Circular Economy and Energy from Waste – Impacts and Opportunities

IEA Task 36 and ISWA Working Group on Energy Recovery
What is the Circular Economy?

What is the circular economy?

• A Circular Economy is an industrial system that is restorative or regenerative by intention and design. It replaces the ‘end-of-life’ concept with restoration, shifts towards the use of renewable energy, eliminates the use of toxic chemicals, which impair reuse, and aims for the elimination of waste. (Ellen McArthur Foundation)

• An alternative to the linear economy in which we keep resources in use for as long as possible and then recover and regenerate products and materials at the end of each service life (WRAP, UK)
Circular Economy - It’s not just about recycling!
Is Circular Economy a barrier to EfW?

“a potential obstacle to meeting the SCP objectives is that Europe leads the world in energy recovery mixed waste incinerators, with about 400 units. Although some are overdimensioned and recycling is diminishing their inputs, mixed waste incinerators are the endpoint of an entrenched linear supply chain (with some metals recovery) that diverts products and materials away from higher-value reverse loops directly to the lowest value use in the reuse hierarchy, energy recovery”.

Ellen Macarthur Foundation reports
How will a Circular Economy impact on energy recovery?

- **Policy and Regulatory impacts**
  - EfW caps, landfill bans of combustible waste
- **Operational**
  - Reducing feedstocks, changing composition
- **Reputational**
  - EfW seen as disposal?
- **Technology**
  - Innovation, advanced technologies, conversion of waste to liquid biofuels
Opportunities

• Despite increases in waste prevention and recycling
  – waste generation continues to rise!!
  – 1.3 billion tonnes per year globally
  – predicted to grow to 2.2 billion tonnes per year by 2025
    • urbanisation
    • population boom
    • expansion of the consumer society (affluent middle classes)

• Europe: a legislative framework developed to address impacts of waste generation
  – many EU countries have developed EfW infrastructure as an alternative to rising landfill costs and restrictions

• EfW can be part of an integrated waste management solution….
  – …. However local policy and economic drivers still key behind choice of EfW solution and project success!
1. Is Energy Recovery from waste an integral part of a Circular Economy?
2. What are the opportunities that a Circular Economy presents to EfW?
3. What changes will EfW face as we move towards the Circular Economy?
4. What are the current and future barriers that will need to be overcome to ensure EfW is part of a Circular Economy in developed and developing nations?