Sustainable biosolids – welcomed practice through community partnership and the consequential economic benefits

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Abstract Technically, most people agree that conserving soil organic matter and completing nutrient cycles by applying animal manures, treated organic wastes and biosolids to land is the most sustainable option in the majority of situations. It is also generally the least expensive. There has been a huge amount of research into the hazards, and this has concluded that the risks can be managed to acceptable levels. But there has been insufficient attention to communicating this knowledge, as so often in the scientific and technological arena. Perception is reality. Nowadays compliance with regulations (whilst essential) is not enough; public and stakeholder attitudes can be of decisive importance. Sometimes policy-makers speculate what public attitudes might be without really asking them. This paper will describe an initiative to create a partnership open to anybody with an interest in the use of organic materials on land to develop consensus on good practice and to share knowledge. It summarises an attitude survey of more than 140 organisations, which was then debated at a workshop in July 2002. The conclusion from this study was that all parties considered a partnership is essential to share knowledge, build mutual trust and agree practices that are welcomed by all in the food chain. The paper will describe the steps to establishing a partnership organisation, its aims and objectives, the work to date and the plans for the future. The Environment Agency considers this very important and has largely funded the work to date. The consequences of failing to establish welcomed practices would be loss of the facility to use organic resources on land.

Keywords Advocacy coalition framework; biosolids; compost; manure; partnership; recycling; sludge; stakeholders; sustainable; use

Introduction
Human activity produces organic residuals that can be regarded as resources. These comprise manures and slurries from farm animals, residuals from processing crops, non-hazardous industrial wastes, the organic fraction of municipal solid waste and sewage sludge. In general, governments advocate that whenever possible these resources should be used on land (with the proviso that hazards are managed) to conserve organic matter and complete nutrient cycles.

There are many parties who directly or indirectly influence the “plough to plate” chain. Members of society no longer accept having the best technical solution imposed upon them. Democracy and improvements in communication of information mean that the opportunities to effectively question, object and oppose are easier than they have been in the past. Some objections are well founded and very valuable, but others are the products of lack of knowledge or misunderstanding; but this does not make them any less real to the people who hold them.

Once an argument moves from rational to emotional it becomes much more difficult to change opinions. The case of the best fate for the “Brent Spar” when it reached the end of its
useful life in 1991 is a good illustration. It was an oil storage buoy and its six tanks could collectively store 43,000 ton crude oil for collection by oil tankers. It received the oil from rigs on the Brent field in the North Sea. Shell, the oil company that own it, analysed 6 different decommissioning strategies and decided that the option with least environmental impact would be to remove as much oil as possible for Brent Spar, tow it into the Atlantic and sink it off the continental shelf. In 1995 the UK government endorsed this choice. Greenpeace campaigned that this would be very damaging and that the platform should be dismantled and processed on land. It launched a campaign for people to boycott Shell fuel stations; this was so successful that the company followed Greenpeace’s wishes. It later transpired that Greenpeace’s case was founded on a huge overestimate of the amount of oil and by-products that would be left on the platform, and that Shell’s analysis of the relative environmental impacts of the options had been correct. On 5th September 1995 Greenpeace apologised to Shell for sampling errors and admitted to the inaccuracy of its claim. The situation would probably have been avoided if Shell had discussed its best technical solution with stakeholders in advance so that the issues could be examined objectively (NERC, 1998). The rights and wrongs of the case are not relevant to this paper, but it is an example that once the emotional genie has been let out of the bottle it is difficult to put it back and that proactive engagement in dialogue therefore has advantages.

