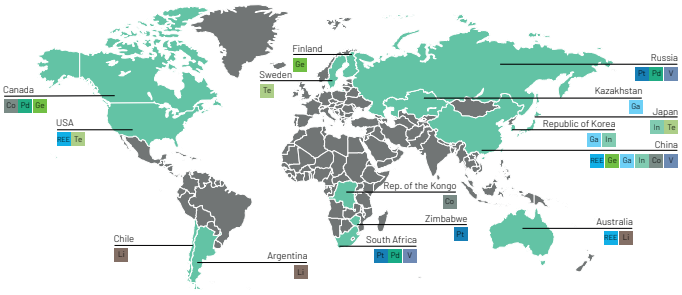
INFACT

INNOVATIVE NON-INVASIVE & FULLY ACCEPTABLE EXPLORATION TECHNOLOGIES

PROJECT BACKGROUND

- Rising global demand for metallic raw materials and complex metal alloys including "high-tech metals", e.g. gallium, germanium, the platinum group elements and steel alloy metals such as nickel and molybdenum;
- Recycling recovery rate still very low for Rare Earth Elements (REE);
- EU currently dependent on mineral raw material import.

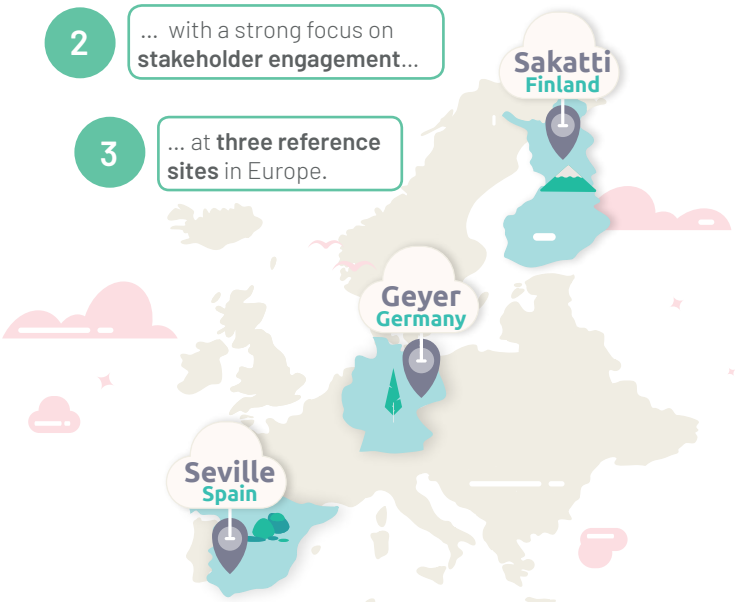


Source: http://energiesysteme-zukunft.de

INFACT looks at critical raw materials and elements indispensable for the energy transition.

INFACT IN A NUT-SHELL

1. Benchmarking of **innovative non-invasive mineral exploration** techniques...
2. ... with a strong focus on **stakeholder engagement**...
3. ... at **three reference sites** in Europe.



WHO?

17 partners from research and academia, industry, state and not-for-profit organisations from **seven countries** with extensive experience in mining, geology, exploration, IT, social science and communication:

COORDINATOR

HZDR

HELMHOLTZ ZENTRUM DRESDEN ROSSENDORF

SOCIAL DIALOGUE & ENVIRONMENT

DIALOGIK · SYKE · CLAVE · UNIVERSITY OF EASTERN FINLAND

IMPLEMENTATION & BUSINESS MODEL

Agencia IDEA · Fraunhofer

TECHNICAL DEVELOPMENT & EXPLORATION

GEOTECH · Atalaya Mining · supracon · srk exploration · AARHUSGEO · OULU MINING SCHOOL · CIC · ANGLO AMERICAN

HOW LONG DOES THE PROJECT RUN?

INFACT has started in **November 2017** and will run over 36 months, until **October 2020**.

MORE INFORMATION

- FAQ section: *https://www.infactproject.eu/faq/*
- Project reports: *https://www.infactproject.eu/deliverables/*
- Technical information: *https://www.infactproject.eu/technical-information/*

CONTACT

Helmholtz Institute Freiberg for Resource Technology at HZDR

Leila Ajjabou | Project coordinator
Phone: +49 (0) 351 260-4461 | Email: l.ajjabou@hzdr.de

Dr. Richard Gloaguen | Head Exploration Division
Phone: +49 (0) 351 260-4424 | Email: r.gloaguen@hzdr.de

European Federation of Geologists

Marco Komac | Leader WP7 – Impact creation
Email: efg.externalrelations@eurogeologists.eu

Anita Stein | EFG Communication Manager
Email: anita.stein@eurogeologists.eu

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement nº 776487.

