Retrospective

From the First to the Second ELFM Seminar in the European Parliament

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Brussels, 2nd ELFM Seminar in the EP, 20-11-2018
EURELCO = EIP RMC since 2014

EURELCO is an open, quadruple helix network that supports the required (...) innovation with respect to Enhanced Landfill Mining within the context of a transition to a resource efficient, circular, low-carbon economy. www.eurelco.org

61 members in 15 European countries

(€1,000 membership fee)
Landfills in EU - Infographic EURELCO (cf. 1st ELFM Seminar in the EP)

> 500,000 landfills in EU-28

- 90% = “non-sanitary landfills”, preceding Landfill Directive
- Majority of landfills are (smaller) MSW-type landfills
- Minority of landfills are (larger) industrial waste landfills
MSW versus industrial landfills

MSW-type landfills (Type 1)
- In most cases publicly owned
- Often relatively small volumes and size
- Heterogeneous content – average value may be limited – low CRM content
- Located in direct vicinity of (semi-) urban communities → Social License to Operate (SLO) is key!

Industrial landfills (& TSFs) (Type 2)
- In several to most cases privately owned (e.g. slag landfills steel Industry etc.)
- Large volumes (economies of scale)
- Homogeneous content (one type of material), with (sometimes) significant CRM concentrations
- Located in direct vicinity of company
Enhanced Landfill Mining definitions

ELFM Type 1 Definition (MSW landfills):
“the safe exploration, conditioning, excavation and integrated valorisation of (historic, present and/or future) landfilled waste streams as both materials (Waste-to-Material) and energy (Waste-to-Energy), using innovative transformation technologies and respecting the most stringent social and ecological criteria”
(Jones et al, JCLEPRO, 2013)
Enhanced Landfill Mining definitions

ELFM Type 2 Definition (adapted to industrial residue landfills):

“The (near)-zero-waste valorisation of landfilled industrial process residues and extractive waste, resulting in both the recovery of the critical and base metals, and the valorisation of the residual mineral matrices into engineered products (…).”

(Binnemans & Jones, JCLEPRO, 2015)
ELFM & EURELCO achievements over the last years (I)

- EURELCO Membership has gradually increased, currently representing 15 EU Member States (61 members)
- ELFM has evolved from a crazy idea into a concept which merits EU funding, although the concept remains disruptive
- Several large, multi-partner projects approved by the EU:
  - EU H2020 MSCA-ETN NEW-MINE & EU H2020 SMART GROUND
  - EU Interreg Europe COCOON & EU Interreg NWE RAWFILL
ELFM & EURELCO achievements over the last years (II)

• ELFM has enjoyed widespread press attention (feature articles, videos, documentaries in news/science fora)

Series 50 Ideas to Change the World
*Financial Times* (8-1-2018)

Series Annual Meeting New Champions
*World Economic Forum* (21-6-2017)
March 14, 2017: European Parliament endorsed ELFM concept - Amendment to Landfill Directive:

“The Commission shall further examine the feasibility of proposing a regulatory framework for enhanced landfill mining so as to permit the retrieval of secondary raw materials that are present in existing landfills. By 31 December 2025 Member States shall map existing landfills and indicate their potential for enhanced landfill mining and share information.”

Paradigm shift:
From landfills as “static end stations for obsolete waste” [linear economy] to...

Landfills as “dynamic resource stocks” to be re-integrated in the circular economy when time is right.
Nevertheless, ELFM Amendment blocked by Trilateral, 2017

February 2018: Closing debate ELFM IV Symposium, Mechelen, Belgium
Credits image: Nicolas Herbots
Expanding “ELFM-only” approach to a “Sustainable Landfill Management & Mining framework” as developed in COCOON

A phased approach is proposed

- Not all landfills should be mined (site and local settings matter – e.g. priorities for landfills in areas with high flooding risk)
- Timing of mining can be modulated
- Interim use of landfill surfaces generates revenues for subsequent remediation and/or mining activities in longer term
- Example: solar energy park, DEME landfill in Zelzate, Belgium (see image)
Political acknowledgement of ELFM is key

- Is ELFM economically feasible?
- ELFM & (env’) sustainability
- Development of ELFM know-how and technology
- The essential role of policy support and market interventions
Political acknowledgement of ELFM is key

“Neglecting ELFM in EU policy and regulatory frameworks is not a neutral act but rather an effective way to lock-in suboptimal, conventional practices.”

Cf. Survey Prof. Steven Van Passel (UAntwerp), Prof Sebastien Lizin (U hasselt), Dr Miet Van Dael (VITO) on the dilemmas policymakers face in allocating funding to novel, disruptive (clean) technologies, compared to incumbents.

Bjornavold Amalie (PhD student) is currently collecting data at the European Parliament, mainly looking for MEPs working in the ENVI, BUDG and ITRE committees

https://uantwerpen.eu.qualtrics.com/jfe/form/SV_4NtLDZWtklGQ4w5
Political acknowledgement of ELFM is key

“ELFM needs to become institutionalized and recognized as a potential option for landfill management and recovery of natural resources.” (…) “A first step of such a process could be to legally define ELFM and provide this emerging concept with a clear regulatory framing.”

“At present, authorities are ambivalent to how ELFM, with its multiple objectives (e.g. remediation and recycling), should be handled in relation to existing regulatory frameworks, which are developed for (…) the realization of one purpose at a time (e.g. remediation or recycling).”
**Which way forward? 2nd ELFM Seminar Agenda**

**PART I**
- Lessons learned on landfill management in Europe by regional/national Policy Makers (Interreg COCOON & RAWFILL)
- Barriers & opportunities for private actors willing to undertake ELFM projects (cf. Closing the Circle case)
- Debate I: Short-term opportunities for landfill management (e.g. interim use) and mining

**PART II**
- Intro on ELFM & Landfill Directive (LFD)
- Debate II: Landfill management and mining with respect to EU legislation/policies...
  BEYOND the LFD, incl. Soil Directive, and Circular Economy, climate change, spatial planning... targets)