IMPACTS

Three main impacts will be jointly generated by the outcomes of GOLD:

- Bring **polluted land back to agricultural production**
- **Produce biofuels** with no indirect land use change
- **Promote** the **international collaboration** towards Mission Innovation Challenge 4 on advanced biofuels

In addition, through the developed optimized phytoremediation strategies and solutions, GOLD **contributes to several Sustainable Development Goals**, namely:

SUSTAINABLE DEVELOPMENT GOALS

CONSORTIUM

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CONTACTS

www.gold-h2020.eu

info@gold-h2020.eu

@gold_h2020

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GOLD

Growing energy crops on contaminated land for biofuels and soil remediation

Soil pollution is a global problem making vast areas of land unexploitable.

GOLD develops solutions to grow lignocellulosic crops on contaminated sites:

- **Producing sustainable biofuels** with no risk of indirect land use change
- **Removing soil pollutants** via phytoremediation to ultimately bring polluted lands back to agriculture

APPROACH

The approach of GOLD is based on three pillars:

Growing energy crops on soils contaminated with organic and inorganic pollutants

Biofuels with low ILUC risks and contaminats in a concentrated form

Optimized value chains in terms of cost, sustainability and SDGs

BIOMASS CROPS

Miscanthus, switchgrass, sorghum and industrial hemp are used as high-yielding, low-input biomass crops, for biofuels production with low risk of indirect land use change.

Hemp

Sorghum

Miscanthus

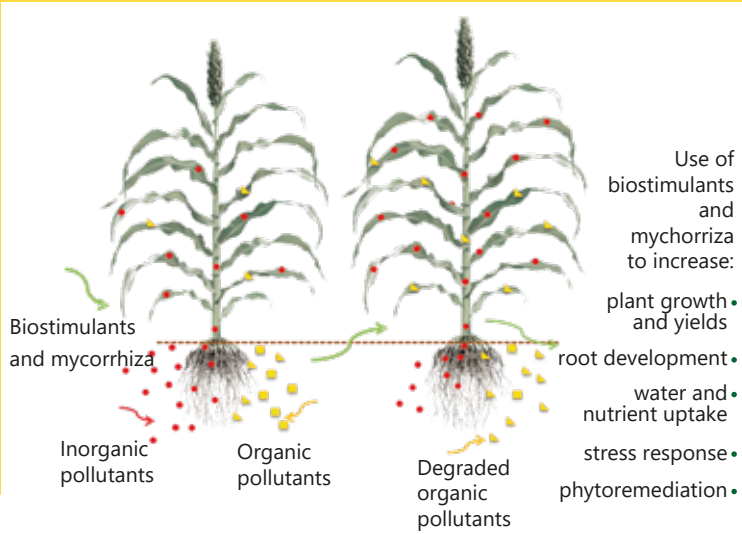
Switchgrass

Adopting a sustainable, low-input agronomic management, to support the plant growth under the stressing site conditions.

PHYTOREMEDIATION

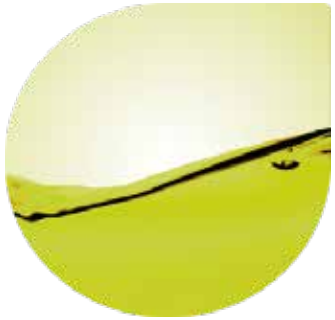
Two types of phytoremediation will be applied to decontaminate polluted soils:

Phytoextraction to increase the crop bioaccumulation potential of the inorganic pollutants and/or to increase the aerial biomass produced and thus the final metal(loid)s removal.
Bioaugmentation to increase the dissipation (i.e. biodegradation and other processes) of the organic pollutants and/or to increase the root system and aerial biomass production.



BIOFUEL PRODUCTION

Two conversion routes based on thermochemical processes are used in GOLD to convert biomass into biofuels:



- High-temperature **biomass gasification** in entrained flow mode, producing a clean syngas which will be further fermented into liquid biofuels.
- **Biomass pyrolysis** and upgrading of the bioproducts into refinery-compatible intermediates and Fischer–Tropsch Fuels (FTfuels).

GOLD produces low-ILUC risk biofuels, since the crops are grown on contaminated land that cannot be used for food production. Furthermore, the two conversion routes allow the soil contaminants to be separated from the biomass.