



# ENVIRONMENTAL PRODUCT DECLARATION

STEEL PRODUCTS:  
STRETCHED COIL  
ELECTROWELDED MESH  
COLD ROLLED



Based on:

PCR ICMQ-001/15 v3

EN:15804:2012+A2:2019

ISO 14025

Certification N°:

EPDITALY0016

CPC: 41

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FA\_EPD\_02

# GENERAL INFORMATION

## EPD REFERENCES

**EPD OWNER:** FERALPI SIDERURGICA SPA - FERALPI GROUP, VIA NICOLA PASINI 11, 25017 LONATO, BRESCIA - ITALY  
MANUFACTURING PLANT IS LOCATED IN THE SAME SITE

**PROGRAM OPERATOR:** EPDITALY, VIA GAETANO DE CASTILLIA 10, 20124 MILANO - ITALY

## INDEPENDENT VERIFICATION

This declaration has been developed referring to the EPDItaly, following the "Regolamento di EPDItaly"; further information and the document itself are available at: [www.epditaly.it](http://www.epditaly.it). EPD document valid within the following geographical area: Italy and other countries worldwide according to sales market conditions.

CEN standard EN 15804 served as the core PCR (PCR ICMQ-001/15 v3)  
PCR review was conducted by Daniele Pace, contact via [info@epditaly.it](mailto:info@epditaly.it)

Independent verification of the declaration and data, according to EN ISO 14025 : 2018

- EPD process certification (Internal)
- EPD verification (External)

**Third party verifier:** ICMQ SpA, via De Castillia, 10 20124 Milano ([www.icmq.it](http://www.icmq.it))

**Accredited by:** Accredia

Environmental declarations published within the same product category, though originating from different programs, may not be comparable. In particular, EPDs of construction products may not be comparable if they do not comply with EN 15804.

## CONTACTS

Eric Filippini E-mail: [eric.filippini@it.feralpigroup.com](mailto:eric.filippini@it.feralpigroup.com) Phone: (+39) 030 99 961



Technical support to Feralpi Group was provided by Life Cycle Engineering, Italy.  
([info@lcengineering.eu](mailto:info@lcengineering.eu), [www.lcengineering.eu](http://www.lcengineering.eu)).



# COMPANY PROFILE



The Feralpi Group is one of Europe's leading manufacturers of steels for use in building construction. The parent company Feralpi Siderurgica, which was set up in 1968 in Lonato del Garda, near Brescia, has developed steadily over the years to form a group of industries that currently more than two million tonnes of steel and rolled products a year, and has a workforce of 1500 permanent employees in Italy, Europe and North Africa.

In over fifty years of business, the company has branched out to foreign markets and have been able to face the challenge of an increasingly globalized steel industry. Starting from its lengthy tradition in steel manufacturing, the Group has developed according to a strategy of diversification into new products and markets, which has involved not only the internal organisation but also external transactions thanks to the acquisition of numerous enterprises operating in this industry. The Feralpi Group also operates in the field of special steels, cold working, structural steelwork, the environment and fish farming, not to mention financial activities and investments.

Since its very origins, Feralpi has focused not only on producing the best steel grades for building construction but also on doing it in the most sustainable possible way, which has involved reducing energy consumption and emissions by using the latest technology available or developing in-house new solutions covered by patents as a result of intensive innovation and research.

## Feralpi, an international diversified group (2021)



**2.62**  
million tons

Steel production



**2.47**  
million tons

Hot rolled production



**1.37**  
million tons

Cold rolled products and derivatives



**1 900**  
million euros

Turnover



**59%**

Turnover abroad



**1 749**

Employees (2021)



**58**  
million euros

Technical investments

# SCOPE AND TYPE OF EPD

THE APPROACH USED IN THIS EPD IS “CRADLE TO GATE WITH OPTIONS” ONE

TABLE OF MODULES																
PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De- construction demolition	Transport	Waste processing	Disposal	Reuse - Recovery Recycling potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	X	MND	MND	MND	MND	MND	MND	MND	MND	X	X	X	X	X

**SOFTWARE:** SimaPro ver. 9.4.0.2

**MAIN DATABASE:** Ecoinvent 3.8

**REPORT LCA:** Life Cycle Assessment (LCA) applied to steel mill products and derivatives for EPD® purposes - final report

**GEOGRAPHICAL SCOPE OF THE EPD:** World according to sales market conditions

**TYPE OF EPD:** specific for cold rolled steel products

# THE PRODUCT

Electro-welded mesh is obtained from drawn wire (5 mm) or hot-rolled coil (6-16 mm), by joining the longitudinal and transversal wires using electric resistance welding to form a panel of the desired dimensions.

