DR CHRISTIAN REYNOLDS ET AL - WRITTEN EVIDENCE (FDO0130)

0.1 I, (Dr Christian Reynolds, CJR) am a Reader at the Center for Food Policy, City, University of London. My main research areas are food loss and waste, and affordable, healthy, sustainable diets. I have led and supported rapid reviews of evidence for the Food Standards Agency and Defra on topics including citizen science; sustainability in the UK food system; and the environmental impact of public procurement. I have co-authored this response with the following collaborators from previous research projects:

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0.2 We will answer drawing on results funded by the 1) National Institute for Health Research (NIHR) Policy Research Programme (Policy Research Unit: Obesity/PR-PRU-0916-21001). 2) The Science and Technology Facilities Council Global Challenges Research Fund project: Trends in greenhouse gas emissions from Brazilian foods using GGDOT, (ST/S003320/1) 3) NIHR funded programme grant to evaluate the health, economic and wider societal outcomes of food taxes in the UK (Health Economic Analysis incorporating effects on Labour outcomes, Households, Environment and Inequalities (HEALTHEI) for food taxes, NIHR133927)

0.3 CJR is currently funded by through Transforming the UK Food System for Healthy People and a Healthy Environment SPF Programme, Grant Award BB/V004719/1 Healthy soil, Healthy food, Healthy people (H3), and a Natural Environment Research Council 'Reducing plastic packaging and food waste through product innovation simulation', grant

number: NE/V010654/1. CJR is acting as quality assurance for "Discovery of Recent Changes in Consumer Behaviour around Food Information (Food Information to Consumers [FIC]): A rapid evidence review" commissioned by DEFRA and undertaken by WRAP 2023-2024.

CJRs main point he wishes to raise: **11.5 Interventions that reduce UPF must also consider the system wide impacts of the foods that will replace it. If we reduce UPF the environmental impacts of the replacement foods may be higher. This may not align with UK Net Zero policy.**

We provide information on specific questions asked by the committee below.

1. *Key trends in food, diet and obesity, and the evidential base for identifying these trends.*

1.1 Our paper (Madruga et al 2023) looked at the dietary share of foods categorised according to the NOVA classification in a historical series (2008–2019) among the UK population. This used the National Diet and Nutrition survey.

1.2 We found a significant increase in the energy share of processed culinary ingredients (Nova group 2) (from 3·7 to 4·9 % of the total energy consumed; P-trend = 0·001), especially for butter and oils; and reduction of processed foods (from 9·6 to 8·6 %; P-trend = 0·002), especially for beer and wine (6% to 3.9%). Unprocessed or minimally processed foods (≅30 %, P-trend = 0·505) and ultra- processed foods (≅56 %, P-trend = 0·580) presented no significant change. However, changes in the consumption of some subgroups are noteworthy, such as the reduction in the energy share of red meat (4% to 2.2%), sausages and other reconstituted meat products (4.2% to 3.7%) as well as the increase of fruits (3.4% to 3.7%), ready meals (7.4% to 8.3%), breakfast cereals (4.2% to 4.9%), cookies (3.2% to 4.2%), pastries, buns and cakes(2.9% to 3.7%). Regarding socio-demographic characteristics, no interaction was observed with the trend of the four NOVA groups.

2. *The primary drivers of obesity both amongst the general population and amongst distinct population and demographic groups.*

2.1 In Europe, 60% of adults and one in three children are affected by overweight and obesity, with a higher prevalence among individuals with lower socioeconomic status compared to higher. Individuals in lower socioeconomic position groups are more exposed to unhealthy food environments (Vandevijvere et al 2023).

