CIWM response to NIC Vision & Priorities Consultation

The CIWM is the professional body for the resource and waste management sector. It represents around 6000 waste and resource management professionals, predominantly in the UK but also overseas. The CIWM sets the professional standards for individuals working in the sector and has various grades of membership determined by education, qualification and experience.

Q1. How does the UK maximise the opportunities for infrastructure, and mitigate the risks, from Brexit?

Sustainable economic growth is a prerequisite to a successful future UK irrespective of whether we leave the EU or not. The vision for our future infrastructure must support the Government's commitment in the Clean Growth Strategy to "put clean growth at the centre of our modern Industrial Strategy", including the ambition to achieve zero avoidable waste to landfill by 2050, and the further ambition expressed in the Industrial Strategy White Paper to double resource productivity by 2050. The Defra 25-year Environment Plan published recently builds on these ambitions and promises "to innovate to achieve clean growth and increase resource efficiency to provide benefits to both our environment and economy".

Maximising the opportunities to deliver these objectives requires a strong policy and legislative framework to underpin investor and market confidence and provide a clear landscape for business and public planning. Policy and legislation in this area has for the last 30 years or so been shaped or heavily influenced by the EU and so, in the context of Brexit, it is critical that the UK governments ensure that there is clear, long term national policy framework in place as we leave the EU. For this reason, the Resource & Waste Strategy expected later in 2018 must set out key objectives, targets and fiscal levers (e.g. landfill tax) across the waste hierarchy from waste prevention, through recycling to energy recovery, as well as positioning the recovery of value from our waste within the wider resource efficiency and productivity agenda. In setting out strategic vision for infrastructure over the next 30 years, the NIA must in turn support these objectives and assess how they can best be met.

The focus in this Vision and Priorities document on residual waste infrastructure, whilst helpful, is not a sufficient approach to the challenge. As an example, while there is evidence of a capacity gap for residual waste (see Q18), significant additional investment in recycling capacity (sorting and reprocessing) will also be required if the government aims to improve the current (flatlining) recycling rate in England (insert ESA figure of aging recycling infrastructure). And it is not just a question of capacity but also of the technological capability of new infrastructure, such as more sophisticated sorting technology to improve the range and quality of recyclates captured from co-mingled waste streams.

In the specific context of Brexit-related risk and more broadly in terms of creating a more resilient, resource secure future, the ambitions in the Clean Growth Strategy, the Industrial Strategy and the Defra 25YEP can be met in part by better exploiting the value of the secondary raw materials and waste-derived products generated domestically.

The UK has made some progress; Defra's 2015 publication 'Resource management: a catalyst for growth' [1] reports that *"Over the past decade the value we extract from managing our waste resource has increased significantly... The GVA/tonne of waste managed by the sector has risen from £32 in 2004 to £43 in 2012 (after adjusting for inflation), representing a 33% increase in real terms over the 8 year period."* Despite this improvement, however, UK recycling remains heavily dependent on the export of waste products and recovered materials; over half of the UK's recycled paper and plastics is exported, as well as over 3 million tonnes of refuse derived fuel (RDF).

The current development by the Government of long term strategies for industrial growth, environmental protection and infrastructure offers up an important opportunity to rebalance the UK recycling economy and develop domestic markets and sustainable end uses for secondary materials.

The benefits of doing so are significant:

- Improved economic competitiveness and resilience – there is a substantial body of evidence quantifying the business benefits of resource efficiency and productivity, for example a 2011 McKinsey report[2] suggests that 30% of global demand for resources in 2030 could be met through improved management, with a resulting global economic benefits of up to $3.7 trillion a year
- Improved material security, particularly for critical /rare raw materials, in the face of potential future global shortages – 80% of CEOs of UK manufacturing companies identified raw material shortages as a risk to their business
- Reduced dependence on export markets to support UK recycling and the risk of disrupted access to secondary material markets for UK recyclates as a result of new tariffs, regulatory barriers, diverging standards etc post-Brexit

As evidenced by the current situation, however, making better use domestically of our secondary materials and waste-derived products cannot be left to the markets, it will require policy intervention to create additional capacity and end market in the UK. Appropriate levers and incentives will be required across a number of policy areas. In terms of delivering the necessary infrastructure, a support package should be developed which could, for example, include mechanisms such as access to targeted investment funding, along similar lines to the original remit of Green Investment Bank, resource enterprise zones to encourage industrial symbiosis and the use of recovered materials and energy, and tax relief on capital investment in recycling and reprocessing.

