

National Infrastructure Commission  
The Second National Infrastructure Assessment: Baseline Report  
Call for Evidence – WRAP Response

**Question 1: Do the nine challenges identified by the Commission cover the most pressing issues that economic infrastructure will face over the next 30 years? If not, what other challenges should the Commission consider?**

WRAP welcomes the Commission's identification of the waste sector and the move towards a circular economy as a pressing issue facing the economic infrastructure. WRAP's ['Delivering Climate Ambition Through a More Circular Economy'](#) (November 2021) report provides evidence on the role of the circular economy in delivering multiple policy outcomes, and why this should be part of the mainstream discussions on climate change.

The way society uses and makes products is a great contributor to climate change and biodiversity loss – 45% of global emissions can only be tackled by changing the way we make and consume products and food. These goods and services are made from material resources like metals, glass, paper, and plastic. Producing, using, and disposing of those goods and services generate significant greenhouse gas emissions both through energy use and from non-energy sources such as land use change and chemical processes. Given this, WRAP believes our biggest untapped opportunity is to change the way we make, use, and design products to cut carbon emissions much further and faster. There is an urgent need now for concerted action across nations, businesses, and homes. One of the benefits of actions on resource efficiency and resource sufficiency is that they can be implemented quickly. As the impacts of climate change relate to cumulative greenhouse gas emissions over time, projects that cut carbon now are worth more than those that won't deliver for years to come. WRAP and its voluntary agreement signatories are working to accelerate the shift away from the linear 'take, make, dispose' industrial model of the last century to a new, circular economy.

WRAP and the Centre for Research into Energy Demand Solutions (CREDS), University of Leeds have worked on the resource efficiency agenda for many years, both in collaboration and separately. A decade ago, we jointly produced 'Meeting the UK Climate Change Challenge' which outlined the carbon benefits of action on resource efficiency. Ten years on, we have revisited the data and analysis underpinning our findings, and we have taken account of what's happened on the ground over that period – much of it undertaken by WRAP. The ['Net Zero: why resource efficiency holds the answers'](#) (March 2021) report unveils new insights on how resource efficiency and resource sufficiency can deliver reductions in greenhouse gas emissions: changing the way we use materials as well as energy could deliver an additional 100 million tonnes (Mt) CO<sub>2</sub>e reduction in territorial emissions between 2023 and 2032, boosting savings from the UK government's Ten Point Plan for a green industrial revolution by over 50%. It could also contribute over 10% (89 MtCO<sub>2</sub>e) of the reductions required from the 5th to the 6th recommended Carbon Budgets.

Resource efficiency and resource sufficiency won't solve climate change on their own. If we are to achieve net zero, we will need multiple actions working in concert. Those actions must include resource efficiency and resource sufficiency as well as those identified by the Commission – transport, energy and wastewater infrastructure.

**Question 3: How can better design, in line with the design principles for national infrastructure, help solve any of the Commission's nine challenges for the next Assessment and what evidence is there to support this? Your response can cover any number of the Commission's challenges.**

WRAP strongly supports the 'Climate' design principle for national infrastructure and agrees that the design and construction of infrastructure must enable the decarbonisation of society and increase resource efficiency. Research by WRAP and CREDS identifies that designing and using lighter weighted products by reducing material input can accelerate the move towards a more circular economy while helping to reduce greenhouse gas emissions. For energy intensive sectors like steel and aluminium, reducing the amount of these materials used to create a product can significantly reduce its embodied emissions. Reducing steel requirements for electrical equipment, machinery, and other transport equipment by 25% could contribute a further 0.8 Mt CO<sub>2</sub> e to the 6th Carbon Budget. Furthermore, lightweighting a range of construction products could contribute 6.3 MtCO<sub>2</sub> e to the 6th Carbon Budget. This could be achieved by use of flexible forming technologies, digital tools to enable design optimisation and reduce life cycle impacts of materials used in construction. Another approach to better design is to reduce use of cement, applied sequentially: post tensioning, precast systems, reducing cement content of concrete, use of calcined clay and limestone, reducing construction waste and reducing over-design.

**Question 5: What are the main opportunities in terms of governance, policy, regulation and market mechanisms that may help solve any of the Commission's nine challenges for the Next Assessment? What are the main barriers? Your response can cover any number of the Commission's challenges.**

The waste sector's role in enabling a circular economy can be greatly enhanced through legislation to compel businesses, public bodies and other organisations to segregate their recyclables from residual waste. The 2019-21 Environment Bill includes powers to extend producer responsibilities, to incentivise them to prevent products or materials from becoming waste and promote reuse and recycling of products or materials. Use of these powers across the UK can incentivise recyclability and use of recycled materials. England, Wales, Scotland and Northern Ireland have periodically set increased recycling targets and can set higher future targets. Continued implementation of consistent collections can also aid increased recycling. To support industrial competitiveness and the green recovery, policies in support of the Industrial Decarbonisation Strategy could encourage the use of recycled materials, considering the infrastructure required to enable new markets and sectors to develop. This could include producer responsibility. Fiscal incentives such as the plastic packaging tax could also be used to drive demand for recycled content.

