Capel Action Group

Evidence to Surrey County Council
Environment and Economy Select Committee on
Waste Treatment Technologies

1. Introduction

Surrey County Council's Environment & Economy Select Committee is carrying out two distinct waste related reviews in the next few months, and has invited written evidence from a range of interested parties.

The first review concerns Waste Treatment Technologies. The work will analyse the possible treatment technologies themselves but will not include any reference to sites identified in the Surrey Waste Plan.

The review will focus on the potential health effects of different technologies, their environmental impacts and their economic viability including potential markets for outputs.

The Capel Action Group (CAG) is a committee formed some years ago under the auspices of Capel Parish Council to make known the views of local residents on key issues likely to have an impact on the community. In addition to making submissions on local and regional plans, CAG has submitted evidence, and been called to give oral evidence to a House of Commons Select Committee on waste issues (31st October 2000 – Report dated 14th March 2001 HC 36-1). In 2002, CAG successfully applied to the High Court to obtain an order to quash the seriously flawed decision of the Planning and Regulatory Committee of Surrey County Council in relation to the then proposed Capel mass burn incinerator. In 2003 CAG participated in the Examination in Public for the Surrey Structure Plan and in October 2004 participated in the Examination in Public for the South East Regional Waste Strategy.

2. Technologies available for Waste Treatment

2.1 Introduction

This review is addressing technologies for waste treatment in Surrey. As Surrey County Council (SCC) is the county waste disposal authority its focus in addressing the subject could be expected to emanate primarily from this perspective. In our view this would be wrong. The Waste Disposal Authority - Joint Municipal Waste Management Strategy (JMWMS) - Draft Action Plan, proposes the concept of Integrated Waste Management Solutions. Other authorities recognise the need for such integrated facilities and are anticipating that large-scale sites will be required that are capable of housing a range of facilities needed at a single location, as series of dispersed facilities would not support the concept of an integrated solution so effectively.

Such integrated solutions are likely to include processes that encompass activities higher up the waste hierarchy, which, in Surrey's two-tier structure, are the domain of waste collection authorities. In our view these distinctions, or turf issues, should not be allowed to stand in the way of identifying the most appropriate solutions to Surrey's waste problems. Furthermore joint solutions may prove to be the best or only way for the County Council, District and Borough Councils to achieve an agreed JMWMS for the county as a whole.

2.2 The Technologies

2.2.1 Most of the waste treatment technologies that are now available are reviewed in the WDA Residual Waste Treatment Assessment, included at Appendix 4 to the WDA – JMWMS – Draft Action Plan, presented to the Executive on 17 January 2006.

We make two initial points:

i. We believe that recycling should be pursued vigorously, of both biodegradable and non-biodegradable waste. A statement is made on page 1 to the effect that "Surrey fully supports the EU landfill directive that requires member states to reduce landfill". It is incorrect to claim that the EU landfill directive requires member states to reduce landfill. What it has done is to set targets for the reduction of **biodegradable** municipal waste sent to landfill. The EU has not set targets for the reduction of non-biodegradable waste going to landfill.

ii. Throughout the appendix a view is taken that certain technologies, that produce recycled outputs, may be unable to find suitable markets and, on the assumption that this is borne out in practice, are considered high cost and high risk options. This is an inappropriate approach to considering options and risk.

2.2.2 The commentary in Appendix 4 on **Mechanical Biological Treatment (MBT) and Anaerobic Digestion (AD)** is dominated by concerns regarding market uncertainties. This is mentioned no fewer than 7 times on page 13, including a reference to a facility in the Midlands where a contractor has encountered difficulties with the outputs from an Anaerobic Digester. Identifying one example where problems are being encountered is hardly sufficient evidence to justify a strategy that excludes emerging technologies such as MBT and AD.