INFACT

INNOVATIVE NON-INVASIVE & FULLY ACCEPTABLE EXPLORATION TECHNOLOGIES

BACKGROUND: AN INDUSTRY GAP

- Surficial mineral deposits have largely been mined;
- Current exploration is focused on mineral deposits located deeper and in more remote locations;
- Innovative technology is required to reach new depths.

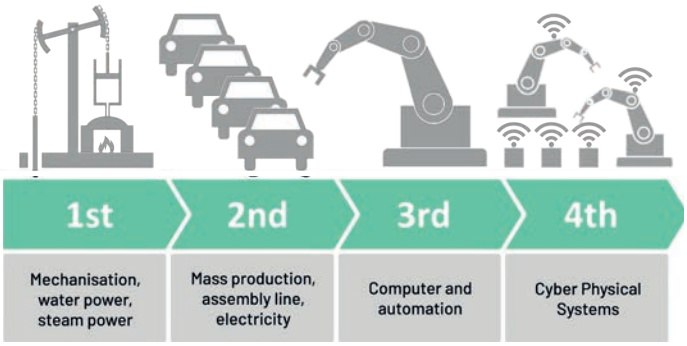


Illustration of Industry 4.0, showing the four „industrial revolutions".
Source: Christoph Roser at AllAboutLean.com

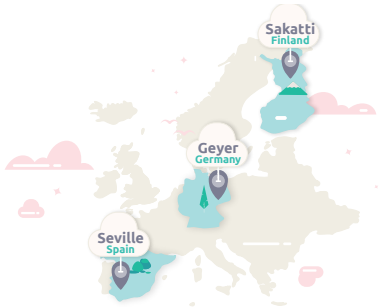
INFACT REFERENCE SITES & SHOWCASE

Within the project lifetime, INFACT aims to benchmark innovative methods and showcase that certifying technology is possible.

1. Laboratory
   - Geographically representative
   - Socially representative
   - Geologically relevant

2. Reference sites
   - Existing data
   - State-of-the-art data

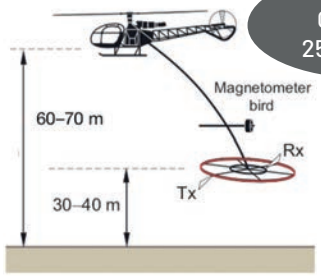
3. Certification
   - Performance
   - Acceptance



For more information, you can consult the factsheet on the reference sites or INFACT's FAQs section at: www.infactproject.eu/faq

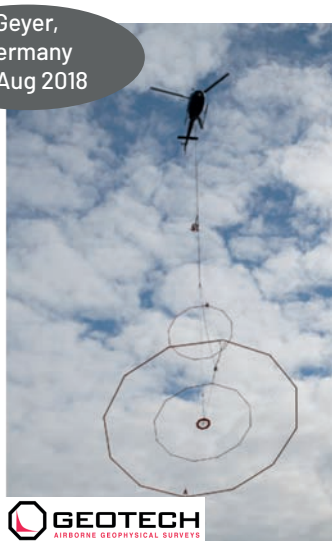
TECHNICAL OUTCOME

Acquiring state of the art Airborne - Electromagnetic data: a milestone to establish a reference site



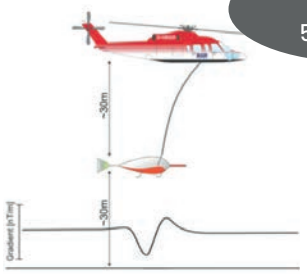
VTEM© (Versatile Time domain EM)

