EU TRAINING NETWORK FOR RESOURCE RECOVERY THROUGH ENHANCED LANDFILL MINING

European Training Network for Resource Recovery Through Enhanced Landfill Mining (NEW-MINE)

D6.10 - Policy Brief/Newsletter 4

This project has received funding from the European Union's EU Framework Programme for Research and Innovation Horizon 2020 under Grant Agreement No 721185 - https://new-mine.eu/

Public

Authors:

Peter Tom Jones, Lieven Machiels, Lucian Onisei & Piet Wostyn

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Final newsletter/Policy Brief

On August 31, 2020, the final newsletter (incl. policy brief) of the MSCA ETN NEW-MINE was published. The final newsletter (see annex) included:

- An introduction to the NEW-MINE project rationale
- An overview of the 15 ESRs and a link to their individual results pages as featured on the NEW-MINE project website.
- Results from the work packages, incl. links to relevant webpages on the NEW-MINE project website.
- A brief policy section, entitled “Policy Section: Climate change impacts necessitate ELFM-based solutions for more than 10,000 landfills in Europe”
- A review of NEW-MINE project videos
- Reference to the key publications of the project.

As stated in the Annex 1 and the NEW-MINE project communication strategy, the newsletter is shared with the overarching EURELCO-network. In this way, the impact of the dissemination is increased.

All newsletters can be found online: new-mine.eu/communications/newsletter/ (and/or www.eurelco.org/newsletter).

Annex 1 - Final Newsletter of ETN NEW-MINE: key achievements; Policy Section on climate change

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Piet Wostyn

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Aan: Piet Wostyn
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Categorieën: Categorie Rood

NEW-MINE

EU TRAINING NETWORK FOR RESOURCE RECOVERY THROUGH ENHANCED LANDFILL MINING

To mine or not to mine (our lanfills)?

That was the question that 15 PhD students explored during the past 4 years within the Horizon2020 MSCA European Training Network for Resource Recovery through Enhanced Landfill Mining (NEW-MINE). In this final newsletter, we share the main results and conclusions from the project.

Read more

NEW-MINE rationale

Can Enhanced Landfill Mining (ELFM) be the answer for Europe's 500,000+ landfills? That was the question addressed by NEW-MINE. The rationale for the widespread implementation of ELFM in Europe is that an estimated 90% of Europe's landfills are old and therefore "non-sanitary" landfills, which at some moment in the future would need expensive remediation measures. With the rising impact of global warming and increased flooding risks on the safety and stability of these landfills, this becomes even more urgent (see Policy Section in this Newsletter). NEW-MINE presented an exciting opportunity for a combined remediation and resource-recovery strategy. As such, remediation costs can be counterbalanced by revenues obtained from reclaimed resources (materials, energy, land, water). The NEW-MINE project trained 15 early-stage researchers (ESRs) in different aspects of ELFM, ranging from technological innovations to integrated environmental and economic assessments and policy analysis.

Meet the 15 PhD students and find out the key results of the PhDs

Christin Bobe
UGent, Belgium & Cranfield University, UK
ESR1

Cristina García López
RWTH Aachen, Germany & Montanuniversität Leoben, Austria
ESR2

Bastian Küppers
Montanuniversitaet Leoben, Austria & RWTH Aachen, Germany
ESR3

Juan Carlos Hernandez Parrodi
Shanks, Belgium & Montanuniversitaet Leoben, Austria
ESR4

Zaini Ilman Nuran
KTH, Sweden & KU Leuven, Belgium
ESR5

Gomez Rueda Yamid
KU Leuven, Belgium & KTH, Sweden
ESR6

Katarzyna Jagodzińska
KTH Stockholm, Sweden
ESR7

Marco Gigantino
ETH Zürich, Switzerland
ESR8

Hugo Ignacio Lucas
RWTH Aachen, Germany
ESR9

Georgia Flesoura
KU Leuven, Belgium
ESR10

Guilherme Ascencão
Italcementi – Italy, KU Leuven, Belgium, University of Padova, Italy
ESR11

