Editorial

Jeff Cooper BSc, MSc, FRGS, FCIWM

Former President of ISWA, Independent Consultant on Renewable Energy
from Waste and Technical Editor, London, UK

Globally, we seem to have moved on from the concerns that we had as recently as 6 years' ago when there were food riots in several countries, embargoes on food exports and a rapid rise in the cost of food and also foodstuffs for animal feed. In March 2015, the global reduction in the prices of commodities included food sources traded internationally, but was this a short-term improvement or a long-term trend? Malthus' pessimistic prognostications in the early years of the 19th century of an ever expanding population being starved due to the limits of agricultural production were confounded by technological progress in production methods and particularly the exploitation of the prairies in North America and to a lesser extent Argentina and Australia. Now we have run out of new arable land to cultivate, constraints on water supplies are becoming ever more severe throughout the world and the expanding global population is projected to exceed nine billion by 2050.

A report, *Strategies to Achieve Economic and Environmental Gains by Reducing Food Waste* issued in March 2015 by the Waste and Resources Action Programme, estimated that a reduction in consumer food waste could save between US\$120 and 300 billion per year by 2030 by reducing food waste by 20–50% on average (Wrap, 2015). There would be additional savings if waste reduction were to be applied to every step in the food supply chain, from farm to fridge. This thematic issue of *Waste and Resource Management* will assess a number of options to reduce food waste, not only by consumers but also in other parts of the global food supply chain.

The papers in this themed issue examine different perspectives on the issues of food waste and demonstrate its complexity now as we have moved to a global supply chain for so many raw materials for feedstuffs and ingredients and the finished food products that the modern consumer demands. This is highlighted by the rising expectations and demands of the growing number of middle class consumers in transition economies, such as China, India and Brazil, to name just the most populous.

Overall the consumer bears the greatest responsibility for food waste because when the consumer discards food unused it has gone through the full cycle of agricultural production, food product preparation, its distribution and final transport and consumer storage. Therefore this thematic issue focuses on

different aspects of the final stage of food consumption, the interface between food and its consumption.

Gomez *et al.* (2015) focus on the earlier stage of the food supply chain noting that the fruit and vegetable processing industry wastes 5–50% of their raw materials. By utilising some of these by-products from food processing in food product manufacture as natural additives in manufacture to provide fibre content and antioxidant properties, these wastes can be reduced and substituted for other processed ingredients in food product production.

One of the food waste products suggested as a substitute, residues from the cardoon, caused me some confusion. This is a vegetable related to asparagus that is predominantly grown in drier climatic conditions, hence its cultivation in the countries represented by the researchers. However, according to Wikipedia (2015) it is difficult to utilise as a vegetable, which probably explains the amount of waste available for reutilisation as a natural food additive, and according to the authors is especially valuable for its fibre content.

Sonja Rossaint and Judith Kreyenschmidt (2015) in their paper show that that 20% of meat and meat products is wasted and this group of food products has the greatest environmental impact, mainly owing to the rearing of animals, generally using processed feed. Their solution, which might reduce this wastage by 35%, would require the use of intelligent labels that are able to measure temperature throughout the supply chain so that if the temperature is kept low throughout the earlier parts of the chain then the product will have an extended shelf life at the retail and consumer parts of the chain. Indeed, the consumer has a great responsibility in preserving the quality of their food after purchase from a store because as the authors cite 'the shelf life of fresh pork is reduced by approximately 30% if the storage temperature is 4°C instead of 2°C'.

On the theme of consumer reaction to information about food waste, Langen *et al.* (2015) demonstrate that the information does not deal with the difficulties that consumers find in minimising their food waste. The paper reports on their survey of 351 German consumers. The consumers surveyed noted that parties and other celebrations are occasions on which considerable food waste is generated. Weekends also are a

time when food is wasted because people like to have choice of items that can be consumed at home but are more likely to go out to restaurants at this time. A third reason specified was the issue of packaging sizes, especially for fruit and vegetables. The authors conclude that current guidance on food waste does not address the first two issues.

Curry *et al.* (2015) tackle the vexed issue of values and decisions on sustainable food choices when eating out. Their assessment of the available literature shows that consumers are concerned about sustainability issues associated with the food that they are offered to eat and often other aspects of the restaurant's service provision. However, this concern is rarely expressed directly.

Perhaps the overall conclusion from these studies are that there is need for consumers to adopt better habits in all aspects of their food purchasing in order to prevent food waste. However, perhaps we all need to become vegetarians in order to ensure food supplies for all in the future?

REFERENCES

- Curry R, Crawley E and Baird J (2015) Values and decisions on sustainable food choices when eating out. *Proceedings of the Institution of Civil Engineers – Waste and Resource Management* **168(2)**: 87–98, <http://dx.doi.org/10.1680/warm.13.00033>.
- Gómez A, López R, Esturo A *et al.* (2015) From waste products to raw materials for the development of new foods. *Proceedings of the Institution of Civil Engineers – Waste and Resource Management* **168(2)**: 55–62, <http://dx.doi.org/10.1680/warm.13.00038>.
- Langen N, Göbel C and Waskow F (2015) The effectiveness of advice and actions in reducing food waste. *Proceedings of the Institution of Civil Engineers – Waste and Resource Management* **168(2)**: 72–86, <http://dx.doi.org/10.1680/warm.13.00036>.
- Rossaint S and Kreyenschmidt J (2015) Intelligent label – a new way to support food waste reduction. *Proceedings of the Institution of Civil Engineers – Waste and Resource Management* **168(2)**: 63–71, <http://dx.doi.org/10.1680/warm.13.00035>.
- Wikipedia (2015) *Cardoon*. See <http://en.wikipedia.org/wiki/cardoon> (accessed 26/03/2015).
- WRAP (Waste and Resources Action Programme) (2015) *Strategies to Achieve Economic and Environmental Gains by Reducing Food Waste*. Waste and Resources Action Programme and the Global Commission on the Economy and Climate, Bicester, UK.