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Make low carbon transition happen. Now!

Who we Are | The Bluethink Group

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BlueThink

2009

Turin
Legal Office

Milan
Headquarter

Warwick (UK)
Office

modelway

Artificial Intelligence

Product Development

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Low Carbon Transition

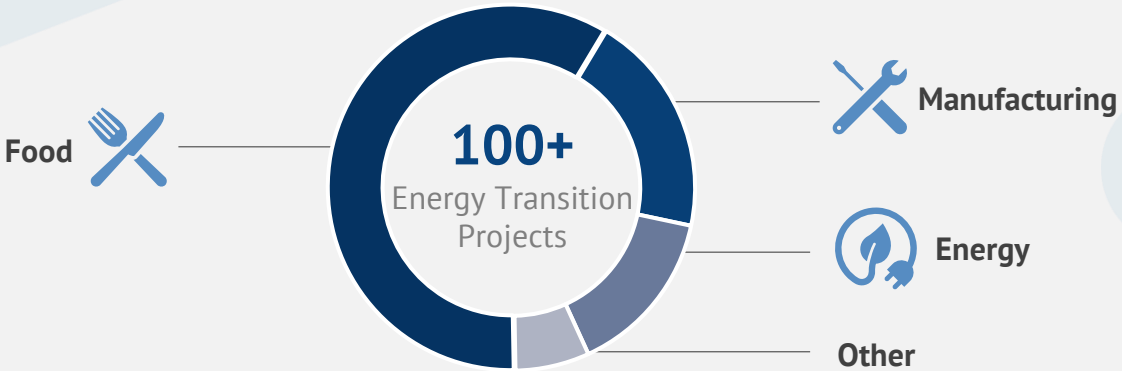
100
EMPLOYEES

32
AVERAGE AGE

8%
PHD

Our Track Record

- Track of records composed of **100+ Energy Transition Projects**
- **Multinational industry** is our most usual playground
- Acknowledged as trusted "**decarbonisation atelier**"
- "We've seen things you people wouldn't believe": **no tech is left out!**
  (Multi-MW Heat Pumps, Pyrolysis of wastes, H_2 Boilers, Biomass CHP, and it goes on …)



The Decarbonization Partner chosen by exclusive brands

FERRERO

Barilla

Ferrari

Bonfiglioli

…

Bluefoundation Ecosystem for Low Carbon Transition

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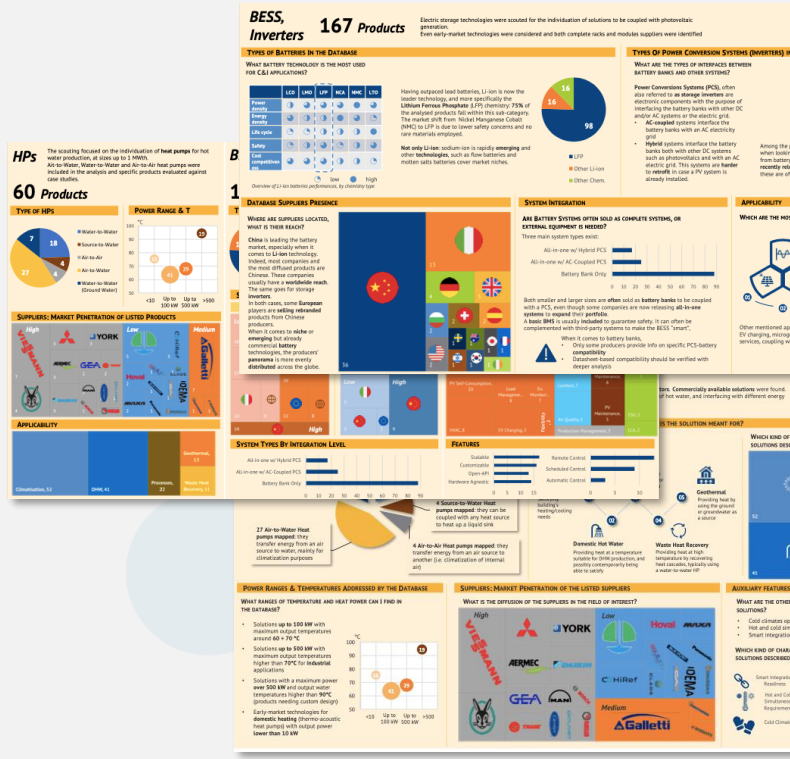
Our Network of Solution Providers

Biomass Boilers
Carbon Farming
Monitoring Systems
Electric Motors
Electrification
Li-Ion Batteries
Photovoltaic
Electric Load Optimization
Energy Harvesting
Wind Energy
Heat Recovery
Biofuel
Compressed Air
Biomethane
Thermal Storage
PV-Inverters
Geothermal
Carbon Capture
Heat Pumps
Agri-voltaic
Solar Thermal
Carbon Credits
Hydrogen
EV-charging
CHP
HVAC Optimization
Power Quality