Stretched coil is extremely easy to use with a high quality content. The mechanical properties of weldable hot-rolled coils, combined with a compact packaging size which is nevertheless of considerable weight, facilitate storage in confined spaces.

The special coil-on-coil processing ensures accurate and faster coil unwinding, giving considerable increases in output. The reduced number of daily changes results in fewer downtimes, less scrap and a higher level of safety.

In general, the main materials of the final product are: *iron* > 96%; *alloy elements* (e.g. manganese, silicon, carbon) 2% c.a.; *other elements* (e.g. copper, nickel, chromium) complementary to 100%.

**Declared unit** for the study is **one tonne of cold rolled products**.



INFORMATION	DESCRIPTION
PRODUCT IDENTIFICATION	Steel products: stretched coil - electrowelded mesh - cold rolled
PRODUCT FEATURES	Stretched coil: Cross section range $6 < \varnothing < 20$ mm Weight from 2 500 to 5 000 kg per coil Total wire length up to 22 000 m Electrowelded mesh: Diameters from 4.5 to 12 mm Weight from 666 to 2 200 kg Cold rolled: Diameters from 5 to 10 mm, Weight from 1 800 to 5 000 kg per coil
PRODUCT PROPERTIES (UNDER EN10080:2005)	Steel coming from post and pre consumer steel scraps produced in electric arc furnace route (EAF) and further hot and cold rolling process.  Adherence and surface geometry $f_R$ or $f_p$ : - for $5 \leq \varnothing \leq 6$ mm $f_R$ or $f_p$ 0.035 - for $6 < \varnothing \leq 12$ mm $f_R$ or $f_p$ 0.040 - for $\varnothing > 12$ mm $f_R$ or $f_p$ 0.056  Weldability: $C_{eq} < 0.52$  Typical yield stress: $Re > 400$ MPa and/or $Rp_{0.2} < 700$ MPa  Elongation: $Agt > 5\%$  Successful in bend and rebend test  Successful in strength test and oligocyclic strength test
PLANT FEATURES	Total amount of products covered by this EPD, year 2021: 688 328 t  Total production, for selling purpose, year 2021: 1 401 914 t  On-site air emission control system  On-site system to recycle process water  On-site system to recycle water used in process  In/out materials/products and melting process monitored to prevent nuclear radiation  In house photovoltaic plant of 625 kW peak capacity operating since 2011

# ENVIRONMENTAL PERFORMANCE

The detailed environmental performance (in terms of use of resources, pollutant emissions and waste generation) is presented for the three phases, Upstream, Core and Downstream and related sub-phases (A1-A2-A3-A4-C1-C2-C3-C4-D). The numbers reported in the following tables are the outcome of rounding. For this reason total results could slightly differ from the sum of contributions of the different phases. The energy sources behind the electricity grid used in manufacturing is the Italian residual mix 0,457 kg CO<sub>2</sub> eq./kWh (AIB report May 2022) with Life Cycle Engineering post-elaborations.

