



Environment, Food and Rural Affairs Committee

Oral evidence: [Waste management](#), HC 241

Wednesday 25 June 2014

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Written evidence from witnesses:

- [SITA UK](#)
- [ECO Plastics Ltd](#)
- [Viridor](#)
- [RPS Planning and Development](#)
- [UK Without Incineration Network](#)
- [Green Alliance](#)

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Members present: Miss Anne McIntosh (Chair); Jim Fitzpatrick; Mrs Mary Glendon; Iain McKenzie; Sheryll Murray; Neil Parish; Ms Margaret Ritchie; Mr Mark Spencer; Roger Williams

Questions 55-123

Witnesses: **David Palmer-Jones**, Chief Executive, SITA UK, **Jonathan Short**, Founder and Deputy Chairman, ECO Plastics Ltd, and **Dan Cooke**, Director, Viridor, gave evidence.

Q55 Chair: Gentlemen, good afternoon and welcome. Thank you very much for being with us today to contribute to our inquiry into waste. For the record, would you like to introduce yourselves each in turn?

David Palmer-Jones: My name is David Palmer-Jones. I am the CEO of SITA UK.

Jonathan Short: I am Jonathan Short. I am the founder and Deputy Chairman of ECO Plastics.

Dan Cooke: I am Dan Cooke, Director of External Affairs for Viridor.

Q56 Chair: Could you tell us a little bit about the waste hierarchy, and how your businesses support the waste hierarchy? Do you see any barriers to implementing the waste hierarchy, particularly perhaps through public concerns with certain aspects of the waste hierarchy? Mr Cooke?

Dan Cooke: Viridor supports the waste hierarchy through the provision of waste auditing, waste advice and recycling services to sectors in both the private and local authority sectors. We provide services for long-term integrated contracts, some of which

have waste prevention clauses as part of the service, and all of which are aiming for high levels of recycling, and then high levels of landfill diversion and energy recovery. So they are long-term partnerships working with local authorities to deliver those services, and effectively all our services are aligned to the waste hierarchy.

David Palmer-Jones: There is an industry level and there is a SITA UK level. Certainly our industry has invested through various means—PFI and through our own balance sheet—£10 billion to £15 billion over the last period of time. When you look outside the PFI, 95% of all investments in recovery and recycling come from the private sector. We have been able to move the UK from single-digit at the beginning of 2000 to over 40% today, so we have had a major contribution. When I took over running SITA UK, we made a decision to base all our strategic decisions and investments around the circular economy—you could say that links quite nicely with the waste hierarchy—and therefore we choose recycling and recovery before we do any other form of investment. My company, like Dan's Viridor and others in the industry, like Veolia, have been investing significant amounts of money—in our company £1.5 billion over the last five years—to create over 2 million tonnes of capacity, which moves waste from landfill to something, to put it to good use.

Jonathan Short: We sit in the recycling part of the waste hierarchy. We operate a post-consumer plastics recovery and recycling plant in North Lincolnshire. It is the largest and most technically advanced in the world, having been there only eight years, so we bring in post-consumer plastic packaging, we reinvent it, we invigorate it, and then supply it back into the FMCG supply chain. We are the only company in the UK that makes a food approved product suitable for direct food contact.

Q57 Chair: In terms of the different levels of heat recovery and incineration, perhaps you could share with us your understanding of the different methods, and how you can best meet the targets by the different levels, either with electricity or with heat?

Dan Cooke: In terms of recovery from residual waste, again, as with many in our sector, our first priority with all material streams and with all clients is to recycle as much as we can. Whatever cannot be recycled, we then look to deploy technologies to recover energy from it in the most efficient way. We deploy a range of technologies ourselves. Like David's company SITA, Viridor is investing about £1.5 billion in infrastructure at the moment—a mix of recycling and energy recovery.

Energy recovery technology has to be robust, efficient and effective—and cost-effective. Energy from waste technology, the traditional moving grate technologies have come a long way. Evolution in that technology makes it very clean, very efficient, and that is where the bulk of the investment has been in infrastructure, to serve local authorities to move their material away from landfill.

In terms of other emerging technologies, anaerobic digestion for certain organic waste streams can prove effective; there is a limited amount of additional capacity that can be brought on-stream for that. Again, the nature of the waste streams that you feed into that mean that the technology is not as straightforward as some others. Some emerging technologies, like gasification and pyrolysis, for example, may have a future. We are building our first gasification plant in Glasgow to help local authorities up there build, so they are coming through. They do not necessarily offer distinct advantages over proven and robust technologies. Therefore, it is a good mix that is required, but certainly

investment in further capacity is without doubt required, if we want to move material away from landfill.

David Palmer-Jones: When we are looking at the future, obviously capacity is an issue that is on your minds, as it is on ours, as we are investing significant amounts of money, as Dan was saying. I probably can give to you as evidence—I do not know if I am allowed to do that—the “Mind The Gap” report that we put out. There is a lot of consistency of the view from the major waste players within the industry that there will be a capacity gap appearing in 2020 or 2025. Even 2025 we will still have a capacity gap unless we get some of the policy drivers that no doubt we will discuss later today. There will be at least 5.7 million tonnes of undercapacity, and by capacity we are talking all elements, not just residual waste and energy from waste, but there is a definite requirement to invest in further recycling and other recovery methods, as well as. I am talking, as Dan said, advanced thermal treatment, MBT, anaerobic digestion, MRFs and also the more traditional energy from waste.

Chair: Do you have anything you would like to add, Mr Short?

Jonathan Short: We do not have much involvement in waste-to-energy; our focus is on recycling, recovering the resource that is currently disposed of. I do have a slight concern around waste-to-energy; there are differing reports around the amount of capacity coming on stream, and the amount of availability of waste by 2020. We do not want to fall into the same trap as Germany has, where there is massive overcapacity in waste-to-energy, and it would seem crazy to me that you would burn a resource when you can recycle it, so there is just a concern that overcapacity will drive the wrong behaviour in terms of recycling that resource as opposed to just sending it up the chimney.

Q58 Chair: Do you have a good relationship with the Government, and do you think there has been a clear and consistent message to the industry on waste management policy from the Government? A wry smile, Mr Palmer-Jones.

David Palmer-Jones: The withdrawing of Defra from the market, which was signalled by Dan Rogerson in his very first speech at the WRAP conference, was a big disappointment to our industry, and we feel very premature when you look at some of the things that we have to achieve: 50% recycling is still a way off, due to various other things that we can discuss later. When you look at Europe as well now, it is starting to talk about 70% recycling; really there is no manner, in my opinion, that they can withdraw.

There is a real risk to the industry, I believe, of market failure here, first because we invest in infrastructure and we need a very strong, stable regulatory and legislative outlook for us to do that. One of the best pieces of policy in terms of landfill tax was the fact that you gave us a window of five years, and we could see very clearly over that period of time and there was some sureness about the prices that would allow us to make the investments, to allow us to divert in whatever form; first came recycling, because that is the cheapest form. Political instability, lack of leadership, lack of vision is not very good when we speak to our investors—the investors outside. We would say that that is regrettable.

Secondly, for us it is all about stability in the marketplace. When we talk about further recycling, which we are going to do, we really do need the ability to place those materials, which are being driven by legislation and targeting, into a market-driven

economy. Regrettably the UK does not have the reprocessing capacity that it requires to deal with the amount of recyclate today. When we look at rising to 50%—and rising potentially, if it passes the European Parliament, to 70%—then that stream of resources outside the UK has to continue to go.

One of our views that we express to Government quite often is that a resource vision should sit alongside an industrial strategy where you can start to re-shore some of those materials into the future, or we will be very much reliant on Asia and other places in the world to take our resources today and produce services and products that we send back to the UK.

Chair: Thank you. Mr Short, anything you would like to add?

Jonathan Short: I would echo a lot of what David says. I think now is not the right time to step back; there are some areas of legislation that are unclear and confusing. As a specific example, the producer responsibility legislation was good when it was set up, but now it incentivises the export of resource to the developing economies, which is basically exporting green jobs and exporting green manufacturing. We need to rebase and to bring those jobs and that value creation back onshore, and we need additional reprocessing capacity.

Going one step further from Defra stepping back from the industry, I would like to see the industry fall under the auspices of BIS. We have moved away from being just a landfill industry, where you should sit within Defra, to BIS, which, as an organisation, should understand the commercial opportunities being presented by what is a brilliant and growing industry.

Chair: Okay. Mr Cooke?

Dan Cooke: Again, I would echo most of what you have heard. I think we always try and have a positive relationship, both as a company and as a sector, with Government. We are always looking for that balance of clear leadership and strategy coming from Government and supporting policies that provide that framework, the level playing field, and, indeed, the context for us as an industry to deliver the innovation and enterprise that are needed to support both local authorities and businesses moving towards greater resource efficiency.

There are examples of excellent policies that have come from Government in recent times, and as David said, the most successful one has been the landfill tax and the clear signals and framework that that set. That has allowed a framework whereby investment has been forthcoming and the capacity is now coming online to take big steps in terms of recycling levels and better resource efficiency. For Government to step back at this point, in terms of that policy framework, is dangerous, especially at a time when we should be encouraging greater enterprise, greater jobs, and the investment opportunities that our sector can bring.

Q59 Chair: Just one last question at this stage: so you are saying that it is a resource, it is not waste; you look on waste as being a resource and creating—

David Palmer-Jones: Absolutely. We sometimes have to use the terminology and refer to “waste” in public debate; within our industry we talk about resources now.

