough energy would be saved to power half the street lighting in the UK<sup>12</sup>

Appliances tend to be replaced for one of two reasons: either the current appliance is uneconomic to repair or the householder wants an upgrade, perhaps as part of a home improvement project.

However, in many instances, financial constraints or uncertainties dictate against the selection of the highest efficiency machines. The purchasers might be be:

<sup>9</sup> Eurostat 2017

<sup>10</sup> Appliance Average Consumptions 2020, Energy Saving Trust on behalf of AMDEA, Average consumption of Appliances ‘Energy Consumption in the UK (ECUK)’, 2020, BEIS

<sup>11</sup> Idem

<sup>12</sup> Idem

- Householders with limited budget or financial confidence
- Builders and developers providing modern fitted kitchens – there are currently no stipulations on the efficiency of machines provided
- Landlords, both social and private – they must supply appliances in good working order only
- Housing associations – many help with the provision of white goods
- Grant-making bodies who buy essential goods for those living without essential home appliances

A significant appliance rental market also exists in the UK, driven by needs linked to low income or flexibility of ownership. An estimated 12 million people rely on this market<sup>13</sup>.

## 7 Wider environmental considerations

Domestic energy and water efficiencies can help in reducing greenhouse gases and slowing climate change, and will contribute towards the government's pledge for the UK to be carbon neutral by 2050. Thus a drive towards increasing the uptake of more efficient appliances would assist in reaching the carbon target.

However, with the UK's population forecast to grow to 72.4<sup>14</sup> million by 2043, many new homes will be needed. This building drive is already underway. Before the last election, the Conservatives pledged 'at least' a million homes would be built over the next five years<sup>15</sup>, a £12 billion boost for affordable homes has recently been announced<sup>16</sup>, and the government has published new energy efficiency standards for all new homes and businesses. These standards relate, though, only to the fabric and heating of the buildings, not what goes on inside them<sup>17</sup>.

Domestic energy consumption accounts for 35%<sup>18</sup> of all electricity supplied, and 41%<sup>19</sup> of domestic electricity used in the UK is on washing and refrigeration appliances. This means 14% of all electricity consumption is on domestic washing and refrigeration.

As much as 55% of UK water consumption is domestic<sup>20</sup>. Washing machines account for 9% of household water use and dishwashers 1%, with the total being 10%<sup>21</sup>. This equates to 5.5% of all water consumption.

The energy used to heat water for devices and appliances emits an average of 875kg of CO<sub>2</sub><sup>22</sup> per household per year. This equates to the CO<sub>2</sub> emissions from driving more than 1,700 miles in an average family car. The kitchen accounts for 38% of that or 336kg CO<sub>2</sub><sup>23</sup>, the equivalent to driving that same car 646 miles, further than three quarters of the way from Land's End to John O'Groats.

<sup>13</sup> <https://www.mynewsdesk.com/uk/yes-appliance-rentals/pressreleases/new-appliance-rental-franchise-opportunity-hits-the-uk-market-1633064>

<sup>14</sup> <https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationprojections/bulletins/nationalpopulationprojections/2018based>

<sup>15</sup> <https://www.insidehousing.co.uk/news/news/conservatives-pledge-at-least-a-million-homes-over-next-five-years-64242>

<sup>16</sup> <https://www.gov.uk/government/news/jenrick-unveils-huge-12-billion-boost-for-affordable-homes>

<sup>17</sup> <https://www.gov.uk/government/news/rigorous-new-targets-for-green-building-revolution>

<sup>18</sup> [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/877047/Press\\_Notice\\_March\\_2020.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/877047/Press_Notice_March_2020.pdf)  
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<sup>19</sup> <https://energysavingtrust.org.uk/top-five-energy-consuming-home-appliances/>

<sup>20</sup> Artesia/Ofwat

<sup>21</sup> [https://waterwise.org.uk/wp-content/uploads/2019/09/Energy-Saving-Trust\\_At-Home-With-Water-2\\_Technical-Report.pdf](https://waterwise.org.uk/wp-content/uploads/2019/09/Energy-Saving-Trust_At-Home-With-Water-2_Technical-Report.pdf)

<sup>22</sup> <https://energysavingtrust.org.uk/sites/default/files/reports/AtHomewithWater%287%29.pdf> – p16

<sup>23</sup> <https://energysavingtrust.org.uk/sites/default/files/reports/AtHomewithWater%287%29.pdf> – p 16

