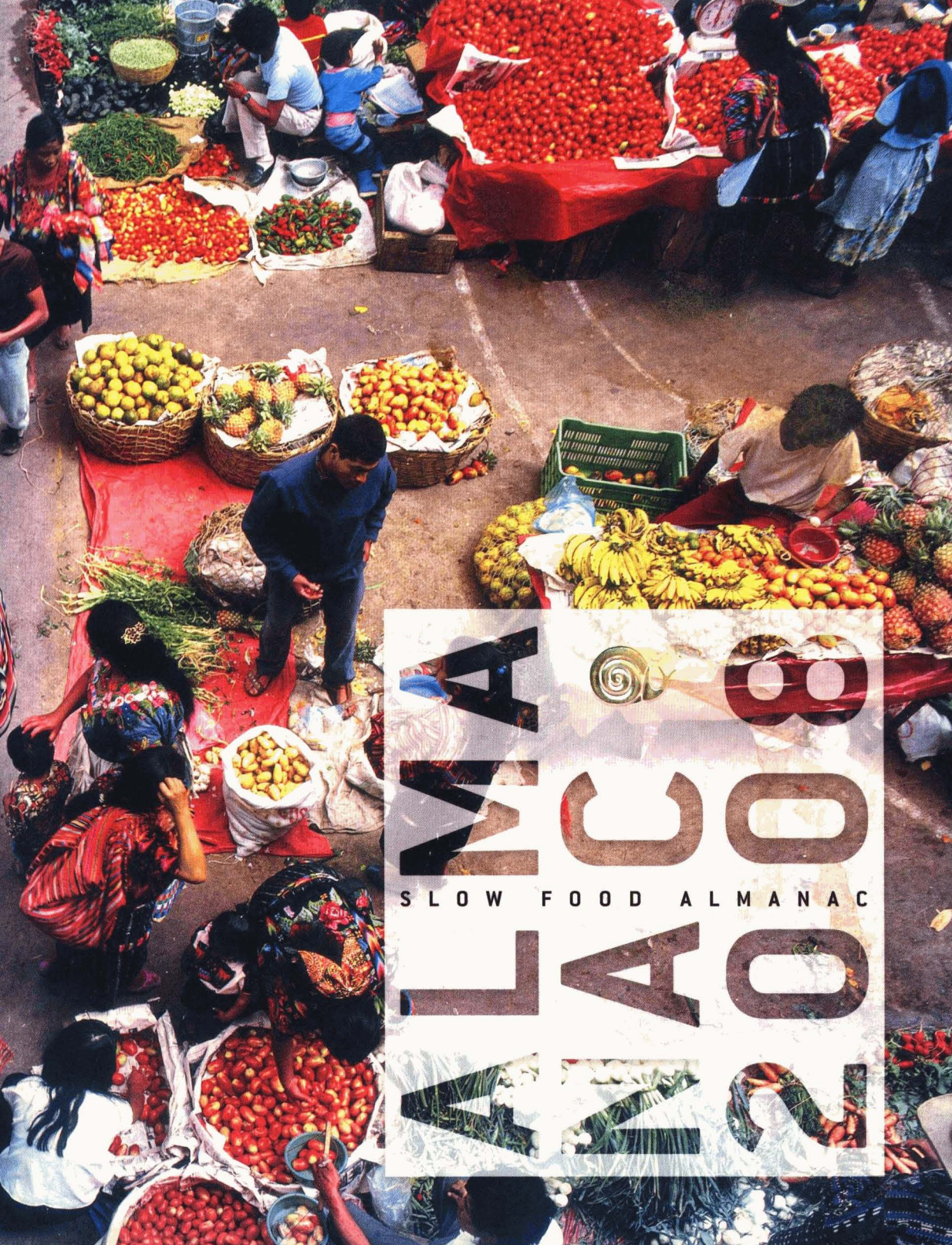

SLOW FOOD ALMANAC

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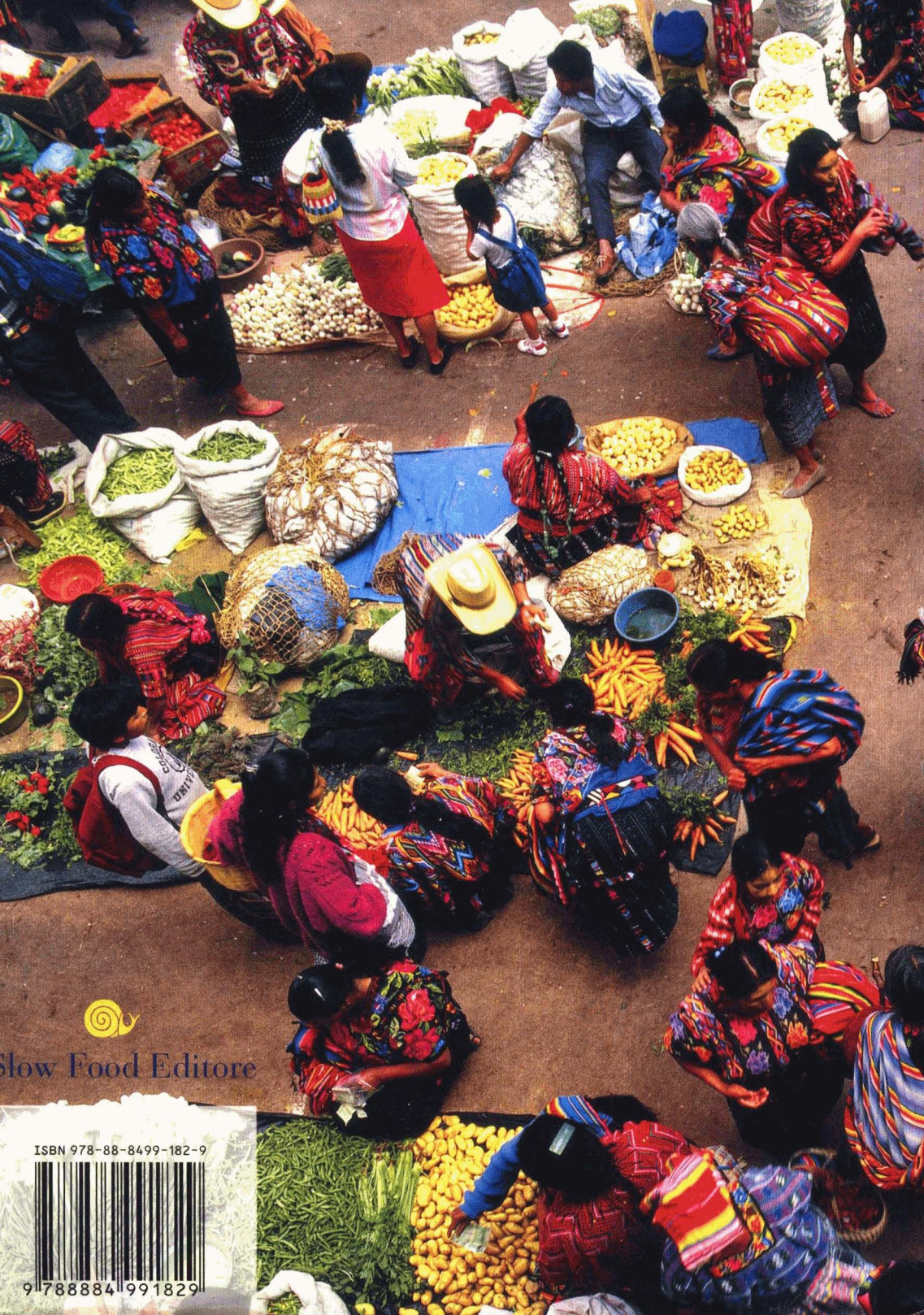

Slow Food Editore

ISBN 978-88-8499-182-9


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ZERO WASTE

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GLOBAL/LOCAL

Waste is the shadow side of the economy, the untouchable in the caste system of commodities. Stripped of desire, it weighs like a corpse around the necks of the living. It is placed in black bags or bins, and transported, like the dead, to sites of exclusion—to landfills and incinerators that are the graveyards and crematoria in the kingdom of objects.

From the perspective of policy, waste has first and foremost been seen as an issue of public health, something that needs to be removed from society as quickly and cheaply as possible. What developed in response has been a system of mass disposal, where household waste is set out, collected and disposed of as a single stream of mixed waste. Scale and speed have been everything. Collection lorries have got bigger, compactors more powerful, incinerators and landfills larger and larger. Mass production generated as its counterpart mass waste and a Fordist waste industry.

MODERN LEVIATHAN

Mass waste was not simply the discards of mass consumption. It also comprised the waste generated at each phase of production, in mines or fields, in factories and shops, all of which far exceeded consumer waste. In England producers accounted for 91 percent of national waste. With food, for every kilogram we eat, 10 kg of waste are generated along the food chain. For consumer goods the trail of waste can be much greater. A car that weighs a ton takes 70 tonnes of material to produce it. Waste is the leviathan of the modern industrial system.

Over the past 30 years there has been a growing recognition that this system of extensive exploitation of the material world cannot be sustained. It is not just a question of the profligate use of materials.[1] It is also the energy it takes to process the materials and the ever mounting problem of disposal.