As scientists, engineers and technologists we seldom devote enough resources and energy to communicating information about our work to the wider public. If we do communicate it is normally only with our peers. It is not surprising therefore that we think that members of the public do not understand the technical issues when our particular field of interest is the subject controversial of debate. As the 2002 Reith Lecturer Onora O’Neil said “We may not have evidence for a crisis of trust: but we have massive evidence of a culture of suspicion” (O’Neil, 2002). This suspicion can only be shed by openness and communication. A public attitude survey in the USA (in preparation WERF, 2003) found that people who had visited a wastewater treatment works were significantly more likely to support biosolids recycling than those who had not, but how many people have visitor centres at their wastewater treatment works? In the case of biosolids recycling, the European Commission has taken an initiative by commissioning “A Layman’s Guide to Sludge Use in Agriculture” due to be published later in 2003.

The Environment Agency (EA) of England and Wales launched its “Vision for the Environment” in January 2002 (EA, 2002). The Vision focuses on nine environmental outcomes such as: “Waste will be regarded by both industry and consumers as a potential resource, with the efficient reuse and recycling of materials the social norm”. Another focuses on restored, protected land with healthier soils. Working with others and forming partnerships to create shared solutions is identified by the Vision as being essential to achieving these outcomes. To some extent inspired by the example of the National Biosolids Partnership (NBP) in America, the EA decided to investigate the potential benefits and feasibility of an Advocacy Coalition Framework (ACF) to ensure quality and to promote good practice for use of organic resources on land. There is little tradition of such ACFs in Europe but in the USA they are established as an effective mechanism of achieving concerted action. This paper will report the results of a scoping study for an AFC for organic resources in the UK and its results.

**Scoping study**

**Introduction**

It was recognised that there are some key organisations without whose endorsement an ACF could not succeed. In addition to the EA, these were the Department of Environment, Food and Rural Affairs (DEFRA), the Food Standards Agency (FSA), the National
Farmers Union (NFU), the Country Land and Business Association (CLA), and the British Retail Consortium (BRC). Accordingly the idea was discussed with representatives of each of these; they gave their support in principle.

The NBP comprises the USEPA (US Environmental Protection Agency), WEF (Water Environment Federation) and AMSA (Association of Metropolitan Sewerage Agencies). It has received $1 million per year from Congress and has been exclusively devoted to biosolids and initially advocating adoption and application of the federal rule (USEPA, 1993) in all of the 50 States and promoting good practice. More recently it has devoted much of its resources to establishing an Environmental Management System for biosolids (EMS) with independent auditing. It was not imagined that the funding of a UK ACF would be on a similar scale and it was also the intention for the ACF to encompass other organic residuals besides biosolids. Some friends in the NBP had observed that one of its limitations is that it is a discussion “amongst the choir”; it does not have representatives of the wider community of stakeholders. On the basis of this and experience described below it was felt that the proposition for this ACF should be something that is more inclusive.

We already had experience of invited stakeholder engagement regarding the use of wastewater biosolids on land in the UK. This had led to a pro-forma contract between landowners and suppliers of biosolids and to the “Safe Sludge Matrix” (ADAS, 1998). The use of farm animal manures is following the precedent of the sludge matrix; it is possible that composted materials and other wastes are likely to follow eventually. The negotiations that led to these agreements were conducted with “lead stakeholder organisations” on the presumption that they represented the interests of a wider group. The participants in these discussions have honoured their agreements but some stakeholders who were not directly involved in the discussions have not bought into the outcome; this has significantly undermined confidence. We realised that an ACF needs to be both a continuing and an inclusive activity that is open to anybody with an interest in the subject.

It was interesting that the stakeholder negotiations arrived at consensus on good practice for the use of sewage sludges that were based on science and went beyond some of the prescriptions of existing legislation (control of microbiological risks) whilst accepting the adequacy of others (control of chemical risks). The provisions of the voluntary standards arrived at by consensus which included government and EA representation have since been used by government as the basis for revising legislation. A vision for the ACF for organic resources is that it too might contribute to a consensus led approach to legislation, which would have the confidence of the majority because they had shared in its development. In this context the idea was discussed with the Director of Directorate–A, “Sustainable Development and Policy Support”, of DG Environment at the European Commission who welcomed the initiative.