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Sustainable Transition of:

The Toolkit to convert industrial assets in **Net Zero Emissions Factories**

The Platform to enable the **decarbonization of Business Partners**

The Path to **Design low-carbon products**

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Sustainable Transition of:

The Toolkit to convert industrial assets
in **Net Zero Emissions Factories**

Decarbonization Toolkit

THE FULL PACKAGE TO TRANSFORM INDUSTRIAL ASSETS INTO NET-ZERO FACTORIES

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TECHNOLOGIES

PROCESS OPTIMIZATION

LOCAL CONDITIONS

OPTIMAL NET ZERO ROADMAP

$$\begin{cases} \min \int_{2022}^{2030} Total\ Costs \\ CO_2\ emissions < CO_2\ Target \\ Technical\ Requirements \end{cases}$$

RENEWABLE ENERGY | BIOMASS | STORAGE | HEAT RECOVERY | ELECTRIC BOILER | HEAT PUMPS | BIOFUELS | CARBON CAPTURE | EFFICIENCY | HYDROGEN | WIND ENERGY | ...

PLANT ANALYSIS

- **Data** collection
- Technical **on-site inspections**
- **Inventory** of energy assets
- **Energy balance** and **carbon** footprint
- Analysis of **process specifications**

NET ZERO CONFIGURATIONS

- Digital-twin model
- Simulation of alternative solutions
- Analysis of interactions
- Yearly energy budget
- Evaluation of investments
- Sensitivity Analysis

DESIGN & EXECUTION

- Business plan
- General layout
- P&ID and drawings
- Engineering and design
- Selection of solution providers
- Coordination of implementation works

Decarbonization Toolkit

The first step is the **detailed characterization of the plant** in the as-is situation to define all energy flows and identify the applicable decarbonisation strategies.

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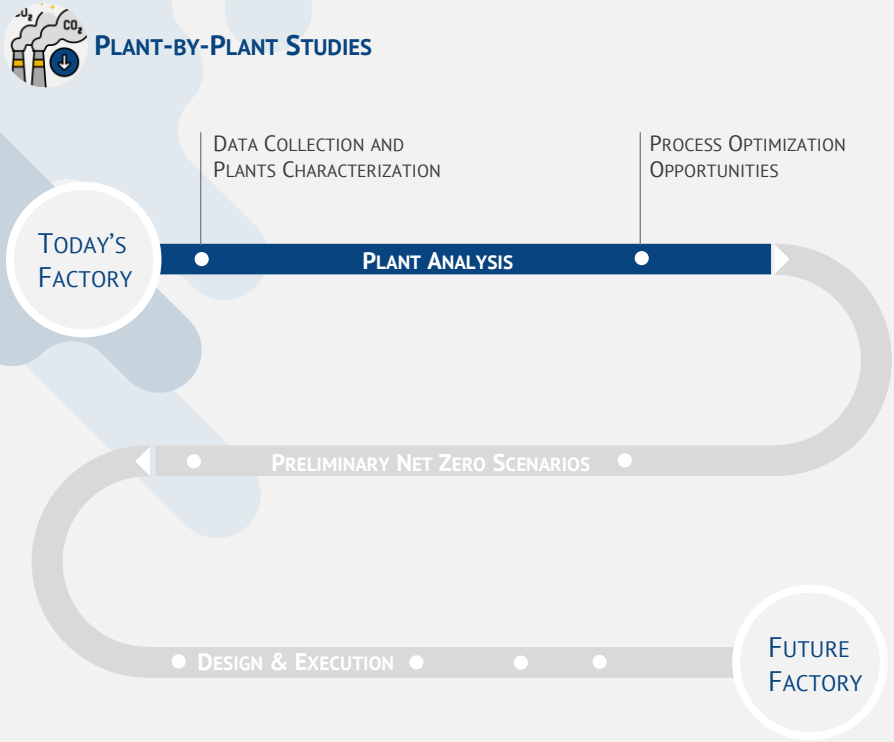


