

# Environmental Product Declarations for the Galvanizing Industry

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Prepared by: Stefano Rossi, Chiara Urbani

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## CONTENT LIST

- Who we are
- EGGA – LCE partnership
- Environmental Product Declaration
- EPD for the Galvanizing Industry
- PEF
- New paths and methodologies



# Who we are?

# ABOUT LIFE CYCLE ENGINEERING

## THE LCE TEAM


 <b>Alessandra</b> Industrial Chemist	 <b>Alessia</b> Web/Graphic Designer	 <b>Alice</b> Materials Engineer	 <b>Assunta</b> Environmental Engineer	 <b>Barbara</b> Civil Engineer	 <b>Chiara</b> Chemical Engineer	 <b>Elena</b> Communication Assistant
 <b>Elisa</b> Materials Engineer	 <b>Elisabetta</b> Environmental Scientist	 <b>Francesca</b> Environmental Economist	 <b>Martina</b> Environmental Scientist	 <b>Stefania</b> Agronomist	 <b>Francesca</b> Industrial Ecologist	 <b>Laura</b> Management Engineer
 <b>Paola</b> Administration and human resources						 <b>Simona</b> Accountant Assistant
 <b>Paola</b> Chemist	 <b>Anna</b> Chemical Engineer	 <b>Sonia</b> Environmental Engineer	 <b>Valentina</b> Environmental Economist	 <b>Lorenzo</b> Environmental Scientist	 <b>Giammarco</b> Environmental Scientist	 <b>Davide</b> Energy Engineer
 <b>Fabrizio</b> Environmental Engineer						
 <b>Gian Luca</b> LCA Engineer	 <b>Maurizio</b> IT and Web Developer	 <b>Massimo</b> Energy Engineer	 <b>Massimo</b> Graphic Designer	 <b>Pietro</b> IT and Web Developer	 <b>Riccardo</b> Environmental Engineer	 <b>Stefano</b> Mechanical Engineer

## LCE BRIEF PROFILE

## >20 YEARS SPECIFIC FIELDS

LCA, EPD, CSR tools, Eco-design, carbon footprint, eco-labelling, environmental communication, environmental law

## MORE THAN 500 SUSTAINABILITY PROJECTS



- AQUAFIL Group**  
**SYNTHETIC FIBERS**  
ECONYL® REGENERATED NYLON  
The waste turned into first-grade nylon yarn  
The waste turned into first-grade nylon yarn
- Barilla**  
The Italian Food Company Since 1877  
**FOOD**  
Large number of LCA/EPD for many product families; Sustainable farming projects; Eco-designed packaging solutions
- CONAI**  
Consortium of Italian Packaging Producers  
**PACKAGING**  
CONAI Eco Tool  
to evaluate the eco-efficiency of packaging, looking for innovative solutions to improve their performances
- enel**  
**SUPPLY CHAIN IN ELECTRICITY GENERATION/DISTRIBUTION**  
Circular Economy initiative for Enel suppliers engagement  
a project to boost circular economy along the supply chain
- GIRO**  
**BIKE/SNOWBOARD HELMETS**  
SILO  
A plant based revolution in helmets
- zoetis**  
**PHARMACEUTICAL IMPROVAC**  
Environmental Product Declaration (EPD)



# EGGA-LCE partnership

## PROJECT'S TIMELINE



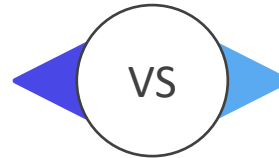
## EU SAMPLE 2015 vs 2005

**2005**

46 plants =  
936 976 t of steel coated

8 countries

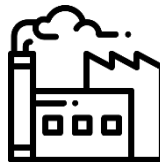
The sample represents more than  
15% of the total European  
production