In many countries the trigger for change has been political—the opposition by local communities to extraction and logging at one end of the chain and to new landfills and incinerators at the other. But what started as primarily a movement of resistance—sparked in the case of waste by the evidence of the hazardous emissions from waste sites—

time and again has turned into a movement of alternatives.

The case is highlighted by organic waste. In England, of every kilogram of food we buy, we throw one third away. In the pre-modern period much of this would have been composted or given to pigs and chickens—as late as the 1970s some of London's food waste was transported to pig farms in East Anglia and came back to Londoners in the form of the 'Tottenham sausage'. But urbanism and food regulation broke this cycle, and resulted in a double loss. On the one hand the land lost a major source of nutrients, on the other food waste was concentrated in landfills where, coupled with garden and other organic waste, it became a significant contributor to global warming.

COMPOST MADE IN ITALY

As evidence grew about soil degradation and erosion, on the environmental impact of artificial fertilisers and the potential role of compost-improved soils for the prevention of flooding and for the sequestration of carbon, so the pressure rose to restore the biological cycle.[2] In the UK a community composting movement grew up. Municipalities encouraged home composting and introduced green collections. By 200, 3 2 million tonnes of organic waste were being composted at 325 facilities.

Industrial composting systems are now well established in The Netherlands and Germany. But the most striking model—with the highest rates of capture—has been developed in Italy. Municipalities—supported by the innovative agrarian institute in Monza—found that making a separate collection of food waste from households and restaurants, and encouraging home composting, meant that they could both create marketable compost and keep the harmful organic waste away from disposal. Instead of the big black plastic bag, many of the municipalities introduced a small, transparent bio-degradable plastic bag, which could be collected by small (even electric) vehicles and composted close-by. A local biological cycle has been restored. It is a more complex process. Householders have to separate their food waste at the sink. Extra collections and processing are needed. The fact that compost is now a commodity and no longer a waste, means that there has to be scientific testing and quality control, advanced water treatment systems, and marketing specialists, all the things needed by an industry oriented to production rather than destruction. It is also a slower process. It can take 60 days or more to manage food waste in this way, instead of the half-day journey to landfill or incinerator. But it is a journey that creates value out of what would otherwise cause environmental damage and, remarkably, has often done so at lower financial cost to the municipalities. It is the slow waste tortoise that has gained the prize.

GREY ENERGY

In the Italian model, food waste has been made separate and visible. One council was even taken to court by a resident objecting to using transparent plastic bags. But visibility is everything if food waste is to be transformed into a useful material. The same holds true for other waste. The moment waste is removed from the dustbin into the light—and many community groups started by collectively sorting the waste into its many components—it becomes clear that, like food, much of what had been discarded as waste is potentially a source of value. Recyclers in cities now refer to waste as urban mines and urban forests.

More than that, much so-called waste embodied what is called 'grey energy'—the energy used in every stage of production. By the early 1990s, the five leading non food materials in the Western domestic waste stream—paper, cardboard, steel, aluminium, and glass—were found to account for two thirds

of industrial electricity use in the US. Rescuing these materials from disposal has meant that the energy needed for virgin materials is no longer needed. An assessment of the ambitious Dutch climate change programme in the 1990s found that half the CO2 savings came from recycling.

So alongside the restoration of biological cycles, there has been a parallel move to restore material cycles, thereby preserving the value of the materials, the energy, and the work embodied in the discarded commodities. It is a question not just of recycling, but upcycling, of finding ways in which the qualities of the discards can provide more valuable inputs in their next life (crushed bottles as water filters for example, or old tyres into basketball court surfaces). As with food, the perspective involves a shift from the linear model of mass waste to a circular model that conserves value and resources.

The critique of traditional waste systems and the development of alternatives has been led by community and environmental movements. Community recyclers and composters pioneered new systems of collection and processing in Australasia, in Germany, the UK, and in much of North America. In response to their work, local and regional governments started promoting the new policy. They found that quite quickly they were diverting 50 percent or more of household waste from disposal, with some municipalities up to 70 percent and even 80 percent among the pioneers.