**TABLE OF MODULES**

POTENTIAL ENVIRONMENTAL IMPACTS	UNITS / D.U.	UPSTREAM		CORE PROCESS				DOWNSTREAM				TOTAL	D
		A1 	A2 	A3 	A4 	C1 	C2 	C3 	C4 				
<b>GWP</b>	kg CO <sub>2</sub> eq	3.74E+02	1.21E+02	1.39E+02	6.21E+01	3.82E+01	2.44E+01	1.93E+00	7.32E-01	<b>7.61E+02</b>	4.24E+02		
<b>GWP,f</b>	kg CO <sub>2</sub> eq	3.74E+02	1.21E+02	1.39E+02	6.21E+01	3.82E+01	2.44E+01	1.92E+00	7.32E-01	<b>7.61E+02</b>	4.24E+02		
<b>GWP,b</b>	kg CO <sub>2</sub> eq	1.96E-01	8.14E-02	2.09E-01	9.43E-03	2.69E-03	1.44E-03	5.78E-03	9.87E-05	<b>5.06E-01</b>	6.94E-02		
<b>GWP,luluc</b>	kg CO <sub>2</sub> eq	8.12E-02	1.33E-03	5.99E-02	2.87E-03	9.43E-04	1.99E-04	3.98E-03	2.49E-05	<b>1.50E-01</b>	1.79E-02		
<b>ODP</b>	kg CFC11 eq	6.49E-05	2.84E-05	3.01E-06	1.47E-05	8.56E-06	5.85E-06	7.18E-08	1.52E-07	<b>1.26E-04</b>	1.25E-05		
<b>AP</b>	mol H+ eq	1.48E+00	7.01E-01	3.10E-01	3.48E-01	4.12E-01	1.42E-01	9.62E-03	7.54E-03	<b>3.41E+00</b>	1.59E+00		
<b>EP,f</b>	kg P eq	6.85E-03	1.91E-04	3.03E-03	1.41E-04	2.69E-05	1.26E-05	9.79E-05	2.60E-06	<b>1.03E-02</b>	1.74E-02		
<b>EP,m</b>	kg N eq	2.80E-01	2.76E-01	9.83E-02	1.36E-01	1.85E-01	5.69E-02	1.77E-03	3.28E-03	<b>1.04E+00</b>	3.09E-01		
<b>EP,t</b>	mol N eq	3.15E+00	3.03E+00	1.09E+00	1.50E+00	2.03E+00	6.25E-01	1.96E-02	3.59E-02	<b>1.15E+01</b>	3.58E+00		
<b>POCP</b>	kg NMVOC eq	9.13E-01	7.90E-01	2.76E-01	3.91E-01	5.54E-01	1.62E-01	5.31E-03	1.00E-02	<b>3.10E+00</b>	1.90E+00		
<b>ADPE*</b>	kg Sb eq	5.63E-05	5.12E-06	7.96E-05	2.73E-06	1.97E-06	1.07E-06	5.75E-08	3.53E-08	<b>1.47E-04</b>	6.77E-03		
<b>ADPF*</b>	MJ	7.79E+03	1.70E+03	8.85E+02	8.78E+02	5.17E+02	3.41E+02	3.27E+01	9.73E+00	<b>1.22E+04</b>	5.21E+03		
<b>WDP*</b>	m <sup>3</sup>	4.40E+01	3.15E+00	1.11E+02	8.74E-02	1.36E-01	-5.84E-02	2.93E-01	3.94E-03	<b>1.58E+02</b>	5.87E+01		

**GWP** Global warming potential, total

**GWP,f** Global warming potential, fossil

**GWP,b** Global warming potential, biogenic

**GWP,luluc** Global warming potential, land use & land use change

**ODP** Ozone depletion potential

**AP** Acidification potential

**EP,f** Eutrophication potential, freshwater

**EP,m** Eutrophication potential, marine

**EP,t** Eutrophication potential, terrestrial

**POCP** Photochemical ozone creation potential

**ADPE** Abiotic depletion potential minerals & metals

**ADPF** Abiotic depletion potential fossil fuels

**WDP** Water use deprivation potential

Additional environmental impact indicators are computed in the LCA report but not reported in the EPD.

\*The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experience with the indicator.

## RESOURCE USE PER DECLARED UNIT

USE OF RENEWABLE MATERIAL RESOURCES	UNITS / D.U.	UPSTREAM		CORE PROCESS				DOWNSTREAM				TOTAL	D
		A1 	A2 	A3 	A4 	C1 	C2 	C3 	C4 				
PERE	[MJ]	4.65E+02	2.27E+01	9.58E+01	5.07E+00	8.54E-01	5.35E-01	3.08E+00	4.08E-02	<b>5.93E+02</b>	3.02E+02		
PERM	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	<b>0.00E+00</b>	0.00E+00		
PERT	[MJ]	4.65E+02	2.27E+01	9.58E+01	5.07E+00	8.54E-01	5.35E-01	3.08E+00	4.08E-02	<b>5.93E+02</b>	3.02E+02		
PENRE	[MJ]	7.83E+03	1.75E+03	7.47E+02	9.04E+02	5.33E+02	3.51E+02	3.30E+01	1.00E+01	<b>1.22E+04</b>	5.23E+03		
PENRM	[MJ]	0.00E+00	0.00E+00	1.51E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	<b>1.51E+02</b>	0.00E+00		
PENRT	[MJ]	7.83E+03	1.75E+03	8.98E+02	9.04E+02	5.33E+02	3.51E+02	3.30E+01	1.00E+01	<b>1.23E+04</b>	5.23E+03		
SM	[kg]	1.12E+03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	<b>1.12E+03</b>	0.00E+00		
RSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	<b>0.00E+00</b>	0.00E+00		
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	<b>0.00E+00</b>	0.00E+00		
FW	[m <sup>3</sup> ]	1.26E+00	9.58E-02	2.84E+00	2.04E-02	8.93E-03	9.58E-04	1.41E-02	2.08E-04	<b>4.24E+00</b>	1.15E+00		

