



The market for materials to land re-use is one where there is both great potential and great opportunity. The potential to move materials use upwards in the waste hierarchy and find beneficial uses that substitute for primary resources, reduce GHG emissions to atmosphere, reduce legacy problems from waste disposal sites and improve soil functionality is widely recognised. Policy and taxation frameworks are in place in the UK and many other countries to maximise this potential.

Many businesses have developed or are moving to exploit opportunities for profit generation from shifting materials from disposal to use on land. The range and scale of this enterprise indicates the profits to be made, which will only tend to increase as the landfill tax escalator continues. The recycling of materials to land has been a successful part of British agriculture since time immemorial, and very many organisations carry out this activity with a high degree of professionalism.

However, there have always been problem applications. An extreme example of this was the disposal of partially processed mixed waste in Norfolk and Suffolk in 2005 (see Box 1) which resulted in significant environmental damage and reputational damage for the waste processor concerned and their consultant. The rapidly changing landscape of potential recyclates (notably increasing amounts of digestate, CLO and biochar) increase the chances of mistakes being made. In addition, the utilisation of less well qualified staff can reduce costs and so provide a more cost competitive service. This puts pressure on margins and threatens the delivery of quality. There are two negative consequences to this: it reduces the overall value of the “green economy” in the materials to land function, and it puts at risk the availability of land resources for materials re-use. These are significant market risks.

The anecdotal information from regulators is that in an unacceptably high proportion of cases, materials to land propositions being made have significant technical problems and/or are potentially harmful to the environment. There are also examples where unacceptable applications have taken place, even under the provenance of major companies. This is an indication that there is a skills problem in some sectors of the business. An immediate impact of this is an unacceptable strain on the regulator who has to act as a “consultant of last resort” for soil protection in too many cases.

CPD training in the beneficial re-use of materials on land in an overarching way will assist better management of the land bank resource by those involved in materials recycling and those involved in land management. This has two major benefits: developing the “green economy” and improving the resilience of the land bank.

Box 1: Illegal dumping on farmland Case Study (Taken from Environment Agency 2006)

Syringes with needles, bottles of pills, batteries, metals knives and an inhaler were among items of waste spread on agricultural land in Norfolk. Paul Rackham Ltd is an agricultural business that covers about 445 hectares in Norfolk. The spreading of the waste on the farmland was carried out as part of a commercial arrangement between Paul Rackham Ltd and a waste company Antiwaste Ltd. About 20,000 tonnes of this waste mixture was spread on 175 hectares. The field was later used for cereal crops. Although the companies said that this was part of a trial they had not sought our permission, nor had they asked for an exemption from the need to have a waste management licence to carry out the trial. At the time one of the directors of the farm business was also a director of Waste Recycling Group. It is important that where treated waste is spread onto farmland that a full risk assessment is carried out to ensure that it does not harm the environment or human health and that there is an agricultural benefit. Paul Rackham Ltd was fined £25,000 and Anti-Waste Ltd £21,000. Both companies were ordered to pay £78,122 costs each.

Benefits to the Green Economy

Green economy benefits accrue from improving professional practice. Greater levels of professionalism in materials to land activity will lead to more appropriate activities, avoidance of situations that might give rise to unacceptable impacts, a better targeting of available resources to available land bank, and better mutual understanding for exchange of views between clients and providers from recycle to user and hence a more realistic value proposition. Land managers accepting materials to land (agricultural or non-agricultural) are beholden to the perceptions of those buying or using the land or consumers of its produce whether this is food or biomass. A demonstrably higher level of professional practice will increase the confidence markets in materials re-use, and protect the value of land where materials are being re-used. It supports the shift of “waste” to being considered a resource rather than a problem. It also improves the robustness of the “landbank” for materials recycling into the future.

The over-riding concern of all stakeholders in recycling materials to land has to be the resilience of the land bank. If the land bank becomes less available then there are widespread negative consequences for sustainable development in the UK:

- **Environmental impacts, e.g. from greater use of primary resources**
- **Economic impacts, e.g. business failures in the recycling sector**
- **Societal impacts, e.g. reduced capacity for managing wastes**

The scale of these impacts could be very large and would result in a downward shift in waste management in the waste hierarchy. This change may not be reversible for 10 to 20 years if the consequence was a shift to thermal or chemical conversions given the typical facility lifetimes and waste contracts.