Particularly so when there are many more examples of progress and success, viz:

i. The UK's first full-scale biowaste digester (AD) opened in Ludlow, Shropshire in March 2006. (see attachment). Funded by Advantage West Midlands and Defra it recycles 125 tonnes/pwk of kitchen and garden waste and card from 19,000 households, producing biofertiliser for use by agriculture, to improve soil quality, and biogas, to produce electricity and heat. Markets have been found for the outputs at Ludlow. This contrasts to the negative tone taken in the commentary in Appendix 4, which casts

doubt on markets being found for the outputs from AD.

ii. Reference is made on page 15 to the market status of AD plants across Europe. The position in Spain is an example (see attachment). Having accepted that AD was well proven globally, 22 AD plants have opened in Spain over the last 5 years. 16 of the plants treat MSW. Spain currently has the highest capacities of AD for MSW anywhere in the world. Further plants are currently being tendered. The AD plants in Spain generate c 500,000 kw of electricity, so they clearly have found suitable and reliable markets! Spain has incineration but apparently no new plants are planned.

iii. In Holland processing of MSW via EfW is in freefall, with processing by separation and digestion now the single largest process (see attachment).

iv. MBT cannot cope with all types of waste, as it is not suitable for hazardous waste. Integrated facilities are emerging which can incorporate more than one technology. One such is an MBT plant at Luebeck in Germany where a 150k plant, incorporating AD, is in operation. We understand that this plant was visited last year, along with others in Germany, by a group of Surrey councillors. There are two thermal treatment processes involved at the plant. Low temperature thermal dryers are used to reduce the water content of the digestate, with no combustion involved. The other is part of the air treatment for the reduction of odour from the plant. These thermal treatments do not cause incineration related problems since neither produces dioxins. Other technologies continue to develop and are addressed at 2.3.

2.2.3 It is also worth noting note 2.04 of the SLGA meeting held on 6th September 2005, attended by Surrey Local Authority officers responsible for waste matters:

"Meeting generally expressed concern at scenarios and felt this was not in line with approved Integrated Municipal Waste Strategy Statement where heat treatment was a last resort. ---------- *An SCC representative* agreed that there could be more use made of Anaerobic Digestion (AD) instead of EfW."

MBT and AD are new technologies for the UK. Indeed all the alternatives to EfW are new to the UK as potential solutions to the municipal waste challenge. Arguably Surrey, with no legacy solutions on the ground, is in an advantageous position to be at the forefront in taking on new, better solutions, rather than promoting yesterday's technology. Doing so should not be seen as a high risk approach.

2.2.4 Appendix 4 seeks to defend **Energy from Waste (EfW)** against established arguments made against it:

i. EfW "crowds out" Recycling"

The allegation is wholly credible. Had the Council had its way back in 1997 incinerators would have been built to accommodate over 80% of MSW. At that time SCC was forecasting a maximum recycling rate of 14%. Had that scenario transpired recycling efforts would have stopped in their tracks. When SCC considered three applications for incinerators in 2001 the

forecast maximum recycling rate was put at a mere 34%, a target that was then considered difficult to achieve! Now SCC accepts that a level of 50% can be achieved, with difficulty! Had incinerators been built to handle over 60% of MSW (as was the original intention in 2001) recycling of 50% could not have been achieved. That is what is meant by "crowding out" and it is true. EfW plants are extremely expensive to build and once in place will be made to operate at the planned capacities to remain financially viable.

The recycling record in Surrey is of a halting start and slow development by collection authorities hugely constrained by a non-believing County with an alternative agenda. Once enabled to move ahead, by the quashing of the Capel EfW proposal in the High Court, collection authorities have been making strong progress and are exuding confidence for the future. It is this that has led to a forecast of 50% recycling and it could be more:

"Suffolk local authority St Edmundsbury (an authority serving 44,000 households) has become the first in Britain to achieve a 50% recycling rate". *(ENDS, March 2006)*

It is true that sizing disposal facilities for a residual level of 40% would enable recycling levels to reach 60%. **But it remains quite clear that greater recycling success, supported by other technologies, with the capability to generate value creating outputs (e.g. energy and recycled material) will, over time, enable recycling levels of 80% or more to be achieved. At these levels EfW plants with a 40% capacity would be "crowding out" recycling.**

ii. Public Concerns re Emissions from EfW plants

a**)** Public concerns are very well founded:

"Certainly, there is good evidence that the emissions standards have driven down the actual emissions from incinerators and this will continue with the implementation of the Waste Incineration Directive. **But** it is also generally accepted that emissions standards are still based on what can be ***measured*** and what is technologically achievable, rather than what is ***safe***." (*House of Commons Select Committee Report - point put forward by Capel Action Group (Q149) and accepted by Environment Agency (Q896), para 93, Select Committee)*

