

SUSTAINABLE DEVELOPMENT

CLAPS

Clean Land And Power System



INTRODUCTION



PROTOTYPE OF ACCESSORY MOBILE SINTERING PLANT

The **CLAPS** project consists of the design and development of a pilot plant capable of **transforming residues** from mining, rubbing and friction from the coal supply chain into **new usable material** in the framework of the circular economy.

The CLAPS (Clean Land And Power System) R&D project offers a concrete solution to one of the main environmental problems related to the coal supply chain: **dust dispersion in the air and groundwater pollution.**

GOALS

REMOVAL

of the coal dust in addition of soil reconditioning

REDUCTION

of carbon dust accumulation.

TRANSFORMATION

of processing residues into energy and/or feedstock for other industries (e.g., steel)

ABATEMENT

of CO2 emissions in mining activities

PROJECT DESCRIPTION



Coal dust is the inevitable by-product of all stages of the coal production and utilization chain. Although they have the same characteristics as the original coal, these dusts have significant critical issues related to their use and disposal, which the innovative CLAPS plant will aim to overcome by contributing to the ecological transition and reclamation of ecosystems near the coal mining and utilization facilities.

Waste from the coal supply chain, particularly dust, continues to damage the environment, and unless it is removed or minimized, it will be impossible to carry out environmental and land reconditioning.



Typical image of coal production waste with dust residue generation

PROJECT DESCRIPTION



The CLAPS project is aimed at developing a **highly innovative product** consisting of the prototype of a mobile sintering plant for the **conversion of coal dust into secondary raw material** and which can be set up as an advanced production system.

The mobile, fully automatic test unit will include a section for preparing the accumulated (powders) in which the latter will be screened, dried, ground and screened again in order to obtain **coal granules in the form of pellets**, which can be used on an industrial scale.

The project involves finding **binder solutions** that can make coal dust achieve the required compaction and size without altering its chemical and physical characteristics.



Typical image of **coal production waste** with dust residue generation being released into the soil

PROJECT DESCRIPTION

Through the **dust agglomeration** achieved also by the amalgamation action of a non-polluting organic agent developed in-house, the transformation process is aimed to make these particular wastes transportable and **reusable** in various industrial applications both in the field of energy generation and, in a circular economy perspective, as a base material for the production of further non-polluting products. This will also make it possible to **increase the degree of resource efficiency** by recycling the supply chain waste and limiting coal mining in favor of **consuming the tons of dust still accumulated in the world**.



BENEFITS AND RELEVANCE TO STAKEHOLDERS



There are many aims of the project, but they can be summarized by the need to provide a concrete and factual response to the problem of **coal dust accumulation**, the cause of the so-called “black snow” phenomenon, with related **abatement of CO2 emissions** and prevention of **groundwater pollution** caused by the inadequate management of coal reservoirs and storage areas in general.

This issue becomes extremely relevant since, at present, this material cannot be used for energy purposes, either because of problems related to transportability or because of technological limitations (e.g., addition of binders for the production of coal pellets anyway not tolerated inside industrial burners).

The project will make it possible

1

To ensure a new industrial paradigm that includes an **ECO-FRIENDLY** approach to the coal mining and processing phase.

2

To transform the mining, rubbing and friction residues of the coal supply chain, an inevitable by-product of all stages of the coal production and utilization chain, into **usable and cost-effective new material**.

BENEFITS AND RELEVANCE TO STAKEHOLDERS

Representation of **Annual Production** (MM tons) of the top ten (10) coal producers in the world.



(Source: Key World Energy Statistics Report, IAE 2018)

BENEFITS AND RELEVANCE TO STAKEHOLDERS

The plant has three environmentally sustainable goals



The achievement of the project's ultimate goal will enable it to meet the requirements of the **United Nations 2030 Agenda**, specifically:

Goal 3: Good Health

Goal 6: Clean Water and Sanitation

Goal 8: Decent Work and Economic Growth

Goal 9: Industry Innovation and Infrastructure

Goal 11: Sustainable Cities and Communities

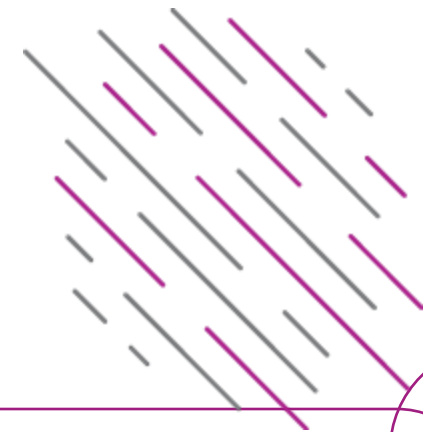
Goal 12: Responsible Consumption and Production

Goal 13: Climate Action

Goal 15: Life On Land



MAIN IMPACTS OF THE PROJECT



Effective to perform the phase of **Reclamation of the Lands** and/or **Hubs of Trading Routes** and/or **Coal Stockpiles** of Power Plants where tons of unused and environmentally harmful coal dust continues to be deposited today.

Overall Economic Impact Estimated in Millions of Dollars achievable on the one hand due to the proposed process, associated with a non-polluting binder that does not alter the original characteristics of coal (e.g., calorific value and chemical composition) and, on the other hand, the adoption of a circular economy logic. Therefore, the agglomerates produced, by becoming transportable, can be sold on the world market and have multiple uses.

It contributes to tackling the Issues Related to the Use of Fossil Coal also in the energy sector, cement industry and chemical industry, in anticipation of a full ecological transition to more sustainable forms of energy.

POSITIVE IMPACT ON THE ENVIRONMENT AND COMMUNITIES

Reduction of coal dust stockpiles

- Removal and cleaning of existing stockpiles.
- Prevention in the creation of additional coal dust by treating it during the same production/creation stage.

Reconditioning of soils and reduction of air dust

- Reduction of risks associated with coal dust infiltration into soils and subsoil (groundwater pollution).
- Land regeneration and reconditioning.
- Reduction of coal dust in the air resulting in health benefits for communities and flora/fauna.

Job generation for the community

- Job creation during the engineering and assembly phase of plants.
- Job creation for plant maintenance and operation.
- Opportunities for development and growth for the entire supply chain.

MAIN IMPACTS OF THE PROJECT

The CLAPS project is fully in line with **ISS International's Sustainable Development strategy**, which involves the support of **Energy Efficiency** and the promotion of **New Technologies** with full **Attention to Safety**.

ENVIRONMENT and SUSTAINABILITY are the core of CLAP project:

- Coal dust removal
- Reconditioning of land and groundwater with return of areas to the community
- Transformation of waste into new energy sources



EXPERIENCE PERFECT INTEGRATE
INTERNATIONALIZE EXPAND GROW DIFFERENTIATE
EVOLVE STRENGTHEN
CREATE INVEST GLOBALIZE INVEST
STRENGTHEN INVEST
DIFFERENTIATE EXPERIENCE DARE
INNOVATE CREATE INNOVATE
EVOLVE INTERNATIONALIZE
PERFECT GROW DARE EXPAND

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