Plants



EU countries



Sample  
representativeness

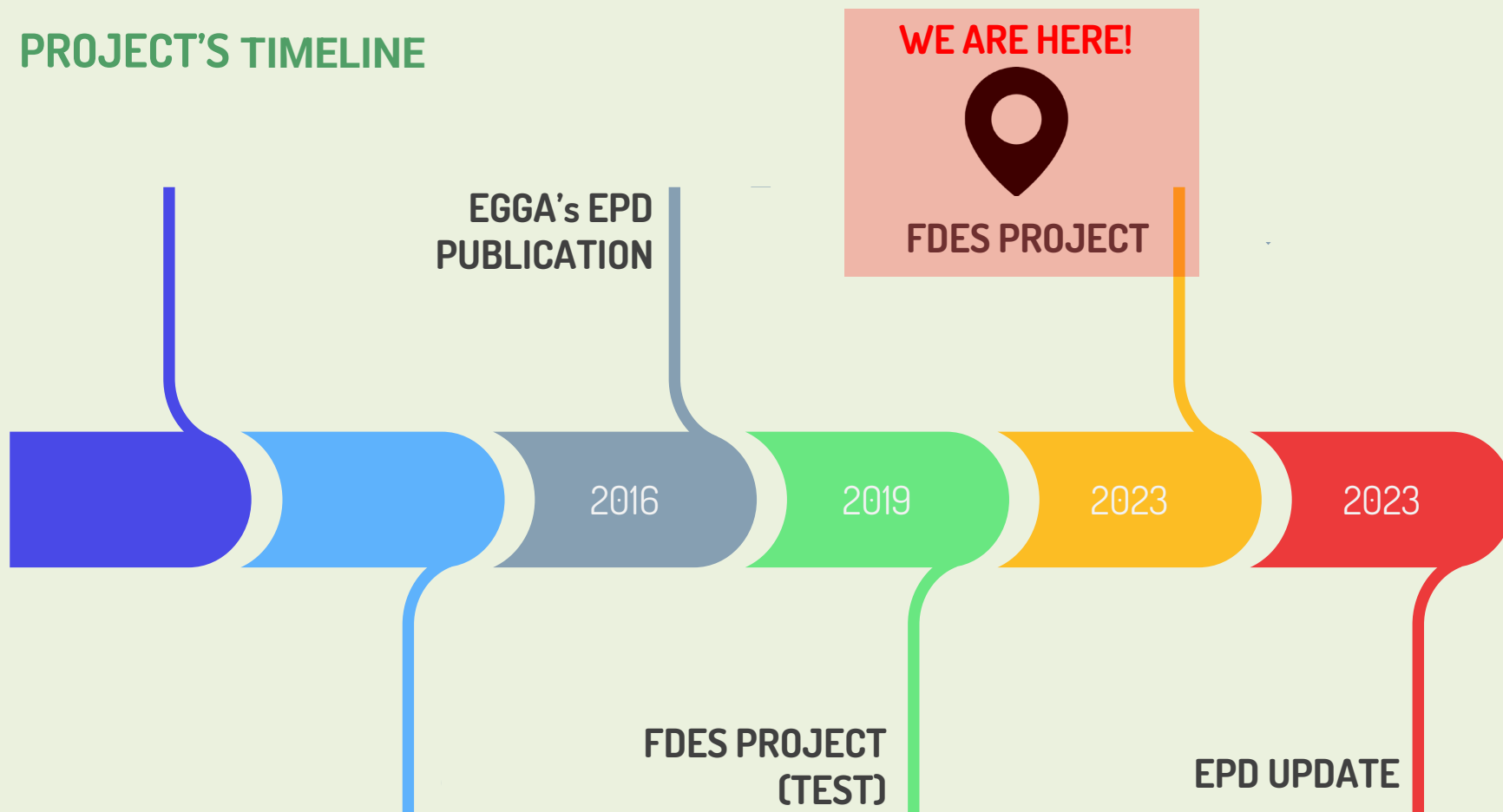
**2015**

66 plants =  
1 200 000 t of steel coated

15 countries

The sample represents more than  
20% of the total European  
production

## PROJECT'S TIMELINE





## LIFE CYCLE INVENTORY (LCI)



- LCI data provides information on all **emissions and resources** associated to the **life cycle of processes and materials**
- LCI data are **used in LCA studies, eco-design** of materials and processes, **comparisons between possible alternatives** (ex. different corrosion protection services)
- Common LCI databases: Ecoinvent, GaBi, PEF, etc.