Consultation

The next step in the study was to approach as many organisations as possible by phone, email and post to test their interest using a questionnaire (Table 1). The inclusion of a selection of keywords to be scored was a later revision and consequently was only sent to a minority of those questioned. 142 organisations, covering the whole of the UK, were asked to give their views on the proposed organisation.

Some of the organisations were trade associations; others were individuals. Some members of trade associations said that their association could be an unwelcome filter and that they wanted to participate as full members. Indeed some went so far as to say that they feared the Partnership would be an irrelevance if membership were restricted to trade associations. All but one indicated verbally at least some interest in maintaining links with the Partnership. 43 organisations submitted completed questionnaires; these repeated the
initial verbal response that they were interested in the practice of recycling organic material to land in a safe and sustainable manner.

Twenty-nine respondents proposed subjects that they believed should be included in the Aims and Objectives of any partnership: these are summarised in Table 2, together with the number of organisations that recommended them.

All but the one of the 142 indicated that they agreed that there was a need for better communication between stakeholders, and that they would be interested in involvement at some level in achieving this, including attendance at a conference or workshop. It was decided that the most effective way to review the questionnaires, formulate ideas and gauge support

<table>
<thead>
<tr>
<th>Subject</th>
<th>Number of organisations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dissemination/sharing of information</td>
<td>15</td>
</tr>
<tr>
<td>Good/best practice/products fit for purpose</td>
<td>13</td>
</tr>
<tr>
<td>Facilitating consultation with government</td>
<td>7</td>
</tr>
<tr>
<td>Promotion/secure long term future of recycling</td>
<td>7</td>
</tr>
<tr>
<td>Identifying sustainable solutions/promote sustainable development</td>
<td>5</td>
</tr>
<tr>
<td>Educating/informing the public</td>
<td>4</td>
</tr>
<tr>
<td>Legislation</td>
<td>4</td>
</tr>
<tr>
<td>Minimising health risk</td>
<td>4</td>
</tr>
<tr>
<td>Facilitating stakeholder partnerships to develop solutions</td>
<td>3</td>
</tr>
<tr>
<td>Identifying gaps in knowledge</td>
<td>3</td>
</tr>
<tr>
<td>Address pollution/environment issues</td>
<td>3</td>
</tr>
<tr>
<td>Oppose use of sewage sludge in agriculture</td>
<td>1</td>
</tr>
</tbody>
</table>

Should there be a widespread support for establishing the network, it is proposed to hold a workshop to decide on the aims and objectives, including sources of funding and a business plan. Would you be willing to participate in such a workshop?

Do you have any other comments or suggestions?
would be a workshop, involving a high proportion of discussion. This was held on 4–5 July 2002 at Wadham College, Oxford, and was attended by 80 people from England, Scotland and Wales representing 55 organisations covering a very wide range of interests. These interests included government departments, agencies and regulators, environmental NGOs, food retailers, water companies, waste companies, research institutes, food and drink producers, farmers, landowners, agronomists and consultants. Other organisations that expressed their support and interest but were unable to send a representative asked to be informed of the outcome. The workshop was funded by the EA, Water UK and Waste Recycling Group, itself a promising demonstration of partnership and commitment.

Results

The overall response to the questionnaire and workshop was very positive.

- Stakeholders representing all steps in the "plough to plate" chain said that there is a very definite need for a partnership.
- They considered that consensus on good practice based on sound science will be possible by sharing objective information and building mutual trust.
- Producers of organic resources considered this consensus will bring stability to and confidence in the use of organic resources on land.
- Owners and users of treated land believed that this consensus is necessary to assure the ability to sell produce from treated land.
- Members of the food and drink industries wanted this good practice to protect the quality of their produce, their brands and the health of their customers.
- Regulators wanted the promotion of good practice in order to protect health, the environment, etc. and to avoid the need for enforcement actions and proceedings against poor practitioners.

The general view was that a partnership should be formed quickly and it should make progress rapidly.