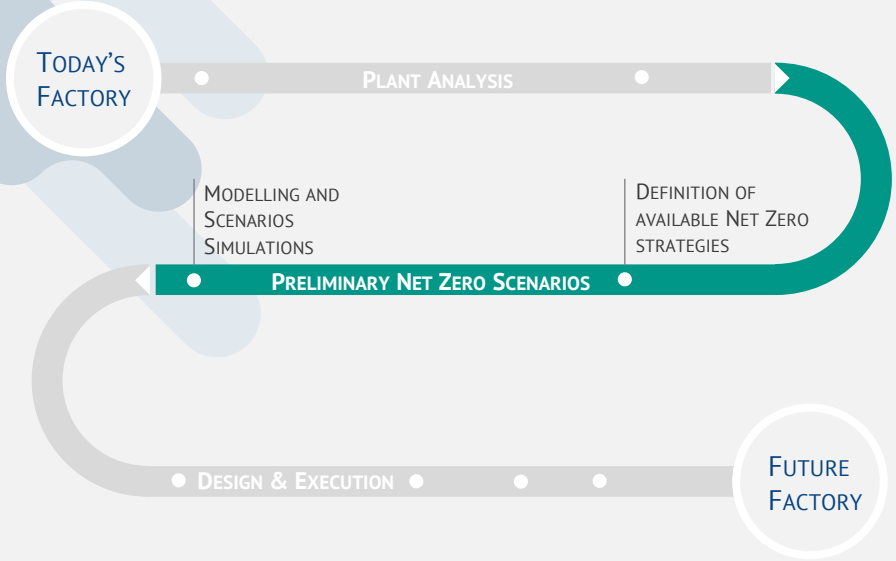
Awareness of the existing is the foundation for the best planning of the future

- **Data** collection
- Technical **on-site inspections**
- **Inventory** of energy assets
- **Energy balance** and **carbon** footprint
- Analysis of **process specifications**
- Scouting of **local sources** and **energy efficiency** opportunities

Decarbonization Toolkit

From a large range of scenarios, to a **selected range of optimal configurations**: the resulting configurations will be characterized in terms of capital costs, energy costs, input vectors and hourly profiles.

Plant-by-Plant Studies



Digital-twin simulations to compare alternative Net Zero configurations [Techno-economic optimization]

- Digital-twin **model of the existing industrial plant**
- **Simulation** of various **alternative solutions**:
  - Renewables
  - Efficiency
  - Electrification (Heat Pumps, Boilers, Ovens)
  - Waste Heat Recovery
  - Valorisation of Organic Wastes
  - Alternative Fuels (Biomass, H2, ...)
  - Carbon Capture
- **Analysis of the interaction** of multiple technologies on measured/simulated **hourly profiles**
- Evaluation of **yearly energy budget**
- Preliminary **evaluation of investments**
- **Sensitivity Analysis**

Decarbonization Toolkit

The result will be the design for the novel, decarbonized plant in terms of: **1) How** the system **will be transformed**, **2)** how the transformation will **impact on economics**, **3) Technical and managerial** support to the **implementation**

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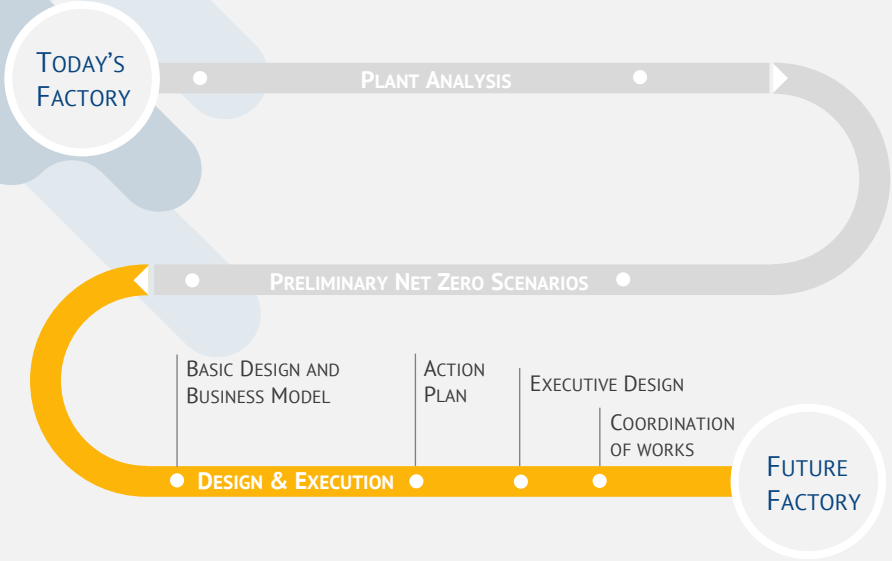
Plant-by-Plant Studies



From Analysis to Execution:
Actionable results for an effective switch to the hardware implementation

- Business plan: **Investments and OPEX**
- **General layout** with the integration of novel assets
- **Engineering and design**, P&ID and drawings, nominal parameters: pressure, flow rates, thermal and electric power
- Selection of **commercial products** and potential **partners** for implementation
- Expected **Footprint** and compliancy with available areas
- **Specification sheets** to be used for feasibility studies or **RFP** to **Suppliers**
- **Coordination** of implementation works

Towards Zero Emissions Factories – Some References

We've already planned the carbon neutral transformation of several industrial plants all over the world, eliminating more than 250'000t/y of CO2 emissions, closing the gap between commitment and implementation