**PERE** Use of renewable primary energy excluding renewable primary energy resources used as raw materials

**PERM** Use of renewable primary energy resources used as raw materials

**PERT** Total use of renewable primary energy resources

**PENRE** Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials

**PENRM** Use of non-renewable primary energy resources used as raw materials

**PENRT** Total use of non-renewable primary energy resources

**SM** Use of secondary raw materials

**RSF** Use of renewable secondary fuels

**NRSF** Use of non-renewable secondary fuels

**FW** Use of net fresh water

## OUTPUT FLOWS AND WASTE CATEGORIES PER DECLARED UNIT

WASTE GENERATION AND TREATMENT	UNITS / D.U.	UPSTREAM	CORE PROCESS				DOWNSTREAM				TOTAL	D
		A1 	A2 	A3 	A4 	C1 	C2 	C3 	C4 			
HWD	[kg]	0.00E+00	0.00E+00	1.95E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	<b>1.95E+00</b>	0.00E+00	
NHWD	[kg]	0.00E+00	0.00E+00	1.58E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	<b>1.58E+01</b>	0.00E+00	
RWD	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	<b>0.00E+00</b>	0.00E+00	
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	<b>0.00E+00</b>	0.00E+00	
MFR	[kg]	0.00E+00	0.00E+00	1.81E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	<b>1.81E+02</b>	0.00E+00	
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	<b>0.00E+00</b>	0.00E+00	
EE	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	<b>0.00E+00</b>	0.00E+00	

- HWD** Hazardous waste disposed
- NHWD** Non-hazardous waste disposed
- RWD** Radioactive waste disposed
- CRU** Components for re-use
- MFR** Materials for recycling
- MER** Materials for energy recovery
- EE** Exported energy





# CALCULATION RULES



The environmental burden of the product has been calculated according to EN 15804:2012+A2:2019 and PCR ICMQ-001/15 v3.

This declaration is a cradle to gate with options EPD type, based on the application of Life Cycle Assessment (LCA) methodology to the whole life-cycle system.

In the whole LCA model, infrastructures and production equipments are not taken into account.

Cold rolled steel products at plant level were described by using specific data from manufacturing facility (Lonato del Garda, BS, Italy) for year 2021.

Customized LCA questionnaires were used to gather in-depth information about all aspects of the production system (for example, raw materials contents and specifications, pre treatments, process efficiencies, air and water emissions, waste management), in order to provide a complete picture of the environmental burden of the system from raw materials supply (A1) to Transport (A2) and Manufacturing (A3). Therefore, in nominal installation and operating conditions, no emissions to air nor to water shall occur.