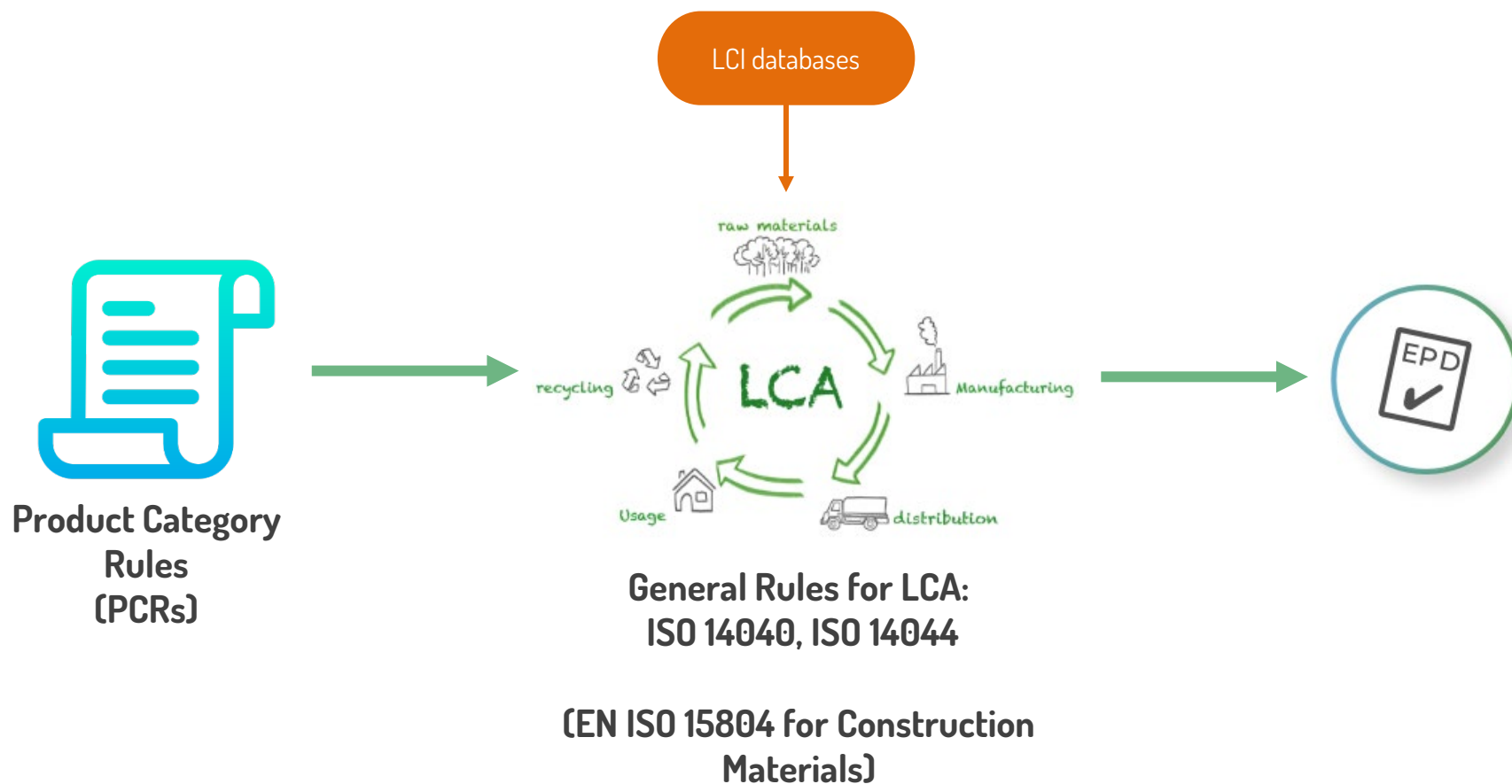
# Environmental Product Declaration

## WHAT IS AN EPD?

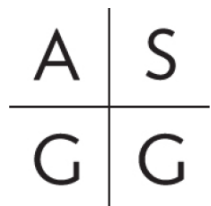


- EPD stands for **Environmental Product Declaration**
- It provides **transparent and comparable information** about the **life-cycle environmental impact of a product**
- Calculations **based on the results of a LCA study** (Life Cycle Assessment)
- It must be **third-party verified** before it can be published
- **Valid for a fixed period**