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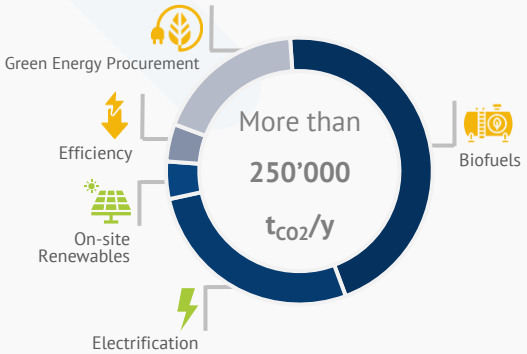
Industrial Decarbonisation Projects



Plant Location	Project CO_2 Reduction	Proposed Technology Mix
Germany	73,000 t_{CO2}/y	- Biomass CHP (50 MW_{Th}) - Heat Pumps (process heat) - Waste Heat Recovery - Photovoltaic
Italy	43,000 t_{CO2}/y	- Photovoltaic - Biomethane CHP - Fuel Cell - Heat Pumps - Waste Heat recovery
Poland	35,000 t_{CO2}/y	- Electrification of process heat (Heat Pumps + Electric Boilers) - Waste heat recovery - Biomethane - Photovoltaic
Canada	26,000 t_{CO2}/y	- On-site wind - Biomass boiler
Belgium	16,000 t_{CO2}/y	- Heat Pumps (process heat) - Biomethane CHP
Italy	15,000 t_{CO2}/y	- Biomass boiler - Heat Pumps (process heat)
Ireland	7,000 t_{CO2}/y	- Biomass boiler - Biomethane CHP
France	7,000 t_{CO2}/y	- Electrification of process heat (Heat Pumps + Electric Boilers) - Biomethane (baking ovens) - Photovoltaic
Italy	3,000 t_{CO2}/y	- Gasification of organic wastes - Heat Pumps - Biomethane (baking ovens) - Photovoltaic
Brasil	3,000 t_{CO2}/y	- Electrification of process heat (Heat Pumps + Electric Boilers) - Biomethane (baking ovens) - Photovoltaic
Italy	2,000 t_{CO2}/y	- Electrification of process heat (Heat Pumps + Electric Boilers) - Biomethane (baking ovens) - Photovoltaic

+ More than 50 other projects

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Sustainable Transition of:

The Platform to enable the
decarbonization of Business Partners

How to **Reduce Supply Chain Emissions**?

Make your **suppliers part of the solution.**

Empower them with the right **tools** to succeed

CO2RALLO

Diverse needs on action...