Q60 Ms Ritchie: Both Mr Palmer-Jones and Mr Short indicated that now was not the right time for Defra to be stepping back from waste policy work. Mr Cooke, do you agree with that decision?

Dan Cooke: Yes, wholeheartedly.

Q61 Ms Ritchie: Right. Having said that then, for each of you, what risks are there for industry if Defra only takes action if there is evidence of clear market failure?

David Palmer-Jones: One particular area I do think we need to talk about is the ability for us to place recyclables on to the market. There are some indications and examples, certainly from Germany, where they oversupply to the market; demand caused a paper crash through their DSD system some time ago, and so we have to be very wary about that. As I say, we are legislation-driven, and we want to drive more out, but we have got to make sure that those policy levers—we can discuss some of those—can be set in a good framework by the Government that will allow us to continue to draw more material out of that stream into material recycling, rather than defaulting to energy production.

Jonathan Short: I have a similar view, really. Absolutely, it is resource; we do need to develop more end markets for the material. We have been too reliant upon Asia. There are certain levers can be used to encourage the use of recycled content within the manufacturing base here in the UK. We are already seeing a situation in film recycling where one particular type of recycling is displacing another recycled content. At the same time when the Government was expecting us to double the amount of post-consumer recycling in the next three or four years, it is absolutely key that we develop end markets, and it is key that we encourage manufacturers to use recycled content.

Dan Cooke: I guess I would put forward two examples. One is that there is a danger, in aiming for targets that we may or may not reach—we hope and believe that we will be close to the 50% recycling target—we are doing so at a time when consumer habits are changing, so people read less newspapers and paper volumes are going down, and our targets are currently tonnage-based. A lot of different habits are affecting materials, so businesses are rightly light-weighting materials such as glass, for example, so both consumer and business habits are changing at the same time as our use of material streams. That may change radically, which affects the UK's ability to meet the targets that it is aiming for, so to step back entirely and not to keep a close eye on that, provide close support and work with industry to meet those challenges, is a danger.

Another good example at the moment is the export of RDF, so in the last two or three years, we have gone from nothing exported for energy recovery abroad, to more than 2 million tonnes. That is enough to provide domestic electricity needs for over 1% of the UK population. Where that is done well, it presents no risk, but where it is done badly it is presenting a risk to both amenity and environment; we are having increased instances of fires, very poor practice, and the standards and the enforcement are definitely missing. Again, without the ability of Government to react quickly to that to stop it, it is a situation that could, in the view of some, get out of control.

Q62 Sheryll Murray: Could you just tell me what all three of you think on whether, under the existing policies, England will reach its EU household recycling targets of 50% by 2020? If you do not think so, could you just give me some indication as to what action you think we should take?

David Palmer-Jones: I would just echo what Dan said earlier about the structural change that is happening in our business. Do I think we can meet 50%? Not if Defra steps back, not if local government does not accept the targets themselves, and there has been a detachment from Government target and local government target; I hear that very, very clearly when I am meeting local government.

As Dan said, less news and pams—that is one of the major weight-based products. One of the things that perhaps we can add is green waste, so payment of green waste at local government level; 40% of the weight of recycling comes from green waste. In south Gloucestershire, where we have a contract, that was a very good uptake going to a priced service; only 30% took that up, and I know of others that are much less than that. With regard to those structural changes, I think you will see a dip from 43% today. You will see it dip back, and then we may have a gap of over 10% that we have to achieve over the next period of time.

There is a feeling as well that things will not be done before an election; you certainly start to feel that within the industry, and it will be difficult if the new administration comes in and they are faced with an even larger gap, in that sense. One of the major problems with the UK is we are quite an urban-based country, as you know. We have a heavy dependency on urban, and because it is related to a target on weight, the urban areas do not achieve the same recycling targets as the suburbs or the rural districts. Some of them can reach over 50%, and some of them do today, but in terms of their contribution to the overall tonnage, they weigh only a small fraction. What we need to do is to be able to get London, Birmingham, and Leeds—all the major conurbations—to recycle at the same level.

We have just done a sponsored report by Keep Britain Tidy, which you will see coming out soon I hope, and certainly we will give you a copy of that, which really indicates that the public are very confused, especially in urban areas, around what they should do. They are looking for greater simplicity. They are looking for some leadership from Government, quite clearly; they want to see that you back our industry. They certainly look at incentive schemes related to council tax; I do not know how plausible that is, but they would like to see going down the road slightly of “pay as you throw”, but they see it as more of an incentive-based approach: “If I do a great citizen’s job, I see a benefit for that”. That report is going to come out soon, but it says that you have got to tackle the urban areas.

With lack of funding for local government—I feel sorry for local government as they have to have that money taken from them—communication is the first thing they restrict, and the one thing you need to drive recycling rates consistently up is communication.

Jonathan Short: Yes, I would pick up on that point in terms of consumer communication. I believe in the carrot approach, rather than the stick approach, so penalising the consumer is not the right thing to do in my view. Recycling has grown an awful lot in the last 10 years; we are now at 43% and it is flatlining, but there is a lot of confusion out there among the public. Even if you move from one street to another street you could have a different collection scheme, so we need to give a very clear and consistent message to the consumer. There are certain areas of the country where recycling rates are in excess of 60%, and that is put down to clear consumer communication.

Whenever I talk to people generally about what I do, the first thing they ask me is, “What is it about the plastic bottles we should or should not put into the recycling bin?” It is confusing; confusion turns to scepticism, scepticism turns to cynicism, and then they read the *Daily Mail* and that is it: they are not recycling any more. Just changing the name of the industry from “waste” to “resource”, allowing people to understand that it has got value, that it is not rubbish and that it is a resource, would also help put a step change in the recycling rates. It is possible, but we need to do those things.

Q63 Sheryll Murray: Can I just come back to you? You just said that plastic bottles, for instance, were quite confusing; how would you address that?

Jonathan Short: Keep the message very simple: if it is a plastic bottle, put it in the recycling bin. There are still 300,000 tonnes a year of plastic bottles going into landfill or incineration, because people just get mixed messages. If it is a plastic bottle, put it in the recycling bin. That is £50 million of value, £20 million of landfill tax avoided—very, very simple.

Sheryll Murray: Mr Cooke, have you got anything to add?

Dan Cooke: Again, I would echo much of what you have heard. I would say it will be touch-and-go as to whether we meet in England that 50% recycling target. Certainly if Government takes its foot off the throttle or backs away from the clear leadership that we have agreed is needed then that will be even more difficult. I think if we maintain the recycling levels and the momentum that we have got for certain material streams then that is the baseline that we must do. I think there is opportunity to recycle certainly more plastics, to capture more plastics from material streams, and we, like ECO Plastics, are investing in new reprocessing technology for that stream, to help that.

There is certainly room to improve organics and food waste collections at the household level. Again, I would echo the importance of consistent and effective communications; there are some great examples. One of the best things that Government has done or one of the best uses of Government money recently, was the WRAP Recycle Now communications campaign, which introduced consistent messaging, consistent graphics, which made it much easier and more understandable for consumers to recycle regularly.

There are some great examples that we could point to. We work with Greater Manchester—or nine authorities out of the 10 in Greater Manchester. There is an integrated approach. We have behaviour change communication campaigns keeping it simple: one called “Right Stuff, Right Bin” aims to encourage consumers to use the systems that are in place, maximise participation and minimise contamination. That proves very effective, but you cannot do that once and then step away; it has to be consistent.

Q64 Neil Parish: Good afternoon, gentlemen. Will a business-led approach to recycling inevitably lead to the lowest-cost option, rather than the best environmental option?

David Palmer-Jones: It is very encouraging that business has got the resource idea now, and you certainly see some glowing examples—the likes of M&S on the high street, Kingfisher, Carillion, Unilever—the ones that really want to get some more control on the

resources that they have, and the security and cost associated through those resources. They are ahead of the curve in that respect.

As we said before, business cannot do it alone; they say that to us, and we serve them. They need that extra assistance over and above how they can influence their own supply chains. Government needs to send out those wider signals, without a doubt, and I do not think that when we deal with our commercial customers—the likes of these—that they are talking in those terms.

We are driven and led by their own aspirations in order to really look after that. Cost does play a part in choice; we see very much that the style and direction of their own CSR reports, etc, really drives the way that they want to manage their resources. What we start to see is the development of some circular discussions with them, where we are the stewards of their material. They are looking to control the cost and supply back into their own chain, understanding the long game, that in the long term resources will increase, and they have certainly increased over the last 10 years; after declining for 150 years the last 10 years it has gone up. They start to see that linkage, and therefore it is not really just cost. They are looking at a longer term. They are looking at asking “How do I get those good materials back into my system?”

Q65 Neil Parish: Can I expand the question slightly? Some products will be easier to recycle, because they have got value in them, others do not, and those values fluctuate. Once a Government and council starts subsidising one way over the other, how can we make sure we are not over-subsidising it? How do we deal with the fluctuating market in a lot of recycled products?

Jonathan Short: I am not sure the Government is subsidising recycling. It is actually the reverse. As I said earlier, it is incentivising the export of these resources, and while recycling may be the cheapest option, it is the option that adds the most value. You can add an awful lot of value to the resource that we are currently landfilling—a wasted opportunity. I have seen technology move on leaps and bounds in the last five or six years. Material that was not recyclable five or six years ago is now commercially viable to recycle, and that will continue to move, change and evolve. Materials that are very difficult to recycle now, in two or three years’ time, given the resources for businesses like ourselves, will be capable of being recycled.