2.2 In the UK, a follow up study concluded the higher consumption of ultra-processed food is strongly associated with a higher risk of multiple indicators of obesity among the adult population (Hazard Ratios (HR)1.31; 95% CI 1.20–1.43 for increase in BMI, HR 1.35; 95% CI 1.25–1.45 for weight circumference and HR 1.14; 95% CI 1.03–1.25 for body fat, all adjusted for potential confounders).(Rauber et al 2021)

2.3 A study that assessed global trends in volume sales per capita of ultra-processed food and drink (UPFD) and its associations with adult body mass index (BMI) trajectories found that increases in UPFD

volume sales per capita were positively linked to population-level BMI trajectories. For every standard deviation increase (51 kg/capita, 2002) in UPFD volume sales, the mean BMI increased by 0.195 kg/m2 for men (P < .001) and 0.072 kg/m2 for women (P = .003).< Vandevijvere et al 2019)*3.The impacts of obesity on health, including on children and adolescent health outcomes.*

5.The definition of a) ultra-processed food (UPF) and b) foods high in fat, sugar and salt (HFSS) and their usefulness as terminologies for describing and assessing such products.

5.1 Ultra-processed foods are defined by the NOVA classification system. They are formulations made from ingredients predominantly of industrial origin, resulting from various industrial processes. These processes involve the fragmentation of whole foods into substances like sugars, oils, fats, proteins, and starches, often derived from high-yield plant foods and animal carcasses. Chemical modifications, such as hydrolysis or hydrogenation, may occur, followed by assembly using industrial techniques like extrusion and molding. Additives like colors, flavors, and emulsifiers are frequently added. Ingredients of ultra-processed foods can be categorized into those with minimal culinary use and classes of additives that improve palatability. (Monteiro et al 2019)

5.2 Almost all foods undergo some level of processing, even if only for preservation, so labeling foods as "processed" is not productive. Various food classification systems exist, yet in a systematic review the NOVA classification emerged as the most specific, coherent, clear, comprehensive and workable option.< Moubarac et al 2014)

5.3 A study using data from US households found that combining HFSS criteria with UPF criteria can help identify less healthy foods, giving policymakers a clear and accurate way to target products for policy intervention. In 2020, half of the 33,054,687 products purchased by US households were considered UPFs, while 43% were classified as HFSS. However, there wasn't complete agreement between the two definitions (P < 0.0001). By starting with HFSS criteria and adding UPF elements like colors and flavors, the study achieved 100% agreement in identifying UPFs and HFSS products.(Popkin et al 2024)

6. *How consumers can recognise UPF and HFSS foods, including the role of labelling, packaging and advertising.*

Summary: Our assessment is that additional labels could help some UK demographics recognize UPF and HFSS food.

6.1 Our qualitative research on snacking in infants, children and adolescents (Gallagher-Squires, et al) highlighted that (current) "Front-of-pack labelling not only influenced which products parents purchased, but also reassured parents that products were safe and age appropriate". Indeed, parental understanding of certain (processed) products as 'healthy', appears to be largely generated by product packaging and messaging.

6.2 However, previous research (García et al 2019) has shown front of pack claims do not always reflect what is contained within the product, with about 75% of UK infant products falsely claiming to provide 'one of 5-a-day' for fruit and vegetable intake.

6.3 We note that there is limited research on labelling, packaging and advertising and the interactions of UPF and HFSS foods against other labeling standards.

6.4 Indeed, Pettigrew et al (2023) suggested that future research could test the efficacy of providing consumers with front-of-pack nutrition labels for unprocessed foods to investigate whether this would increase the appeal of these products.

6.5 Certain label types are not of use to all the UK population equally. Bhawra et al noted that age was a notable sociodemographic factor that impacted the use of nutrition labels, with older age groups (60+, 45–59 and 30–44 years compared with those aged 18-29) more likely to be aware of or report using nutrition labels.

6.6 Labelling is not as dominant factor as price, especially considering not all populations use labelling to the same degree (see Bhawra et al). For context, the FSA's Public's Interest, Needs and Concerns Around Food report (Connors et al – CJR supported this) revealed that price was typically considered as the main driver of food choice, which leads consumers to make compromises around health, environment, and wider ethical values.

