European Commission

ROADMAP			
TITLE OF THE INITIATIVE	EXPLOITING THE POTENTIAL OF WASTE TO ENERGY UNDER THE ENERGY UNION FRAMEWORK STRATEGY AND THE CIRCULAR ECONOMY		
LEAD DG – RESPONSIBLE UNIT – AP NUMBER	ENV- UNIT A2 – 2016/ENV/086	**DATE OF ROADMAP**	1/2016
LIKELY TYPE OF INITIATIVE	A Communication from the Commission		
INDICATIVE PLANNING	*http://ec.europa.eu/atwork/key-documents/index_en.htm*		
ADDITIONAL INFORMATION	*http://ec.europa.eu/priorities/energy-union/* *http://ec.europa.eu/priorities/jobs-growth-investment/circular-economy/docs/annex-communication-action-plan-for-circular-economy_en.pdf*		
This indicative roadmap is provided for information purposes only and can be subject to change. It does not prejudge the final decision of the Commission on whether this initiative will be pursued or on its final content and structure.			

A. Context, Subsidiarity Check and Objectives

Context

This initiative is part of the Energy Union Framework Strategy adopted on 25.02.2015 (COM (2015) 80 final), which announced a Communication on waste to energy as part of its Roadmap. It is also one of the actions on waste management listed in the Annex to the Commission's Communication on an EU action plan for the Circular Economy adopted on 2 December 2015 (COM (2015) 614). Finally, it is supported by the 7th Environment Action Programme (Decision 1386/2013/EU of the European Parliament and Council OJ L 354/171, which requires that measures are taken to ensure energy recovery is limited to non-recyclable waste.

The following official information provides relevant indicators on the degree of compliance by the Member States with the objectives and targets set out in the EU waste legislation, and includes relevant information of an evaluative nature:

- Yearly published Eurostat statistics (http://tinyurl.com/qj7afre)
- Implementation reports related to EU waste management legislation including the Waste Framework Directive, the Landfill Directive and the Packaging and Packaging Waste Directive; (http://ec.europa.eu/environment/waste/reporting/index.htm)
- The Impact Assessment of the waste targets review (http://ec.europa.eu/environment/waste/target_review.htm)
- The REFIT Fitness Check of waste stream directives including the Packaging and Packaging Waste Directive issued with the Circular Economy package, published in July 2014. (http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52014SC0209)

It results from these reports and statistics an important implementation gap amongst Member States that needs to be addressed at EU level in line with the waste hierarchy and circular economy principles. In a majority of Member States energy and other resources contained in waste are being lost through improper management. In certain cases, waste management planning, at the base, of forward-thinking solutions, have become obsolete or lack enough coherence to achieve the objectives and targets laid down by EU legislation. When planning Member States need to prioritise actions targeting the highest ranks of the waste hierarchy - waste prevention; product reuse and recycling – through effective waste separate collection schemes and economic instruments (e.g. landfill tax or charges) – and avoid investments in end-of-pipe waste management solutions such as landfill sites and overcapacity in mechanical and biological plants and incinerators that could compromise meeting present and future objectives. The Commission calls for more action at Member States' level so as to curb the current high landfill rate and turn this into opportunities directed to meet the recycling targets and extract the energy from non-recyclable waste in an efficient manner.

At EU level, the Commission continues to work on a number of policies which converge towards the same objectives. This initiative should seek synergies amongst them: the Circular Economy; the Energy Union Strategy; and the EU Climate Change and the Renewable Energy policies. Energy and material recovering non-recyclable waste not only makes sense under the resource circularity, but also would avoid landfill emissions

with a powerful climate change potential; displace the use of virgin fossil fuels and contribute to the security of energy in the EU by producing energy from a renewable source.

Issue

This initiative intends to harness the potential in extracting resources e.g. energy and materials embedded in non-recyclable waste (i.e. waste which, for technical, economical or environmental reasons cannot be recycled), in line with the objectives outlined in the above-mentioned policy initiatives aiming at turning waste into a resource.

The main problems which this initiative will address are the following:

1. Lack of synergies between the waste-to-energy situation and EU policies

Waste-to-Energy (WtE) can potentially contribute further to the objectives set out in the Energy Union Strategy, in particular to the energy security of supply, the renewable objectives and the EU strategy for heating and cooling. The recovery of energy in non-recyclable waste can replace virgin fuels, thus being useful to the economy and society while reducing climate pressure change. Indeed, energy recovery can further contribute to the objectives of renewable energy through state-of-the-art incineration technology and emerging solutions such as gasification and anaerobic digestion to treat highly calorific and non-recyclable waste.

