



**REPORT OF FEASIBILITY ASSESSMENT
OF DEMO ACTIVITIES WITH COMMISSIONED PROTOTYPE AND
TESTING OF VARIETY OF NON-RECYCABLE WASTE**

LIFE project Nr. LIFE20 IPE/LV/000014 - LIFE Waste to Resources IP

Activity and no.	A3.1 Preparatory works for demo activities using end-of-waste syngas technology
Title of deliverable in the project	Feasibility assessment report of demo activities and detailed planning of activities within the Action C3
Deadline for deliverable in project	30.08.2022.
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Version	1.0.

PROJECT INFORMATION

Project Contract Name: LIFE Waste to Resources IP

Contract number: ID Nr. V/15/2022

Countries: Latvia

Coordinating beneficiary: Ministry of Environmental Protection and Regional Development, Republic of Latvia

Associated beneficiary: HyroGas SIA

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Preparation of ACTION C3 Pilot projects for application of end of waste criteria to demonstrate circularity and waste to resources concept

The report focuses on detailed planning of the front-end-engineering and design of the prototype.

This sub-action of LIFE WasteToResources IP aims at setting up the pilot facility based on innovative technology to process non-recyclables with processing capacity 260 kg/h into synthetic gas as a product and couple the system with ash vitrification technology to demonstrate zero landfill concept for carbon-based waste material recycling. The pilot facility will test and demonstrate the treatment of a variety of mixed waste streams to produce new products for market offtake with broad upscale and know-how distribution potential not only in Latvia but also other EU member states.

The demonstration site will be based at the regional waste management operator at landfill “Dzila Vada” (operated by the Project beneficiary LLC “Vidusdaugavas SPAAO”) where, within the scope of Action C4, waste treatment activity will be provided to reduce waste amounts to be landfilled by 2000 tons annually (when pilot is operating at a continuous basis). Also, a fraction from non-recyclable textile waste provided within the LIFE IP Action C1 activities will be used for testing purposes (according to preliminary analysis up to 40% of separated textile waste falls under the category as non-recyclable).

Conceptual and basic design of the prototype has been accomplished FEED study started.

The detailed FEED planning is reflected in Table 1.

Table 1. FEED study and procurement schedule

Hyrogas end of waste syngas prototype	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
FS and FEED study								
Basic design								
Process simulation studies & HMB (heat&mass balance)								
FEED execution plan/resource planning								
FEED and detailed engineering								
BFD (block flow diagramme)								
PFD (process flow diagram)								
P&IDs (piping and instrumentation diagram)								
Process description								
Process control phylosophy								
HAZIP analysis								
Safeguard diagram								
Cause effect diagram								
Preliminary equipment list								
Motor/load list								
Valve list								
Battery limit summary/Tie-In Schedule								
Line schedule								
Instrument index								
Main equipment data sheets								
HAZOP workshop and recommendations								
Compliance with Machinery Directive and CE-conformity								
3D and general arrangement								
Detailed engineering of equipment and piping								
Bill of quantities								
Ordering PSA or membranes								
Electrical project design, PLC/SCADA								
Procurement								
Issuance of RFQs for equipment								
Communication with suppliers								
Review of offers								
Ordering of equipment								
Set up of prototype site/tent/utility connections								
Delivery of equipment (supervision, controls)								
Preparation of users manuals on operation and safety								

Analysis of the potential sources of the material when validation of the prototype is done, and further complementary actions undertaken has been accomplished.

Planning of complementary actions are the same already considered in the proposal, no changes at the moment are foreseen.

During LIFE IP activity time new potential application of the technology will be discussed with Liepaja and Cesis waste management regions which expressed interest as early uptakers of the technology.