

Nordic Horizons Hallowe'en special: Energy from Rubbish – 31st October 2012

Mike Mackenzie MSP, sponsor of this evening's event:

Delighted to be asked to host this. Has been to other Nordic Horizons events; as an MSP for Highlands and Islands he covers a vast area, including Orkney and Shetland; finds these communities resonate with him. He feels very much at home there. Kinship in Scotland with Nordic countries.

But at another level, he read the landmark book *The Spirit Level* and thinks we have much to learn from the Nordic countries re equalities, economic approaches, business success etc.

Lesley Riddoch

We're here today for what should have been called 'Nordic Rubbish'. Our speaker talks about opening a bin and seeing potential and he means it, that's what he will talk about tonight. Opening bins is a Nordic habit; she recalls Torvald Colliander, Swedish Consul in Edinburgh, opening a bin in Dumbiedykes and starting to empty it, identifying what wouldn't be allowed in a bin in Sweden during a live Radio Scotland programme 15 years ago.

These are enthusiasts!

Also speaking tonight: Pippa Milne, City of Edinburgh Council, Waste Services Manager – from Hampshire originally ... and thanks to the Swedish Embassy in London for help with Kim Olsson's travel and accommodation expenses ... and the Danish pastries!

And with that, she offers a 'braw/bra' Scottish welcome to Kim Olsson, Managing Director of NSR recycling plant in Helsingborg, southern Sweden.

Kim Olsson, NSR: "How our landfill became a net reducer of CO2"

Honoured to be in Scotland for the first time. Glad to be able to give another point of view of what garbage is. His company is owned by the municipalities around Helsingborg – which is the home town of Henrik Larsen. He points out where Henrik Larsen's home is – next to the landfill, which is located strategically 10 minutes from the city centre. This company is unique – the municipalities put their debts, their landfills, into the company. They had a plan to save 10 million euros to finance it for the future. That was just the economical cost; they had 100,000 tonnes of methane gas leaking from the landfill. At that time in Sweden, 15% of greenhouse effect was emissions from landfills, they now have half that.

Tells a story about a king of the Vikings, who would have an annual weekend of no fighting, lots of talking and ideas with chiefs, but then back to fighting. His name was Bluetooth. 1000 years later, tech companies came together to see what they might come up with re communications – they invented 'Bluetooth'. Cooperation is the key. There have been no wars for 300 years in this region. They planned with the Danes to build a world-leading centre for material research. On the way, they will transform a landfill into an industrial park of recycling, driven by renewable energy.

Landfill is the worst thing to do because the methane created is 24 times more climate changing (when it leaks) than the carbon dioxide that comes from burning. At NSR only the bare minimum is burned -- 84% of waste worldwide goes to landfill; 5% of Swedish waste goes to landfill; NSR sends

only 2% of waste to landfill. Incineration is the next worst thing to do. 7% of global waste is incinerated; 49% of Swedish waste is incinerated; NSR incinerates 18% of its waste. It's better to recycle. Globally, only 9% of waste is recycled. In Sweden that figure is 46%; NSR recycles 80% of the waste they process.

It is even better to reuse, but the best approach of all is to minimise consumption. The Swedes are world champions at creating waste; they are in the top 5 waste producing countries. They need to learn to reduce that, but meantime they need to know how to deal with it. NSR has moved the focus from landfill to incineration and recycling.

What have they done with the landfills? They have reduced what goes in, stopped using it for household waste, and have also looked at how to get the methane gas out of landfill and re-use it. They use landfill geology; they treat it like looking for oil deposits. They are getting 90% methane extraction using these controlled methods. To improve recycling they have changed the system – they have a compulsory source separation in each house. There are 2 bins each with 4 compartments. They are 'extremely comfortable' for the citizens. Quotes someone saying "This was the cheapest renovation of my garage ever done" – it freed up space in people's homes. They provided a lot of information ; and they collect data about the rubbish. They analyse it on the street; they do an annual check of the rubbish from a street, breaking it down into 21 'fractions' to see what is in the bins. They use the information to refine the system.

And they learn that there is value in the rubbish; the raw material in the bins is worth something. But now they have a problem – a fight between the 'producer' and the municipalities about who owns the garbage! Finally, they make the rubbish visible. It doesn't get bagged into plastic bags, so when people open their bins, they go on seeing the amount of rubbish they produce and wash it to stop smells. Making it visible is part of changing people's behaviour.

The most important thing is the action of understanding. They work closely with schools in the region. All third year pupils visit the plant each year to get an understanding of the value of what is thrown away. They get a deeper understanding of the biogas production and utilisation. He sees this as extremely important for the future. This is how they reduced their methane gas production from 100,000 tonnes to 15000 tonnes.

So, on to the industrial process of producing vehicle fuel out of organic waste:

The Swedish government has a target of 2035 to get rid of ALL fossil fuels. Small electric cars are one option, but they are also looking at biogas. They don't want to make biogas out of agricultural waste but rather out of domestic and commercial waste. They turn 40 Gwh methane into the equivalent of 4.5 million litres of petrol.