## EPD'S RULES



# PUBLIC TENDER ASKING FOR EPD AND GWP VALUE LOWER THAN A THRESHOLD



## Sustainable Materials Questionnaire

SMG 2.2.5 and Appendix A	<b>STEEL Products with EPD</b>  Does the steel Manufacturer provide an EPD?	<input checked="" type="radio"/> <input type="radio"/> <input type="radio"/>	Provide Independently verified Environmental Product Declaration (EPD) to EN 15804 or equivalent showing the global warming potential, which is to be equal to World Steel average for the below (for life cycle stages A1 – A3):
	<div>GWP lower than a threshold value</div>		<div> <ul style="list-style-type: none"> <li>Carbon steel rolled sections, plates and bars for structural applications  <math>&lt; 1.52 \text{ kgCO}_2/\text{kg}</math></li> <li>Stainless steel sections  <math>&lt; 5.20 \text{ kgCO}_2/\text{kg}</math></li> <li>Hot and cold formed carbon steel tubular sections, corrugated plates and similar sections  <math>&lt; 2.77 \text{ kgCO}_2/\text{kg}</math></li> </ul> </div>



# EPD for the Galvanizing Industry



## EGGA'S EPD



- **Sectoral EPD**
- Reference standards:
  - **EN 15804+A1** (expired, current version: EN 15804+A2)
  - **PCR 2011:16 «Corrosion protection of fabricated steel products»** (expired 2021-04-05, being updated)
- Published under **The International EPD System**

## EGGA'S EPD

Reference unit: **1 year of protection of 1 m<sup>2</sup> steel plate of 8 mm thickness**

 <b>ENVIRONMENTAL IMPACT PARAMETERS</b>	MANUFACTURING		END OF LIFE		D Benefits and loads beyond the system boundary*	Contribution (included) from galvanizing process [EN ISO 1461]
	 A1 - A3 Product stage	 A4 Distribution	 C2 Product Waste transport	 C4 Product Disposal		
Global Warming Potential, GWP [ kg CO <sub>2</sub> eq ]	2.58	0.01	0.01	4,12E-04	-1.20	0.12

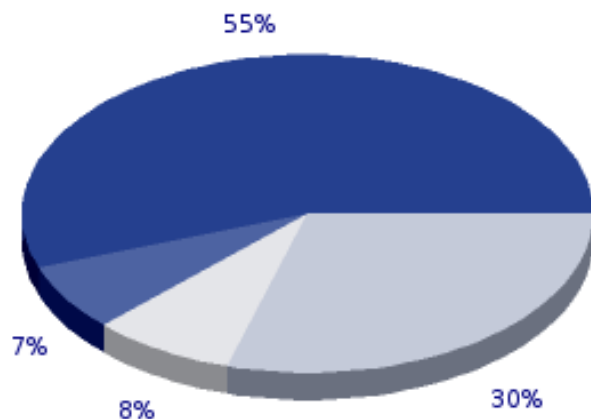
<b>Substrate</b>	steel plate of dimension 1m x 1m x 8mm and weight 62.4 kg
<b>Galvanized coating thickness</b>	85 microns (2% in mass)
<b>Exposure environment</b>	Category C3 (as defined in PCR) with average zinc corrosion rate of 1.35 microns/year
<b>Predicted maintenance-free coating life</b>	Minimum of 63 years
<b>Units (results)</b>	Burdens per year of protection

Contribution of the galvanizing process

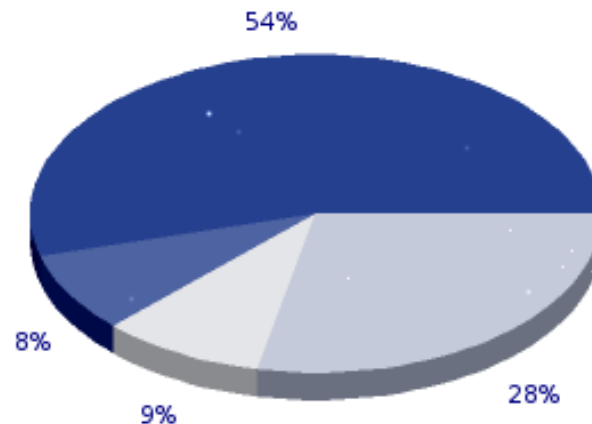


## EGGA'S EPD

GLOBAL WARMING POTENTIAL



GROSS ENERGY REQUIREMENT



- Raw material - Zinc
- Raw material - pre & post treatment
- Energy consumption - kettle heating
- Energy consumption - plant other phase activities



