# Beyond the date: From discard to action

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Topic: Addressing food waste: a win-win opportunity for climate and agrifood systems

**Motivation:** Not all food waste is created equal, and to treat "food waste" as homogenous is to ignore the climate ramifications of our food waste policy efforts. Red meat waste is a prime example: though it represents a lower proportion of the world's total food waste volume, red meat waste produces over 60 kg of CO2 for every kilogram lost. Even pork and poultry may still produce six times more emissions than a comparable volume of vegetables (Ritchie, 2020). Beyond its carbon footprint, meat production requires substantial resources. On average, beef production requires 100 times more land than pea production (Ritchie and Roser, 2021), and 1,800 gallons of water are required to produce just one pound of beef (Fox, 2024). Meat production is one of the major drivers of global deforestation (Ritchie and Roser, 2024), which negatively impacts the long-term health of the climate and food system. Moreover, it is unethical to raise animals for slaughter, only to throw their meat away. Given these considerations, when it comes to using food waste as a lever to improve both climate and food systems, addressing the problem of meat waste is paramount. Every year, 54.2 million tons of meat are wasted (Seidman, 2023), and consumer waste in developed countries represents a significant proportion. For example, American consumers waste 2.51 million metric tons of meat every year (ReFED, 2022). This figure is 7.3 million tons in the European Union (Caldeira *et al.*, 2019), 0.28 in Australia (FIAL, 2021), and 0.21 in Canada (Gooch *et al.*, 2019). It is well documented that labels can affect consumer behavior around food. Indeed, confusion regarding date labeling on meat may account for some 20% of consumer-level waste (Gong *et al.*, 2022). The date labels are often misunderstood, and consumers evaluate the freshness of the product solely based on these labels, ultimately leading to unnecessary food waste (Gong *et al.*, 2022) (see Fig 1).

**Rationale:** The FAO has formulated harmonized labeling guidelines to help resolve the issue of consumer confusion. For foods that are highly perishable and potentially hazardous to consume if spoiled, the label "use by" is indicated, as opposed to "sell by," which has no relevance to consumers, or "best before", which does not necessarily indicate safety (FAO, 2016). The simplicity of this paradigm goes a long way in preventing consumer confusion, but not necessarily waste (Gong *et al.*, 2022).

Given the overwhelming climate and ethical considerations of meat, meat labels must be given more specific consideration under the FAO's labeling paradigm.

**Proposal:** The FAO will build on its current labeling recommendation by proposing meat-specific labels that encourage consumers to take proactive action to reduce food waste.

**Development and assessment:** The FAO will develop a variety of targeted labels to encourage proactive consumer behavior regarding meat. This may involve enhancing current labels with freezing and thawing instructions (Fig 2a), labels that showcase the climate impact of wasting meat (Fig 2b), labels that change color when meat expires (Fig 2c), or other innovations. The assessment will take place in the United States and Canada, as these member-states already have diverse labels in circulation, and their federal labeling guidelines are limited and therefore more amenable to experimentation. The FAO will partner with meat manufacturers and distributors to conduct a longitudinal assessment of which kinds of meat labels can prompt positive consumer behavior. If possible, the FAO should workshop various translations of these labels to improve the transferability of the labeling innovations to other, non-English-speaking countries.

**Implementation:** Based on the assessment findings, the FAO will update its labeling guidelines to include effective, meat-specific labels. It will then work with the relevant government agencies of states with high consumer-level meat waste and where meat is often purchased pre-packaged (see geographic scope) to roll out the new labels. To foster adoption, the FAO will engage with existing food waste advocacy groups and NGOs. Depending on its success, the policy could be expanded to other countries experiencing rising meat consumption and waste.

**Geographic scope:** the United States and Canada, the European Union, Australia, New Zealand, and the United Kingdom. The policy targets these countries because of their significant consumer-level meat waste and the prevalence of pre-packaged meat.

**Outcomes:**
1. Improve FAO and member states' understanding of the mechanisms by which labeling can and cannot prompt positive consumer waste-reduction action, with potential ramifications for other food products (e.g. yogurt).
2. Increase meat manufacturers' and distributors' engagement on the issue of food waste as a result of active participation in the assessment phase; foster partnerships that could be leveraged in future projects.
3. Enhance consumer understanding of how to handle meat in a waste- and safety-conscious manner (depending on the ultimate meat labeling standards adopted).
4. Promote responsible consumer action that avoids unnecessary meat waste, there by avoiding GHG emissions and resource use associated with wasted products.
5. Reduce meat demand in target member states, thanks to meat waste avoidance, and thereby help slow overall growth of global meat consumption.

# References

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# Figures

**Fig 1. Survey Pictures of Meat Labeling in US, Canada, Europe, UK (done by the Team).** Pictures of different meat labeling. "Sell by" and "Best before"are common in the UnitedStates and Canada, and are often associated with confusion. "Use by" is the standard promoted by the FAO, although it lacks actionable information and is associated with waste10.



"Sell By"
Missouri, USA

"Use by"
Manchester, UK

**Fig. 2.a. An example of a label that enhances "use by" with freezing and thawing instructions.**

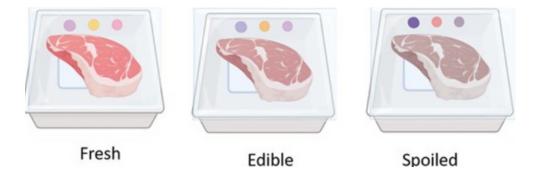**Fig. 2.b. An example of a carbon footprint label that could be added to meat to encourage positive consumer behavior.**



**Source :** Kühne, S. J., Reijnen, E., Laasner Vogt, L., & Baumgartner, M. 2023. Can carbon labels encourage Green Food Choices? Frontiers in Psychology, 13. https://doi.org/10.3389/fpsyg.2022.902869

**Fig. 2.c. An example of a label whose color changes as meat quality degrades.**



**Source:** Bhadury, D., Nadeem, H., Lin, M., Dyson, J. M., Tuck K. L., Tanner, J. 2024."Application of on-pack pH indicators to monitor freshness of modified atmospheric packaged raw beef." Food Quality and Safety 8: fyae021. doi: 10.1093/fqsafe/fyae021.