An interviewee from FSA said that it would not be able to promote an activity such as organic recycling actively. However it would be able to promote good practice and assist with the process of agreeing this by consensus.†

The vision for the partnership was that it would work to make the use of organic resources on land welcomed and accepted as part of sustainable development. In particular the partnership should:

- be independent of vested interests and should not unduly favour any particular interest,
- build mutual trust between the members,
- become a reliable source of information,
- ensure 2-way communication,
- identify gaps in knowledge,
- achieve consensus on what is good (welcomed) practice,
- build trust in that good practice and disseminate it.

Workshop delegates considered it vital that some outputs are achieved quickly so that there should be concrete evidence of the Partnership’s activity. In particular it was proposed that a regular email newsletter would be very useful. It could be initiated in a short space of time without requiring the expenditure of a large amount of money, however it

† Until these discussions the FSA had considered, following extensive research, that since the use of organic resources on land does not pose significant risk to human health via food it should not be one of the early targets for its resources; the exception to this was animal manures. Therefore the FSA had not produced a position paper on the use of sewage sludge or municipal or industrial wastes on land. However now that the FSA does appreciate that the stakeholders regard the opinion of the FSA as the "bottom line" if a scare story should break, it is considering producing a position paper.
would require that a Project Officer be recruited. Delegates agreed that dissemination of information relevant to the benefits and risks of using organic resources on land is very important but that they might be too busy to find the information themselves and/or they might not have access to the information. The newsletter will provide a focused current-awareness function. The newsletter would also be a positive benefit of membership and an incentive to join the Partnership.

It was also considered that membership criteria will have to be developed as quickly as possible in order to start to gather income and to keep the momentum that has been generated to date. However the scales of membership fee remain a dilemma because in order to achieve its goals the Partnership needs to be open to all and therefore membership fees must not be a barrier to participation.

Finally, the workshop delegates indicated that a (legal) structure for the Partnership should be devised and agreed as quickly as possible. In replies to the questionnaire those organisations that expressed a view indicated that the Partnership should be non-profit making. Several suggested that it could be set up as a company limited by guarantee and one suggested that it should seek charitable status because this would enable tax to be reclaimed as Gift Aid on donations. However a solicitor experienced in corporate law advised that revisions in rules related to charities could mean that the Partnership might not qualify. It was also possible that any tax advantages might not out-weigh the disadvantage that charitable status might be a constraint on freedom of action.

During discussions two organisations suggested that consideration be given to restricting the voting rights to trade associations and non-commercial organisations, so as to reduce the possibility of lobbying to the advantage of a single company. However others were strongly of the opinion that trade associations are often remote from the issues and that they could be a barrier or filter to the opinion of their members. This is a question of balance; the raison d’ etre of trade associations is to represent their members, but the success of the Partnership depends on all feeling that it is open to their particular concerns and perceiving that it is independent of undue influence. If there are sufficient members, all with equal voting, it should be more difficult for any one individual to have excessive influence.

There was support for the Partnership covering the whole of the UK but it was felt that there should be a mechanism to ensure that regional issues were effectively covered. Separate Waste Policies are being developed for Scotland, Northern Ireland and Wales and these could have significant effects on the practices and policies that apply there. This ability will also be important if activities are extended to cover the rest of Europe.

The Partnership must be responsive to its members. This could entail regular stakeholder meetings to determine and/or ratify policy, and a body that includes members from Government, Regulators, industry and other stakeholders should direct activities.

The conclusion from the study was that the most suitable structure for the Partnership is a company limited by guarantee without share capital and with membership open to all. It should have a small (say 5–9) Council of Management (Board of Directors) with executive powers to direct the work. It would be advised by a Committee of Members representative of the principal organisations and funders to decide broad policy. LEAF (Linking Environment And Farming) has a similar structure and is a good model for the ACF. It was expected that much of the technical work would be undertaken by special Task Groups, which would be established to work on selected topics. Participation in Task Groups would be on a voluntary basis but they would be serviced by the secretariat.