PEF

## PEF METHODOLOGY



- Developed by **the European Commission**
- **Life Cycle Assessment (LCA) based method** to quantify the relevant environmental impacts of products (goods or services)
- Aim: to set the basis for **better reproducibility and comparability** of the results
- **PEFCRs** (Product Environmental Footprint Category Rules) **provide specific guidance** for calculating products' life cycle potential environmental impacts

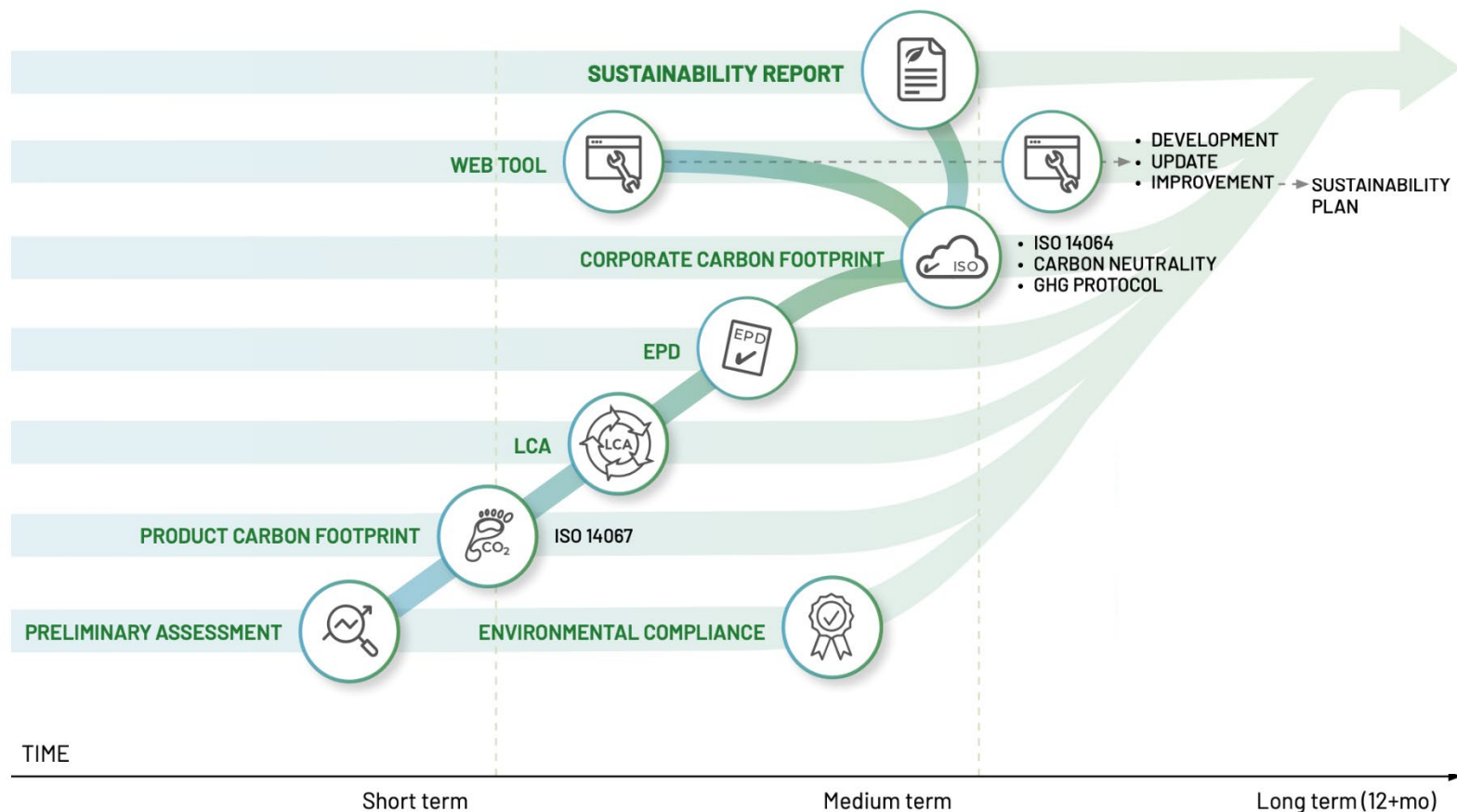




# New paths and methodologies



# SUSTAINABILITY PATH OVERVIEW



# Thank you!





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