On the one hand

CORPORATES NEED

To align with their **Scope 3** emission **targets**

To **define how** to get there

To obtain and elaborate suppliers environmental **data**

On the other hand

SUPPLIERS NEED

Resources, both in terms of time and funds

Instruments to access and manage the transition

Knowledge, to understand the opportunities

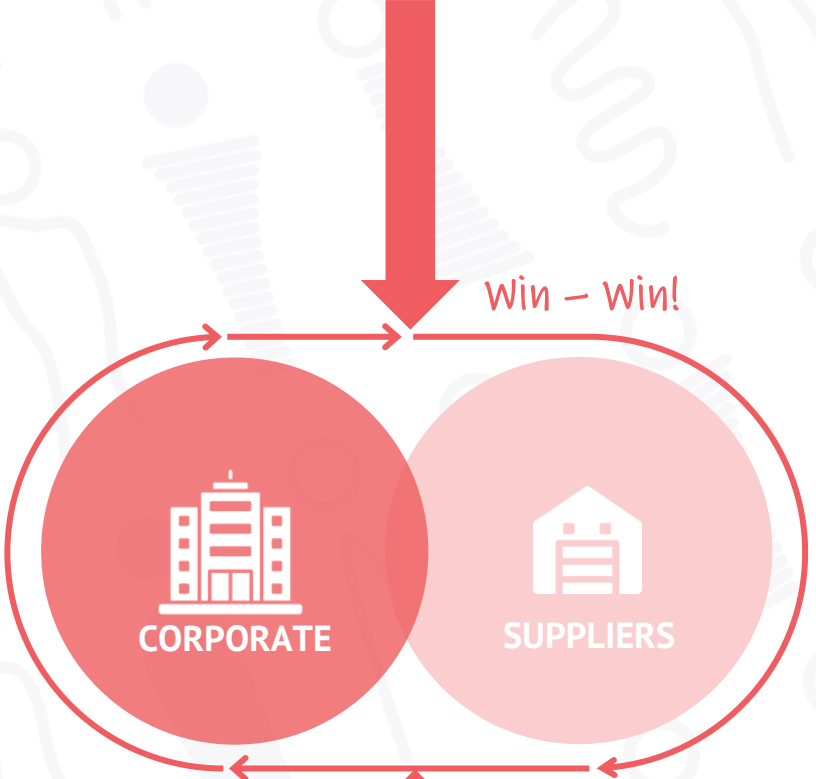
CO2RALLO

CO_2RALLO platform
brings them together

Empower your **suppliers** with the right **tools** Educate Measure Reduce

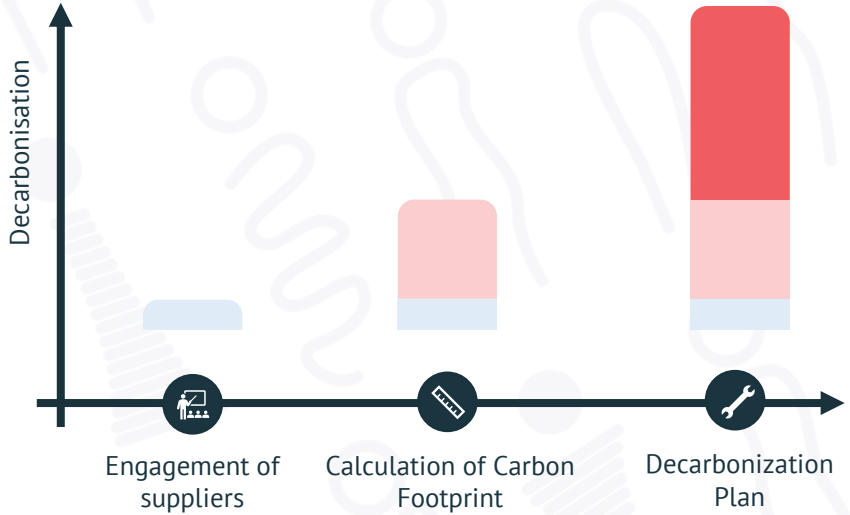
Take control of your CO_2 reduction strategy Progress monitoring

Tailored tech solutions + wide **network of providers** Make it real



CO2RALLO

… and it's not just a platform



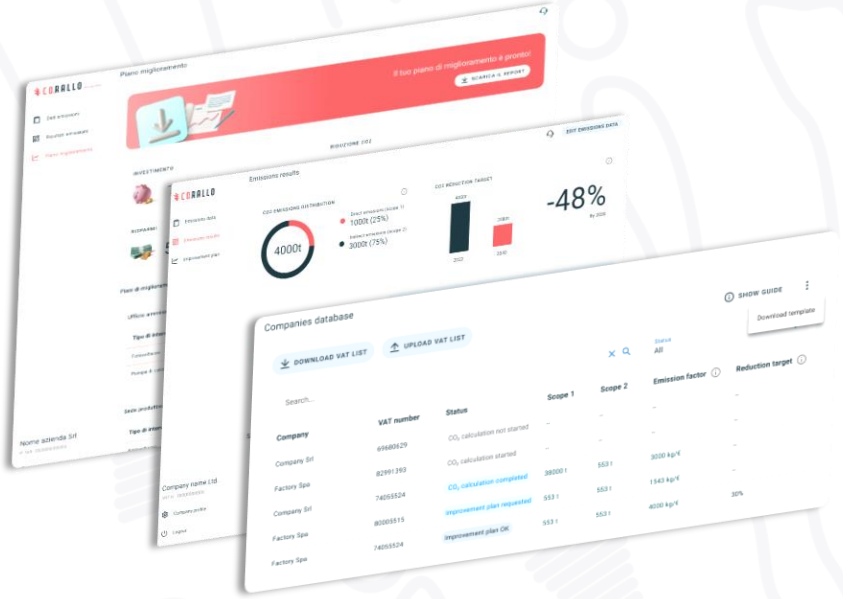
CO_2RALLO is the framework that **enables the decarbonization of** any **Supply Chain**

From **Suppliers Engagement**

To the **Execution** of **Decarbonization Actions**

CO2RALLO

Supply Chain Decarbonization, deployed!



- Get **supplier-specific** (spend-based) **emissions data**
- Build a **decarbonization plan** tailored to **each supplier**
- Reduce **supply chain** energy costs and increase its **resilience** and **competitiveness**
- **Financing opportunities** for energy transition interventions along the value chain
- Network of **technology suppliers** to **implement interventions**

A **shared framework** and a **dedicated expert team**, implementing supply chain decarbonization, for real.

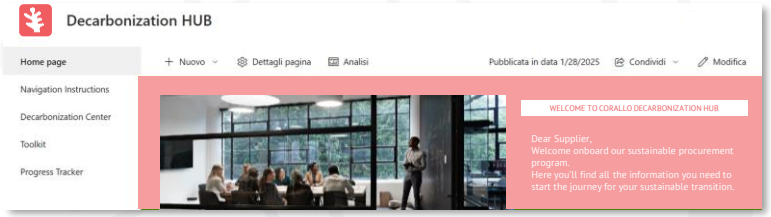
CO2RALLO

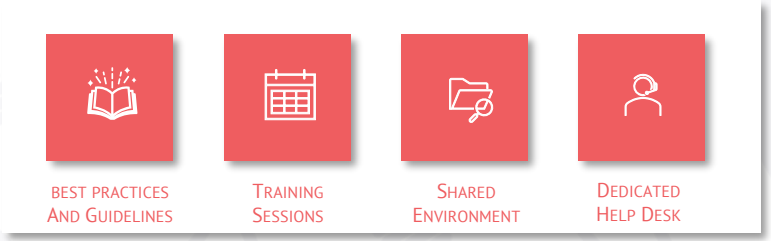
How it works – Phase 1: ONBOARDING

Phase 1: Onboarding

Phase 2: Measure

Phase 3: Reduce





Supplier awareness is the starting point for achieving concrete impacts in reducing emissions **along your value chain**.

