Techno-economic assessment of agromining

Introduction

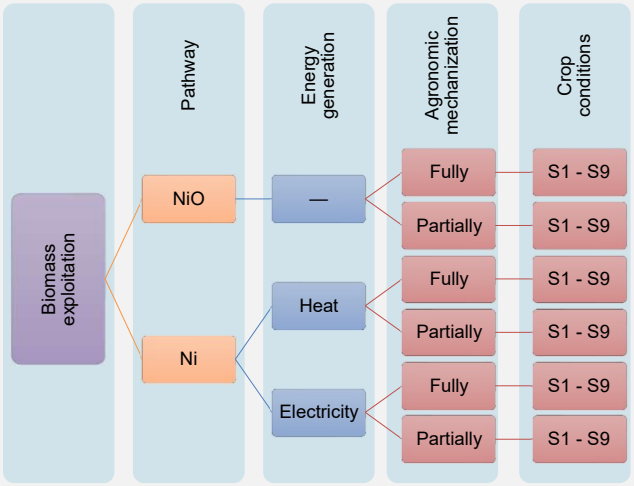
- There is an ever-increasing waste generation from the mining industry
- Mining wastes could be reduced through hyperaccumulator crops: plants that stock metals. This is known as agromining [1, 2]
- How profitable is this practice?

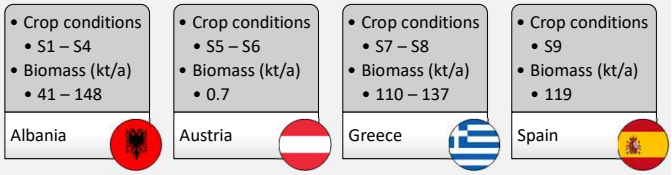
Material and methods

1. Biomass exploitation scenarios and availability

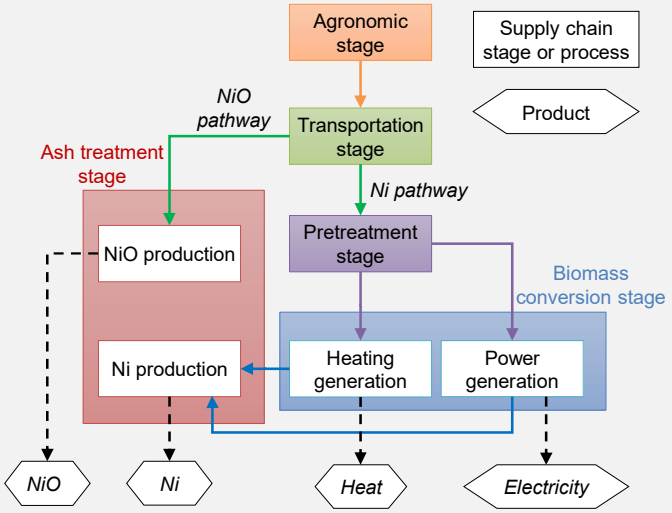
54 biomass exploitation scenarios were assessed contemplating:

- 3 portfolios of products
- 2 levels of agronomic mechanization
- 9 crop conditions (S1 – S9)





2. The supply chain of agromining

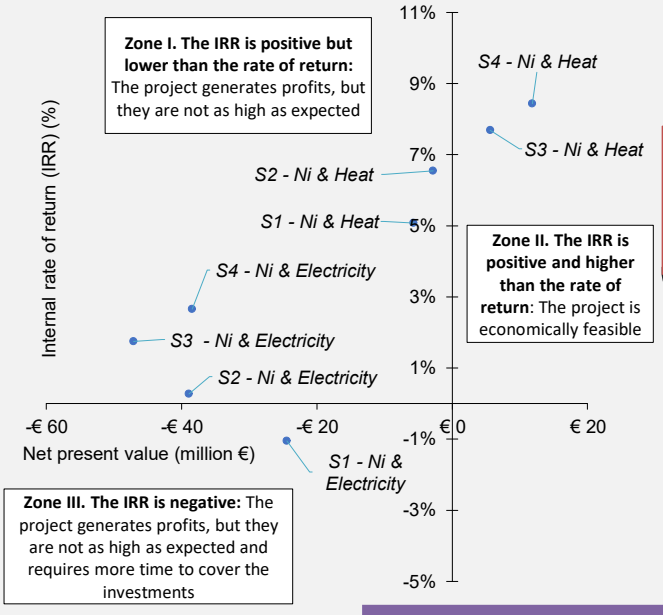


3. Performance indicators

Net present value (NPV) | Internal Rate of Return (IRR)

Preliminary results

- Only 8 analyzed scenarios are promising. They all consider:
  - ✓ The agronomic conditions of Albania (S1 – S4)
  - ✓ A fully mechanization of the agronomic stage
- From these, only 2 are entirely economically feasible. The other 6 might be feasible if no capital investments were needed



Conclusions

- Albania crop conditions provide promising economic perspectives for agromining
- Agromining crops should be fully mechanized
- Heat co-generation is economically more attractive than power co-generation

References

[1] Van der Ent A, Baker AJM, Reeves RD, Chaney RL, Anderson CWN, Meech JA, et al. Agromining: farming for metals in the future? 2015.

[2] Van der Ent A, Baker AJM, Reeves RD, Pollard AJ, Schat H. Hyperaccumulators of metal and metalloid trace elements: facts and fiction. Plant Soil 2013;362:319–34.

Dr. Freddy S. Navarro Pineda

Dr. Tom Kuppens

freddy.navarropineda@uhasselt.be

CMK CENTRUM VOOR MILIEUKUNDE UHASSELT