Geyer, Germany 25 Aug 2018

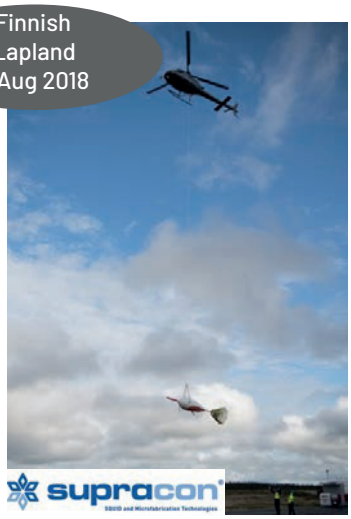


- The helicopter flies 60-70 m. above ground
- The sensor loop flies 30-40 m. above ground
- Active technique (measuring artificially emitted EM waves)

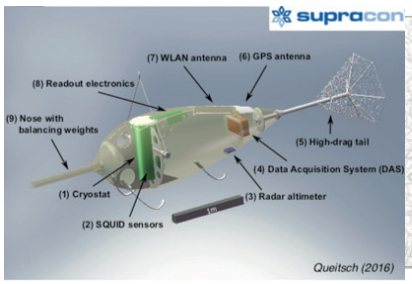
Technical innovation – Kicking-off the benchmark: FTMG (Full Tensor Magnetic Gradiometer)

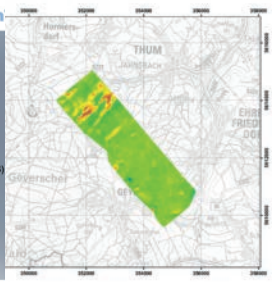


Finnish Lapland 5 Aug 2018



- The helicopter flies ~60 m. above ground
- The sensor flies ~30 m. above ground
- Passive technique (measuring natural EM waves)

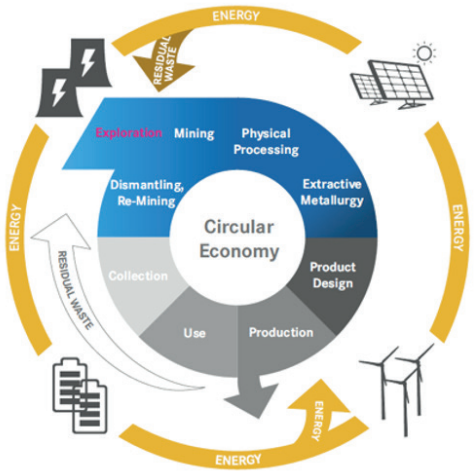




For more information about the technologies used by INFACT, please visit: https://www.infactproject.eu/technical-information

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement nº 776487.

RAW MATERIALS: A CONTRADICTION



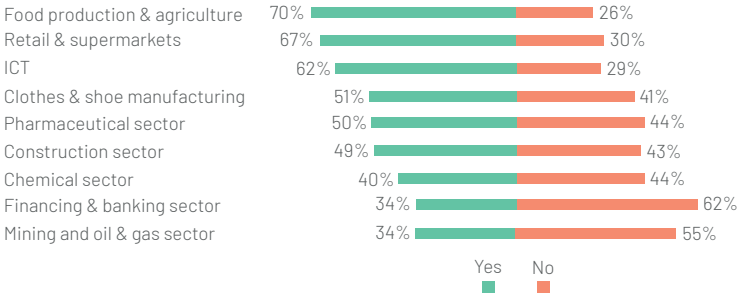
Source: Helmholtz Institute Freiberg

In a circular economy, mineral exploration is still required...

...but there is a discrepancy between what EU citizens want and what they need, considering that the resistance to mining, often at a local level, is increasing.

Do companies make effort to behave responsibly towards society in our country ?

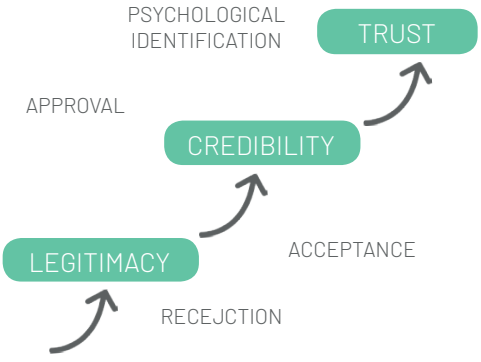
Average values for the EU by type of company



Source: European Commission: Flash Eurobarometer 363, 2013

OBJECTIVE: CREDIBILITY

- A **social licence to operate** (SLO) refers to the level of acceptance or approval by local communities and stakeholders for organisations and their operations.
- The concept has evolved recently from the broader and more established notions of **"corporate social responsibility"** and **"social acceptability"**.
- It is based on the idea that institutions and companies need **not only regulatory permission but also "social permission"** to conduct their business.