[1] Defra (February 2015) 'Resource management: a catalyst for growth and productivity', https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/401453/resource-management-catalyst-growth-productivity.pdf

[2] McKinsey (November 2011), 'Resource Revolution: Meeting the world's energy, materials, food, and water needs', https://www.mckinsey.com/business-functions/sustainability-and-resource-productivity/our-insights/resource-revolution

infrastructure. This will need to be further supported by government intervention to stimulate market demand for of high quality recyclates and to support the supply side. This will require action in areas such as a more comprehensive Extended Producer Responsibility framework, minimum recycled content requirements, green procurement, reducing the number of different plastics in use to support improved capture and recycling of plastics, etc

Ultimately, unless the UK opts to introduce Producer Responsibility to its fullest extent, thereby making the market (producers and manufacturers) wholly responsible for the recovery and recycling of products at end-of-life, then infrastructure to deliver these objectives must be planned for at a national level as a strategic priority to ensure that the UK has the right collection, sorting, reprocessing and recovery infrastructure to recover secondary resources including critical materials.

Q9. What strategic plans for transport, housing and the urban environment are needed? How can they be developed to reflect the specific needs of different city regions?

All future housing and commercial development must more adequately take into account both the design and functionality criteria needed to recover resources effectively from UK householders and businesses, and the resource collection, transport and treatment infrastructure needed to support this future development. For example, with a figure of circa a tonne of waste generated per household per year in England, the government's target to build a million more homes by 2020 means significant additional demand in terms of the collection and transport of waste in areas where major housing development is anticipated and must be planned for regardless of whether these services are provided by the public or private sector.

Recycling in cities is particularly problematic due to housing stock and population density; conversely, city regions have more opportunity as a result of clear geopolitical boundaries and the devolution agenda to create dedicated circular loops for recovered materials that again must be part of the infrastructure and planning process. Both utility and resource productivity objectives, therefore need to be articulated in relevant policies across government, from housing to industrial growth, and cascaded down into local economic development and city region infrastructure plans.

Q13. What will be the critical decision factors be for determining the future of the gas grid? What should the process for deciding its future role be and when do decisions need to be made?

In assessing the future of the gas grid, consideration should be given to the potential for decarbonising heat through biomethane-to-grid and current challenges to the expansion of this source of renewable energy including issues such as access to grid connections and flow rates. The volume of greener gases such as biomethane that might be produced in the longer term is not clearly known but some studies suggest they could meet around 5% of total UK gas demand and 10% domestic gas demand by 2035[3].

[3] Ofgem Future Insights Series (November 2016),'The Decarbonisation of Heat', https://www.ofgem.gov.uk/system/files/docs/2016/11/ofgem_future_insights_programme_-_the_decarbonisation_of_heat.pdf

Q18. How should the residual waste stream be separated and sorted amongst anaerobic digestion, energy from waste facilities, and alternatives to maximise the benefits to society and minimise environmental costs?

Maximising the benefit to society and minimising environmental costs and impacts is delivered by avoiding waste arising in the first place and then separating out and recycling materials so that they do not enter the residual waste stream. Any long term vision for infrastructure must recognise the need to plan for appropriate recycling and reprocessing capacity to support the government's resource productivity, clean growth, and low carbon objectives.

Decisions about future treatment options for residual waste will need to be taken based on desired policy outcomes. It is not clear what the UK's renewable energy policy will be in the future and how aligned to EU legislation, but as an example, EfW has a role to play in meeting the UK's obligation under the EU Renewable Energy Directive (RED) to source 15% of its total energy from renewable sources by 2020. In the 2012 UK Bioenergy Strategy[4], energy from the biogenic part of mixed residual waste was identified as one of a number of technologies that either have the greatest potential to help the UK meet the 2020 target in a cost effective and sustainable way or offer great potential in the future. However, there is an important interplay between recycling and energy recovery and decisions about long term EfW capacity requirements must take into account long term recycling policy and targets to ensure that EfW does not 'cap' recycling below the desired level.