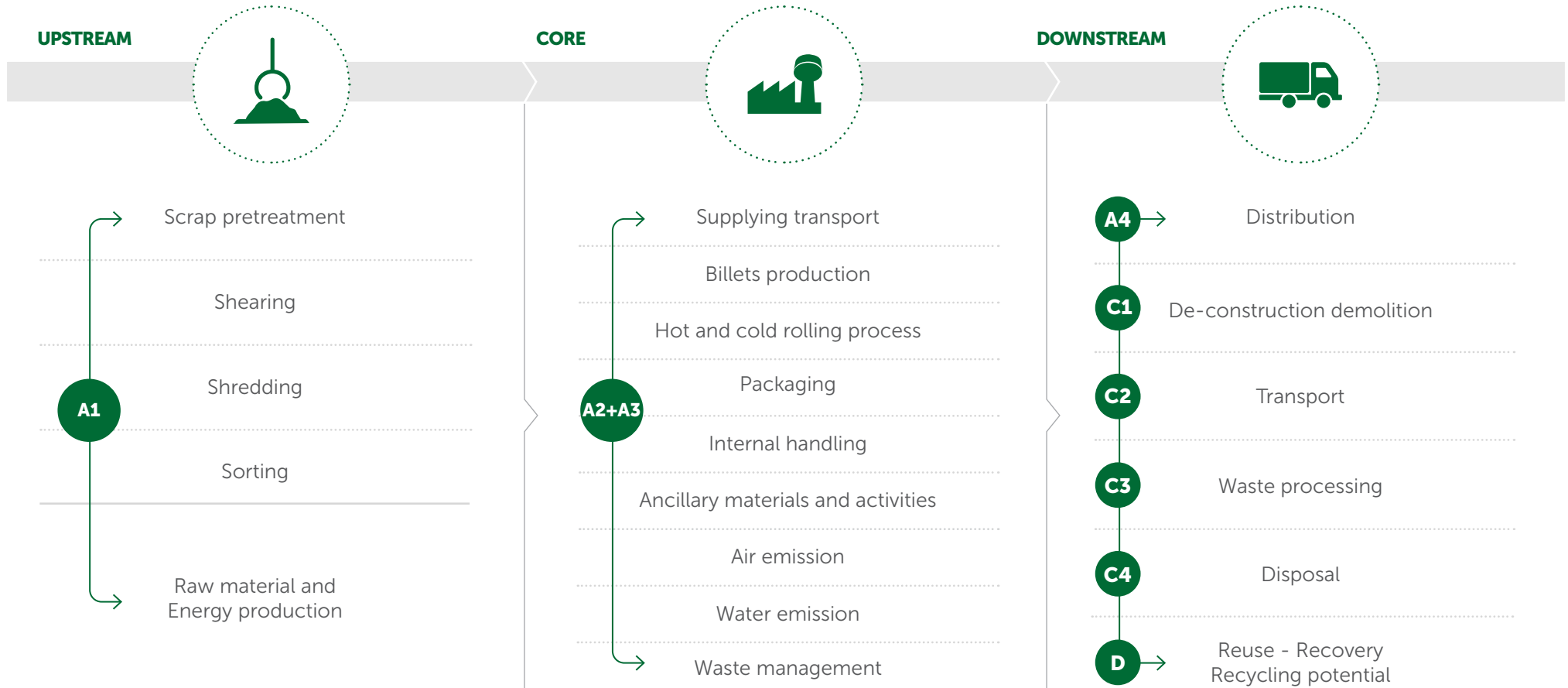
The use phase was not considered according to EN:15804 and PCR ICMQ-001/15 v 3, while transport to final destination (A4) and end of life (C1-C2-C3-C4-D) were considered.

According to ISO 14040 and 14044, allocation is avoided whenever possible by dividing the system into sub-systems.

Data quality has been assessed and validated during data collection process.

According to EN:15804 the applied cut-off criterion for mass and energy flows is 1%.

# SCENARIOS AND ADDITIONAL TECHNICAL INFORMATION



Broad scheme of cold rolled steel production, in which the main activities included in the system boundaries are listed and divided in the three subsystems: **UPSTREAM Process, CORE Module and DOWNSTREAM Process.**

# UPSTREAM PROCESS



# CORE PROCESS



## A2 - Transportation



Raw materials transportation from production or collection facilities to the production plant



Hot and cold rolling, including utilities

Scheme of the considered system boundaries (core processes)



