



C R O **Co** D I L E



**First of a kind commercial Compact system  
for the efficient Recovery Of CObalt Designed  
with novel Integrated LEading technologies**

This project has received funding from the European Union's EU Framework Programme for Research and Innovation Horizon 2020 under Grant Agreement No 776473 - <https://h2020-crocodile.eu/>

*General presentation*

# The Crocodile project



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First of a kind commercial Compact system for the efficient Recovery Of CObalt Designed with novel Integrated LEading technologies <http://h2020-crocodile.eu/>

## Challenge:

Improve the economic and environmental values of recovery processes of cobalt in Europe.

## Solution:

Provide a zero-waste strategy for important waste streams rich in cobalt such as batteries.

**CROCODILE**

## Targeted feedstocks:

The targeted primary and secondary raw materials are laterite mines, autocatalysts and batteries.

## Funding & Duration:

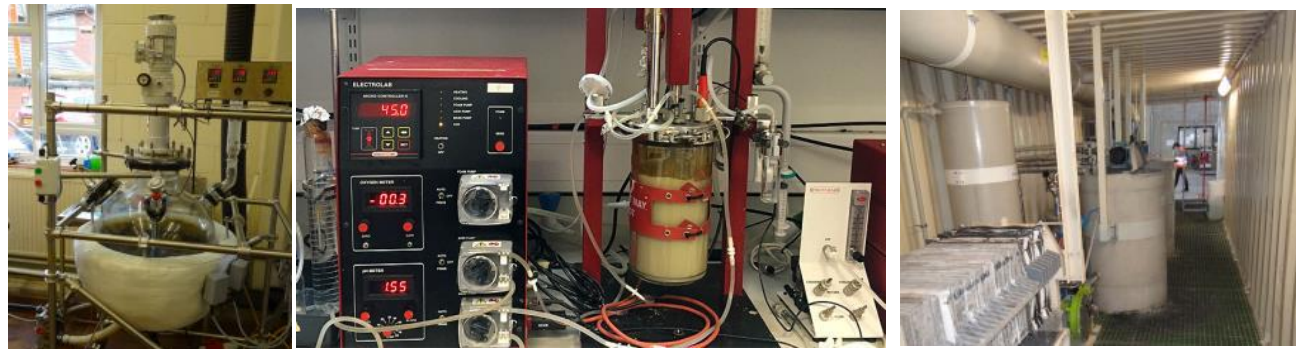


Horizon 2020 - Grant Agreement No. 776473- EC contribution: 11 625 289€  
4 years: from June 2018 to May 2022