Likewise, anaerobic digestion has a role to play in decarbonising transport. The Defra 25 YEP states that the government will explore "different infrastructure options for managing residual waste beyond electricity, including the production of biofuels for transport and emerging innovative technologies" and the NIC should be engaged in this work.

Waste infrastructure challenges

In terms of planning for future residual waste treatment infrastructure and decisions on the optimum technologies to recover additional value, there are three main challenges:

- The impact of policy uncertainty on investment:
  Uncertainty with regard to future policy and targets for waste prevention, recycling, diversion of biodegradable waste from landfill, etc, has constrained investment in all waste infrastructure for a number of years, coupled with a lack of direction from government in terms of other desired outcomes (such as carbon, contribution to renewable energy targets, etc) which, as noted above, could shape decisions about future treatment options. More clarity about the long term policy landscape is needed to underpin the business and investment case for investment, both to service municipal waste contracts and for new merchant capacity for commercial and industrial waste streams.

- Poor data to inform capacity forecasting:
  The lack of robust data on commercial and industrial waste streams, both in terms of composition and volumes, is a long acknowledged problem for the waste and resources

[4] UK Bioenergy Strategy (April 2012), https://www.gov.uk/government/publications/uk-bioenergy-strategy

sector, and continues to hamper future capacity planning and investment[5]

- Changing waste composition:
  Assessment of the infrastructure gap (both for residual waste and recycling/reprocessing infrastructure) and optimum future treatment options for residual waste are subject to considerable unknowns in terms of the future composition of waste, including:

  - A decrease in the volume and type of plastic packaging ending up in the residual waste stream as a result of measures outlined in Defra's 25 year Environment Plan as part of the overarching ambition to achieving zero avoidable plastic waste by the end of 2042. These include extending the tax on plastic carrier bags, fiscal measures to reduce single-use plastic waste, reducing the number of polymers used in packaging to aid separation and recycling , and reforming the packaging waste regulations to encourage greater producer responsibility.

  - Online shopping trends leading to changes in the volumes of some types of packaging materials, particularly cardboard.

  - Likely growth in the use of biopolymers, which are currently seen as a contaminant in conventional plastic recycling systems but are identified as a future opportunity in the Defra 25 YEP, which proposes to encourage the development of bio-based, biodegradable and environmentally-friendly plastic through the Bioeconomy Strategy. As these materials are not currently able to be collected separately for recycling, they could potentially add to the biogenic content of residual waste being used as a fuel, with implications for its calorific value and the formula for renewable energy incentives for EfW facilities).

  - Broader strengthening and extension of Producer Responsibility which could see more and new items diverted back into the recycling supply chain before they reach the residual bin e.g. textiles.

  - Changes in the biodegradable content of residual as a result of increased food waste diversion – UK adoption of the EU Circular Economy package could increase the collection of food waste in England and the Defra 25 YEP includes proposals on supply chain food waste reduction and increased separate collection from households.

  - Other material trends, such as increased use of new materials such as carbon fibre, for which there are currently few or no recycling opportunities.

[5] Ricardo (February 2016), 'Waste Data in the UK', https://ee.ricardo.com/downloads/waste/waste-data-in-the-uk

While a number of industry reports (e.g. ESA & Tolvik Consulting[6], Suez[7], Biffa[8]) identify a potential capacity gap for residual waste infrastructure, the size of the gap varies from report to report as a result of the assumptions made on all of the above and other variables, and other analyses indeed predict a future overcapacity[9]. No similar assessment has been carried out on additional recycling/reprocessing infrastructure needs, without which any meaningful progress towards government's ambitions on resource productivity and waste management will not be realised.

Further technology specific considerations

Anaerobic Digestion: Anaerobic digestion remains constrained by policy uncertainty and repeated changes to renewable energy incentives in recent years. However, it has continued to grow and according to the NNFCC's latest Anaerobic Digestion deployment in the UK report, there are now 401 operational anaerobic digestion plants in the UK, including 77 biomethane-to-grid plants, and a further 420 anaerobic digestion projects under development.

