

# ENVIRONMENTAL PRODUCT DECLARATION



In accordance with ISO 14025 and EN 15804 for

## Hot-dip Galvanized Steel Towers from MİTAŞ Industry



Programme:	EPD Turkey, a fully aligned regional programme <a href="http://www.epdturkey.org">www.epdturkey.org</a>	The International EPD® System <a href="http://www.environdec.com">www.environdec.com</a>
Programme operator:	EPD Turkey; SÜRATAM - Turkish Centre for Sustainable Production Research & Design Nef 09 B Blok No:7/15 34415 Kağıthane/Istanbul, TURKEY	EPD International AB
EPD registration number:	S-P-01675	
Publication date:	11.11.2019	
Validity date:	10.11.2024	
Geographical scope:	Global	

# Programme Information

Programme	EPD Turkey, a fully aligned regional programme	The International EPD® System
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Product Category Rules (PCR): The International EPD® System's PCR 2012:01 Construction Products and Construction Services, Version 2.3, 2018-11-15

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Independent third-party verification of the declaration and data, according to ISO 14025:2006:

EPD process certification

EPD verification 

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**Third party verifier:** Vladimír Kočí, PhD

**Approved by:** The International EPD® System

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Procedure for follow-up of data during EPD validity involves third party verifier:

Yes

No 

The EPD owner has the sole ownership, liability, and responsibility for the EPD. EPDs within the same product category but from different programmes may not be comparable. EPDs of construction products may not be comparable if they do not comply with EN 15804.



# Company Information



MİTAŞ Industry Inc., a MİTAŞ Group company, operates on a global scale in the business of engineering and manufacturing of towers, poles and high masts for power transmission and distribution, solar, telecommunication, lighting, and transportation infrastructure.

Headquartered in Ankara, MİTAŞ Industry has the following manufacturing facilities located in Turkey and Italy.

- Lattice tower manufacturing factories in Ankara and İzmir, Turkey, with annual capacity of 180.000 mt production and 175.000 mt galvanizing,
- Pole and high mast manufacturing factories in Ankara, Turkey and in Siderpali, Italy with annual capacity of 45.000 mt production,
- Plate fabrication factory in Ankara, Turkey, with annual capacity of 14.400 mt production and 32.000 mt galvanizing,
- Welding factory in Ankara, Turkey, with annual capacity of 6.000 mt production,
- Galvanizing factory in Ankara, Turkey, with annual capacity of 120.000 mt galvanizing,
- Powder coating factory in Ankara, Turkey, with annual capacity of 12.000 mt coating,

All factories are certified to the latest versions of ISO 9001 quality, ISO 14001 environment and ISO 45001 to meet the most stringent standards. Some factories have CE, welding and other certificates, as well.

The Company has an annual turnover of 200,000,000 USD and employs 1,300 qualified employees.

MİTAŞ Industry delivered its products to over 135 countries in 5 continents and widened its customer portfolio across the world constantly, being long term preferred business partner by the utilities in many countries.

# Product Information

Product name	Hot-dip Galvanized Steel Towers
Product identification	Steel gantries for transmission of electric energy
Product description	<p>Hot-dip Galvanized Steel Towers are used for transmission of electric energy from the power plants to the transformer stations in proximity of the electric consumption areas or the distribution thereof from these stations to end-users.</p> <p>These towers are designed and manufactured considering the parameters such as routes of the energy transmission lines, geographical, land and atmospheric conditions, line voltages, carrying capacity and intended use specified.</p>
UN CPC code	42110
Geographical scope	Global

Hot-dip Galvanized Steel Towers are manufactured in the forms of lattice or pole type and, are delivered as galvanised and galvanised for the atmospheric corrosion resistance.

Surface area of final products can vary, average value is 55 m<sup>2</sup>/ton. Zinc coating process (galvanizing) is applied with the minimum average thickness coating thickness as stated in EN ISO 1461 and ASTM A123 standards.