In order to be effective it was recommended that there should be an active, and paid, secretariat. In preliminary discussions it was felt that the first appointment should be a Project Officer to produce the newsletter and service task groups and research networks. It was felt
that an able postgraduate would suit this post. A breakout group at the workshop suggested
that an experienced and high-powered Chief Executive should be appointed at an early
stage but there was a counter view that this would be expensive and ran the risk of getting
the wrong person. This should be a choice for the interim Council of Management. In any
case, the view was frequently expressed that the actions of the organisation should be inde-
pendent of any stakeholder or stakeholder group and to be clearly perceived as such.

Funding for the Partnership is a tricky matter. The cost of subscription should not be a
barrier to participation because that would inhibit some of the contributions to the
Partnership needs. There must be adequate resources to enable valued outputs. If there is
sponsorship it must not jeopardise the independence and impartiality of the Partnership. A
levy of 10p/tDS on non-farm derived organic resources would, if all producers paid, gener-
ate an annual income in excess of £200k. There is a precedent in Germany where a levy is
paid by land-appliers of biosolids, but would all the producers honour a levy if it were vol-
untary? A combination of modest subscriptions, sponsorship and grants is the most likely.
There are several funding programmes that look as if they are applicable but they take time
and resources to acquire. It was considered that the current awareness electronic newsletter
and the annual workshop will be incentives to enrolment. Far-sighted organisations that
have regard to the objectives of the Partnership have indicated a willingness to be financial
sponsors.

One of the tasks for the questionnaires and workshop was to elicit a name. There were
several clever acronyms but no clear recommendation. Everybody at the workshop was
comfortable with the expression “the Partnership” which was a high-scoring word, along
with “sustainable” “resource” and “organic” (Table 3). Although “network” and “forum”
scored quite highly in the questionnaire they were considered to be too passive when they
were discussed at the workshop. Therefore we have recommended Sustainable Organic
Resources Partnership as a working title and in a suggested logo the additional strap line
“for a better environment”.

Table 3 Scoring of key words for acceptability in the Partnership’s name

<table>
<thead>
<tr>
<th>Word</th>
<th>Scores (highest – most favoured)</th>
<th>Total score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sustainable</td>
<td>3 3 3 3 3 3 3 3 3 0 3 3 3 3 3 3 0 3 3 3</td>
<td>30</td>
</tr>
<tr>
<td>Waste</td>
<td>0 – 0 3 3 3 0 0 0 0 1 0 0 7</td>
<td></td>
</tr>
<tr>
<td>Recycling</td>
<td>3 1 3 3 0 3 3 3 3 1 3 2 25</td>
<td></td>
</tr>
<tr>
<td>Recovery</td>
<td>2 – 3 3 1 3 3 3 0 2 1 3 21</td>
<td></td>
</tr>
<tr>
<td>Use</td>
<td>2 – 2 3 1 1 3 0 0 1 3 16</td>
<td></td>
</tr>
<tr>
<td>Residual</td>
<td>1 – 2 – 2 1 1 0 0 1 1 9</td>
<td></td>
</tr>
<tr>
<td>Resource*</td>
<td>3 3 3 – 3 3 3 * * * *</td>
<td>18</td>
</tr>
<tr>
<td>Partnership</td>
<td>3 2 0 – 3 2 3 0 0 3 3 19</td>
<td></td>
</tr>
<tr>
<td>Network</td>
<td>2 2 3 3 1 2 3 3 0 2 3 24</td>
<td></td>
</tr>
<tr>
<td>Forum</td>
<td>2 2 3 – 1 2 3 3 0 0 2 18</td>
<td></td>
</tr>
<tr>
<td>Organic</td>
<td>2 3 2 0 2 2 3 3 0 3 3 20</td>
<td></td>
</tr>
<tr>
<td>Beneficial</td>
<td>3 – 2 – 3 3 3 0 1 3 1 19</td>
<td></td>
</tr>
<tr>
<td>Group</td>
<td>2 – 1 3 2 1 2 0 1 1 3 16</td>
<td></td>
</tr>
<tr>
<td>Information</td>
<td>3 – 2 – 2 1 2 0 1 1 0 12</td>
<td></td>
</tr>
<tr>
<td>Discussion</td>
<td>2 – 2 – 1 1 1 0 0 2 2 11</td>
<td></td>
</tr>
<tr>
<td>Liaison</td>
<td>2 – 2 – 1 2 1 0 0 2 1 11</td>
<td></td>
</tr>
<tr>
<td>Environmental</td>
<td>3 – 3 0 3 2 2 3 3 3 3 1 23</td>
<td></td>
</tr>
<tr>
<td>Reuse</td>
<td>3</td>
<td>3</td>
</tr>
</tbody>
</table>