Reward Schemes for Engaged Suppliers

- **Organisation** of sessions for the onboarded suppliers
- Insightful **webinars with experts**, and practitioner panels
- Motivational **roundtables** with interviews showcasing supplier **best-practices**
- Access to expert decarbonization **consultancy**

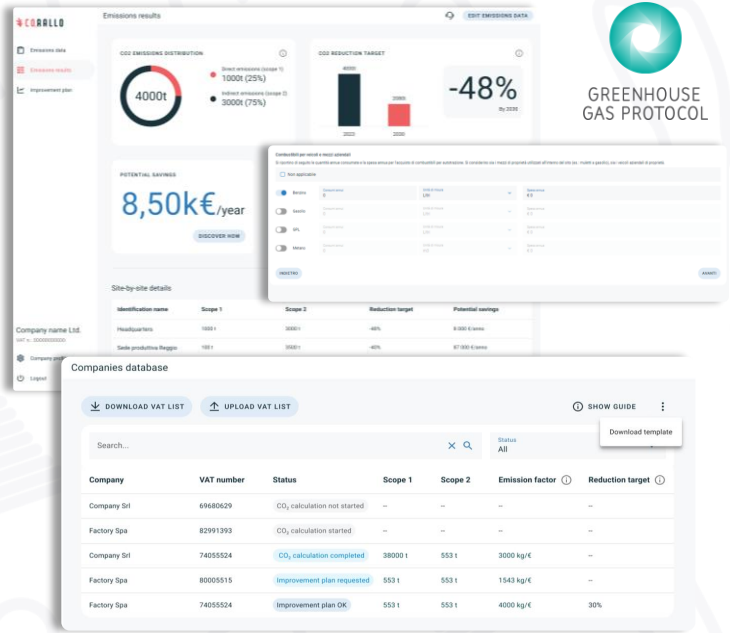
CO2RALLO

How it works – Phase 2: MEASURE their CO_2

Phase 1: Onboarding

Phase 2: Measure

Phase 3: Reduce



Let them touch their potential

- **Automated Carbon Footprint calculation** for your suppliers
- Immediate estimation of **potential savings** for your suppliers
- **Supplier-specific emission factor** (spend Based)
- **Tracking** of calculation status and **sharing** of results

You can't manage, what you don't measure.
Scope 1 and 2 readily available CO_2 calculation, according to **GHG Protocol standard**.