Continuing para 93 of the Select Committee report:

"Inevitably, this simple fact undermines the safety case which can be made from an incinerator meeting modern emission standards. In particular, the scientific evidence and consensus about the health risk posed by dioxins is not fully developed and the US Environmental Protection Agency have recently published for consultation a review which concludes that dioxins could be some 1000 times more toxic than previously thought. The Environment Agency told us, more generally, that our understanding of the heath risk of air pollution is "at an early stage".

b) In May 2004 Defra published its review of the health and environmental effects of waste management. The review was in itself peer reviewed by the Royal Society, which said:

"that it is important that anyone using these data takes adequate consideration of its inherent uncertainty."

c) A recent report by the British Society for Ecological Medicine on the Health Effect of Incinerators recommends that the safest methods of waste disposal should be used and recommends that no further waste incinerators be built. It bases these on health grounds:

"Incinerator emissions are a major source of fine particulates, of toxic metals and of more than 200 organic chemicals, including known carcinogens, mutagens, and hormone disrupters.

Two large cohort studies in America have shown that fine (PM2.5) particulate air pollution causes increases in all-cause mortality, cardiac mortality and mortality from lung cancer. Fine particulates are primarily produced by combustion processes and are produced in large quantities by incinerators." *(Executive Summary, page 5)*

d) In response to a question on public concern over emissions from EfW plants put to the Executive on 17 January 2006, the Executive Member for Environment said:

"Surrey CC has been very careful to draw upon a wide body of evidence in preparing its rationale for the officer recommendations to the Executive on 17 January. ----------. On the basis of the evidence we have reviewed, we are confident that modern EfW plants, subject as they are to extremely stringent regulation, do not pose health risks. Officers have offered to bring forward a detailed report on the health effects of waste management facilities to a future meeting of the Environment and Economy Select Committee."

e) The results of SCC's consultation exercise undertaken before Christmas 2005 showed that **75% of respondents said NO** to SCC's incinerator led waste plans.

We are unaware of any developments that invalidate the points recorded by the House of Commons Select Committee, as set out in 2.2.4 *ii a)* above. We suggest that the Environment and Economy Committee should demand the detailed report offered by the Executive Member for Environment and should be assiduous in its review of the "wide body of evidence" relied upon by SCC in preparing its rationale for the officer recommendations to the Executive.

f) The Executive Member for Environment places great confidence in the stringent regulation afforded to EfW plants. This confidence is misplaced:

- "At the heart of the problems with incineration is the unsatisfactory nature of monitoring at these installations, unsatisfactory in the way it is done, the compounds monitored, and the levels deemed acceptable, and the lack of monitoring of body burdens in the local population". (*The Health Effects of Incinerators, British Society for Ecological Medicine*.)

- Ten incinerators in the UK committed 553 pollution offences in a two-year period but incurred only one prosecution for the entire period. (*Greenpeace).*

- The European Incineration Directive does not require continuous monitoring of all emissions. In particular dioxins and furans are only monitored twice a year. Breaches of emission limits, under the Directive, are ignored if they do not exceed four hours, and up to sixty hours of breaches will be ignored in each calendar year.

- "If the public is to believe that incineration is safe, it must be convinced that the regulation and inspection regime is adequate and sufficiently thorough to ensure that an incinerator will be well run. When the Environment Agency came before us, they did not make a convincing case that they could persuade a sceptical public that incineration was safe" *(House of Commons Select Committee Report, 14th March 2001, para 96)*

g) Incinerators produce dangerous toxins. Even where emissions are reduced they are not eliminated. And disposal of the highly toxic fly ash remains a major concern. In view of the risks to human health that remain we find it extraordinary that SCC should wish to pursue an outdated technology which produces toxic outputs rather than being in the vanguard of new, clean technologies. We believe that SCC should undertake a full assessment of the risks to human health, to the environment and to its reputation of pursuing an EfW led approach.