It is a fact that in many Member States such waste streams are today still massively landfilled or incinerated without energy recovery when they could be energy-recovered if recycling is not an option. In 2012, EUROSTAT reported that 49.8 % of all wastes generated in the EU were disposed of (namely, landfilled and incinerated without energy recovery) in Member States while approximately 5 % were energy recovered, representing 1.3% of all energy used in the EU. As regards municipal waste, more recent data show that in 2013, on average the EU landfilled 31%, energy recovered approximately 17%, and incinerated approximately 9%. Fourteen Member States still landfilled more than 50% of their municipal waste. It is thus presumed that important amounts of non-recyclable municipal waste, whose energy content could otherwise be fed back into the economy, are being leaked from a circular economy model.

In light of the mandate set out in the 7th Environment Action Programme to phase out landfilling in the EU and the potential availability of additional non-recyclable feedstock for energy recovery, the Communication should highlight - in line with the waste hierarchy - the relevance and the best ways to optimise the performance of WtE processes and the suitability of waste-derived fuels so as to fully harness their potential in the economy while observing the environmental protection standards.

2. Making existing WtE processes more energy efficient

The Communication will assess how existing WtE processes (e.g. incineration, co-incineration) and other emerging improved processes e.g. gasification can be optimised through new technology and changes in operational parameters. For this purpose, the information obtained through the ongoing work related to the Best Available Techniques reference documents (BREFs) will be utilised as needed.

Another way to make such processes more efficient is through their coupling with the existing and the development of district heating and cooling networks to provide heat to households and industry. Energy recovery is dominating the share of WtE, especially in the field of municipal waste, where a number of WtE plants are integrated with district heating networks. Incineration which only recovers energy in the form of electricity is relatively inefficient (approximately 23% efficiency) as compared to Combined Heat and Power (CHP) processes (up to 90% efficiency). The development and expansion of efficient district heating and cooling systems present untapped potentials for an efficient use of WtE, especially when combined with cogeneration. In such cases, however, the residual waste (fly ash containing hazardous waste) and associated management costs can be particularly high. Also, investments tend to be long term, capital intensive and social opposition can be a hindrance to their development due to concerns related to air emissions.

As stated above, improved WtE technology is presently becoming mainstream (e.g. gasification). Some operate at high temperature, thereby facilitating the abatement of air emissions and the minimisation of residual waste. Therefore, the Communication should also address the role of new available technology for non-recyclable combustible waste.

3. Unevenly spread WtE (over) capacities.

Some Member States (SE, DK, EE) show incineration (with energy recovery) overcapacities (especially for municipal waste) while the south eastern part of the EU shows no capacity at all and high landfill rates. This uneven distribution results in shipment of waste for energy recovery across the EU. Taking into account relevant provisions in EU waste legislation and the need to prevent illegal shipments of waste the Communication should

thus consider to what extent shipments of combustible non-recyclable waste from Member States with a high landfill rate and insufficient WtE capacity towards Member States with WtE overcapacities might contribute to better waste management and to a more efficient use of the network of WtE facilities in the EU

4. Untapped potential from Waste-derived fuels

Recent research by the Joint Research Centre (JRC) of the Commission identified about 20 different waste-derived fuels some of which may be undervalued and/or underutilised. Thus, the Communication would present the results of an analysis of the most relevant streams with a view to highlight their potential in the energy and economy context, e.g. co-processing.

5. Lack of clarity with respect to the Waste Hierarchy

Although EU guidelines have been issued on the interpretation of the waste hierarchy[1] it seems that Member States have different interpretations on the role of energy recovery. Therefore, the Communication should clarify the role of WtE under the waste hierarchy as the best option for the management of combustible non-recyclable waste, thus highlighting most efficient processes for each main waste stream. Moreover, the Communication should indicate under what circumstances it is justified to depart from the waste hierarchy for specific waste streams. Also, it should analyse the contribution of WtE as a safe option to eliminate waste containing hazardous substances which should be safely managed so as not to pose any significant risks to human health and the environment.

Stakeholders

Primarily, Member States' regulators, waste-to-energy plants operators, waste-derived fuels producers, recycling industries and industries using waste as input to their processes are affected.

Subsidiarity check

In accordance with the principle of subsidiarity enshrined in Article 5 of the Treaty on European Union, an EU approach to the identified problems has value added as compared to Member States' individual approaches on the following areas:

- Facilitate the common interpretation of and compliance with relevant EU legal requirements e.g. waste hierarchy as laid down in Directive 2008/98/EC on waste.
- Ensure that synergies are developed as much as possible between EU policies, e.g. the Energy Union and Circular Economy strategies
- Analyse EU wide solutions or approaches in particular to make more efficient use of existing WtE capacities e.g. through trans-boundary waste shipments.
- Analyse what WtE processes and waste-derived fuels are most optimal and energy efficient in the EU context.