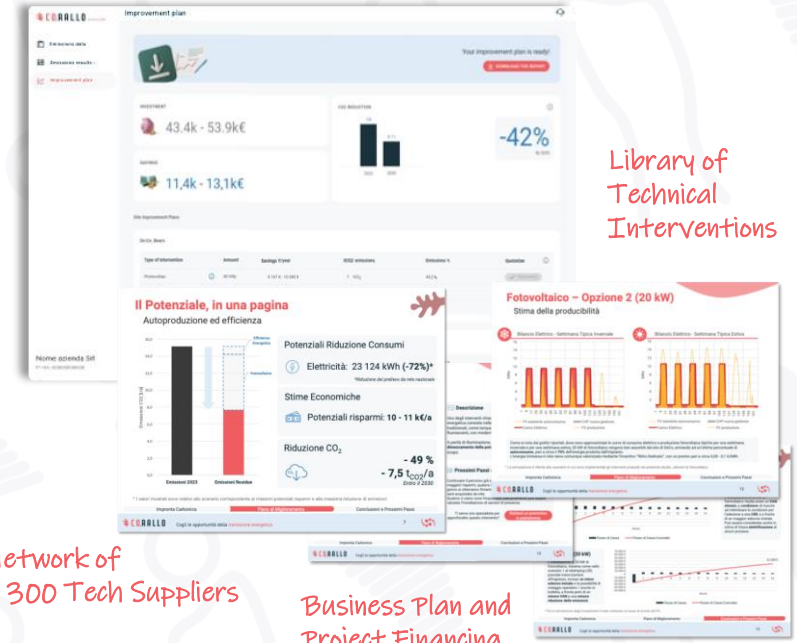
CO2RALLO

How it works – Phase 3: REDUCE their CO_2

Phase 1: Onboarding

Phase 2: Measure

Phase 3: Reduce



Library of Technical Interventions

Network of > 300 Tech Suppliers

Business Plan and Project Financing

Progress Tracking

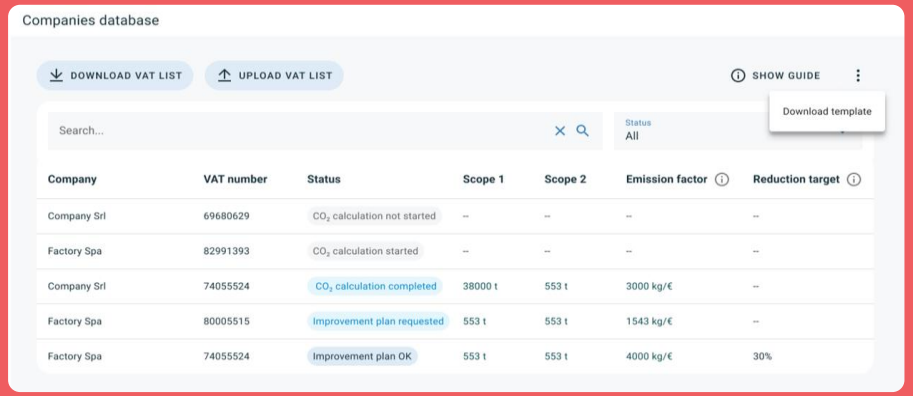
Moving to action

In a simple, **manageable and traceable** way

Make a Plan Make it Happen

- **Automated Assessment** of decarbonization levers per each supplier
- Identification of **Investments**, savings and **CO_2 reduction trajectory**
- Access to **financing opportunities** for energy transition interventions
- Network of **technology suppliers** to **implement interventions**

CO2RALLO



Different **data export options:**

Ready to go: .xls export of the suppliers data results and progress

Custom: integration with your own ERP is possible, on a project-basis

The corporate space

Get **confidence** on your Scope 3 reduction targets.
A **common framework** and a **dedicated expert team** to achieve them.

Features for Corporates

Supplier **specific KPIs**, ready for GHG Protocol hybrid methodology

Current and **prospected situation**, backed by **concrete plans**

Access and **export** suppliers updated **environmental data**

Prompt laggards to take **action**

Discover **opportunities** to develop **joint supply chain** projects

CO$_2$RALLO

A Success case – Italian financial institution

BPER: Banca

A digital platform to develop Energy Transition Plans for the SME clients

*«The project aims to **help the bank's SME customers** identify the right decarbonisation path for them. We asked ourselves how SMEs can find the **right investment in sustainability**. Especially since we have seen that in this phase of great transition, **small entrepreneurs are in danger of losing their way** (as the Eurobarometer also points out). Our Open Innovation experiment helped us get into the phase of **supporting the green transition of SMEs**, without Bluefoundation we would not have made it.»*

Fabiola Baraldi
Head of ESG Credit Adequacy

CO2RALLO

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Sustainable Transition of:

The Path to
Design low-carbon products

The Sustainable Design Process

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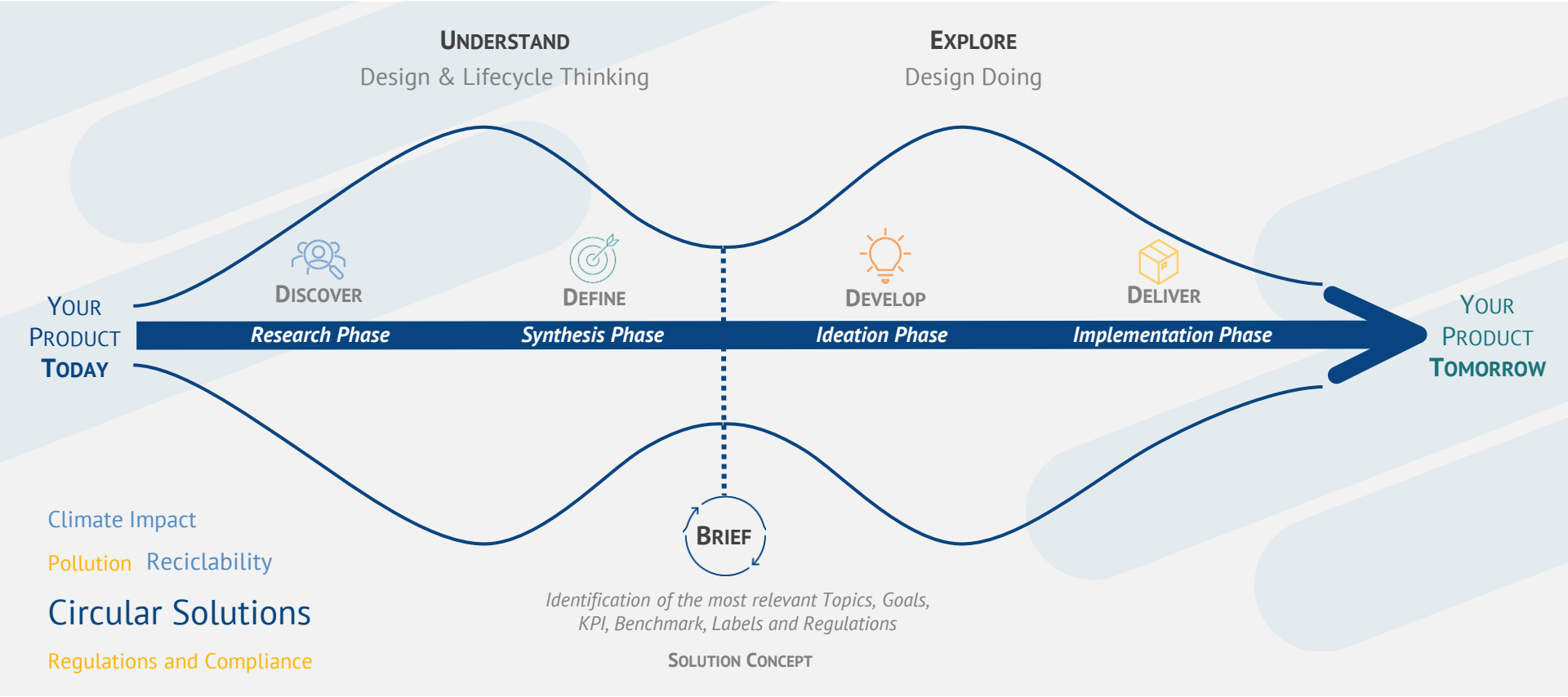