2.3 Alternative Waste Technologies

MBT cannot cope with all types of waste as it is not suitable for hazardous waste. So MBT needs to be part of an integrated system. Such an example is at Luebeck, Germany (see 2.2.2 iv).

Gasification and pyrolysis are briefly addressed in Appendix 4. On page 19 it is stated: "

There are several technology suppliers worldwide with more than one operational reference facility, although applicability to UK **mixed** MSW is uncertain."

It is the **mixed** element that is the issue here. But as MBT segregates input waste these technologies could form part of an integrated system with MBT, viz.

a. Plasma or high temperature gasification, using the Thermoselect Process, can dispose of residual waste and deal with the most hazardous types of waste. Unlike incineration it does not produce contaminated ash. Toxic substances, including metals, become encapsulated in silicate, which is like being encased in stone. Synthesis gas or syngas is produced. Combined with recycling and MBT only a small unit would be required. *(Health Effect of Incinerators, British Society for Ecological Medicine.)*

b. Gasification in fluidised bed systems, to produce high-energy syngas, is likely to become more cost effective. (Thermal methods of municipal waste treatment, Biffa*ward* 2003).

2.4 Markets

The market uncertainties that weigh heavily in Appendix 4 against new technologies are overstated. Endlessly repeating the concern about potential lack of markets does not equate to providing the evidence!

The UK is on a recycling drive. That is fact. The latest figures for 2004/5 released by Defra on 24 March 2006 show that national MSW recycling rates increased from 19% in 2003/4 to 23.5% in 2004/5, an increase of 23.6%. Mole Valley District Council has a current recycling run rate of 36%. And St Edmundsbury in Suffolk has achieved a 50% level. Do increasing levels continue to be achieved without available markets for the outputs? Hardly.

WRAP is making solid progress. And more successes than failures are being registered with new technologies (see 2.2.2). Spain and Holland are forging ahead with MBT/AD and yet we are expected to believe that this would fail in the UK because of market uncertainties. Where is the evidence for this?

Are markets for the "preferred" option more secure? EfW will produce waste residues of some 35%, comprising severely toxic fly ash of up to 5% and bottom ash of 30%.Will readily available markets exist for bottom ash? Appendix 4 is not at all confident that they will recognising that "in the event that an operator was unable to find a market for the material it would be landfilled". Operators will have great difficulty finding markets given the lingering memories over contaminated material following the paving slab scandal in Byker near Newcastle, in 2000. Greenpeace illuminates this:

"Bottom ash from the boiler grates is enriched with poisonous heavy metals like lead and cadmium. In most cases it sent to an ordinary landfill site. Some incinerator operators, too stingy to pay for this disposal, have concocted a scam they call "ash recycling". They give it to aggregate companies who mix it with construction materials and bury it in roads and even houses. This is incineration's legacy for future generations." *(Greenpeace website,*

incineration, virtual tour, 7 bottom ash).

To SITA UK's credit they appear to agree – see para 2.6, below.

2.5 Costs and Economic Viability

i. SCC officers have carried out a cost assessment of the two candidate solutions:

Option 4 MBT and EfW
Option 7 EfW alone

It is stated under "Financial Analysis" on page 11 of Appendix 4 that Option 4 would cost £12-15m pa more than Option 7. It should be of no great surprise that MBT added to EfW would be more expensive than EfW alone given the significantly higher investment inherent in EfW. According to evidence available the investment required for MBT with AD would be significantly lower.

ii. The following information is highly relevant here:

- Information obtained from Luebeck, Germany, which was visited by a group of Surrey councillors last year - to the effect that the cost of incineration is increasing exponentially for small plants. An incinerator plant capable of handling around 150kt/pa of MSW will cost around £60m to £80m which is magnitudes higher than the cost of an MBT with AD plant, like the one at Luebeck

- Evidence provided by Omrin to the SEEDA South East Regional Waste Summit on 27 June 2005 to the effect that the investment required for separation and digestion plant amounts to less than 1/10 of the investment necessary for an incineration plant.

- Data for the Siggerweissen MBT plant in Austria, which processes 100,000 tonnes of waste pa, indicate a capital investment of E10m and net treatment costs of E65 per tonne.(*Greenpeace*)

These independent sources point in the same direction, claiming **significantly lower capital** costs for MBT/AD than for EfW.