# The Crocodile objectives

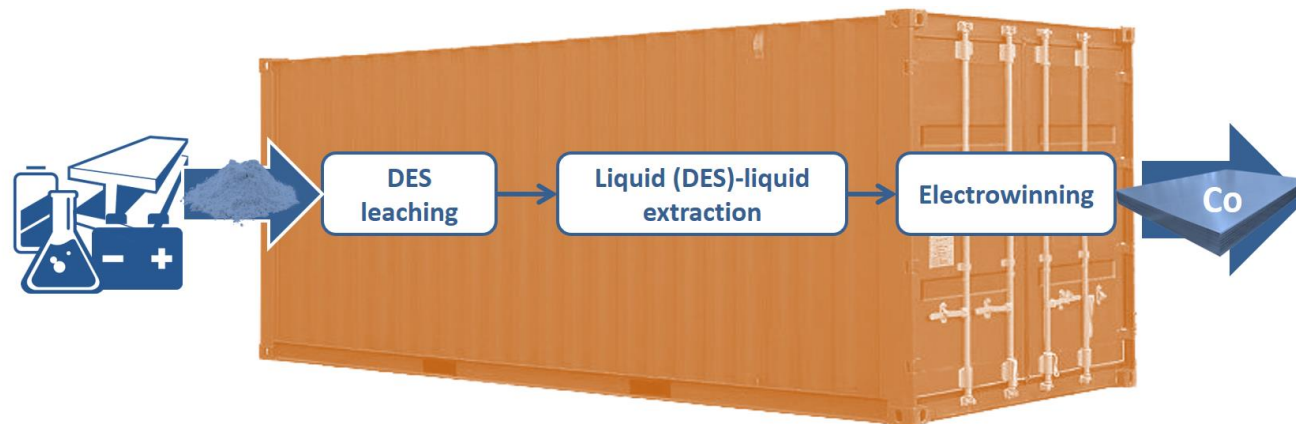


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DES Leaching reactor at Tecalia (left), Bioleaching experiments with COG3 samples conducted by COG3 partner Acidophile Research Team at Bangor University (center) and the EcoRecycling mobile plant (right)

- Demonstrate **scaled-up** innovative integrated systems and technologies capable of enhancing the efficiency of existing raw materials recovery processes;
- Develop a **new mobile system** with the capability of producing cobalt metal to enable new business opportunities and expand the business across the EU;
- Build a **strong value chain** capable of supplying approx. 10,000 ton of cobalt per year (about 65% of the current EU demand) from mainly European resources.

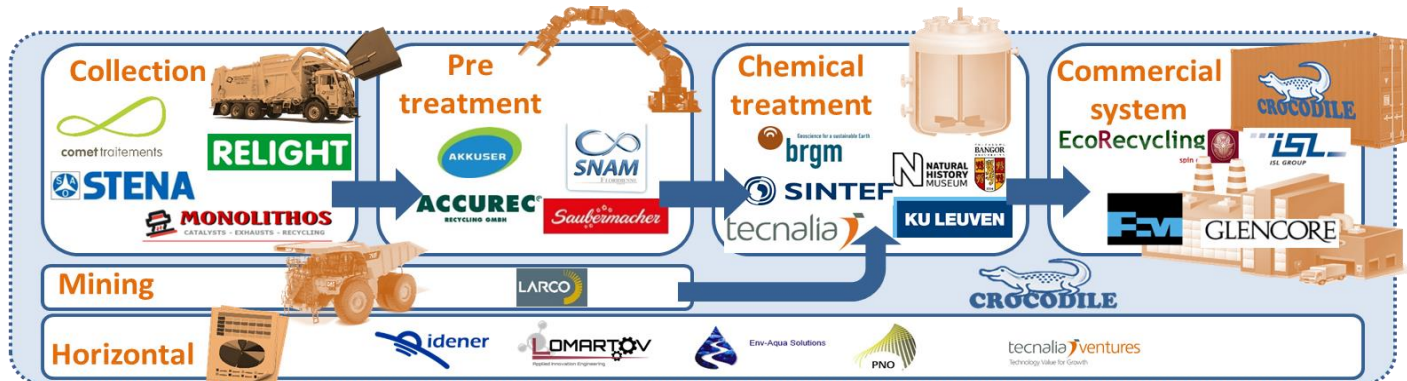


CROCODILE mobile solution overview

# The Crocodile consortium



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# The Crocodile project activities (1 / 2)

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- Build a commercial compact mobile system with a capacity of up to 200kg of cobalt metal per day-65ton/year;
- Optimise the pretreatment step of secondary waste rich in cobalt by advanced mechanical, wet mechanical process and pyrometallurgy;
- Fine-tune the recovery process, from economic and environmental point of view, designed in a closed-loop set up, reducing OPEX and waste generation.

# The Crocodile project activities (2/2)

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- Scale up the bio-processing route for primary resources;
- Develop a detailed market analysis and business models based on process efficiency, metal stock exchange and market share, and an engagement strategy with investors;
- Engage with civil society to obtain a social license to operate and to co-develop the CROCODILE solution.