The nature of land ownership, and interests in the products of land, means that perceptions play a large part in securing the availability of land for re-use of materials. There are undoubted economic drivers for materials re-use, including the replacement value of major plant nutrients (esp. N and P) and liming. However, perceptions of risks of damage to land or crops could mean a rapid removal of land availability. The speed with which this might take place is illustrated by the response to the foot and mouth crisis and by anecdotal examples of supermarket customers no longer taking crops from land where source segregated composts had been

applied. The most worrying scenario is of a “domino” effect where a relatively isolated problem of inappropriate use proliferates through markets as being illustrative of a potential economic risk. These perceptions have been recognised and acted on by several sectors involved in the return of organic materials to land, beginning with the “safe sludge matrix” developed by the water industry to allay concerns over sludge to land. They are an explicit driver for the “quality protocols”.

Training Demand

Training exists for organic materials to land for some specific areas mainly related to NPK management for agricultural land, see Table 1. There is significant demand for this training. However important aspects remain uncovered, namely issues related to biological, chemical and physical soil quality. These include both benefits, for example pH management, organic matter management, soil condition / fertility, and impacts, for example animal and plant pathogen risks, chemical contamination and the significance of physical contaminations. Furthermore, there are gaps in provision for (1) training about the range of materials available, their usefulness and value and their management in an integrated way (2) aligning materials re-use with soil requirements, taking into account local needs and climatic conditions, (3) the particular needs for managing “emerging” materials streams such as paper sludge ash, digestates, CLOs and biochar, and (4) including uses beyond agriculture and soil grown horticulture, for example forestry, bioenergy, brownfield and other managed landscapes. The training will need to accommodate a wide range in backgrounds and skill levels for participants, and may therefore need to be linked to foundational learning resources.

Table 1 Available Training Related to Materials Application to Land

Provider	Course	Relevant Topics
BASIS	Fertilizer Advisers Certification and Training Scheme (FACTS)	Organic nutrient sources for agriculture (Potentially toxic elements)
BASIS	Soil and Water Management	Soil protection –agricultural land. Manures and nutrients
CL:AIRE		Contaminated land (Soil Quality Protocol)
SAC	WASTes	Organic wastes to agricultural land for benefit without harm
Environment Agency	Internal courses	
Private Consultancies	Various	
CIWM/ WAMITAB	Short courses linked to regulatory requirements	Waste Management operations

A possible approach to delivering this kind of training might be to have a short two day “face-to-face” course, particularly if such events can attract cross-sectoral participants to support networking and better mutual understanding between waste recyclers, land managers, regulators, land clients (super-markets, developers etc). This course would be linked to / signpost existing provisions (e.g. by BASIS -FACTS) for specific information, and on-line resources or supplementary courses for more detailed information where there is no existing provision. The aim of this approach is to provide an opportunity that is an acceptable commitment of staff time, combined with distance learning for more detail. This distance learning could be supplemented by activities such as tutorials groups and project delivery supervision.

A question raised was what will leverage or drive participation in such CDP. Two drivers were discussed; the first was that participants would be motivated to join by a desire to improve their knowledge and ability to deliver their professional services. However, a second scenario of a “market requirement” for accreditation was also discussed. In this scenario one or more major market “movers” would require their service providers (or staff) to take this CPD route as a means of demonstrating their own business resilience and environmental credentials. This might be important where there seen to be business risks from a relatively poor state of practice.

The business resilience drivers that might underpin this are wider than just protection of land bank holdings or access, but also relate to improving the contribution of several “intangibles” to shareholder value, such as brand value and management of potential reputational risks. In some cases an important driver might be avoidance of or management of future environmental liabilities, and the related concern of maximising land bank value, particularly where merger and acquisition and/or land sale and divestment processes are likely. Finally, there may be drivers related to corporate social responsibility, liability and other related financial reporting requirements.

Reference

Environment Agency (2006) The environment: what’s in it for you? Spotlight on Business. Environmental performance 2005. p16.

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