Dan Cooke: I would address your last point in terms of how we can negotiate some of that volatility. One of the main ways is the innovation, the expertise and the relationships that our sector can bring. Part of Viridor is called Viridor Resource Management, which simply markets the materials that we have recycled or recovered from various material streams. Viridor Resource Management works so well, because it has built long-term, stable relationships with reprocessors and remanufacturers both in the UK and Europe, and across the globe, so we can keep material moving.

Undoubtedly the volatility of the market is, because we are still a relatively immature sector and a lot of what we do is finding its feet, one of the main dangers to recycling. Also that expertise comes into play, because, as Jonathan said, some materials may be marginal in terms of their environmental benefit and economic practicability of recycling. Until solutions are found to those it may be better to recover energy from them to use them as a resource until we have the technology and the expertise to begin to recycle.

Q66 Neil Parish: My next question follows on: what is the best incentive for business to promote and increase recycling rates? What is the best incentive?

Dan Cooke: The best incentive, again, is cost-efficiency. Certainly big business and the leaders in various sectors have recognised what is known as the impending “resource crunch”, the issues around resource security, and certainly increasing their own resource efficiency. That helps them reduce their costs and recover costs; it helps us to provide the infrastructure and services needed. It is all about the best incentives for businesses, and indeed the best incentives for us to provide a service to business; it is all about cost, convenience, and quality; and quality includes the quality of the materials that we can recover.

David Palmer-Jones: Just to pick up your point, on one of the elements we mentioned earlier about landfill tax and longevity, we have asked Treasury on a number of occasions, “Give us the next five years. Tell us what it is going to look like in five years’ time.” We get a one-year incremental vision. That just does not help in terms of bringing on new infrastructure, because we cannot go to our investors and say, “Here is the next window”. They have been very good at delivering the first five years to get to £80 a tonne: is it inflation? Is it more than inflation? Give us a clear signal for a period of time, which really meets the same level of investment timescale we need.

Neil Parish: If the Government wants to be blunt with it in raising recycling, then we can just push up the landfill tax higher and higher until it makes recycling profitable, but, of course, it then adds a huge cost to a local authority or wherever are disposing of that waste. Where do you believe the right level is?

Chair: I think we are coming on to that in a moment.

Q67 Sheryll Murray: On the specific role of business, do you think there is a place for business to be perhaps less rigid in the way they collect recycling? I know that in my area I have had a lot of people complain because they separate, but their recycling has been left because they have put the wrong bottle in the wrong bag, and so it has been left. That then probably goes into landfill.

David Palmer-Jones: There is a bit of a misnomer about people wanting to put valuable resources into landfill.

Chair: Can we perhaps come to landfill in a little while? Just briefly.

Q68 Sheryll Murray: Just purely and simply that sometimes it is not being collected.

Jonathan Short: That is about consumer communication.

David Palmer-Jones: Yes.

Jonathan Short: You need consistent communication with the consumer. They want to do the right thing; they just need that steer.

Dan Cooke: Again, collection systems have to be—

Chair: We will hold landfill just for a little while.

Q69 Mr Spencer: The principle that the polluter pays is fairly well recognised. The extended producer responsibility legislation covers, in my opinion, very few products. Do you think that should be extended to more products, and what products should that be extended to?

Jonathan Short: The polluter pays; that is fine. The producer responsibility legislation that we have got at the moment is difficult, because it does incentivise the export of material. Should we extend that to other areas when it is attached to your broken system already? I think you are there. I would take that further up the waste hierarchy, and rather than the producer paying for something that needs to be disposed of after a very short lifespan, maybe there should be some incentive to make things that last longer. 30 years ago you bought a washing machine that lasted 10 or 15 years; now it lasts three. Rather than address disposal, let us go further up the hierarchy and start from the top down, and put things into the market that you can repair as well; nowadays they are just not worth repairing.

David Palmer-Jones: When you start looking at some of the targets that we discussed earlier, the 50% or 70%, there has to be a radical rethink, not just of the collection systems in the UK around household or domestic; you have to look at the producer responsibility as well. There are some good learnings from other areas of Europe who have an extended producer responsibility, so you would have to go back to the drawing board a bit; I agree with Jonathan that the PRN system is a bit opaque in the manner in which it distributes its funds, specifically to local government. Local government does not see the impact in its own bottom line to support its collection system from the PRNs; it seems to be lost in this opaque world.

I would go back to basics and have a look what is done in Europe; there are some good examples in Sweden certainly, where I have some experience. They have two systems: they have a normal recycling system, and they incentivise through their own producer responsibility and target very specifically, passing the money back in to reaching those targets from the producers, so a radical overhaul.

Q70 Mr Spencer: Which products are we talking about? Give us the easy wins that we should extend this legislation to cover.

Dan Cooke: There are a couple of examples at the moment: in packaging, in electronic equipment, for example, where producer responsibility applies. I would, again, echo some of what you have already heard: it is always a balance between cost and bureaucracy, to a degree, in terms of the advantages, weighing that up with the environmental advantages and resource efficiency advantages that we are seeking.

I would not say rip it up and start again. Some of the producer responsibility legislation and schemes work very well, and, again, have been effective drivers. Packaging is a great example of where packaging recycling has helped drive the recycling sector itself and the opportunities to do more of that. I would also echo very strongly that, in reviewing the potential to extend and improve those schemes, we should review the opportunities to further incentivise eco-design and designing out waste from some of these materials, and, indeed, designing in recyclability, because we still see a lot of composite materials placed on to the market whereby the designers have not even given a single thought to how that material could be recovered.

Q71 Mr Spencer: Okay. All three of you have not given me a product that you want to extend the legislation for, so give me a product whose design and manufacture it would be easy to change to eliminate waste.

David Palmer-Jones: It is the composites; I agree completely with Dan. Composites are our major headache. We want a purer stream of materials that are identifiable for us. Plastic is often a good one, because we get lots of composite laminates, etc, which are very costly to recycle and split. We are very much in favour of eco-design, but that does not seem to be flowing through; some of the major brands start to talk in those terms, but that would help us immensely and I think it would help the public as well.

Dan Cooke: One easy example in terms of designing in recyclability: black trays that they use for food packaging. At the moment, the main way we can separate out for reprocessing out some post-consumer plastics is by optical sorting, it is the quickest, most effective and efficient method we have. It does not work with black trays, and the packaging industry, along with the retail industry, need to work in conjunction with the recyclers and the designers to work out a way of using a better material to enable, again, a good step in a consumer good that is used by all of us.

Jonathan Short: Maybe it is a combination. As I said earlier, I am a big believer in carrot, rather than stick. You have got companies that are putting materials on to the market that are very difficult to recycle. They then pay for that material to be put on to the market. They often do not know where that money is going to. It is a volatile market; prices of PRNs go up and down like nobody's business. If there was some sort of incentive to design in recyclability, with their producer obligation cost, and they then reduced to factor that in and take it to another stage, and if they introduce recycled content, which would encourage them, in actual fact, to make a more recyclable-friendly product going into the market, again, that would reduce their costs.

Chair: I am terribly sorry; we have a lot to get through. Can we have slightly shorter questions and slightly shorter answers? We want to get it on the record, but we have got a lot to get through. Mr Palmer-Jones?

David Palmer-Jones: I would say that is okay.

Q72 Jim Fitzpatrick: Mr Cooke, you have already mentioned messaging, and following on from your answers, to Mr Spencer and Mr Palmer-Jones, you referred to the report coming out with Keep Britain Tidy, from whom we have already heard that we need clear, consistent and continual communications to motivate householders. With that in mind, and following on from the last answers, what role does industry play in educating householders to improve recycling rates, and to address issues such as contamination, which we hear is on the up, given that we are not likely to be seeing penalties or incentives in the short term?

Dan Cooke: Very quickly, industry has a role to play in partnership with Government and especially with local authorities. We can provide some of the innovation in terms of design, messaging and engagement. We deliver and run in partnership with some of our local authorities and, indeed, some of our private sector clients, education centres whereby people can come and find out more about it. It is partnership; we can bring innovation, and local authorities can partner that and deliver in terms of some of the mechanisms they have to reach consumers and householders that they serve. Government,

again, can support national schemes, such as the “Recycle Now” and “Love Food Hate Waste” campaigns, which have been so successfully delivered.

David Palmer-Jones: There is an education job to be done within our own workforce, as well. I spend a lot of my time doing that; I am going up to the North East tomorrow to talk to my guys on the shop floor. We spend a huge amount of time educating them, giving them the tools; our guys carry cameras with them in order to photograph contamination, which is still a major problem for the recycling business. A picture paints 1,000 words, so we try to use those tools as well. Their camps are more and more sophisticated, allowing them to give back some accurate information to specific customers, whether that be the public or our commercial and industrial customers.

Q73 Jim Fitzpatrick: Is there a conflict between the cheapest way to recycle, the simplest way to recycle and the most convenient way to recycle? Is there a conflict between those aspects, because the simpler the messaging, the easier it is to understand, and the more response one is likely to get, but that might not necessarily mean that people will put the right thing in the right place or put the right resource out for collection?

Jonathan Short: If you keep it simple, you have got a very good chance. Once you complicate things, that is when it becomes very difficult. In answer to your first question, using the industry, I think the brand owners have a great part to play in all this; their forte is guiding consumer behaviour. Once they become more comfortable with the use of recycled content and what is happening with their revenues—their obligation revenues—they can play a great part in directing that consumer behaviour as well.

Q74 Roger Williams: Recent analysis shows that England will not have enough capacity for waste treatment by 2020, but other people would say if you increase that capacity you might end up with less recycling. Does England need to increase that capacity and, if so, which technologies need investment?