7. The cost and availability of a) UPF and b) HFSS foods and their impact on health outcomes.

7.1 Our qualitative research on snacking in infants, children and adolescents (Gallagher-Squires, et al) found that parents shopped for "snack products which offered better financial value". "This included low-cost snack products, items that were discounted or part of a multi-buy deal and products that children would definitely eat and not waste."

7.2 The better value and low chance of waste/rejection meant that purchasing fruit and vegetables often made less financial sense compared to long shelf-life packaged snacks, especially if children did not have taste preferences for the lower-cost fruit options such as bananas and apples. These cost-saving strategies were used to enable participation in social norms about snack sharing and provision, however often led parents towards UPF and HFSS snacks.

7.3 During COVID-19, many Parents also made efforts to source food through alternative means where the 'lure' of highly processed snacks was viewed as less strong. However, it was mostly those on higher incomes who were able to maintain this long-term due to increased costs associated with delivery fees or a minimum spend.

7.4 These trends in parental dietary shifts and concerns were also confirmed by our survey work (Bridge et al 2022). Among survey participants, dietary changes were split, with some participants increasing consumption of healthy and sustainable foods (such as vegetables) while others increased consumption of unhealthy and unsustainable foods (such as processed red meat). Emotional eating was identified as a maladaptive way of coping with COVID-19 related stress that resulted in an unhealthier diet.

7.5 The older but useful study of Moubarac et al 2013 compaed ready-to-consume food and drink products in the UK and Brazil found that in the UK, the caloric share of ready-to-consume products (63.4%) was far more than double that of Brazil (27.7%), whereas their cost relative to the rest of

the diet was 43% lower. The lower the relative cost of ready-to-consume products in the UK (compared with Brazil), the higher their relative consumption ($R2=0.38$, $p<0.01$).

8. The role of the food and drink industry in driving food and diet trends and on the policymaking process.

8.1 Evidence on the expansion in the types and quantities of UPFs sold worldwide shows that as a country grows richer, there is a corresponding increase in both the quantity and diversity of UPFs available for sale. This trend is closely associated with the industrialization of food systems, technological change and globalization, including growth in the market and political activities of transnational food corporations and inadequate policies to protect nutrition in these new contexts. see Baker et al 2020)

8.2 A synthesis review on the market and political strategies employed by transnational food corporations highlights that transnational UPF corporations employs advanced market and political tactics to boost sales, diminish opposition from civil society and scientists, and sway local politicians and bureaucrats. Their political strategies aim to shape favorable policy and regulatory conditions for market growth and to safeguard their long-term market interests. Additionally, they can influence science and academic environments to their advantage, and mobilize grassroots support, capturing civil society. Ultimately, the authors conclude that transnational UPF corporations wield significant influence over governmental decisions. See Moodie et al 2021

9. Lessons learned from international policy and practice, and from the devolved administrations, on diet-related obesity prevention.

Popkin et al 2021 have noted a global trend, particularly noticeable in South America, where food companies fortify UPFs with micronutrients to make health claims, labeled as "fake foods" by regulatory authorities. While over 45 countries and smaller entities have imposed taxes on ultra- processed drinks like sugar-sweetened beverages, few have extended these to snacks and other UPFs. Notably, there are no significant subsidies for healthier, fresh, or minimally processed foods for lower socioeconomic groups. Efforts have also been made to improve package labeling, with some countries adopting impactful

warning labels and effective school food policies.

10. *The effectiveness of Government planning and policymaking processes in relation to food and drink policy and tackling obesity.*

and

11. *The impact of recent policy tools and legislative measures intended to prevent obesity.*

11.1 When taking an integrated approach to obesity prevention policy we need to consider alignment with Net Zero policy and wider food system outcomes.

11.2 Our previous research has shown that UK could have diets in 2013 that are affordable, healthy and sustainable (Reynolds et al 2019); however, food inflation has meant that affordable, healthy sustainable diets may be out of reach for low-income households (see reports by Food Foundation, Nourish Scotland etc.