Carbon Neutral Pasteurization Process

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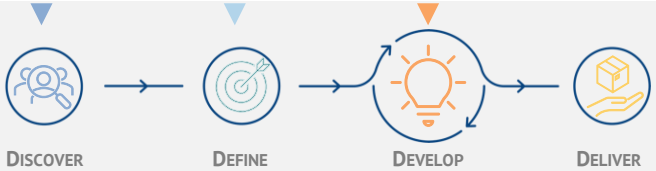

Client's need

Integration of heat pumps in industrial processes is considered as one of the most effective ways in reducing carbon emissions and improving efficiency of heating consumptions.

How to re-think the pasteurization process to be **carbon neutral by design?**

Main activities & outcomes

The activity was focused on the development of a novel Concept Design able to provide the same performance compared to the current solution, while significantly reducing energy demand, energy costs and CO_2 emissions :

- **3X Energy Efficiency** Increase
- **12 Technology Providers** involved
- **Design** of **5 alternative configurations**

Circular Economy Solutions from Organic Biomass Wastes

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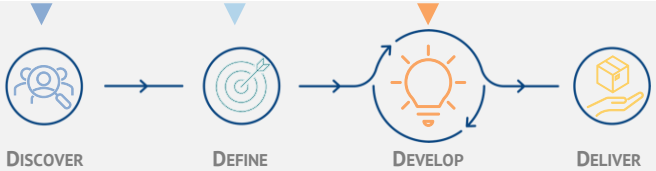

Client's need

The client is one of the world's leading players in hazelnut processing.
The need is to exploit the several tons of shells processed annually to bring greater economic, environmental, and social value to a byproduct with a relevant under-exploited potential.

Main activities & outcomes

We **explored all possible alternative valorisation routes** to exploit **nutshells** and enhance the economic and environmental sustainability of the production process.
Dry shells can be used to produce bio-materials, pharma and bodycare products, bio fuels and biochar, leading to the surprising results of:

- **- 25'000 t/y Wastes Recovered**
- **- 12'700 tCO_2/y emissions**
- **+ 1.5 M€/y Additional Revenue**

Enhancing Recyclability of Small Packaging Parts

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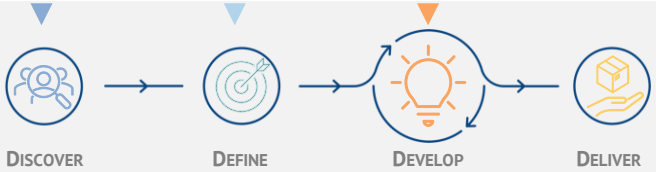

Client's need

- **Small plastic packaging** parts of consumer products that are theoretically recyclable might not be so in practice, due to technical constraints in the technologies adopted at recycling plant
- Finding solutions to **actually recycle** these **items** can benefit both producing companies and municipalities by enhancing their efforts in increasing recycling rates of plastic products.

Main activities & outcomes

At global scale, the analysis of :

- **2 Different Recycling Approaches**
  - Product re-design
  - Dedicate collection programs
- **Technical and Financial Opportunities**
- **10 Addressed Countries**

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