David Palmer-Jones: If I could jump in there—a favourite subject—20 million tonnes is still going to landfill today. We are a long way off this vision of zero waste in our economy. That translates to a huge multi-billion-pounds worth of investment to move that from landfilling, the old style where we lost that resource, to another form of treatment that extracts value. First and foremost, we have got to tackle that, and the cheapest form of diversion is recycling, reuse. There are various others at the top end; we do not spend enough time talking about the top end. Our businesses are very related to the here and now and developing that. First and foremost with the targets—the 50%, and the 70% from Europe shortly—you will see the need for far more recycling plants. There is not enough to move that 20 million tonnes to something of good use.

The next thing is obviously to take as much as you physically can, reduce the amount you reuse, take as much as you physically can in materials, and then the residual—we talk about residual; put it on the record—then you should take it in energy. The UK has a structural energy deficit. You will be aware, in your positions, that we are facing a 20% reduction in our supply capacity to the UK over the next few years, 2016, with old coal and nuclear power stations coming offline. Our companies can provide perhaps 7% or 8% of the UK’s electricity if you take the fraction as a residual.

In our report, “Mind the Gap”, which I will leave with you, 65% is material recovery, and 35%—that sort of element—ultimately, if the investment, with stability of markets and strong leadership from yourselves, is put in place.

Jonathan Short: First and foremost, we should be recycling material rather than going down the waste-to-energy route, so we have got to be mindful that we guard against overcapacity in the waste-to-energy sector. To be fair, it is not my area of expertise; mine is the recycling sector. There are different reports out there; some talk about overcapacity, some undercapacity.

Dan Cooke: There is a clear consensus that there will not be sufficient capacity, either in recycling or in energy recovery. Of the schemes that are potentially deliverable, you only have to look at the fundability of most of them to see that most of them that are on the table or in the pipeline at the moment will not come on-stream. It is important that we get the balance right; there is clear evidence, if you look at the best recycling countries in Europe, that high levels of recycling can exist in a complementary fashion alongside higher levels of energy recovery. It is important that we invest in both, as many of us in the sector are doing at the moment, but it is important to get that balance right.

Q75 Mr Spencer: Does the practice of exporting our waste for energy recovery fit in with the waste hierarchy?

David Palmer-Jones: Dan mentioned it earlier, but just to understand the markets, there are two different types of fuel: there is RDF—refuse-derived fuel—which is processed, it is shredded and trammelled, the fines are taken out of it, the metal is taken out of it, it is baled, and it is taken to energy-from-waste plants municipally owned on the continent. The speed of development, when we talk about undercapacity or overcapacity, 3 million tonnes, which is a doubling from last year, is leaving our shores. I think that says a lot about capacity in that instance; it is going to the Netherlands, to Germany and to Sweden.

That is probably more of a temporary market, and it is because we are diverting more away from landfill without the infrastructure available. The market always finds a solution; it finds it, because recessionary influences on Europe, the Netherlands, Germany, etc, allows a gap of capacity to arrive. Therefore we utilise that and we buy their capacity over a period of time. There is another form of fuel, which certainly my company deals with—solid recovered fuel, SRF—which we supply; it is a very, very high-quality specification coming from the commercial industrial stream that we supply to, the likes of Thermex, Hanson, and Heidelberg. Cement, which is substituting petroleum coke, coal, etc, in order to give them an advantage, both in terms of the environment, in terms of carbon, but also in their cost base, which is important, not only to the cement industry but also the construction industry.

I think there is absolutely a position for that over a period of time, as we make this adjustment in terms of infrastructure investment. We need to ensure that those channels are left open, so we can balance that movement, but I agree very much with Dan's comment about some of the core practices that appear around our industry from illegitimate operators, who are utilising this change, mainly around landfill tax, to provide a very lucrative business. It is most concerning when you hear that that crack cocaine dealers in the North West move from drug dealing to our industry because it is rich pickings and there is little or no effective policing.

Dan Cooke: I would answer that, again, to echo much of what David said, but very simply the export of RDF when it is done poorly is clearly against the waste hierarchy. There is an economic driver to bypass recycling for some of the less reputable operators

that come in. They will do very rudimentary if any treatment, and certainly any removal of recyclables is minimal, before baling it up and shipping it out. Therefore that is bypassing or leaping a couple of stages of the waste hierarchy, certainly when it comes to commercial waste streams.

Where it is done properly there is the opportunity to remove materials before it is baled up to produce fuel, as you should in any situation. As it stands at the moment, with the lack of intervention and some of the practice that is happening in that field, yes, it is a challenge, and clearly against the waste hierarchy.

Q76 Mr Spencer: Are you not just concerned that your waste stream is being exported, therefore it makes your business model less competitive? Is that your principal concern?

Dan Cooke: No. Our principal concern has to be, from the UK plc point of view, in terms of energy security, we are exporting a fuel, a largely biogenic renewable fuel, while at the same time importing biomass from other countries. We are exporting investment opportunities; we are exporting job opportunities, as well as, as I said, losing that potentially renewable fuel source. Yes, we as a company and we as a sector are making large investments in infrastructure to serve the UK market and to help the UK market be self-sustaining in terms of managing our own material stream, so there is a business issue.

David Palmer-Jones: Waste crime sinks the price, because they do not have to ultimately treat that waste, because they are burning it or putting it into fields to escape that, so it misses completely the waste hierarchy. That suppresses the price within the market, which does not allow the business models to stack up for further investment.

Q77 Mr Spencer: Are you suggesting the Government should intervene and regulate the export market of that waste?

Dan Cooke: There is a very simple measure that the Government could take at the moment, and that is to encourage the regulator, i.e. the Environment Agency, only to issue export licences to businesses that have sufficient quality management systems and environmental management systems in place. That would take a step up and eliminate overnight some of the examples of blatant waste crime that are happening at the moment.

Q78 Mr Spencer: Are those export markets within the EU or outside the EU?

Dan Cooke: Within the EU.

Q79 Neil Parish: How can the problem of obtaining regular access to food waste for AD plants be addressed? Anaerobic digesters particularly like food waste, especially if you mix it with farm waste as well, so how do we solve that problem?

David Palmer-Jones: The AD plant, which was a central theme of Defra, has been quite successful. It has certainly stimulated the construction of a large number, probably about 100 or something like that, over the last period of time. It was incentivised through the renewable obligation certificates, which really pulled people into the marketplace to deal with that. Certainly, when you look at the targets that we have to achieve—70% or 50%—you need food waste; it is 30% of the total volume required.

I would say we should take a leaf out of Scotland's book here; they link their policy to the collection site. It is quite costly, because it is small amounts of material.

They have intervened, and they have a policy that began at the beginning of the year where they tell businesses—and they sponsor the domestic side of collection—to extract that material. By doing that, that places the material on the market for these investments to make sense.

Q80 Neil Parish: Can I interrupt you a moment? You say it is getting better, but have you any idea how much food waste is still either going into compost or into landfill?

David Palmer-Jones: It is several million tonnes; it would be well over 3.5 million tonnes, something of that description.

Q81 Neil Parish: How much is going into AD plants?

David Palmer-Jones: It is less than 1 million. You need to link the front-end collection systems with the back-end provision. Government subsidised, got the construction, forgot about the beginning, and linking that front-end collection.

Q82 Neil Parish: How do we balance the AD feed stock with the overriding need to reduce food waste? They are almost conflicting things; you need the waste for the AD plant; but you do not want that amount of waste in the first place. Or is it not your job to do that?

Dan Cooke: We have built and operate five anaerobic digestion plants at the moment. Part of the answer, in terms of getting the material for those plants, is working with local authorities. They are designed to serve householders with their food waste collections, and that is about convenient, easy collection systems for the householder aligned with good communication. They are not as straightforward a technology as some would have you believe. They work very well for sewage waste streams, for example, but mixed food waste brings with it its own issues in terms of consistency of supply. Some of the opportunities I understand for AD and taking AD forward may be smaller-scale plants at the food manufacturing facilities themselves, so that you have a closed-loop system on the site, and therefore that bypasses collection.

Q83 Mrs Glendon: This question is to Mr Palmer-Jones and Mr Cooke, although I am pleased to say that ECO Plastics has a sales office in my constituency. Is there a sufficient market for the outputs of AD, both digestate and biogas?

David Palmer-Jones: I think biogas, yes. The energy element from it, yes, I think you can deal with that. The digestate has been a problem over the last period of time. It is perhaps a little-known fact that you need a series of dry days in order to then distribute your digestate. You can remember over the last couple of years we have not had so many dry days, although the sun is shining today. They have suffered quite heavily there. I know there are a lot of tanks full within the UK waiting for weather just like this in order to distribute that.

Also you have an imbalance with the nutrient need within the UK, so there are parts of the country that have a real need for that, and there are other parts that do not. It is very, very costly to transport digestate, and so it tends to be a local market, so that is one of the areas that I would be concerned about: getting the right placement in the areas where they really require that nutrient, and perhaps there are other means in other areas to deal with that material.

Dan Cooke: I would echo that. Again, the AD plants that we operate, we use the gas on site to fire gas engines to produce electricity to feed straight into the grid, so whether it is feeding biogas into the grid or power itself, there is no problem with the market for that. With regard to digestate, as David has said, it is not as straightforward. Again, it depends on the nature of your inputs as to the composition of the digestate that comes out of the back end, and that limits the use. It means that the markets by their very nature are fairly complicated, and, indeed, in some instances drying it out and mixing it with fuel, if you have got a local power plant, may be one of the best uses for that as well, being a good biogenic renewable fuel.