11.3 Our research on Brazilian dietary patterns has shown that healthy diets can be realistically reduced in terms of both beef and UPF potentially resulting in a 20% reduction in the environmental footprints (carbon footprint and water footprint) of the Brazilian diet, (da Cruz et al 2024) and for various income groups (da Silva et al 2020).

11.4 Our research on Brazilian dietary patterns has shown that UPF (Nova 4) purchases (233 kcal per day) account for 16% of 2017-18 dietary carbon footprints and 20% of water footprints. For reference: Brazilian Beef purchases are 43% of 2017-18 dietary carbon footprints and 31% of water footprints despite being smaller in weight and energy (57kcal per day) (da Cruz et al 2024).

11.5 Interventions that reduce UPF must also consider the system wide impacts of the foods that will replace it. If we reduce UPF the environmental impacts of the replacement foods may be higher. This may not align with UK Net Zero policy.

11.6 The UK Government has a long-standing ambition to lead the world in climate action and has legislated for Net Zero emissions by 2050. The UK government encourages a Systems Approach. See for instance "Health matters: whole systems approach to obesity". There is little evidence of government co-ordination between these two major policy challenges.

11.7 The CCC recommends a 20% reduction in meat and dairy by 2030 and 35% reduction for meat by 2050, eating better meat and plant-based alternatives. These plant-based alternatives may mean increased processing. The Eatwell guidelines and other Uk Government guidance is limited on sustainable and healthy diets.

11.8 Our conceptual model building (Anastasiou et al 2023) has identify multiple other food systems trade-offs with reducing UPFs:

- Energy use versus food system efficiency (UPFs can rely on high-energy inputs, but these energy inputs may enable efficiency);
- Land sparing versus land sharing (Changing to less-intense production systems may come at the cost of requiring more land to produce the same amount of foods);
- Diversity versus efficiency (Diverse agriculture can reduce unhealthy ultra- processed foods, but may be less efficient and costly.);
- Wasted food system resources versus food loss and waste (UPFs may waste resources by producing non-essential foods that promote overconsumption, but their durability can help reduce food waste compared to perishable non-UPFs);
- Food supply stability versus healthfulness (Limiting UPF availability could harm food supply stability when attempting to make food supply healthier.)
- Prioritising sustainability and healthy outcomes versus cost (Transitioning to sustainable practices and diverse foods can lead to higher costs.).
- Convenience versus healthfulness (Transitioning to healthy food systems without considering convenient options may harm those who are already short on time and lack cooking skills.)

11.9 This does not mean that a transition to a food system less reliant on UPF should be avoided, but rather that policies should consider unintended consequences in their design. For example, to avoid increasing food loss and waste, enable convenience and retain food supply stability, a scale- up of processed food production would be required.

12. Policy tools that could prove effective in preventing obesity amongst the general population, including those focused on the role of the food and drink industry in tackling obesity.

12.1 Our qualitative research on snacking in infants, children and adolescents (Gallagher-Squires, et al) highlights a number of areas where policy may intervene to reduce early dietary disparities.

1) Maintaining and expanding access to Healthy Start Vouchers can alleviate the financial burden low-SEP families face in purchasing fruits and vegetables and minimise concerns about wasted money if fresh food is left uneaten.

2) There is also a need to ensure minimum wages cover the true cost of a healthy diet, whether through guaranteed universal income, subsidising the cost of fresh fruits and vegetables or other fiscal policies.

12.2 Public food procurement may be a strong leaver to adjust the food environment, enable positive health outcomes, and enable wider food system change. (CJR supported a Rapid Evidence Assessment on the food system impacts of UK Sustainable food procurement for Defra in 2022- 2023, this is to be published in April-May 2024).

12.3 Food taxes have the potential to reduce the purchasing and consumption of foods that are high in sugar, salt and saturated fat (HFSS). The impact of food taxes, and subsequent effects on the cost of living for less affluent households is a key consideration for the acceptability of the policy. (see HEALTHEI project outcomes in other evidence submission by Dr Breeze)

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