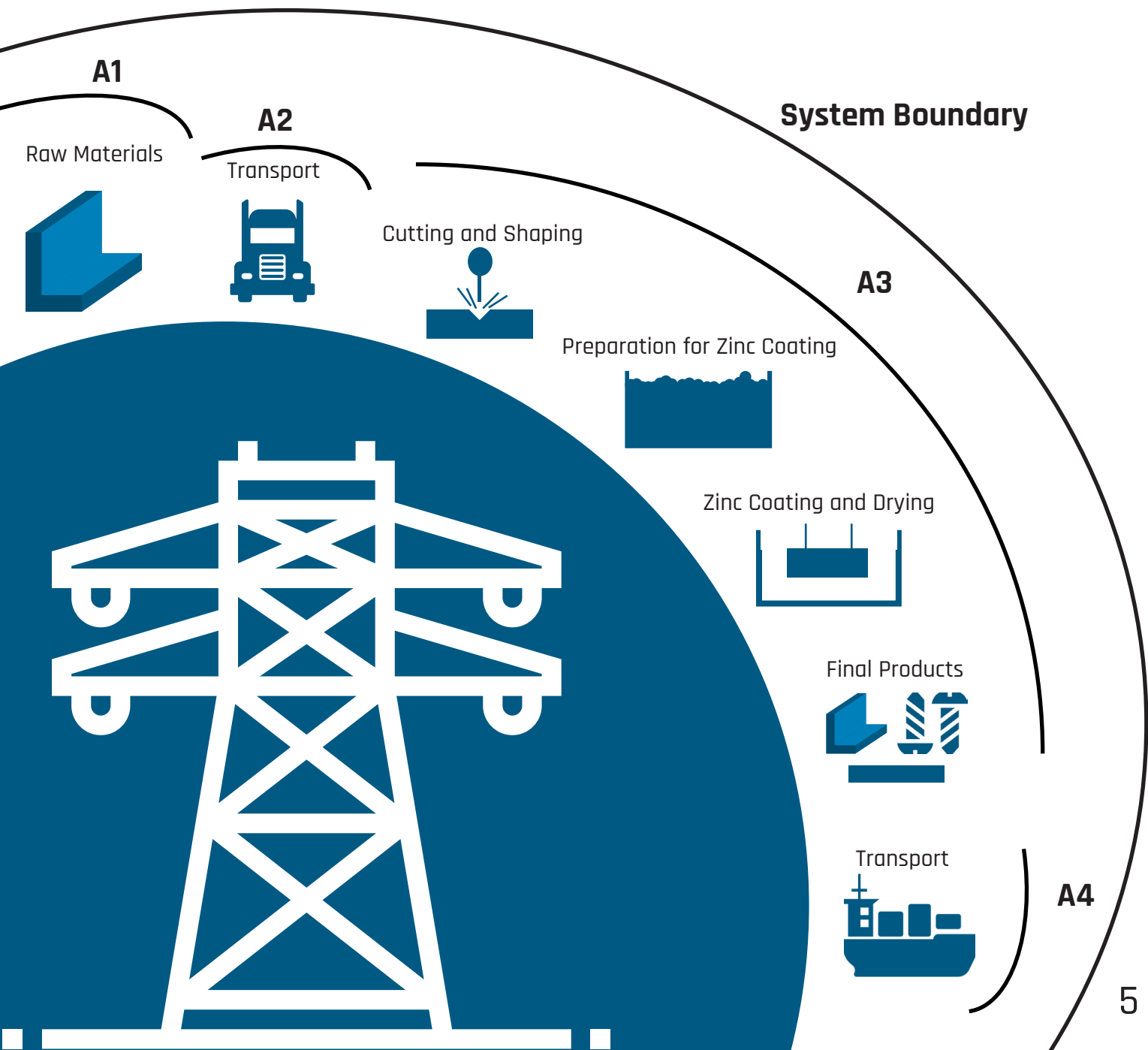


# LCA Information

Declared unit	1 ton of Hot-dip Galvanized Steel Towers
Time Representativeness	2018
Database(s) and LCA Software Used	TLCID ver. 1.0 (Turkish Lifecycle Inventory Database), Ecoinvent 3.5, SimaPro 9.0

The inventory for the LCA study is based on the 2018 production figures for Hot-dip Galvanized Steel Towers by Mitaş Industry production plants.

## System Boundary



# Description of System Boundary

The system boundary covers A1 - A3 product stages and A4 (Transport to customers) construction site.

Upstream	Core		Downstream												Other Environmental Information	
Raw Materil Supply	Transport	Manufacturing	Transport	Construction Installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational Energy Use	Operational Water Use	Deconstruction, demolition	Transport	Waste Processing	Disposal	Future reuse, recycling or energy recovery potentials
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	MND	MND	MND	MND	MND

Description of the system boundary (X = Included in LCA, MND= Module Not Declerated)

## A1: Raw Material Supply

Production starts with raw materials. Raw material supply includes raw material extraction and pre-treatment processes before production.

## A2: Transportation

Transport is relevant for delivery of raw materials and other materials to the plant and the transport of materials within the plant.