Q84 Roger Williams: Turning now to incineration, do you think there should be a ban on certain types of waste going into incinerators—for instance food or plastics?

David Palmer-Jones: You can do that by lots of different policy drivers. You can really incentivise and set targets for the streams that you want to be removed. There always comes a particular difficulty when people say banning landfill, banning energy from waste, etc, is very difficult to police. I would much prefer that we put a positive spin on that where we give strong policy drivers to sort out that part of the extraction of value up front, rather than trying to police it at the back end.

Jonathan Short: I think there is a place for landfill bans on certain materials; I would say particularly plastics, so long as it is far enough ahead for the industry to take note. We are talking 2030; I think that is far enough ahead. Based upon the new targets that I think we are going to see come from the EU during July, I think landfill bans will feature quite prominently there.

Q85 Roger Williams: We are talking more about bans on certain things going into incinerators now.

Jonathan Short: Plastic should not go to incinerators.

Dan Cooke: I would say two things: one is, again, agreeing with David in terms of maximising recycling. If we have the right framework in place, and the right facilities and infrastructure, then you get as many recyclables out before and therefore that is the main driver. You are left genuinely with the residual material for which there is no economic or environmental benefit in doing anything other than extracting energy from it. Incineration bans for materials at this stage would be perverse; we have had clear EU and UK policy that has encouraged the development and delivery of capacity to extract greater amounts of energy from it. To turn round at this stage when some of that capacity is only just coming online, and de-incentivise and risk lack of investment, etc, in further capacity would be perverse.

Q86 Roger Williams: Do you think there is sufficient regulation and monitoring in place to ensure that incinerators do not cause environmental or health damage to people?

David Palmer-Jones: There is a very strict regime around the monitoring of those sites, quite a lot of our sites are even online, so you can see the levels that we perform to; it is highly regulated. We have, because of the late investment in our infrastructure, the most modern fleet of energy-from-waste plants in Europe.

Dan Cooke: I would echo that. In terms of the regulatory framework, it is transparent, it is strict, and, again, we do what we can to encourage that transparency by putting all the plant emissions online, feeding it live to all of our local communities.

There is rarely any discernable impact in terms of local air quality standards, and we work hard to make that the case.

Q87 Roger Williams: We have received differing evidence about the cost of incinerators. Do you think that they are expensive, and do you think that they deliver value for money?

David Palmer-Jones: There is a range of costs within that, some of the figures that you may have received relate to maybe some very specific contracts around PFI, which could be the reason. The market price ranges from probably £70 to £100; that is about the level when you look at landfilling, with the landfill tax of £80 plus an average gate fee of £10-plus, you are at £90-plus. It is very cost-effective, and you have gained the energy that is much needed in the UK.

Dan Cooke: Again, I would echo that. We have to deliver value for money, otherwise our customers simply would not use the service. We have worked hard with local authorities; there are rigorous procurement regimes in place and rigorous forms of scrutiny to ensure that the customer gets value for money. When compared to other available treatments then, without doubt, it provides value for money.

Roger Williams: I think we anticipate having a different view from the next panel.

Dan Cooke: I am sure.

Q88 Ms Ritchie: Recent reports have indicated that the European Commission plans to ban the landfill of all recoverable municipal waste by 2030. Is this an achievable target in England? A “yes” or “no” answer.

David Palmer-Jones: You can say “yes” if you legislate in the right way, but beware: if you do not have the right infrastructure in place, you will have a problem. I remember the foot-and-mouth epidemic; sometimes having a landfill as a failsafe is not such a stupid thing to do, so beware of banning everything. Strategically placed landfill sites in the UK are not such a stupid thing.

Jonathan Short: I would say “yes”, subject to everything you have heard over the last hour.

Dan Cooke: Likewise, I would say “yes”, as long as the alternatives are in place and do not come at an extortionate cost, and “yes”, as long as you have contingency measures, as David said, if you need what has been a very important service and will continue to be an important service in an emergency situation.

Q89 Ms Ritchie: What impact will a landfill ban on all recoverable municipal waste have on your business?

David Palmer-Jones: We are investing significantly in being able to move it to extract value from it. We still have landfills, as does Viridor and others, and we are managing the decline of those businesses over the next 10 years. At that point we will have little or no capacity in terms of void space left in the UK. It is not a problem for us.

Jonathan Short: I would expect my business to grow on the back of that.

Dan Cooke: Likewise, we are moving from currently where we have 20 operational landfills; we will be going down to three in the next three to five years. We

have a wind-down and aftercare programme; the only three that will exist will be strategically placed to take those material streams that have no other route available to them.

Q90 Chair: Just a couple of questions before we are interrupted: is zero waste actually achievable? “Yes” or “no”?

David Palmer-Jones: If you say residual, yes.

Jonathan Short: Yes.

Dan Cooke: A provisional “yes”. Again, it depends on the waste you are talking about and the context, but, yes, we can aim to maximise resource use.

Q91 Chair: Should there be a Government-sponsored public information campaign on the benefits of incineration or other forms of energy from waste?

David Palmer-Jones: I think there should be more communication from Government supporting our industry—the whole value chain, not just one particular technology.

Jonathan Short: I would say “yes”, but draw a clear distinction between incineration—when I, as a consumer, think of incineration I think of pure burning, which is different to energy from waste.

Dan Cooke: Likewise, there was an excellent document that was put out in February this year by Defra, I believe, which was a guide to the debate and provided a superb context.

Q92 Chair: Have any of you ever had a fire incident in any of your waste management sites, and do you believe that the guidance from the Environment Agency covers that prospect at the moment.

David Palmer-Jones: Yes; everybody will have had those through the period of time, whether it has been on landfill or whatever. Does that guidance help? I think we deal with that as a responsible contractor anyway.

Chair: Okay. We will leave it there, if we may. Thank you for your answers. We stand suspended until the end of the vote.

Examination of Witnesses

Witnesses: **Daniel Smyth**, Senior Director, RPS Planning and Development, **Shlomo Downen**, Secretary and National Coordinator, UK Without Incineration Network, and **Julie Hill**, Associate and former Director, Green Alliance, gave evidence.

Q93 Chair: Thank you very much to the gentlemen and lady for being with us this afternoon and contributing to our inquiry. For the record, could I ask you to introduce yourselves, perhaps starting with the lady on my left?

Julie Hill: Julie Hill. I am an associate to Green Alliance and I chair the Circular Economy Task Force.

Daniel Smyth: I am Dan Smyth. I am a senior director at RPS Planning and Development.

Shlomo Downen: Shlomo Downen, the national coordinator of the United Kingdom Without Incineration Network.

Q94 Chair: Where you agree please do not feel that you have to contribute. It is probably more where you disagree and you have got something different to say it would be helpful. How do you consider the Government's approach over the last four years in regards to waste management? Do you believe that the Government has given a coordinated and consistent message in regard to waste management policy?

Julie Hill: No, I do not think it has given a coordinated and consistent message. The work Green Alliance has been doing with our task force, which is a consortium of businesses from across the supply chain, to move forward a conversation about the circular economy, is trying to take a much more holistic view. It marries up looking at municipal waste with commercial industrial waste. That is a false distinction, really, to separate those waste streams. They are quite often the same materials with the same properties and the same potential. It also looks across the UK, whereas we are beginning to see divergent policies in different parts of the UK, which is useful if it generates competition for excellence but not very useful for businesses who go across the divide. We are also increasingly trying to get a more holistic sense of how we organise—

Chair: Can we keep the answers fairly short, please? Anybody else want to contribute?

Daniel Smyth: I would just add that I agree. In certain areas the government leadership has been very good, in other areas not quite so good and not consistent across the board. There is evidence that Government does not fully understand and appreciate the whole lifecycle concept and the whole circular-economy concept. That is an area for more work.

Shlomo Downen: The question includes the word “consistency” and I will just focus on the inconsistencies of Government. You have got the pro-recycling message that is being undermined by perverse financial incentives to incinerate and combust material that should not be. You have Defra talking about the waste hierarchy while at the same time Government is providing subsidies for gasification plants that are so inefficient they sit at the very bottom of the waste hierarchy along with landfill. You have Defra talking about the waste hierarchy while at the same time Government is providing subsidies for gasification plants that are so inefficient they sit at the very bottom of the waste hierarchy along with landfill.

Similarly, DECC talks about decarbonisation of the energy supply and yet Government is paying subsidies for incinerators that will emit 10 times the amount of grams of CO₂ per kilowatt hour. It is worse than coal-fired power stations.

When it comes to planning, the Department for Communities and Local Government allows planning consent for incinerators that go against Government policies on climate change, energy efficiency and waste hierarchy. These all seem like inconsistencies to our members.

Q95 Chair: Each of you, what do you believe the role of Government should be in waste management policy? Do you believe that this is a time that the Government should be stepping back from its role in waste management policy?

Shlomo Downen: First of all, Government, and in particular Defra, should be shifting their focus from avoiding landfill to avoiding residual waste. I was glad to hear some of my colleagues saying that today. Even if Defra did limit itself to clear market failures, it has a lot of work to do. Defra acknowledges that government intervention is needed to prioritise reuse and recycling over incineration, and that government intervention is needed to ensure the full cost of incinerating plastics, for example, is reflected in the price of incineration. There is still a lot to be done even if we just limit ourselves to market failures. In addition, it is only fair that Defra should help out local authorities that they have led down the garden path into signing long-term waste management contracts that those local authorities now feel are bad deals. I think it is only right that Defra should help them out.