Given this information we find the comment attributed to SCC's technical advisers on page 19 of Appendix 4 "of the unwillingness of potential technology suppliers to provide validated capital and operational & maintenance costs", to be incredulous.

Furthermore on page 19 of Appendix 4 there is the following statement:

" Meaningful comparisons of capital and operating costs for the different technologies were not possible due to the scarcity of reliable and publicly available information, but there is no reason to believe that these

technologies are any less expensive than combustion and it is likely, from information available, that the more complex processes are **significantly more expensive** (than conventional EfW)"

We suggest that the gulf that exists between the sources in para ii) and the statements in Appendix 4 must be bridged as a matter of urgency.

iii. **As the terms of reference for this review specifically include a review of economic viability it is evident to us that full disclosure of the detailed cost data in the hands of officers and the financial assumptions that have been made by officers is required and should be provided to the Environment and Economy Committee, to enable it to provide effective scrutiny and challenge. At present there is more than a suggestion that conclusions have been drawn on the basis of inconsistent, insufficient or flawed data.**

2.6 Landfill

Some words on landfill. We support diversion from landfill to the upper reaches of the waste hierarchy. No rational, thinking being would prefer to see resources buried that could otherwise be reclaimed to create value. The excellent recycling efforts being spearheaded by the Districts and Boroughs have thus far made the major contribution towards achieving this aim. The County can also contribute by addressing its Civic Amenity Sites.

But the almost pathological hatred of landfill displayed by some is quite extraordinary. The Environment portfolio has gone as far as to suggest that landfill should be eliminated. This would be quite impossible with incinerators handling 40% of waste, of which a third will be residual!

SITA UK understand this well. Their position on landfill is worthy of note:

"SITA UK believes that landfill remains a critical element in an integrated waste management strategy. Even with the best attempts at waste minimisation, recovery and recycling, its use as a repository for residues is unavoidable. To this end, SITA UK will maintain a viable landfill portfolio as part of a suite of management options available to the UK waste market" (SITA UK website)

SITA UK's view must be heavily influenced by the reality that residues from EfW will not find often their way markets. Nonetheless its view remains in stark contrast to that stated by SCC. The reason for this gulf in thinking needs to be exposed.

We accept that some landfill will continue to be with us. So long as holes in the ground are dug most will have to filled. In para 2.2.1 i), we point out that the EU Landfill Directive places no restriction on the amount of non-biodegradable waste going to landfill. The restriction is on biodegradable waste, which is what causes the blight. SCC has said very little about its

intentions to clean its act up on the dirty sites that it currently operates. It should ask SITA UK to produce plans to deal with this important issue as a matter of urgency.

But we do not believe that a move away from landfill, that involves just one small step up the waste hierarchy, is anywhere near ambitious enough. SCC can be in the forefront of 21st century waste management solutions. This would be achieved by adopting a recycling led approach capable of reaching levels in excess of 80% (as envisaged in para 2.2.4 i). At these levels of recycling residuals to landfill would be similar to those envisaged from a 40% incineration led approach and could well be achieved within existing plan timescales.

2.7 Summary and Conclusions

"The UK currently lags far behind the world leaders in waste management techniques. A step change in waste management policy is needed to change this situation. Such a change needs to set in motion a process that transforms the objective of waste management strategies from a preoccupation with disposal options, to a quest for high value-added resource utilisation." (Greenpeace, 2002).

This statement, though almost four years old, continues to be relevant.

Sadly this can be read as a commentary on SCC. Although not helped by its two-tier status, until very recently SCC has acted and thought as a disposal authority. Changing from that perspective to one that views waste as a value-added resource is demanding but possible. SCC has shown some intent but nowhere near enough resolve. It will almost certainly fail to deliver the JMWMS that it is required to do, in joint agreement with the Districts and Boroughs, unless it changes.

Why is this? Is it due to the weight of a pro-incineration contractor bearing down? We were advised by Mark Hammond, Head of SCC Environmental & Economic Policy in his letter of 24 August 1999 that:

"It (the contract) is a complex document which, whilst making provision for most predictable events, also retains flexibility in the event of totally unforeseen circumstances by allowing for agreed variations".