## A3: Manufacturing

Manufacturing starts with steel forming and cutting. The materials continue with the preparation for the galvanizing process. Firstly, surface cleaning process is applied and galvanizing process is done. The final products are quality checked and packaged for delivery.

## A4: Transport From the Gate to the Site

Transport of final product to construction site is taken as the weight average values for transport to customers in 2018.



# More Information

Life cycle assessment calculations required for this EPD were done using SimaPro 9.0 life cycle assessment software. Energy calculations were obtained using Cumulative Energy Demand (LHV) v 1.00. Global Warming Potential (GWP), Eutrophication (EP), Abiotic Depletion Fossil Fuels (ADPF), Abiotic Depletion Elements (ADPE), Ozone Layer Depletion (ODP), Photochemical Oxidation (POCP) and Acidification (AP) were calculated using the CML-IA baseline method and finally, Water Scarcity (WSI) were calculated using AWARE methodology.

Different steel thickness options were allocated based on the production figures in 2018 and weighted averaged of environmental impacts for the Hot-dip Galvanized Steel Towers were presented.

Accordingly, hazardous and non-hazardous waste amounts were also allocated from 2018 total waste arisings.

No substances included in the Candidate List of Substances of Very High Concern for authorization under the REACH regulations are present in Hot-dip Galvanized Steel Towers, either above the threshold for registration with the European Chemicals Agency or above 0.1 % (wt/wt).

## Content Declerations

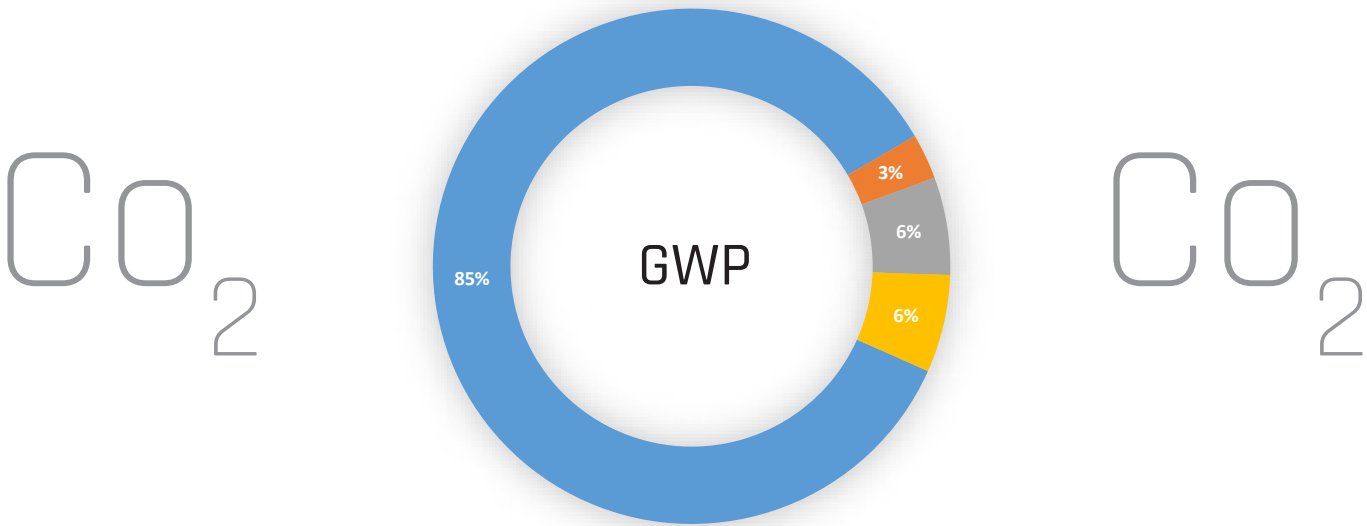
Materials		%
Alloyed Steel	Profile (Angle, Beam, Channel)	85-87
	Plate	6-7
	Bolt	4-5
Zinc		3-5