Daniel Smyth: There are some obvious areas where there is a role for Government—recycling targets, for example. There is evidence from the most recent Defra statistics that the 50% diversion by 2020 is at risk, so there is an area where support is required. We have heard about leadership. We have heard about communications and the importance of getting communications right all the way through the system. There is a role for Government to play in terms of encouraging certain technologies that are economically marginal, to continue driving waste management up the hierarchy, and again to encourage specific types of gasification, for example. There are lots of different kinds of gasification: some of them only generate electricity as an output; others are looking at generating synthesis gas or synthesis fuels. To achieve that, encouragement is required from Government.

Julie Hill: I think there are three main areas. One is to set strategic direction for the circular economy, and that means making it as much an economic goal to capture value of resources as an environmental goal. The second is to intervene in the design of products. We heard a lot about that from the previous three witnesses. You cannot get stuff back unless it is designed to have the product or material recovered. The third is to get the right infrastructure. You also heard that from the previous three witnesses. We have bottlenecks in the provision of not just sorting but reprocessing infrastructure, because there are supply-side and demand-side problems, which we can go further into, but we have a gap.

Q96 Ms Ritchie: Under existing policies, will England reach the EU household waste recycling target of 50% by 2020?

Julie Hill: I would defer to the knowledge of my industry colleagues in the first session, and also very much WRAP—the Waste and Resources Action Programme—who I think you are hearing from later, that the consensus is probably not.

Daniel Smyth: I would agree that there is a risk that we will not meet that target. The evidence is quite clear. Again, I have little to add to what has been said previously.

Shlomo Downen: I will remind everyone that 70 English local authorities are already recycling more than 50%. However, if we do miss the target I would suggest that is because local authorities have focused too much on incineration and not enough on recycling.

Q97 Ms Ritchie: If not, what actions should be taken to address any anticipated short fall?

Shlomo Downen: Very simple, as others have said. Make sure that food waste moves from the residual stream to the recycling stream, so that no food waste is incinerated or landfilled. Also support local authorities to extend the range of materials accepted for recycling. Echoing what was said about a wider range of plastics—simply put, if a consumer purchases plastic it should be recyclable. If it cannot be put in the recycle bin, they should not be able to buy it. It should not be available.

Daniel Smyth: Again, a product-lifecycle approach in terms of design, so that you are designing to be able to recycle products. We heard about composites and the problems that composites create. In terms of recycling, many recycling processes work on physical systems, so magnets, electrical current, and density. It is very difficult to do that when you have composite materials, mixed materials and contaminated materials. Product design and also separate collection systems, so that you are not cross-contaminating materials and you cannot recycle them as a consequence, and then investment in infrastructure.

Julie Hill: Exactly the same things. Without the infrastructure you cannot push up the rates, and you have got to do something about the demand side so that there is somewhere for the products in that reprocessing infrastructure to go.

Q98 Ms Ritchie: Will there be a clear market failure if EU targets are increased to 70% by 2030, as indicated by the EU Commissioner?

Julie Hill: Do you mean a market failure as in the current instruments not doing what they are meant to do? Yes, it probably indicates that the landfill tax ought to have been higher to start to build those incentives. However, it is the bottleneck, and the availability of the recycling and reprocessing infrastructure, that is going to be the difficulty. The market failures there are multiple.

Daniel Smyth: I would simply agree.

Shlomo Downen: We are 15 or 16 years away from 2030. That is wonderful because that gives us time to move from incineration subsidies to incineration taxes, to invest more in recycling infrastructure and education, to do more to ensure separate food collections and collections of other bio-waste and to require the removal of all recyclables prior to incineration or landfill. Government can lead by example through green procurement, etc. We have got the time to do it. The solutions are there; it is just a matter of implementing them.

Q99 Mrs Glendon: Do you agree that it is not possible to recycle all materials that enter the waste stream?

Julie Hill: First of all, can I say that we also need to think about product? One of the big gaps is we tend to think about recycling, which means individual materials and therefore a need to reprocess them. The circular economy is about recovering product, so that is about reparability, upgradeability and so you can ensure reuse. It is also, as some of the earlier witnesses said, about extended product lifetime. It is about keeping resources in use. In a sense, recycling and reprocessing, which is what we do with most of municipal waste, is the least environmentally beneficial to do and often represents the least good-value capture from those things. We have got to stop just thinking about household waste and recycling, and think about resource capture in as whole a product form as we can manage.

Daniel Smyth: I would just add that it is not possible to infinitely recycle all materials. At some point the material is no longer recyclable, so you cannot do it forever. The idea is to prolong its use and to use it as much as possible, but you cannot do that forever.

Shlomo Downen: I was watching the evidence you received a fortnight ago from my colleague, Steve Lee, and he was talking about greasy pizza boxes and how that could make them totally unrecoverable as cardboard. However, what he failed to explain is that cardboard decomposes and so that greasy pizza box could go into the compost and then it would actually count towards recycling. There are a lot of materials that, with creativity, etc, can actually be recycled. Again, it is a matter of removing the perverse disincentives to do that. Obviously, there are members of the chartered institute that would love to get their hands on that pizza box because it provides incinerator feedstock; I would rather see it composted. There is no way you are going to be able to prevent grease from going from the pizza to the box, so use it otherwise.

Q100 Jim Fitzpatrick: You heard the discussion we were having earlier on about a business-led approach rather than a Government-led approach. Is that preferable and does it inevitably mean that it will be the lowest-cost option, because it is business-led rather than Government-led, at the expense of the best environmental option?

Julie Hill: No, not at all. I think what you heard from the previous three witnesses is that the industry, or the resource recovery part of industry certainly, is way ahead of Government in this field. That is in terms of its vision and its desire for a long-term solution, its recognition of resources as having value, not just the need to deal with a waste problem and reduce environmental impact. It has been the industry that has recognised the carbon benefits of reuse and recycling, so it is way ahead. As some of those witnesses said, other businesses—the businesses they serve—also want that kind of approach. That is what our task force tells us: they want a circular economy and the Government is not giving it to them.

Daniel Smyth: I agree. It depends on the kind of business, of course. In terms of the waste management sector as a business type, absolutely it is a highly innovative business. It is coming up with great solutions in terms of recovering values from material, and it is doing that across different streams and across products. Some of the work that has been done is fantastic. Obviously the business in the private sector managing its own waste streams will have a tendency to look at the lowest-cost legally compliant disposal solution. They will have a tendency to do that. However, there are other businesses—some of the food retailers, for example—where it makes a lot of sense for them to recover value from that material themselves. It contributes to their corporate social reporting outlook, it recovers energy and it saves cost. It depends on the kind of business. There are some very natural incentives for many businesses but for a significant proportion those costs are what they are looking for.

Shlomo Downen: It is very important for Government to ensure that the incentive hierarchy matches the waste hierarchy. At the moment it does not, and that is where a lot of the problems stem from. Business cannot realign the incentive hierarchy to the waste hierarchy, but Government can, so that is a job to be done. There are market failures that need to be addressed so there is work for Government to do, whatever business is doing. Government is needed to address the market failures, to ensure the true costs and benefits

are reflected in the price of treatment. That is one of the reasons that UKWIN advocates for an incineration tax to help restore the balance.

Q101 Jim Fitzpatrick: You heard me ask about messaging, and there was agreement in the previous panel about the messaging having to be continuous and consistent from the private sector, from local government and from Government. Is the average householder as informed as they ought to be to participate in that which we all want to see be a success? What more could be done to get them onside, given that we want to make it as simple as possible, but sometimes simple is not necessarily the best way to do it.

Julie Hill: We heard earlier that WRAP has had a very big role in successful campaigns, but what we also understand is you have to keep repeating it. The messages and communications have to keep coming forward. As soon as they stop people are liable to slip back into previous habits.

Jim Fitzpatrick: Bad habits.

Julie Hill: Yes, non-participation, perhaps. We need to drive up a number of things. We need to drive up participation, so people using the systems at all. We have got to get them using it better, so they are not contaminating streams because, as the re-processors will tell you, purity and certainty is everything. Let us not again forget the business and commercial waste that, if we had a more rational system, local authorities could perhaps begin to collect, and capture the value for that. There is almost no messaging to businesses, other than where they are contracting waste services. Householders in a sense are a captive audience for the local authorities; they have to provide that service. Nothing makes small business listen to messaging about the potential of recycling, or the potential even of getting money back. I am sure that you have heard that household waste is probably a ninth of the total availability of resources we could get back in this country.

Daniel Smyth: Householders do want to do the right thing. They understand that there is value in the material that they throw away. It does need to be kept simple. They do not know where that stuff goes. You do not know where that stuff is going on a street-by-street basis. There is more information that can usefully be provided to people so that they understand what the consequences of their actions are and what the benefits are. There is a largely fairly well informed population, but of course I agree it needs to be repeated and it needs to be kept clear. There is also a proportion that does not perform as well, and that needs work.

Shlomo Downen: Householders need educating, they need reminding; so do product designers and manufacturers. I think that point is made. Places with the best recycling rates often have variable charging schemes. That is something to consider. It makes sense for those sending less to the residual stream to pay less for their waste management. Recycling should be easy, but convenience should not come at the expense of quality. So mixed waste bins where all the plastics go in misses an opportunity because people can appreciate that by further segregating their plastics they are actually doing an even more noble thing than just putting them all in together. People will respond to that.

Much more can be done to make recycling both easier and cheaper. For example, if someone brings a reusable item to a bring site it should be accepted for reuse. At the moment you have this whole network of household waste recovery centres but, for various

reasons, a lot of it to do with statistics kept by the waste company who is the subcontractor, once you have brought it in it never goes out. So with a perfectly good children's bicycle that is brought to a bring site, they used to have a stack of them and then someone would come and then they would take them away. Now you cannot have that reuse. That is a missed opportunity.