Note: “–” indicates that the respondent did not score the word
* “Resource” was not included in these questionnaires because it was a late addition to the list following a
respondent’s suggestion, it was one of the few to score all 3s
* “Reuse” only appeared on one questionnaire and was probably added by the respondent
The workshop considered that by the end of 2002 significant progress should be made on all of the following high-priority actions:

- Develop a business plan and briefing package to lobby for initial funding
- Obtain an initial sign-up and commitment in principle
- Agree the aims and objectives
- Agree a constitution and structure
- Publicise what has been achieved so far
- Recruit parties not already at the workshop
- Launch a current-awareness email newsletter
- Obtain interim funding (£15k) to employ consultant(s) to progress some of the above and develop bids for medium/long term funding.

This timescale proved excessively ambitious, and has been delayed by 3–6 months.

The formation of an Interim Council of Management is an essential and urgent prerequisite so that the Partnership can be registered. It is also needed to provide a focus for action, and enable discussions on issues that have remained unresolved, including the executive staff, the benefits or otherwise of Charitable Status, and identify the areas of work of highest priority.

Active extension of the Partnership to other countries in Europe is regarded as a second phase objective that will be conducted in the medium term. However it is also hoped and expected that the Partnership will extend outside the UK by organic growth because of the perceived benefits of becoming a member. The benefits of the Partnership extending to the whole of Europe are that:

- Environmental and food legislation come from the EU and it would be better if it were influenced by welcomed practice derived by consensus across several MS
- Many in the plough-to-plate chain are multinational and/or they buy in many countries
- Perception is influenced by stories from outside as well as from within any particular country
- Confidence is wider than just the UK
- That consensus on welcomed practice will be achieved across the widest community and this will give the best assurance for the future of recycling

Therefore it is intended that the Partnership will be designed so that there is no bar to it becoming an international organisation, if this is seen as in the best interests of stakeholders. It has been recommended that stakeholder organisations (and others) outside the UK are kept informed of the development of the Partnership with an understanding that their views will be appreciated and considered.

The EA continues to actively support the Partnership including funding though the establishment phase hopefully with the support of others.

**Conclusion**

There is an overwhelming belief amongst all stakeholders that an ACF is needed in order that the sustainable use of organic resources on land is secured with welcomed practices. The provisional name will be the Sustainable Organic Resources Partnership. It will be objective and independent of vested interests. All will be welcomed to the Partnership be they individuals or associations. All members will have equal voting rights including election of the executive board, whose members will retire and be eligible for re-election on a rotating basis. A representative committee selected from the membership and including the principal sponsors will advise the executive board. The main objectives of the Partnership will be to build mutual trust between members, disseminate and share information, become a trusted source of information, identify gaps in knowledge, develop welcomed practice by consensus and promote this practice. There will be an annual workshop/conference and
AGM. The vision is that by this means the use of organic resources on land will be sustain-
able and welcomed by all in the plough-to-plate chain. Because the practices will be found-
ed on science and have the confidence of the stakeholders it is hoped that they will be
considered by policy makers as the basis for practicable regulation.

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References