

Editorial

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Introduction

At the 1992 Earth Summit in Rio de Janeiro,¹ sustainable development was agreed as a laudible goal and the Brundtland definition of development which meets the needs of the present without compromising the ability of future generations to meet 'their own needs' was accepted. This universal concept is being translated through national government strategies on sustainable development and into Local Agenda 21 programmes.

The UK Government document *A better quality of life: a strategy for sustainable development for the United Kingdom*² adopted the simple definition of sustainable development as 'a better quality of life for everyone, now and for generations to come', highlighting four objectives of: social progress, environment protection, natural resources use, and stable economic growth and employment.

The integrating aspirations of sustainable development can be understood diagrammatically by the Venn diagram shown in Fig. 1. This analysis suggests that the three sectors of environment (En), economics (Ec) and society (S) play varying roles and at the heart of their interaction is sustainability. The areas of overlap suggest the need for environmental health provision (En and S), for environmental management systems (Ec and En), and for community structures (Ec and S), all supporting the goal of sustainability.

The need to move from strategies to solutions in this global issue is brought into focus in the 2000 Foresight Energy and Natural Environmental Panel Consultation document *A way to go*³ as it cites 13 current dangers which need attention, and included in the danger zone are 'waste disposal, land and water contamination'. Foresight suggests that the effects of economic growth depend on consumption patterns, lifestyles and societal aspirations and identifies the urgent and short-term need for the development of comprehensive technologies to include clean up and cleaner technologies, conservation and restoration techniques, *waste minimization*, *energy reduction* and demand management and greater use of renewable energy technologies.

The *UK Round Table on Sustainable Development Fifth Annual Report*⁴ made six recommendations in relation to the establishment of sustainable indicators, one of the recommendations being that 'further efforts should be made to improve the data on waste so that targets and timetables can be established and monitored for the reduction of waste arisings, increase of recycling and recovery of energy

from waste, and reduction of household waste to landfill'.

Within these global and national contexts, there are urgent needs to understand, regularize and monitor waste management. Strategies for the three regions⁵⁻⁷ of the UK have adopted similar approaches with the need to reverse the existing waste hierarchy so that reduction of waste is pre-eminent and disposal to landfill is the least preferred option. A typical waste hierarchy is shown in Fig. 2, with the underlying principles being

- (a) proximity principle and self-sufficiency
- (b) precautionary principle
- (c) polluted pays principle
- (d) waste hierarchy.

Content

This edition of *Municipal Engineer* covers some of the critical aspects of waste management in the UK but does not attempt to give a comprehensive coverage of all issues, as some are technical, others are still only evolving and several practical elements are covered already in statements and reports by the Department of the Environment, Transport and the Regions, in guidance notes, text books and in the waste management papers.

John Ferguson's paper, *The agenda for the future of waste management*, based partly on his knowledge and experience of the International Solid Waste Association, sets the international scene, giving key information on the world markets while setting the industry within the framework of sustainable development and the need for partnership of public and private sectors, communities and industries and the efforts of individuals on a worldwide scale.

Clear understanding of the EC Landfill Directive is essential in establishing the place of each nation in the waste hierarchy, with a recognition for greater need for energy recovery by means of energy-from-waste (EfW) plants. However, Ferguson argues that a wide spectrum of waste options such as EfW, engineering landfill, green waste composting, anaerobic digestion, recycling, reuse and reduction, minimization and prevention should always be considered in order to remove waste mountains from this millennium's list of potential disasters.

This strategic and business approach is reflected in Peter Gerstrom's paper on energy from waste, identifying sustainable integrated waste management (SIWM) as a critical framework for integration of waste disposal options. His comprehensive analyses of waste reduction

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targets recognize the need for access to adequate information, as well as the application of EfW projects, with essential appraisal of both emissions and product market issues.

Financial provision lies at the heart of solutions to meet all targets and David Kilduff's paper tackles the dilemma of authorities in seeking adequate resources. This is set in the context of the switch from compulsory competitive tendering to best values in meeting the needs of stakeholders. The application of the Private Finance Initiative and public-private partnership approaches are set alongside other funding solutions involving council taxes, grants, EU funds, lottery monies and combinations of these.

The best value framework is seen by John Quinn as an appropriate vehicle for the greater understanding of, and more structured approach to, waste management issues. His Northern Ireland experience suggests the need for the development of regional facilities with satellite municipal solid waste transfer stations, with appropriate financial resources and infrastructure.