Patricia Rabelo Monich
University of Padova, Italy
ESR12

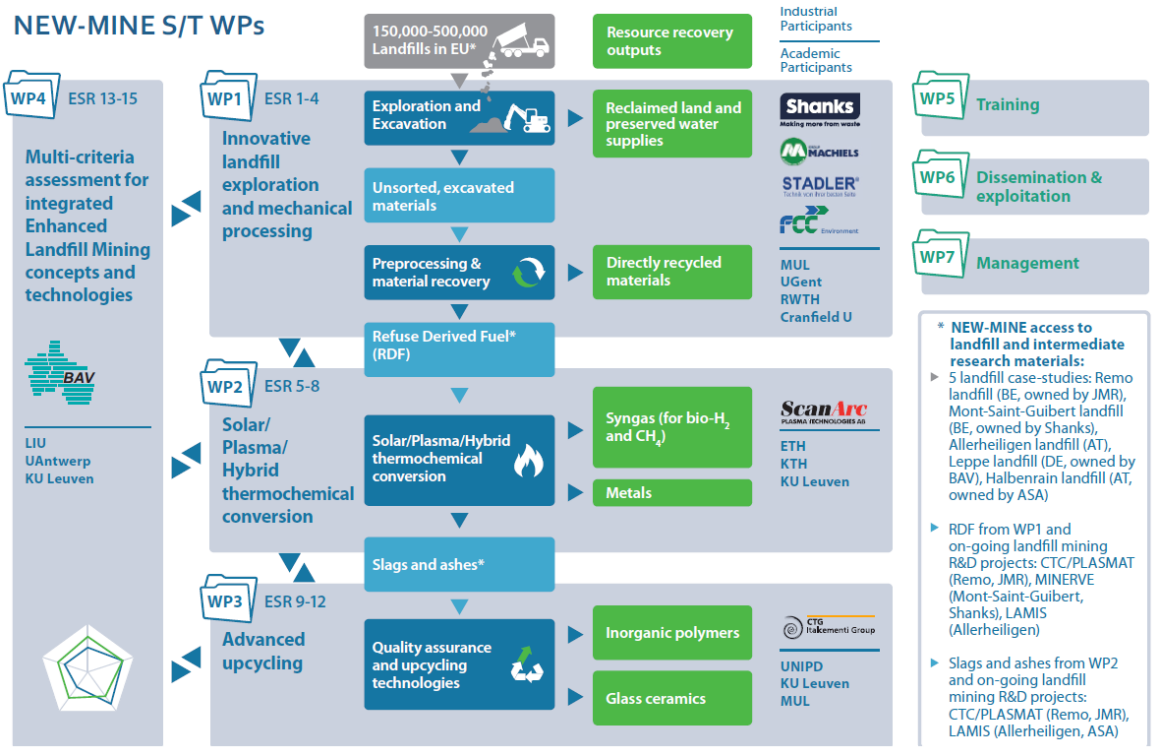
Giovanna Sauve
KU Leuven, Belgium
ESR13

John Laurence Esguerra
Linköping University, Sweden & University of Antwerp, Belgium
ESR14

Paul Einhäupl
KU Leuven & University of Antwerp, Belgium
ESR15

Results from the work packages

The 15 PhD topics are linked through the NEW-MINE ELFM flowsheet, subdivided in 4 work packages.



WP1: Innovative landfill exploration and mechanical processing

WP1 studied the geophysical exploration of landfills and the treatment of the excavated waste to produce different fractions (e.g. metals, building sand, refuse derived fuel (RDF), etc.).

View results

WP2: Solar/plasma/hybrid thermochemical conversion

WP2 studied the conversion of the RDF to syngas, metals, slags and ashes.

View results

WP3: Advanced upcycling

WP3 studied the metal/slag-ash separation and the further treatment of slags/ashes to produce inorganic polymers and glass ceramics.

View results

WP4: Multi-criteria assessment for integrated ELFM concepts and technologies

WP4 combined an economic, environmental and societal analysis of the process and of ELFM as a whole.

View results

Policy Section: Climate change impacts necessitate ELFM-based solutions for more than 10,000 landfills in Europe

As discussed in previous NEW-MINE Policy Briefs (e.g. Jones, Wille and Krook, 2018) Europe comprises more than 500,000 landfills and extractive waste deposits. The large majority of these sites are historical landfills or deposits, which – in many cases – pose a risk to human health and the environment with respect to liberation of pollutants (organic components, heavy metals and/or greenhouse gases) to the environment.

More than 10,000 landfills are in flood-prone areas

A particularly worrying and rather new risk originates from the effects of accelerating climate change, which is resulting in rising seawater levels, and an increase of flooding, erosion and heavy rainfalls. Of the 500,000 landfills and extractive waste deposits in the EU, it is estimated that more than 10,000 sites are in areas already at risk of flooding (see Spencer, 2020). Clearly, a Do Nothing approach is not the best landfill management scenario for these sites.

NEW-MINE's policy advice to the European Commission

Considering the dangers associated with a Do-Nothing scenario, the NEW-MINE team therefore urges the European Commission to facilitate the development of innovative, low-net-cost concepts that combine resource recovery – as proposed by the Enhanced Landfill Mining (ELFM) framework – with long term risk reduction posed by landfills/deposits at risk of flooding. This type of remediation should go beyond traditional remediation measures, which are based on either "containment" of the problem or removal of the risk through mining the landfill/deposit and re-landfilling the excavated materials in a sanitary landfill. Such new concepts can be developed with financial support from the upcoming Horizon Europe Programme.

Such an endeavour should include the development of (1) an inventory of landfills and extractive waste deposits in the EU at risk of flooding, taking into account the presence of distinct landfill/deposit types (content, size), associated risks and diverse local legislation, (2) a risk-based prioritisation scheme for treatment, taking into account various climate change scenarios, (3) innovative methods for identification of landfills/deposits and risks (e.g. using satellite data), (4) smart technologies with respect to the excavation and processing of the waste for recovery of land, energy, metals, minerals and other materials

through mechanical, chemical, metallurgical and/or thermal processes, always considering the separation and sustainable disposal of contaminants, the maximum recovery of resources and energy and the minimisation of secondary landfilling. Solutions should be benchmarked with traditional remediation strategies (e.g. excavate and re-landfill) from an economic/risk and environmental perspective.

Impact

Such a combined resource recovery & remediation "NEW-MINE" approach will significantly reduce the risks posed by flooding and erosion of landfills/deposits, and the related emissions of contaminants to the environment. Likewise, the overall cost of remediation of these landfills/deposits can be drastically reduced, as the recovery of land, raw materials and energy provides revenues. Land use may involve novel solutions with respect to nature creation, tourism… or the use of land as flooding basins. This approach also allows the sustainable and safe removal of contaminants from the circular economy, while yielding new jobs in the remediation and raw materials sector.

NEW-MINE Videos

Key Publications

- **NEW-MINE publications**
- **Detritus Journal special issue on ELFM**
- **ELFM IV symposium proceedings**

Website: new-mine.eu

Coordinator: Peter Tom Jones

Project Manager: Piet Wostyn

Communication and Dissemination Manager: Lucian Onisei

Science & Technology Coordinator Lieven Machiels

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Peter Tom Jones

Kasteelpark Arenberg 44, Leuven, 3001