Packaging materials  
Internal transportation

Steel mill production, including utilities

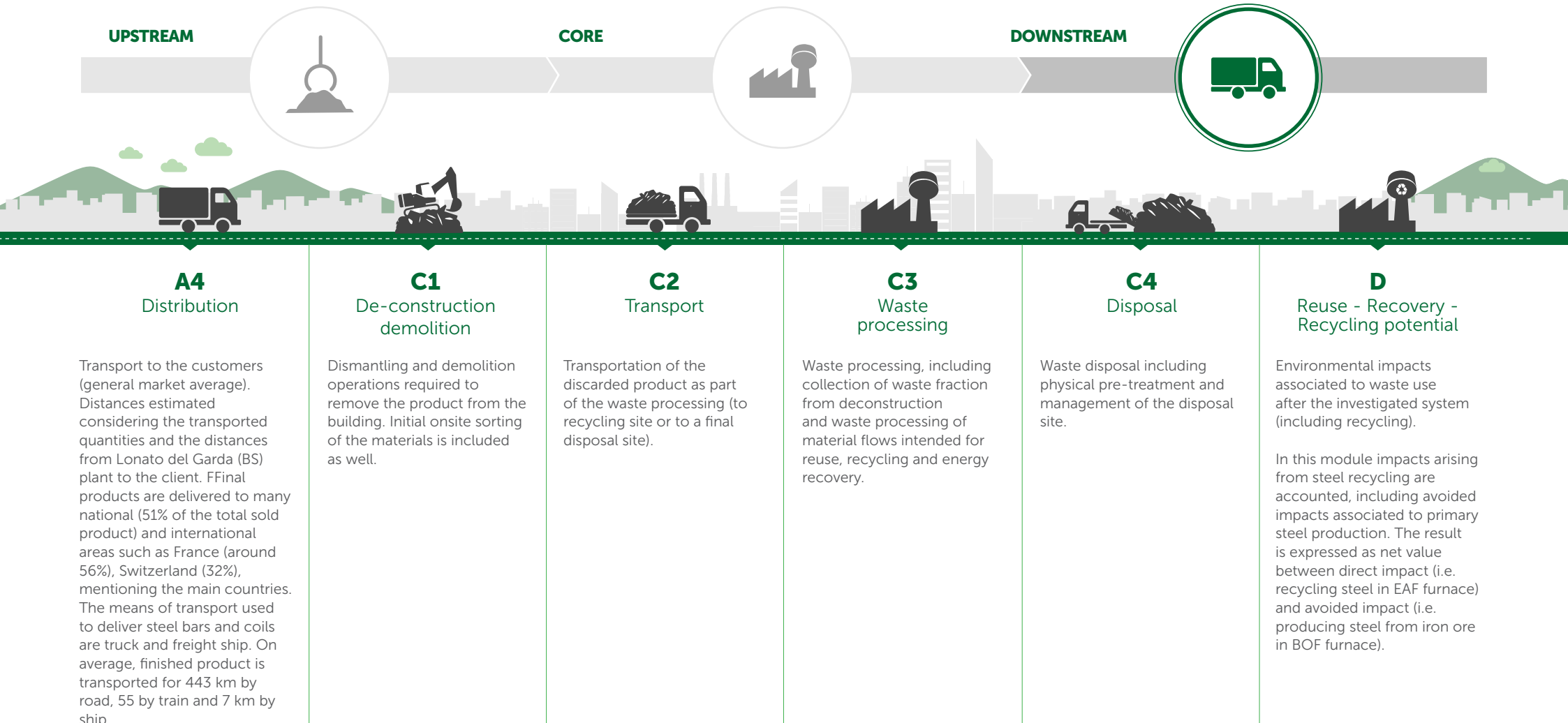


## A3 - Manufacturing



Treatment of waste generated from the manufacturing processes

# DOWNSTREAM PROCESS



# OTHER OPTIONAL ADDITIONAL ENVIRONMENTAL INFORMATION

Feralpi plant in Lonato del Garda (BS) is equipped with prevention and reduction systems for air emissions, a recirculating loop cooling to minimize water consumption and a waste management plan to prevent and reduce waste generation,

In accordance with general EPD® requirements the LCA study used specific, generic and proxy data. These last data are contributing to the environmental indicators less than 10%.

OTHER ENVIRONMENTAL INDICATORS		UNIT	UP	CORE	DOWN	TOTAL
AIR EMISSIONS	Dust from electric-arc furnace	[g]	-	2.23	-	<b>2.23</b>
	CO <sub>2</sub> from electric-arc furnace	[kg]	-	43.36	-	<b>43.36</b>
	NOx from hot rolling process	[g]	-	38.29	-	<b>38.29</b>
	SOx from hot rolling process	[g]	-	0.30	-	<b>0.30</b>
WATER EMISSIONS	Total Suspended Solids	[g]	-	1.33	-	<b>1.33</b>

Other environmental indicators per 1 t of cold-rolled reinforcing steel

Recycled content of cold rolled products = 96% (calculated according to ICMQ verified internal procedure)



# REFERENCES

- EN 15804:2012+A2:2019
- ISO 14040
- ISO 14044
- Life Cycle Assessment (LCA) applied to steel mill products and derivatives for EPD® purposes - final report
- EPDIItaly General Programme Information, v5.2
- PCR ICMQ-001/15 v 3