The essential need for and retention of landfill disposal is defended by Alan Potter, forecasting that these facilities will continue to play a role, and therefore pointing up the need for forward planning to maintain sufficient landfill capacity.

Landfill site management is approached from both financial and operational aspects by Alan Strong, as he enumerates the landfill tax elements and gives details of a study into the benefits of baling waste prior to landfill depositing, identifying both environmental and financial advantages.

Composting is dealt with comprehensively in Ian Avery's paper drawn from his work in Hampshire, with evidence given to suggest that centralized waste composting, covering garden waste, bio and grey waste, can be a viable business. Steve Goulette, drawing from Shepway's activities, covers home composting in detail and this exemplar is transferable to other authorities.

International experience on waste incineration is given by Madg Teisen, based on the Copenhagen scenario, and shows the advantage of a single authority administration linking planning with the application of waste policy, along with the use of NGOs and employer associations.

The contrasting content of David Blackwood's paper on decision-making for upgrading wastewater systems, demonstrates the value of using multiculture tools such as the wastewater integrated system performance score (WISPS), to ensure that there is transparency in decision-making. The paper argues that this has applications in the waste management industry as strategies and solutions evolve.

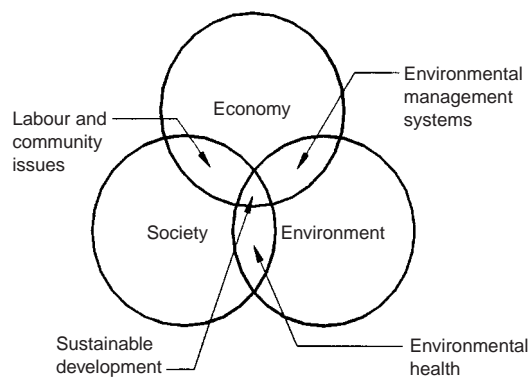


Fig. 1. Sustainable development: Venn diagram

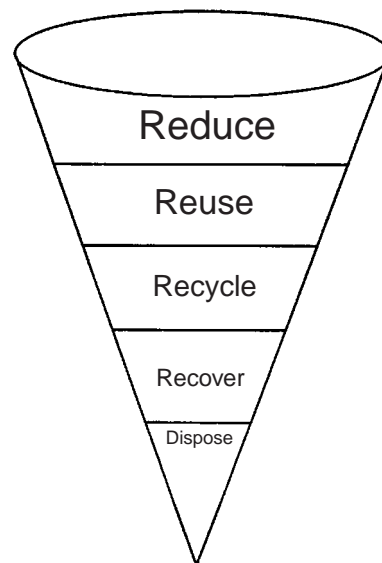


Fig. 2. Waste hierarchy

Professor Woodside *et al.* give a valuable case study for recycling, based on their research work into the reuse of highway materials, with trial results to give both financial and environmental feedback.

Waste management will continue to be at the centre of environmental legislation and government policy, and the formation of the new Sustainable Development Commission in 2000 is further proof that sustainable development issues will continue to challenge engineers for future generations. However, although the contents of this journal issue serve to highlight the ability of engineers to deal with both environmental and financial matters in connection with waste management, it is clear that the involvement and needs of the community have not been fully integrated.

References

1. UNITED NATIONS. *Earth Summit—Agenda 21*. UN, New York, 1992.
2. DEPARTMENT OF THE ENVIRONMENT, TRANSPORT AND THE REGIONS. *A Better Quality of Life: A Strategy for Sustainable Development for the United Kingdom*. The Stationery Office, London, 1999.

3. DEPARTMENT OF TRADE AND INDUSTRY. *Energy and Natural Environment Foresight Panel. A Way to Go (a consultation document)*. DTI, London, 2000.
4. DEPARTMENT OF THE ENVIRONMENT, TRANSPORT AND THE REGIONS. *UK Round Table on Sustainable Development Fifth Annual Report*. DETR, London, 2000.
5. DEPARTMENT OF THE ENVIRONMENT, TRANSPORT AND THE REGIONS. *A Way with Waste: A Draft Waste Strategy for England and Wales*. HMSO, London, 1999.
6. SCOTTISH ENVIRONMENT PROTECTION AGENCY. *National Waste Strategy: Scotland*. SEPA, Sterling, 1999.
7. DEPARTMENT OF THE ENVIRONMENT, NORTHERN IRELAND. *Northern Ireland Waste Management Strategy*. DOE, Northern Ireland, Belfast, 2000.