Similarly, bulky collections from local authorities, like furniture collected by local authorities, could be reused, and instead that is not happening yet. There is more that can be done, and obviously it is catchy. Again, it is good for business: if people know that their old settee will be reused by someone who is less fortunate, they may be more inclined to buy a new one, etc. So while I do not promote waste, I am looking to promote reuse.

Q102 Neil Parish: Following on from Jim Fitzpatrick, should compulsory household recycling be explored as an option to increase England's recycling rates?

Julie Hill: We have previously advocated "pay as you throw" rather than compulsory recycling. The policing of that can be very tricky. "Pay as you throw" is either a penalty or an incentive, depending on which way you look at it. It is often misinterpreted as meaning you pay to get rid of everything, rather than the principle that you pay for residual waste, so you pay for what you do not put in the recycling. You escape the charge by recycling. That bit of simple logic seems to escape an awful lot of, dare I say it, politicians, who treat pay as you throw as something that means you pay for everything you throw. You do not; you only pay if you fail to recycle. In my book, that is an incentive rather than a penalty. There is plenty of research work that shows it works in other countries. Obviously other countries are sometimes different culturally, but there is enough to suggest that it might work here. As I am sure you know, ideas about direct household instruments have been very much off the agenda in this administration, but if we are going to reopen that debate I think "pay as you throw" would be the thing to consider first. Now we have the technology for it as well. The *Daily Mail* does not like it but eventually they will get over it.

Neil Parish: Not necessarily.

Daniel Smyth: I agree with everything that has just been said. I do not think that a compulsory process is going to be popular. I think that incentivisation using intelligent mechanisms and technology is a much better way forward.

Q103 Neil Parish: You were saying, Ms Hill, that if you put more into the recycling then you will have less waste and so you will pay less for disposing of that. How would that be measured practically? Are they going to go around and weigh how much you have got in your waste bin, or will they go by the size of the bin? How would that work?

Julie Hill: There are a variety of means. Again, I would defer to my colleagues in the industry but chipped bins, as you have probably heard of, are there to weigh the bin. So the bin goes onto the lorry, the residual waste bin, and the weight is recorded and charged accordingly, or you can do it on size of bin. In some countries they have managed to get the size of the residual waste bin down to half or a third of the ones that we have.

Q104 Neil Parish: Keep Britain Tidy has suggested perhaps a reward scheme where you actually reward a community, planting trees or producing a playground or whatever. How practical is that?

Julie Hill: I do not think it would have the same effect.

Q105 Neil Parish: Do you not think that people do not necessarily like Big Brother watching them all the time and being told what to do?

Julie Hill: We pay on metres for energy and water. I do not see the difference in paying for disposal of the parts of the waste stream that cannot be recycled. It puts a lot of pressure back on the producers of, say, unrecyclable packaging, to alter that. The manufacturer or retailer who gives you the unrecyclable silver foiled, plastic laminated cat food pouch is also then making you pay for it.

Shlomo Downen: I think that it is a matter of fairness, in answer to the question. It would be fair to expect someone sending less residual waste to pay less. Similarly, it would be fair for someone who chooses to opt out of recycling to compensate for the environmental damage that they have chosen to cause by opting out. It would not be fair to punish someone who fails to recycle properly if the reason that they have not is because the council does not provide adequate facilities and adequate education.

Q106 Neil Parish: What about the person who says, “I have paid for my waste collection through my council tax”?

Shlomo Downen: Indeed. The amount of council tax that you are charged depends on how much the waste collection and the disposal costs the local authority. How something is collected affects the price of how much it costs to dispose, and so if the way that it is collected means that there are discounts in the disposal costs, those discounts should go back to you. That seems perfectly fair.

Q107 Roger Williams: Can I just ask you whether you support or oppose the use of incineration as a waste management technique, and why? Not too long.

Daniel Smyth: It depends what you mean by “incineration”. Incineration without energy recovery is disposal, so it is already recognised in the waste hierarchy as being lower than energy recovery, which is generation of electricity and/or heat. I support the recovery of energy from waste for residual waste, which is the waste that you are not able to do something more constructive with by recycling or reusing it.

Shlomo Downen: UKWIN opposes gasification, pyrolysis and incineration of all forms—conventional incineration. Incineration is a waste of money. Even if incineration was safe, and we argue that it is not, it would still not be sensible. Incineration harms recycling, destroys valuable resources, results in the release of greenhouse gases and other harmful emissions and simply is not needed. Incineration is a threat to long-term decarbonisation of the electricity supply, as we mentioned earlier. The alternatives to incineration are cheaper, more flexible, better for the environment, better for the economy, giving rise to more jobs and better use of resources. Incineration has no place in a closed-loop circular zero-waste low-carbon economy.

Chair: Mr Downen, I think you are actually reading out a statement. We would quite like you reply to the question.

Shlomo Downen: This is the question about whether I support the use of incineration and why.

Chair: Yes, and perhaps you could explain why.

Shlomo Downen: The answer is “no”. As I say, incineration is linear: you start off with a product, you burn it, and it is no longer there. It goes against the circular economy. Just to sum up, I will quote William Neale, our UK person at the European Commission: “We have to have a circular economy concept, so it is highly important that we are pumping back materials into the economy rather than burning or burying them”—straightforward.

Q108 Roger Williams: Ms Hill, as well as answering that, we have heard from Mr Downen that he believes that incineration causes lower rates of recycling. Perhaps you could deal with that.

Julie Hill: Our issue would be where it diverted from recycling, the circumstances of which maybe is different, and because you are trying to be quick I will not go into them.

Q109 Roger Williams: We have heard in our last evidence session that this plant is highly regulated to protect the environment and to protect the health of people. What are your main concerns about the environmental and health impacts of incinerators?

Shlomo Downen: There is not enough monitoring, not enough enforcement and not enough transparency. Incinerator operators are not being given any limits to the climate change emissions that they can release into the atmosphere. In fact, harmful emissions of greenhouse gases are not currently regulated at all. At the moment, whatever monitoring and regulating does occur in relation to other harmful incinerator emissions, neither the Environment Agency nor the incinerator operators have adequately opened up this process for public scrutiny. Incinerator operators and the Environment Agency rarely provide online emissions data, annual monitoring reports, permits, permit applications, R1 calculations, decision documents, compliance assessment reports and so forth, even when this information supposedly constitutes part of the so-called public register. When the industry and the regulators appear so reluctant to be open, it is not surprising that people suspect that they may have something to hide.

Julie Hill: As a former member of the board of the Environment Agency, I have more confidence than Mr Downen in the regulation, but if it is perceived to not be open and transparent I think that needs addressing.

Daniel Smyth: I disagree with pretty much everything that Mr Downen said. It is a highly regulated industry. The Environment Agency has very significant powers to regulate. They do require monitoring. There is effectively a cap on greenhouse gas emissions from these facilities. I will not go through every point.

Q110 Chair: Mr Downen, do you have a view as to why it is so popular in Scandinavia, Austria and Germany?

Shlomo Downen: It is not anymore. The latest national resources strategy is subtitled, “Recycle more, incinerate less”. Its popularity is on the wane. It was once popular, and you are not wrong.

Q111 Chair: Why is it so acceptable, then? I did not ask about this country. I asked about Scandinavia.

Shlomo Downen: No, this is Denmark. Denmark’s national resource strategy is subtitled, ‘Recycle more, incinerate less.’

Chair: Because they were not recycling at all?

Shlomo Downen: Because of incineration, because they were incinerating more than 50% of their waste.

Chair: Because the community has benefited.

Shlomo Downen: Because historically, it was seen as a good idea.

Q112 Chair: If you get a community benefit—you could say it was a sweetener—like providing cheaper hot water and cheaper electricity, that was probably why it was acceptable. Do you say that is a bad thing?

Shlomo Downen: I am aware of anti-incineration movements throughout Europe. There is Zero Waste Europe, and within each European country there are campaigners against incineration. To say that it is accepted is the same as what the Canadians are being told: that incineration is acceptable in the UK.

Chair: Are you Canadian?

Shlomo Downen: No. I was born in Brooklyn, New York. You have picked up on my accent there, which I was not trying to hide, but no. Many years living in Yorkshire helped to calm my accent down, and now I live in Nottinghamshire.

Q113 Chair: Were you involved in the Dalton Incinerator Steering Committee (DISC)?

Shlomo Downen: No, but I do know about your shampoo experience from David Andrews. I was not directly involved in DISC. When I lived in Yorkshire, I lived in Bridlington, which is outside of your constituency, but not far away. However, the long and short of it is that when it comes to the popularity with the public of incineration, clearly, that is not something that is ever going to happen in the UK. It is too late with the history of incineration in this country, and the fact that, if you like, we are moving towards the age of decommissioning of incinerators. In Rotterdam, whether they love their incinerator or not, because of overcapacity in Germany—

Chair: I think the rest of the panel probably do not agree with you but I am going to turn to Mr Parish.

Q114 Neil Parish: I think I have a fairly good idea of what one member of the panel believes about my question, which is: should there be a moratorium or a ban on new incinerators being built, and why? Could we have a fairly short answer, Mr Downen, please, on that one?

Shlomo Downen: I will be as short as I can: yes, we support a moratorium on new incinerators, including gasification and pyrolysis. We need to focus on the top tiers of the waste hierarchy. Incineration is a costly distraction from that. Incinerators are a problem, not a solution. It will only become more problematic as waste arising to—

Chair: Mr Downen, if you are going to read it out, you might as well just submit it as evidence.