But flexibilty appears not to have been invoked, with SITA UK, in the form of Surrey Waste Management, continuing to persevere with EfW, given this is what it knows best and in which it no doubt has significant financial and knowledge capital. We do not believe that this continues to serve SCC and its residents well. We suggest that the Environment & Economy Select Committee should be mindful of this point. If it wishes technologies other than EfW to be seriously considered the County's contractor is hardly likely to take an objective and independent view on such matters.

In this paper we have sought to provide evidence to the Environment and Economy Committee to assist it in forming conclusions on the Waste Technologies that are available for MSW; and on their potential health effects, their environmental impacts and their economic viability, including potential markets for outputs.

We believe that the risks to health and the environment inherent in an EfW led approach are far too great. It is not good enough to rely on the limited evidence available for assurance when it is clear that so many questions cannot be answered until superior operational controls are mandated and epidemiological methods are available. We believe that a recycling led approach, supported by technologies other than EfW, would gain political acceptance and would be capable of meeting EU Landfill Directive and Government targets, at significantly lower risk. We urge that such an approach be pursued.

Capel Action Group
April 2006

Attachments to para 2.2.2:

Advantage, West Midlands
Spain, AD plants
Omrin, Holland

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All systems go at UK’s first full-scale biowaste digester

Friday 17th March 2006

The UK’s first full-scale biowaste digester has started operating in Ludlow recycling 125 tonnes per week of kitchen waste, garden waste and card collected from 19,000 households in South Shropshire.

The arrival of the first delivery of waste was overseen by representatives from Advantage West Midlands, Greenfinch, South Shropshire District Council and construction company Bluestone plc.

The biowaste from the new green wheelie bins that have been provided to every household in South Shropshire is transformed by a natural biological process know as anaerobic digestion into pasteurised biofertiliser and biogas. The biofertiliser is used in local agriculture to improve soil quality. The biogas fuels a combined heat and power (CHP) unit to produce electricity and heat. The electricity is fed into the national grid and the heat is used to digest new waste.

The £2.6m green project, which has been funded by Advantage West Midlands and the Department for Environment Food and Rural Affairs (Defra), is a leading example of de-centralised low-carbon technology, bringing the benefits of benign waste management, nutrient recycling and renewable energy. The facility includes a visitor centre which will be used to demonstrate to other local authorities how they might divert biodegradable waste from landfill.

The District Council has worked in partnership with Ludlow-based Greenfinch, a national leader in anaerobic digester technology, to design, build and operate the plant on the Coder Road Business Park. The plant building was constructed by Bluestone.

All homes in South Shropshire have been provided with green bins for kitchen and garden waste.

Mark Pearce, Director for Shropshire at Advantage West Midlands said: “I am delighted that South Shropshire is leading the way in this exciting and innovative area.”

Cllr Susan McCormack, Lead Member for the Environment and the Economy, South Shropshire District Council said: “We are now relying on the public to put ALL of their kitchen waste in the green bins to keep the right mix in the digester.”

Michael Chesshire, Managing Director of Greenfinch said: “This project demonstrates the capability of home-grown technology to show the way forward towards a low-carbon economy. We are very grateful to Advantage West Midlands and Defra for their financial support and to our project partner South Shropshire District Council.”

Bill Haynes, Area Director at Bluestone Plc said: “The Ludlow Biodigester has been an exciting project for our team to work on and we are proud to be associated with the construction and delivery of this flagship facility which we hope will promote wider national interest in the benefits of greener and cleaner energy technologies.”

Notes to Editors:

Advantage West Midlands is one of nine Regional Development Agencies in England whose role is to provide leadership and action to create more, better jobs and an improved quality of life for all in the West Midlands.

For more media information or images please contact Sarah Bridge on 0121 503 3367 or 07881 582 652.

STATUS UND TRENDS OF THE RESIDUAL WASTE TREATMENT OPTIONS (LANDFILLING, MECHANICAL-BIOLOGICAL TRETAMENT AND INCINERATION) IN SELECTED EU MEMBER STATES: SPAIN

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1.ABSTRACT

Every member state of the EU is obliged according to the EU landfill directive 1999 / 31 / EG to develop strategies how to reduce the amount of municipal biodegradable waste before landfilling. Spain has in the last years made big progress in reducing the amount of municipal biodegradable waste by installing a lot of waste treatment plants. The presentation will give an overview about the current situation of waste treatment in Spain focused on the plants producing energy from waste.