Gaining the Social License. Source: On Common Ground Consultants Inc. 2003

Credibility can be reached through certification for acceptable exploration technologies.

One of INFACT's main challenges is stakeholder engagement. In its engagement activities at the project's three reference sites in Finland, Germany and Spain, the consortium considers four pillars for social acceptability.

Convincing Narrative

Narrative that links the innovation to the life world in which the persons are anchored.

Positive risk/ benefit ratio

Technological innovation must serve residents' interests.

Emotional Identity

Technological changes can alter the ways people define their own roles in their social environment.

Self Efficacy

People embrace technologies when they help them to enhance their choices and options to act.

For more information about stakeholder engagement activities, you can consult INFACT's citizens corner: https://www.infactproject.eu/citizens-corner

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement nº 776487.

INFACT

INNOVATIVE NON-INVASIVE & FULLY
ACCEPTABLE EXPLORATION TECHNOLOGIES

SAKATTI // FINLAND

Key characteristics

- Copper-nickel-platinum group elements deposit in the far north of Finland;
- Situated around 150 kilometers north of the Arctic Circle;
- Exploration license owned by Anglo American;
- Strong nature protection initiative;
- Remote location;
- Reindeer herders – cultural heritage.

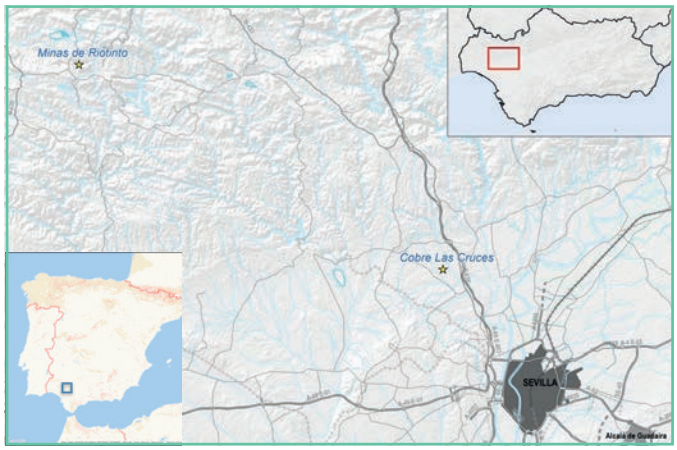
GEYER // GERMANY

Key characteristics

- Deposits of tin, zinc, tungsten, molybdenum, copper, iron, silver and indium;
- Situated approximately 110 kilometers south of Leipzig, Eastern part of Germany;
- Tourism - Erzgebirge;
- High population density;
- Long history of ore mining.

COBRE LAS CRUCES AND RIO TINTO // SPAIN

Both sites in the southwest of Spain, Rio Tinto and Cobre Las Cruces, are located in the Iberian Pyritic Belt, one of the most important metallogenic provinces in the world.



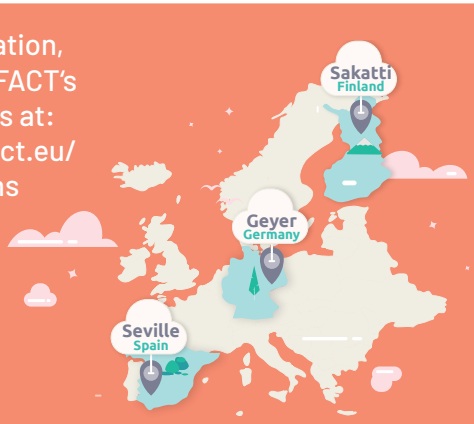
Rio Tinto - Key characteristics

- Opencast polymetallic mine;
- Operated by Atalaya Mining;
- Long mining history (historical heritage, highly altered area);
- Strong local mining identity;
- Rural context, high socio-economic dependency on mining;
- Mainly uninhabited mining/forest areas.

Cobre las cruces - Key characteristics

- Copper mining complex (open pit mine and hydrometallurgical processing plant);
- Operated by First Quantum Minerals;
- Quite recent discovery beneath the Neogene-Quaternary deposits of the Guadalquivir river Basin;
- Near metropolitan area of Seville and highly populated area.

For more information, have a look at INFACT's reference regions at: www.infactproject.eu/reference-regions



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement nº 776487.