Neil Parish: I think I understand your argument.

Shlomo Downen: Simply put, there is too much focus on incineration, not enough on the top tiers of the waste hierarchy.

Neil Parish: Ms Hill?

Julie Hill: There will probably always be a fraction of waste that are not recyclable or recoverable, and if you can get energy out of it, that is a better thing to do than to stick it in a hole in the ground.

Q115 Neil Parish: That is the other part of my question: should there be a ban on certain types of waste, for example, food or plastics being sent to incinerators?

Chair: Mr Parish, do you want to hear from Mr Smyth?

Neil Parish: I thought I would give them the second part of the question, as well. Should there be a ban on certain types of waste—for example, food or plastics—being sent to incinerators?

Julie Hill: I would like to buy into the picture that the colleagues from the waste industry painted earlier that they could genuinely organise the system so that only unrecoverable wastes go to energy-from-waste, or landfill if that is unavailable. If that is not the path that we seem to be going down, it may be necessary to look at bans to divert to recycling. I would hope that that could be organised through incentives for recycling and reprocessing infrastructure, rather than disincentivising or directly banning what goes on at the bottom end of the hierarchy. If it does not happen, we ought to consider that.

Neil Parish: Mr Smyth?

Daniel Smyth: A ban is an extremely blunt tool. You heard Mr Palmer-Jones earlier saying that, actually, some flexibility—bearing in mind that we are talking about a whole system here, and bearing in mind that in terms of incineration we are talking about infrastructure that is there to deal with residual waste, so again, it is what is left after you have done all the recycling you can do. It complements recycling. It sits within the waste hierarchy. You should make it as efficient as you can, and that can be done within industrial CHP schemes. It is more difficult with schemes that require a district heating system because of variable demand for the heat. However, in my view, it has a place. It is important. The flexibility is required, and a ban is the path of least intelligence.

Shlomo Downen: I have two more quick points, just to answer your question. One is that if we look at different local authorities, Sheffield is recycling 28%. Why? Because it has an incinerator. It has to feed the monster, so even materials that clearly are recyclable and compostable are going to the incinerator.

Q116 Neil Parish: What about the materials that are not? You cannot recycle them. The resources you would use to recycle them are actually greater than what it would be to incinerate it. You are closing your mind entirely to incineration.

Shlomo Downen: I started off very open-minded about incineration and did a bit of research.

Neil Parish: With respect, you do not come over as such.

Shlomo Downen: I have not always been the national coordinator of UKWIN, and I applied for the job because I believed in it. I believed in it because I did my research. Some of the things that I found out are, for example, if you put plastics in the ground, it acts as a carbon sink, so it stores the carbon in the plastic in the ground; it does not release it into the environment. Secondly, plastics in the ground can then be recycled later, so it is not considered to be economic to recycle that plastic now but it will be in the future. As we heard this morning, what was not economically recyclable five years ago can now be recycled economically. So five years from now, who knows what the range of plastics will be?

Q117 Neil Parish: So therefore you would increase landfill until you get to the stage where you actually want to do something else with it.

Shlomo Downen: Landfill or storage of—

Q118 Chair: Are we storing it now? Who would pay for the storage?

Shlomo Downen: I do not know if you are familiar with landfill mining but landfill mining digs up landfills because the plastics that are there in the ground have a value, and therefore old landfills are being dug up. In effect, that material has been stored there in the landfill.

Q119 Neil Parish: I think my last question has more or less been answered. What is the alternative to incineration? Is the alternative a good value-for-money option? Surely, you have got to balance the two. Is incineration cost-effective? If you are going to use more resource to recycle something, then surely incineration is not all wrong. If you are going to use the hot water in the houses, surely that is quite a good use. There is much more being done on the continent with that. I am just not quite so convinced that incineration does not play a role.

Julie Hill: Large incinerators are very big bits of capital asset, so it depends what you mean by “cost-effective”. They are possibly now low-risk assets, because they are proven technology and people can see a role for them, but the risk of not having the supply, as we have seen from the European experience where there is overcapacity and now they are taking our waste to incinerate is quite a big risk. Is that a risk we want to run? Overcapacity is the worst thing we can do for the circular economy. That does not necessarily mean that incineration or energy recovery does not have some role, but my feeling is that it needs to be smaller, more flexible and able to adapt to changing waste streams. It really has to deal with the genuinely residual and not take or divert recyclables.

Daniel Smyth: Just in terms of overcapacity, it is particularly unlikely that a private sector will deliver overcapacity. It is not likely that banks will fund overcapacity where they cannot see that the feed stock is available over the period over which they are making their investment. There are lots of checks and balances to prevent overcapacity.

We have just heard that one of the alternatives to incineration is landfill and landfill mining. Landfill is an alternative. Some streams, with better source segregation, better collection and better technology can be driven up the waste hierarchy. With cross-contaminated material that is residual, incineration with energy recovery is a perfectly reasonable, safe, and legally compliant technology and has a place.

Chair: Mr Downen, briefly?

Shlomo Downen: I am just looking to see us all move forward rather than backwards. Incineration seems very backward-looking. We are looking to move forward to a closed-loop circular economy. There is nothing circular about an incinerator: you have a resource; you burn it; it is gone. I would like to see all the variety of circular economy approaches—zero-waste approaches, if you like—applied instead of a single further tonne of incinerator capacity.

Q120 Ms Ritchie: Is there a risk that landfill bans could simply lead to an increase in incineration and if so, how could this outcome be avoided?

Julie Hill: Again, by getting the capacity in for recycling. I think it would not be good enough to ban landfill without providing an alternative. As has been said, it is a blunt instrument. It may force things down the hierarchy but you want to know where you want that material to end up, and our view is that we need a rational system where you have designed it according to the needs of the re-processors, which in turn meet the needs of manufacturers.

Daniel Smyth: Some material needs to go to landfill. It is not appropriate for recycling; it is not appropriate for energy recovery, so there will always be a need for some material to go to landfill and there will be a need for landfill into the future. We heard the sensible approach and the business approach is to retain a strategic network of landfill to provide that service. So I can see circumstances where it would be highly problematic invoking a ban on landfill or incineration. When you think about the cross-contamination materials, if you have a cross-contaminated plastic that is banned from incineration, where does it go? A ban is a blunt instrument. I think much more intelligent mechanisms through incentives and encouraging streams up the hierarchy and into other technologies is a better approach.

Shlomo Downen: On its own, landfill bans do not promote recycling. Our written evidence, particularly section 7, gives a lot of information about what UKWIN thinks should happen with materials, etc. Simply put, there is the vacuum-cleaner effect, as it is called in Europe, where if you ban the landfill but do not give further instructions, you are only driving it one rung up. Not all incineration even fits into that rung, but the best incinerators are still worse than the worst form of recycling. So you want to have more measures, whether they are taxes, incentives, or bans to help drive waste management up the waste hierarchy. Really, we want to start at the top, promoting reduction, reuse, and recycling, rather than starting from a landfill-diversion mindset. That is part of the change I would like to see.

Q121 Ms Ritchie: Recent reports have indicated that the European Commission plans to ban the landfilling of all recoverable municipal waste by 2030. Is this an achievable target in England, Mr Downen?

Shlomo Downen: It is achievable, but it could come at the expense of the top tiers of the waste hierarchy, so government intervention would be needed alongside the European initiative in order to make sure that in the UK, the right things happen to that material, not just avoiding one of several clusters of wrong things.

Daniel Smyth: We heard from Mr Cooke earlier that it is achievable with the right support, leadership from Government and framework in terms of developing the necessary solutions.

Julie Hill: I would agree with that.

Q122 Chair: One of the greatest difficulties is disposing of wooden frames and other materials left out of buildings. They are being stored at many sites retaining waste, and I had a second fire in Thirsk, at a yard there. How do you see this problem of removing combustibles and disposing of them in the speediest possible way to reduce the risk of fires?

Shlomo Downen: It falls outside of my expertise, specifically. Obviously I agree with you that fires are a problem and they certainly are distressing for people. Regulation in the Environment Agency—regulation of the industry—is very important. For people to regain confidence, obviously, the Environment Agency needs to regulate.

Daniel Smyth: We heard from the previous witnesses that there is an issue in terms of regulation and in terms of some of the operators in business that do not comply with the regulations. There is a difficulty of enforcement for the Environment Agency with these kinds of operators, so that is an issue, as well as the segregation of material and the design of facilities. Probably the biggest problem here is waste crime, essentially.

Julie Hill: I have nothing to add.

Q123 Chair: If there was one recommendation you would make for a better waste management policy, what would it be?

Shlomo Downen: To recognise that incineration has no place in the circular economy by introducing an immediate moratorium on new incineration capacity and by launching a consultation on, effectively, an exit strategy for incineration.

Daniel Smyth: We have a set of recommendations in our evidence. If I could choose two of those, as I have already said, there is a role for Government in terms of targets that are at risk in terms of the development of the infrastructure that we require to recover more value from material. In particular, I would like to recommend the micro-scale analysis of gasification technology, where that is supported to generate vehicle fuel and gas as a replacement, rather than simply electricity.

Chair: I am sure you will have a long conversation with Mr Downen after this meeting. Ms Hill?

Julie Hill: The simplest single instrument is individual producer responsibility for products put on the market throughout their entire lifecycle.

Chair: It has been a very lively panel. We are extremely grateful for you for being so open and honest with your answers and sparing the time for being with us this afternoon. Thank you for contributing to our inquiry.