**Question 14: What are the barriers to and solutions for expanding recycling capacity, both now and in the future to deliver environmental and net zero targets?**

A barrier to delivering environmental and net zero targets is the narrow focus on recycling. A truly circular economy focuses on the entire waste hierarchy to include reuse and repair. The Commission may consider expanding the scope up the waste hierarchy and explore the infrastructure barriers and opportunities to fully embed reuse and repair into the waste system. Reuse and repair not only help deliver net zero targets but have a positive economic impact. [WRAP research suggests](#) that increasing the refurbishment of products could add over £54 billion to UK GVA, and create over 300,000 jobs, whilst increasing repair could create over 30,000 jobs and add £3.3 billion to UK GVA.

A key barrier to expanding recycling capacity is the size of the growing UK market for recyclate and the exporting of recyclable material. Although large quantities of material for recycling are collected in the UK, most of the greenhouse gas emissions savings occur overseas as recyclate is exported. For example, the UK generates about 10m tonnes of steel scrap a year. Currently, about 80% of this is exported for processing to other countries. The US, by contrast, meets about half of its demand for steel by recycling. By reducing energy demand and process emissions, recycling steel can halve GHG emissions compared to production from virgin steel. Whilst the UK produces 1.7 million tonnes of plastic per annum, only a third of UK demand is met domestically. Overall UK plastic packaging recycling capacity is estimated at approximately 425kt. Despite the increase in domestic recycling, the UK remains dependent on export markets for recycling its plastic packaging. However, this is slowly changing following the bans and restrictions on waste plastic imports in China, Turkey and other South East Asian nations. Continued import restrictions for low quality plastic waste, compounded with the international legislation from the Basel amendment, has increased the importance of domestic capacity to sustainably manage plastic waste. Steps need to be taken to increase domestic capacity to recycle and reuse plastic waste, as well as develop policies to improve the quality of recovered plastic and create demand for recycled plastics ([WRAP Market Situation Report 2021 – Plastic Packaging](#)). WRAP's analysis suggests that recycling plastic can reduce energy demand, and The UK Plastics Pact is working with businesses to increase recycling and recycled content. By increasing the amount of materials recycled and increasing the proportion of these recycled in the UK, greater carbon reductions can be achieved. Increasing use of recyclates in the production process rather than virgin paper and card, plastic, glass, steel and aluminium could contribute up to 16 MtCO<sub>2</sub> e to the 6th Carbon Budget. WRAP's research suggests that increasing recycling could add over £8 billion to UK Gross Value Added and create over 60,000 jobs.

Consideration of barriers to expanding capacity needs to include citizens – the people who will create the market demand for increase recycling capacity. The WRAP Recycling Tracker is an annual survey of UK households that gathers evidence on recycling attitudes, knowledge and behaviour. It is the largest and longest running of its kind, having been undertaken by WRAP since 2004. Based on interviews with 4,725 UK residents, [the 2021 Recycling Tracker](#) shows that nine in ten (88%) UK households say they 'regularly' recycle, in contrast to almost one in ten (9%) who recycle 'occasionally' and 3% who recycle 'rarely' or

'never'. However, the majority of UK household reported having experienced running out of space in their recycling bins/bags/boxes. Almost three in ten (28%) households report frequently running out of space in their recycling bins/bags/boxes. A further 24% say this happens 'sometimes', compared to 27% who say it happens only on the odd occasion (e.g. at Christmas). This demonstrates the influence of improved recycling service design, with fewer items being disposed of incorrectly by households with restricted residual waste capacity, higher numbers of materials collected for recycling and multi-stream schemes. DEFRA's Resources and Waste Strategy makes provisions for improving recycling rates by ensuring a consistent set of recyclable materials is collected from all households and that they are provided with separate food waste collections. WRAP continues to encourage and support Local Authorities in transitioning to greater consistency in household recycling. WRAPs Local Authority Advisors provide advice and guidance to design and implement effective recycling and waste collection systems, making it more effective for councils and others to provide services, and improve the quantity and quality of materials.

However there remain opportunities to increase UK recycling capture and capacity: 55% of UK households put one or more items in the general rubbish that is collected for recycling kerbside (1.6 items on average). There is also a key opportunity to reduce contamination: the majority (85%) of UK households put one or more items in the recycling that is not accepted locally (4.4 items on average). Research shows that while the majority of UK households check if items can be recycled, this does not always result in the correct recycling behaviour. A solution is for consistent on pack recycling labels and understanding of them. Robust and evidence-based citizen behaviour change campaigns are required to continue to educate both pack manufactures and citizens.

**Question 15: What is the likely environmental impact of waste streams from construction across economic infrastructure sectors, over the next 30 years, and what are the appropriate measures for addressing it?**

Government could introduce industry standards to address waste streams from construction. WRAP's 'Net Zero: why resource efficiency holds the answers' (March 2021) report and the ['Resource efficiency scenarios for the UK: A technical report'](#) highlight that in the construction industry, it is possible to substitute high carbon intensity materials with lower carbon intensity alternatives that can perform the same role. There is good availability of low-carbon biomaterials to replace carbon intensive materials such as steel and cement, for example, wood-based materials. The use of wood-based materials in the design of infrastructure can be increased by Government working with industry to agree a standard for the 'whole-life' carbon footprint of buildings and infrastructure. This Standard should be aligned with established international standards, namely EN 15978 and RICS' 2017 professional statement. Furthermore, Government can introduce a minimum whole-life carbon standard for both buildings and infrastructure, with differentiated targets by function and usage. These standards will provide the legislative framework to embed the 'Climate' design principle and circular economy principles into the design of national infrastructure.