2.INTRODUCTION

Spain is in reference of the area the 2nd biggest and in reference to the inhabitants the 5th biggest EU member state. According to informations from the EU[1] the total annual production of municipal solid waste in Spain is approximately 25 – 27 Mio. tons which corresponds to an inhabitant specific production of 625 – 675 kg / (inhabitant • year). Although Spain has not yet brought forward to the EU its strategy how the EU landfill directive 199/31/EG will be achieved there are already a lot of activities in Spain to treat municipal solid waste. Spanish municipalities use, as in other EU countries, thermal and mechanical-biological processes to treat municipal solid waste. Also recycling of paper, glass, metals and plastic is part of the Spanish waste management system. Unfortunately most of the municipal solid waste in Spain as in most other EU countries is still deposited on landfills.

In August 2005 the spanish parliament decided to increase the part of electricity production from renewable energies from 19 % to 30,3 % which will also give further opportunities for realization of anaerobic digestion and incineration plants in Spain.

Due to the fact that anaerobic digestion received in the last years an increasing share in the waste market the presentation will focus mainly on this technology.

3.CURRENT SITUATION OF WASTE TREATMENT TECHNOLOGIES IN SPAIN

In Spain waste is treated either by incineration or by mechanical-biological treatment (MBT) processes using anaerobic digestion and / or aerobic composting for the biological treatment.

3.1 Incineration

10 Incineration plants are in operation in Spain treating in 2003 approx. 1.5 Mio. tons of municipal organic waste2,3. The 10 plants produce approx. 920.000 MWh of electricity. The biggest Spanish incineration plant is in operation in Cerceda in the north of Spain and treats

550.000 tons per year. The smallest incineration plant is in operation in Catalonia and treats only 6.500 tons per year.

3.2 Anaerobic digestion

The technology of anaerobic digestion is an alternative process to produce energy from solid or liquid organic waste. The technology is well proven and realized in numerous industrial plants all over the world. Spain has realized in the last 5 years 22 digestion plants. Further anaerobic digestion plants are in tendering procedure at the moment. 16 plants treat municipal solid waste and one plant treats biowaste from source separated collection. That means that anaerobic digestion is mainly used as process in MBT plants. The source separated collection of biowaste and green waste is successfully implemented in Catalonia. The total waste capacity for the organic fraction of municipal solid waste installed in the Spanish digestion plants is approximately 1.4 Mio. tons and will increase in the next month to approx. 1.8 Mio tons per year. The roughly estimated total annual electricity production from these plants is 500.000 MWh. Spain has up to now realized the highest capacities in anaerobic digestion plants for municipal solid waste all over the world.

3.3 Composting

Composting is a technology which is also realized in numerous industrial plants all over Spain. The composting plants are either used in MBT-processes to treat the organic fraction from municipal solid waste, to treat biowaste from source separated collection or to treat green waste. The composting technology (tunnels) is in some plants also used to stabilize the digestate from anaerobic digestion plants.

Most of the composting plants in Spain use the tunnel technology. The organic fraction from municipal solid waste is treated usually for 2 – 3 weeks in tunnels and after final maturation is realized by windrow composting. The capacities of the composting plants have a range from 5.000 – 200.000 tons per year. According to EU informations approx. 3.9 Mio. tons of organic waste are treated by composting.

3.4 Other technologies

Other technologies to treat organic waste, like biological drying, play a minor role in the Spanish waste market.

4.LIST OF REFERENCES

[1] http://epp.eurostat.cec.eu.int

[2] http://www.aeversu.com

[3] Muruais Lamas, Josè and Cerdá Lacaci, A. (2005). La incineración de residuos. Una opción necesaria. Infoenviro, Enero 2005, 54 – 55

[4] Korz, D.J. (2005). Anaerobic digestion across Europe. Proceedings of Conference: Biowaste: Digesting the alternatives, 11.03.2005 Birmingham

Results (2)

Processing of household residual waste in tonnes per year – Holland