(See Kim's slides for diagram showing how this is done).

Short version: "their organic waste = our raw materials". They also produce bio-fertiliser (80000 tonnes) for agricultural use. Phosphorus is essential in agriculture, to have a sustainable supply we can't afford to break the supply between the land and the city. All the food we eat has to get back to the fields (see his bell curve showing the reduction in phosphorus levels).

They developed a farmer integrated distribution system to distribute the biofertiliser, but it needs a lot of pipeline (10 km) to move it from where it is produced to where it is needed. So, they took a former landfill and turned it into an industrial park, with production facilities, R&D facilities, run on renewable energy. They have tried to create an 'industrial-symbio area'.

By cooperation they will deliver:

- Less waste from household
- Almost 100% recycling
- No need of fossil fuel for vehicles
- No leaking of methane from landfill
- And recycled carbon dioxide

He wants to talk about what we can learn from each other and "how we in the north can co-operate" to be competitive in the global economy. Anyone who would like to visit Helsingborg – whether to visit the temple of Henrik Larsen or maybe to start a project - is welcome to NSR.

Lesley: recalls him telling her when she visited Helsingborg to 'smell the air, it took us 3 years to do that'. And notes that we have very ambitious targets for food waste in Scotland, and introduces Pippa Milne.

Pippa Milne, Waste Services Manager, City of Edinburgh Council.

This is very timely. "Reassuring to hear that our strategies are very similar." In Edinburgh they are moving the focus to valuing waste as a resource and seeing the potential for carbon reductions as a result of that. Focussing on maintaining the quality of the materials so that we can get that value is very much our new focus in our recycling

Lesley: you basically need good quality rubbish? What do you do with poor quality rubbish?

Pippa: we want to segregate the waste as early as possible. Where we are at in Edinburgh - about 70% goes to landfill and 30% is recycled. They've done the sifting of the rubbish and identified that about 70% of what goes to landfill could go to recycling so they have made changes: the shift to fortnightly collections is part of trying to encourage people to sort and recycle. They are working with Midlothian Council and have identified a company to build an anaerobic digester. And they are looking at mechanical waste sorting. They are also looking at how to develop a district heating heat network – potentially supplying new housing development, QMUC, RIE.

They see education as key, been doing door knocking, going into schools etc trying to raise awareness. The approach is voluntary. They want to encourage people. She recognises that they haven't reached everyone in terms of understanding what the motivation is. They have continued to have protests. However, they've reduced landfill by 25% in one month in Edinburgh.

They are also looking at how they can work more closely with other council departments eg economic development.

QUESTIONS:

Bruce Crawford MSP: has always been keen on this – introduced first recycling officer in Scotland when he was environmental health convenor – he is appalled at how slow it has been to get to here. His question – how did they change people’s perception in Sweden to understand that ‘energy from waste’ is crucial and important – and are they using gasification??

Kim: At NSR the former managing director was not keen on incineration. Previously they did everything not using incineration. The big discussion in Sweden was dioxins. But the technique now is you burn it at a specific temperature then there is a flue gas treatment that cleans it out. When you burn it off you get carbon dioxide but that is still 24 times less than the methane.

Lesley: notes that people live comfortably beside the incineration plants in Sweden – no arguments about it impacting on property prices etc.

Torvald: in Sweden we pay for rubbish removal. We can choose how much rubbish is taken away. Eg he has a kitchen composter and that means there’s no collection of food waste so his rubbish is only collected once a month. Deposits on cans of coke etc, so you return them and get a kroner back. And you get heat from the district heating system.

Lesley: plastics are still a problem, but notes that NSR have come up with a possible solution that would involve the squidged down plastic being used as fuel for ferries and tankers.

Kim: the problem with plastic is that there are many different kinds of plastic, 20 or so. So till now they have sorted it manually and sent it to China to be used in low grade plastic products. Not ideal so they’ve been looking at alternatives – a product that might ‘touch the heart of the citizens’. So they’ve found a company that can process all the plastic together to produce a kind of ‘gas oil’; some plastics will produce oil, tyres will also produce iron and sulphur. They are thinking they can get people engaged with the idea of ‘going to Denmark/Sweden on the plastic’ [i.e. running the ferries on the fuel from recycling plastic].

Bruce Crawford: wants to buy shares in the company that is doing the gas oil...

Lesley: over to Mike McLaughlin. If everybody is going to develop and use biogas we may get left behind.

Mike: yes, he understands that our legislation is not very friendly re biogas.

Lesley: so someone could have a biofuel car and drive to Scotland and not be able to use it?

Mike McLaughlin: the cars can run on dual fuel. But he thinks we should be focussed on reducing the use of plastic – eg spuds in brown paper bags; EU should be setting standards. References the penalties for being over limits with landfill.