Main policy objectives

This Communication is aimed at informing; clarifying; and providing inputs to relevant exiting policies, especially to the Energy Union Strategy. In this respect, the output energy obtained through these processes represents a secure, renewable and possibly more affordable source of energy in line with the Strategy.

The specific objectives are:

1. To present the contribution of energy recovery from WtE plants to the EU energy mix, both from dedicated WtE incinerators and from co incineration plants (e.g. Large Combustion Plants, cement/lime kilns, ceramic production, gasification and anaerobic digestion with the main purpose to generate energy and recover residual material wherever possible). The ongoing work on BREFs can contribute to this objective.
2. To highlight the potential of the main waste-derived fuels (WDF) and to propose some general criteria to achieve the best possible outcome from a Circular Economy and environmental protection perspective.
3. To analyse the optimal utilisation of existing incineration capacity in Member States and to make recommendations for the transition from mass incineration of mixed waste as a result of poor waste management in certain Member States to a better application of the waste hierarchy and a transition towards the most efficient WtE processes.

[1] http://ec.europa.eu/environment/waste/framework/pdf/guidance_doc.pdf

http://publications.jrc.ec.europa.eu/repository/bitstream/JRC65850/reqno_jrc65850_lb-na-24916-en-n%20_pdf_.pdf

4. To help build up industrial synergies and symbiosis between WtE plants and energy-intensive industrial processes e.g. industrial clusters.
5. To examine the best ways that WtE can contribute to the EU energy mix without compromising the achievement of the EU's long-term reuse and recycling targets

B. Option Mapping

The Energy Union Strategy announced that the Commission would adopt a Communication on WtE in 2016. The Communication will take stock of the current WtE situation and present some improvement possibilities to Member States and relevant stakeholders. This would include some aspects of interpretation of existing legislation e.g. Waste Framework Directive and the Waste Shipment Regulation. Also it would explore how to ensure the adequate take up of technical advances to increase synergies between waste and energy policies, in particular through the development of soft instruments e.g. BREFs in the existing legislation and for which work is already in progress, as well as examine how WtE can contribute to the EU energy mix without compromising the need to increase recycling and reuse.

Proportionality check

It is not envisaged to modify existing EU legislation or to propose new legislation.

C. Data collection and Better Regulation instruments

Data collection

The information base that is either already available or will be developed includes:

- Eurostat yearly statistics, the Impact Assessment of the waste targets review (2014),
- JRC is currently carrying out a technical study which will support the Communication on the current use of waste streams in waste-to-energy operations in the EU-28 and available technical options and innovations for improving waste-to-energy operations.

  https://web.jrc.ec.europa.eu/callsfortender/index.cfm?action=app.tender&id=3095
- EEA is currently carrying out a technical study which will support the Communication on waste management capacities in Europe based on a previous study:. http://scp.eionet.europa.eu/publications/wp2014_8/wp/wp2014_8.
- The Waste Treatment and Waste Incineration BREFs (currently under revision)
- The EMAS Sectoral Reference Documents on best environmental management practice.
- The data gathered in preparation for the Circular Economy Package adopted on 2 December 2015 http://ec.europa.eu/environment/circular-economy/index_en.htm.

Consultation approach

Stakeholder consultations will be carried out as part of both technical studies mentioned above:

JRC: the consultation is currently taking place through the requests of inputs and will culminate in a technical workshop scheduled for 9th March 2016.

EEA: the consultation will be run through the Eionet network - the National Reference Centres for Waste: https://www.eionet.europa.eu/ldap-roles/?role_id=eionet-nrc-waste-mc; and the National Focal Points: http://www.eea.europa.eu/about-us/countries-and-eionet/list-of-members-of-the-nfp-eionet-group.

Will an Implementation plan be established?

☐ **Yes** **X No**

No implementation plan is foreseen for a Communication, as this type of act does not require transposition measures.

Will an impact assessment be carried out for this initiative and/or possible follow-up initiatives?

Considering its non-binding nature, the impacts of the Communication will depend on the uptake of the concepts set out in it. However, by shedding light on the potential efficiency gains to be achieved through an optimised approach to WtE, it is likely to bring benefits in terms of waste management, energy policy and resource efficiency goals. Due to its non-binding nature, net costs are not expected to be incurred as a consequence of the communication, as it is expected that only actions with economic benefits would be undertaken by actors.

The Communication will not impose any new requirements on Member States that could lead to any additional

administrative burden. On the contrary, the Communication can have a positive impact through the interpretation of existing legal requirements (e.g. the waste hierarchy).

It is not envisaged to carry out an impact assessment for this Communication which will aim at clarifying existing legislation and technical potentials without opening the ground to new policy areas and without setting new requirements. It is not envisaged that the Communication would announce forthcoming commitments from the Commission but rather highlight the potential for synergies between waste and energy policies in the context of a circular economy, through policy fields where EU-action already exists and for which IAs have been conducted in the past.