## 8 The age of machines

Efficiency gains in appliances in the last decade have been considerable. However, it is estimated millions of older, less efficient machines are still in use in UK homes. Typically, they may be an extra chest freezer or spare fridge kept in a garage. Estimates reveal there are the following numbers of machines over ten years old in use the UK:

- About 2.5 million fridge freezers
- More than 1 million fridges
- More than 1.6 million freezers
- More than 2.3 washing machines
- More than 2 million dishwashers
- A total of more than 9 million fridge freezers, fridges, freezers, washing machines and dishwashers<sup>24</sup>

Persuading householders to unplug these older machines is a challenge, but if replaced with a new more efficient model then a significant reduction in power demand and emissions can be made, as well as a significant saving on their energy bills.

## 9 Incentives towards a cleaner environment

The government has in recent years introduced schemes to encourage the public to make changes to help the environment.

Until recently the Green Homes Grant, backed by a £2bn government pledge, encouraged householders to make improvements to the insulation and heating of their homes. New low emission cars are eligible for a government Plug-in Grant<sup>25</sup>, which can equate to a £3,000 discount on the retail price.

By contrast, the government's proposal to regulate smart appliances and explore new efficiency standards does nothing to shift the heavier polluting appliances located in people's homes or incentivise home builders, landlords or householders to choose the most eco-friendly appliances on the market.

## 10 Appliance incentives in action

Barriers exist for people to choose more advanced energy efficient models, the main one being simply they are more expensive. Such a block obviously impacts lower income households more severely. Several possible ways exist for the government to help the uptake of energy efficient appliances and have been implemented elsewhere.

- In Victoria, Australia, financial incentives are offered to households<sup>26</sup> and businesses to install energy efficient equipment and interest free loans are offered to low-income households to buy appliances<sup>27</sup>
- In Ontario, Canada, an energy savings rebate scheme means retailers can offer a 25% rebate on energy-saving products including on washers, dryers, dishwashers, and refrigerators<sup>28</sup>
- In Brazil electricity providers have been required to invest in energy efficient projects<sup>29</sup>

<sup>24</sup>Table 2, Number of appliances owned by households in the UK 1970 to 2019, Energy Consumption in the UK ECUK' Oct 2020, BEIS combined with 3Gem survey for AMDEA February 2021 on age of machines

<sup>25</sup> <https://www.gov.uk/plug-in-car-van-grants>

<sup>26</sup> <https://www.energy.gov.au/rebates/home-and-business-energy-incentives-vic>

<sup>27</sup> <https://nils.com.au/>

<sup>28</sup> <https://www.canada.ca/en/environment-climate-change/services/climate-change/low-carbon-economy-fund/energy-savings-rebate.html>

<sup>29</sup> <https://www.aneel.gov.br/programa-eficiencia-energetica>

- In South Korea a system of eco-points has been deployed in which households earn points for saving energy which can be used for eco-friendly products or public transport<sup>30</sup>

## 11 Conclusion

The new rescaled energy labels represent a substantial opportunity for householders to clearly see which are the most energy efficient products for their homes and the environment now and in the future. Appliance manufacturers are continually improving the efficiency of new appliances but there are millions of old appliances currently in use - once built, an appliance cannot become more efficient over its lifespan. So far, the government has acted to drive down our household carbon footprint by promoting better home insulation and heating as well as encouraging low emission vehicles. Laundry, washing and refrigeration household appliances currently account for 41%<sup>31</sup> of domestic electricity usage and 10%<sup>32</sup> of domestic water consumption. Incentives to encourage the purchase or rental of more energy efficient appliances, can be built into various government stimulus programmes and will have significant impact in moving the UK towards the stated net zero carbon emissions target by 2050. They would also enhance the UK's position in calls for higher targets which may be agreed in Glasgow at COP26, in November.

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<sup>30</sup> [http://www.koreatimes.co.kr/www/nation/2020/01/281\\_260253.html](http://www.koreatimes.co.kr/www/nation/2020/01/281_260253.html)

<sup>31</sup> <https://energysavingtrust.org.uk/top-five-energy-consuming-home-appliances/>

<sup>32</sup> [https://waterwise.org.uk/wp-content/uploads/2019/09/Energy-Saving-Trust\\_At-Home-With-Water-2\\_Technical-Report.pdf](https://waterwise.org.uk/wp-content/uploads/2019/09/Energy-Saving-Trust_At-Home-With-Water-2_Technical-Report.pdf) - p14

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