The potential for this technology type as a waste treatment option is mainly dependent on the extent to which food waste is collected separately from both households and businesses in the future. The Defra 25YEP includes ambitions to capture more food waste from households and reduce supply chain food waste.

As noted earlier, quality of recyclate is critical to recycling processes and end product value and biowaste recovered from the residual waste stream using current processes such as MBT is extremely unlikely to meet the feedstock and quality requirements of the AD sector (or in-vessel composting processes).

Energy from Waste (EfW): In its February 2014 (revised) edition of 'Energy from waste: A guide to the debate, Defra outlined the principles of its policy on EfW, one of which is that "Energy from waste should seek to reduce or mitigate the environmental impacts of waste management and then seek to maximise the benefits of energy generation."

Building on this, the Defra 25 YEP now proposes the following actions that have infrastructure implications:

- Looking at ways to increase the use of heat produced at waste facilities through better connections to heat networks. The facilities will become more efficient and emit less carbon dioxide.

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6 Tolvik Consulting, 'UK Residual Waste: 2030 Market Review' and ESA Briefing 'The treatment capacity gap that urgently needs to be addressed' (November 2017), http://www.esauk.org/esa_reports/
7 SITA UK (now Suez), 'Mind the Gap: UK residual waste infrastructure capacity requirements, 2015 to 2025' (February 2014), http://www.sita.co.uk/wp-content/uploads/2017/08/MindTheGapReport-SITAUK-1402-web.pdf
8 Biffa, 'The Reality Gap (2017) - UK residual waste management infrastructure: the continuing challenges and requirements' (August 2017), https://www.biffa.co.uk/wp-content/uploads/2015/11/048944_BIFFA_Reality-Gap_2017Single-150817-2.pdf
9 Eunomia Research & Consulting, 'Residual Waste Infrastructure Review (12th Issue)' (August 2017), http://www.eunomia.co.uk/reports-tools/residual-waste-infrastructure-review-12th-issue/

- Investigating ways to cut carbon dioxide emissions from EfW facilities by managing the amount of plastics in the residual waste stream. We will link this with any opportunities to recycle more plastics or reduce the amount used.

The opportunities for heat from EfW plants to be used will need to be explored as part of the NIC's assessment. In an analysis of the outlook for energy from waste in the UK[10], Chris Holmes, Managing Director for Waste and Bio-energy at the Green Investment Bank, observes that:

"While a number of recent EfW plants have been constructed on a 'CHP ready' basis, only a handful of them have offtake agreements in place to tap into potential revenues.

"The ambition of Government is to see EfW facilities connected to urban district heating networks, following a model that is commonplace on the Continent. But while many developers would point to the planning, financial and coordination challenges of locating EfW plants near existing or proposed heat networks, they should not preclude the opportunity for heat supply where possible.

"Industrial and commercial sites can be important customers for heat, as demonstrated by Wheelabrator's Kemsley CHP plant in Kent which will supply renewable heat to DS Smith's Kemsley Paper Mill. Other projects can be developed in anticipation of industries relocating their operations to be within reach of these large, untapped sources of energy."

Q19. Could the packaging regulations be reformed to sharpen the incentives on producers to reduce packaging, without placing disproportionate costs on businesses or creating significant market distortions?

It should be noted that Defra is currently considering the role of Producer Responsibility and it is mentioned in the Defra 25 YEP.

CIWM has urged the government to strengthen or introduce a coherent set of Extended Producer Responsibility (EPR) schemes for a suitable range of waste streams not just packaging. Many other countries have EPR schemes for a wider range of waste streams than the UK, including mattresses, textiles, medicines, tyres, etc.

Designed properly, these schemes can deliver a range of positive outcomes. These include waste prevention and more resource efficient product designs that improve recycling, reuse and remanufacturing opportunities, and more equitable sharing of the costs of dealing with post-use products across the supply chain, including funding for sorting and reprocessing infrastructure and reduced collection costs for local authorities. The OECD has issued guidance[11] on the design and governance of EPRs, competition issues, design for environment incentives and the role of the informal sector.