Lesley: asking Kim re the mandatory element in Sweden –

Kim: it was mandatory to stop using landfill. Now it will be mandatory to deal with food waste.

Pippa: UK legislation is that councils can’t charge for waste that goes to landfill, other than garden waste. Most of the financial drivers have been on local authorities – hence the need to look at ways

to collaborate, eg the City of Edinburgh Council/Midlothian partnership. She says the mentality is still 'it's a right that you take away my waste' no matter how it is stored/sorted/not sorted.

Kim: journalists really like the team that analyses the rubbish every year. Wherever they go in Sweden the papers are always there and it is always a positive story.

Woman in audience: needs a new heating boiler, rubbish fight with seagulls etc. envious of the situation in Sweden. Thinks education is key.

Kim: children visit the plant at 3 points during their school career – 10 year olds, 15 year olds and 17. Not nursery children.

Lesley: would Health and Safety regulations stop this happening here?

Pippa: CEC designing in facilities that enable visits to happen. They visit schools and she anticipates that once the new facility is built they will be able to encourage schools to visit.

Mike Mackenzie: what we have to deal with as politicians is that public opinion sometimes crystallises against things. He thinks NSR sounds like it has good co-operation with the citizens and maybe there is something we can learn there.

Kim: "the best way to succeed is to look for win-win situations". They learned that with Bluetooth, and it's in the culture. So the focus is on the team, the community, the municipality, not on the individual. The partnerships were crucial. You can't start producing biogas if you haven't built the relationship with the farmer that lets you use the biofertiliser by-product.

Lesley: did it take a long time?

Kim: hmm. He thinks the Swedes sometimes want everything planned to the letter. He is more Danish!

Lesley: do you have anything as old fashioned as big fines if people have put their rubbish in the wrong place?

Torvald: yes. But it's stick and carrot. And the big carrot is that you pay for how much rubbish you want collected/how often.

Kim: if people separate it wrongly the bin-man puts a sticker on that is visible for the neighbours!

Man from East Renfrewshire: how wide an area does the plant service? East Renfrewshire is one of the more progressive authorities in Scotland in terms of recycling but recently they have been agonising over a local planning application for a similar plant. The issue that has caused the most concern is the transportation of material to the plant from quite a wide area. He wonders if that was an issue in Sweden.

Kim: from north to south the area is about 60Km, and from coast to inland about an average of 30Km. The sister municipalities are the owner of the company so all household waste is transported there. The government made it statutory that there could not be a landfill in every municipality and that they must co-operate. But with the industrial park, the area they get material from covers a radius of 200km. Includes Copenhagen and Gothenburg.

Lesley: don't the people of Helsingborg say, we don't want Copenhagen's rubbish, we don't want Copenhagen's rubbish trucks?

Kim: Helsingborg will be happy to take Edinburgh's rubbish! [i.e. this is not a problem]

Lesley: are you just more rational than us? Everything you are saying makes sense but it wouldn't happen here.

Kim: reiterates the benefits. 'and we get paid to get heat'.

Woman doing PhD re zero waste: how much of the success is that Helsingborg is flat, it's a publicly owned company, with a publicly owned transport company too; how might it work in a more challenging place? It seems fairly unique?

Kim: we had enthusiastic people involved in the beginning; and farmers are competitive and the guy with the biofertiliser got better produce and that got others interested – so they used the early adopters successes to engage more people. So you start with the keen folk, then they bring in the not so keen but interested folk, then you have the last 20% and you just forget about them.

Scott, Scottish Environmental Technology Networks: what about the digestates – and making them more acceptable? Eg supermarkets don't want to sell produce that's been grown in 'shitey material'; also issue re private companies not being able to bid for long enough contracts to make schemes like this work.

Mike McLaughlin – we need to show people the benefit of what we do, carrot as well as stick.

Question: 'possibly provocative, but is there a fear that by reducing waste we will affect our economic growth?'

Man from Sweden who lived here for 8 years: people may not be against the Biomass plant in Leith as such, but they are against the transport associated with it, if it was based on what could be processed from local waste it would be a different thing.

Mike Mackenzie: I'm not a fan of large scale biomass so have sympathy with people who are not keen. Has not been to Nordics but has been to Shetland where they have a large incinerator. They not only deal with the rubbish from Shetland but also import some waste from Orkney. And they use it for a district heating system.

Pippa: there are schemes like this in other places eg Sheffield; there are issues around scale, eg the size of the plant is determined by what level of risk will be taken on by private companies, banks etc.

Kim: re the risk – almost everything I have spoken about today is owned by municipalities. NSR is a plc. It's a way for the public sector to handle the risk and make it acceptable to the banks. It's 100 years since the first companies owned by public sector in Sweden. Public sector business models not new.

Concluding remarks from Mike Mackenzie. Thanks to Kim, Pippa and Lesley. And to Swedish Embassy.