TOYOTA METHOD

What was then stopping progress to 100%? The manual sorting of dustbin waste found some items that were technically difficult or very expensive to recycle—like Tetrapaks, and plastic bags. Some are made of unrecyclable compounds, or are hazardous to recycle or re-use. But those are in principle resolvable. So, having progressed that far up the mountain, why not aim for the top? This is the background to the idea of Zero Waste. It was pioneered by community groups in Australasia in the second half of the 1990s and has spread remarkably in a decade. Not only have many municipalities signed up to Zero Waste, so have regional and state governments, particularly in Federal states—California, Nova Scotia, Victoria, South Australia, and Western Australia. The first country to adopt it is New Zealand. Lebanon and Taiwan have followed and even the Chinese (who now account for one third of the world's garbage) have adopted the principle of the circular economy in their latest Plan. In England there is a Zero Waste Charter, and in 2001 a Zero Waste International was formed as a network of community groups. It is an idea that has caught fire.

Zero Waste was initially both an aspiration and a methodology. As an aspiration it sought to eliminate all waste by restoring the material and biological cycles. In the phrase of the German biochemist Michael Braungart the move is from 'cradle to grave' to 'cradle to cradle'.

As a methodology, it borrowed from many modern industries, including those that were themselves adopting Zero Waste policies, notably the auto sector, electronics, office machinery and chemicals. Toyota which had developed the concept of continuous improvement and zero defects, adopted the principle of zero waste, and cut waste in its assembly operations by 98 percent. Honda, Hewlett Packard, Du Pont, Fuji Xerox, Minolta, NEC, Epson and Interface are others who are committed to Zero Waste.

UNSUSTAINABLE WASTE

In terms of methods it requires all involved in production to identify the origins of waste, to find innovative ways to reduce it and to re-use or recycle that which cannot be prevented.

For household waste this has involved developing very different systems of storage, collection, and sorting. It has meant desi-

gning new types of home container, new vehicles, new more complex logistics, and new time patterns of collection—by week, month, and season. To restore the pre-modern biological and material cycles, zero waste has had to adopt postmodern tools. It needs the most advanced methods for handling complexity. The best modern recycling systems use bar codes, on-board weighing, data-based feedback systems and sophisticated incentives. Post-modern recycling is a form of reverse retailing.

But because of its aspirations Zero Waste is also a critique and a programme of economic alternatives. What began as a movement to reclaim recyclable materials led to the questioning of many features of production itself—not just the trail of waste it produced, but its hazards, and its blindness to the need to recycle and re-use. Waste came to be seen as a symptom of an unsustainable system of production and consumption.

And out of the critique has emerged the agenda to redesign current systems of production, distribution and consumption.[3] To reduce waste design has to move to the centre of the stage, and it needs the design industry to move with it. The industry needs to shift its focus from the innovation of surfaces, to a new form of transformation design, the redesign of productive systems and each of the elements within them in line with contemporary environmental imperatives.

How can products and processes be designed that will enable all the 're-s', re-use, reduction, repair, reverse manufacturing, re-skinning, re-refining and reverse engineering? How can products be modularised, and commodities leased as part of a service? How can product lives be extended, and be more intensively used? Alongside assembly lines there are now disassembly lines. In local garages there are car share pools. Are these the emerging patterns of a new economy?

Zero Waste has come to these questions from the vantage point of reducing waste. On the way it has met with many others—coming from different places but on a similar track. As with tributaries flowing into the same river, these are currents that are already creating in practice the outlines of different kind of economy, one with greater lightness and fewer shadows.

Notes

1 US material use rose from 200 million tonnes in 1900 to 2.8 billion tonnes by 1990, by which time the world figure had risen to 16 billion tonnes. Asian industrialisation further intensifies the pressure on resources – and on waste generation, with China already accounting for a third of the world's garbage.

2 One of the best recent summaries of the value of compost for improving soil structures and countering environmental degradation is in Appendix 6 of the report by Dominic Hogg, Adrian Gibbs, Enzo Favoino, and Marco Ricci, Managing Biowastes from Households in the UK: Applying Life-cycle Thinking in the Framework of Cost-benefit Analysis, Appendix 6, WRAP, May 2007. Australian evidence suggests that the great value in that climate was in improved water retention in the soil and avoided phosphate depletion.

3 Life cycle analysis and the complex economic and environmental models that build on it, detail each stage and each process that a product passes through, and in doing so issue an invitation to innovate.

Robin Murray, *Zero Waste*, Greenpeace Environmental Trust, London 2002. The book can be downloaded in pdf format from the Greenpeace Australia Pacific and Great Britain websites.
http://www.greenpeace.org/raw/content/australia/resources/reports/toxics/zero-waste-book-by-robin-murra.pdf
http://www.greenpeace.org.uk/media/reports/the-environmental-trust-zero-waste

FOR EVERY KILOGRAM OF FOOD WE EAT, 10 KG OF WASTE ARE GENERATED ALONG THE FOOD CHAIN.
FOR CONSUMER GOODS THE TRAIL OF WASTE CAN BE MUCH GREATER.