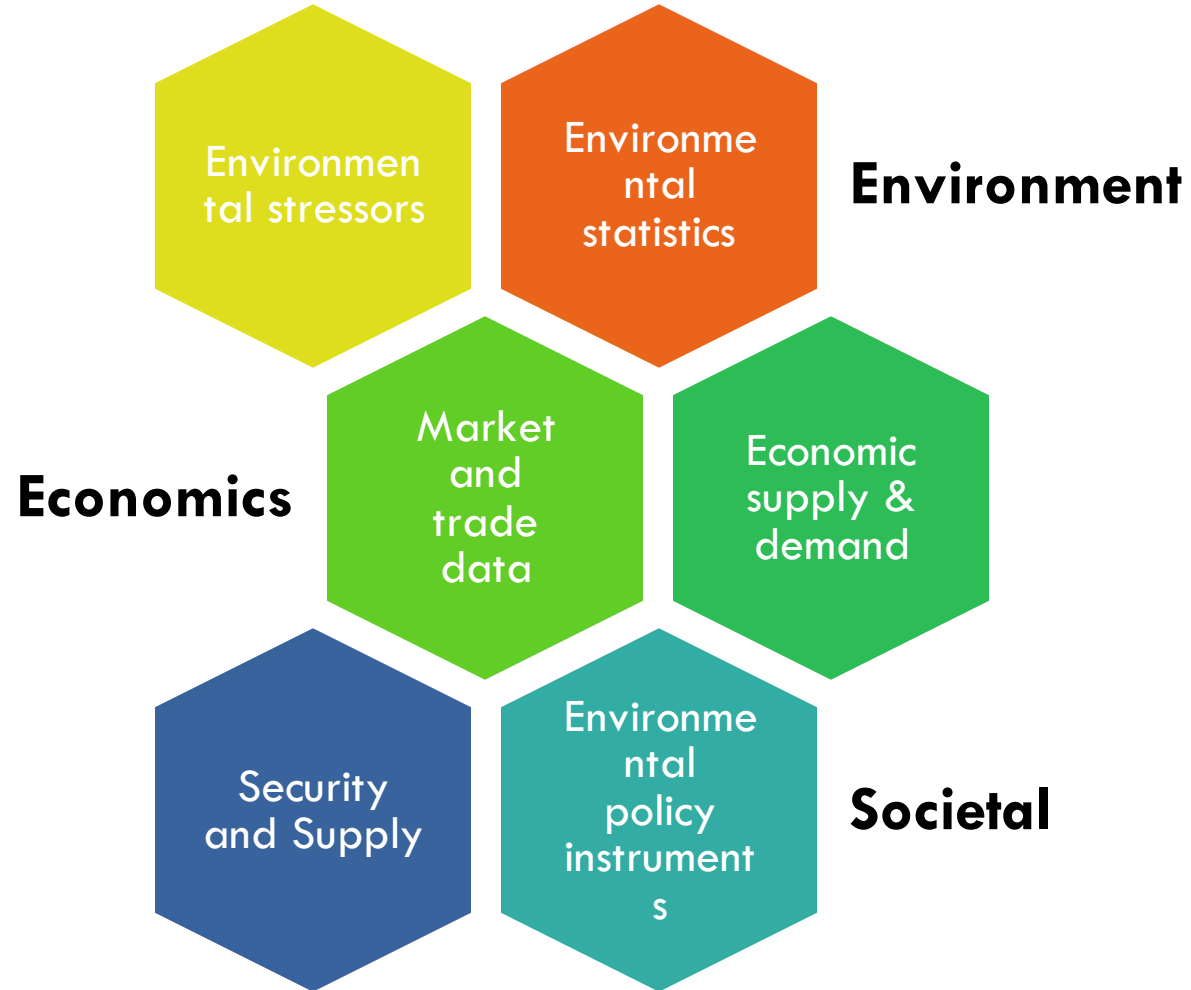


# Life Cycle Assessment

- A methodology that takes into account the health, safety and environmental risks.
- Addressing REACH, RoHS and local environmental standards.
- Modelling of the pilot unit and design.
- Economic and environmental assessment of the pilot unit.



# Material Flow Analysis





# The Crocodile project benefits



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- Reduce drastically the supply risk of cobalt for the European industry
- Lower energy costs and environmental impacts
- Providing solutions with low capital investment costs
- Maximize the exploitation of the local waste.

# Contact

TECNALIA

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