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[10] Chris Holmes, Managing Director for Waste and Bio-energy, Green Investment Bank (March 2017), 'The outlook for energy from waste in the UK', http://greeninvestmentgroup.com/news-and-insights/2017/chris-holmes-the-outlook-for-energy-from-waste-in-the-uk/

[11] OECD (September 2016), 'Extended Producer Responsibility: updated guidance for efficient waste management', https://www.oecd.org/env/waste/extended-producer-responsibility-9789264256385-en.htm

Early consultation with relevant sectors and an appropriate lead-in time for the amendment of existing EPR schemes and the introduction of new ones will allow producers to innovate to fulfill their obligations and thus reduce the costs of compliance. In addition, schemes should be designed to proactively incentivise positive measures by producers, such as higher recycled content, design for disassembly, upgradability (rather than replacement), etc. For waste streams that require collection through household waste collection services, stimulating demand through EPR should improve revenue streams for high quality recovered materials and products; however appropriate measures to ensure that funding is channeled to support collection services where necessary should be factored in.

It should be noted that any strengthening and extension of EPR could have a significant impact on residual waste volume and composition and must be factored into the NIC's assessment as appropriate when the Government decides its approach.

Q27. What would be the most effective institutional means to fulfil the different functions currently undertaken by the European Investment Bank if the UK loses access. Is a new institution needed? Or could an expansion of existing programmes achieve the same objectives.

The European Investment Bank and the Green Investment Bank have provided significant funding for UK waste infrastructure and the latter, prior to its sale, would have been one of the obvious options in terms of replacing at least a proportion of the EU funding.

New measures to support additional investment in waste and resource recovery infrastructure will be needed. There has been, and continues to be, concern across the sector about the investment landscape for waste infrastructure for some years, particularly with the demise of PPP and PFI funding routes and the level of dependence on public sector funding given ongoing budget cuts. This has arisen because of the long term reliability of public sector waste management contracts – collection contracts typically run for 7-plus years (often tied to the serviceable lifetime of collection vehicles involved in these contracts), treatment and infrastructure contracts can run for 25-plus years dictated by the high capital cost of infrastructure and its serviceable lifetime. Industrial and commercial wastes management contracts, in contract, are often much shorter-term, usually renewed annually or even ad-hoc, especially for small or non-steady-state arisings, and therefore carry a higher investment risk.

Estimates vary on the exact level of future investment needed, and it again depends on the government's policy objectives for waste and resources, but they broadly agree on the scale of the challenge. In 2011 the government estimated that a total of £15 billion would need to be invested in the waste sector overall by 2030[12]. By 2014, SITA UK (now Suez)[13] observed that:
"For every million tonnes of waste diverted from landfill, 1- to 20 new treatment facilities will have

[12] HM Government (2011), 'Update on the design of the Green Investment Bank', https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/31825/11-917-update-design-green-investment-bank.pdf
[13] SITA UK (February 2014), 'Mind the Gap: UK residual waste infrastructure capacity requirements, 2015 to 2025', http://www.sita.co.uk/wp-content/uploads/2017/08/MindTheGapReport-SITAUK-1402-web.pdf

to be built. Our industry has estimated that by 2020, the UK needs an injection of over £10 billion of investment in alternative treatment facilities for municipal waste diverted from landfill, with a further £10 to £15 billion if total commercial and industrial waste currently going to landfill is also to be diverted and treated."

The SITA report and other reports on waste infrastructure identify a number of significant barriers to realising this investment in residual waste infrastructure, including a reduction in public sector spending, restricted private sector finance, inherent waste infrastructure project risks and regulatory and policy uncertainty. Other barriers constraining investment in recycling include the increased volatility in secondary material market prices and, for energy recovery, ongoing changes in the subsidies and incentives, as well as increasing competitiveness of contracts for difference.

It is not clear to what extent the GIB will continue to support investment in waste infrastructure in the future and the Government must consider other sources of support. In assessing what measures need to be taken to stimulate adequate investment to support policy objectives on waste, resource efficiency and productivity, over and above those suggested in Q1, de-risking mechanisms and appropriate fiscal incentives remain a priority.