# Environmental Performance

POTENTIAL ENVIRONMENTAL IMPACTS, 1 ton Hot-dip Galvanized Steel Towers

Parameter		Unit	A1	A2	A3	A4	Total
GWP	Fossil	kg CO <sub>2</sub> eq	1212	41.0	87	87.9	1429
	Biogenic	kg CO <sub>2</sub> eq	1.54	0.009	0.077	0.006	1.64
	Land use and land transformation	kg CO <sub>2</sub> eq	1.89	0.028	0.338	0.002	2.26
	GWP Total	kg CO <sub>2</sub> eq	1216	41.0	88	87.9	1433
Ozone Layer Depletion (ODP)		kg CFC-11 eq	78.9x10 <sup>-6</sup>	7.29x10 <sup>-6</sup>	6.81x10 <sup>-6</sup>	16.7x10 <sup>-6</sup>	110x10 <sup>-6</sup>
Acidification Potantial (AP)		kg SO <sub>2</sub> eq	15.3	0.111	0.243	1.05	16.8
Eutrophication Potantial (EP)		kg PO <sub>4</sub> <sup>3-</sup> eq	4.66	0.026	0.125	0.094	4.90
Photochemical oxidation (POCP)		kg C <sub>2</sub> H <sub>4</sub> eq	0.444	0.008	0.015	0.054	0.521
Abiotic Depletion Potantial, elements (ADPE)		kg Sb eq	0.211	449x10 <sup>-9</sup>	4.85x10 <sup>-6</sup>	187x10 <sup>-9</sup>	0.211
Abiotic Depletion Potantial, fossil fuels (ADPF)		MJ	14652	596	1232	1300	17779
Water scarcity (WSI)		m <sup>3</sup> eq	723	3.59	18.7	5.41	751





USE OF RESOURCES, 1 ton Hot-dip Galvanized Steel Towers							
Parameter		Unit	A1	A2	A3	A4	Total
Primary Energy Resources - Renewable	Use as energy carrier	MJ	992	8.19	178	2.28	1181
	Used as raw materials	MJ	0	0	0	0	0
	TOTAL	MJ	992	8.19	178	2.28	1181
Primary Energy Resources - Non-renewable	Use as energy carrier	MJ	15970	600	1244	1303	19117
	Used as raw materials	MJ	0	0	0	0	0
	TOTAL	MJ	15970	600	1244	1303	19117
Secondary Material		kg	968	0	0	0	968
Renewable Secondary Fuels		MJ	0	0	0	0	0
Non-Renewable Secondary Fuels		MJ	0	0	0	0	0
Net Use of Fresh Water		kg	10.4	0.046	0.236	0.073	10.8

WASTE GENERATIONS, 1 ton Hot-dip Galvanized Steel Towers						
Parameter	Unit	A1	A2	A3	A4	Total
Hazardous Waste Disposed	kg	-	-	31,9	-	31,9
Non-hazardous Waste Disposed	kg	-	-	48,3	-	48,3
Radioactive Waste Disposed	kg	-	-	0	-	0

OUTPUT FLOWS, 1 ton Hot-dip Galvanized Steel Towers						
Parameter	Unit	A1	A2	A3	A4	Total
Components for reuse	kg	0	0	0	0	0
Materials for Recycling	kg	0	0	35.7	0	0
Materials for Energy Recover	kg	0	0	0	0	0
Exported Energy, Electricity	MJ	0	0	0	0	0
Exported Energy, thermal	MJ	0	0	0	0	0

# References

/GPI/ General Programme Instructions of the International EPD® System. Version 3.0.

/Gulabi, S. Environmental Engineer, Mitaş Industry, Tel : (+90) 312 296 20 00,  
E-Mail : info@mitasindustry.com

/ISO 9001:2015/ Quality management systems - Requirements

/ISO 14020:2000/ Environmental labels and declarations – General principles

/EN 15804/ EN 15804:2012+A1:2013, Sustainability of construction works - Environmental Product Declarations – Core rules for the product category of construction products

/ISO 14025/ DIN EN ISO 14025:2009-11: Environmental labels and declarations - Type III environmental declarations – Principles and procedures

/ISO 14040/44/ DIN EN ISO 14040:2006-10, Environmental management - Life cycle assessment - Principles and framework (ISO14040:2006) and Requirements and guidelines (ISO 14044:2006)

/PCR for Construction Products and CPC 54 Construction Services/ Prepared by IVL Swedish Environmental Research Institute, Swedish Environmental Protection Agency, SP Trä, Swedish Wood Preservation Institute, Swedisol, SCDA, Svenskt Limträ AB, SSAB, The International EPD System, 2012:01 Version 2.3, DATE 2018-11-15






/The International EPD® System/ The International EPD® System is a programme for type III environmental declarations, maintaining a system to verify and register EPD®s as well as keeping a library of EPD®s and PCRs in accordance with ISO 14025.  
[www.environdec.com](http://www.environdec.com)

/Ecoinvent / Ecoinvent Centre, [www.Eco-invent.org](http://www.Eco-invent.org)

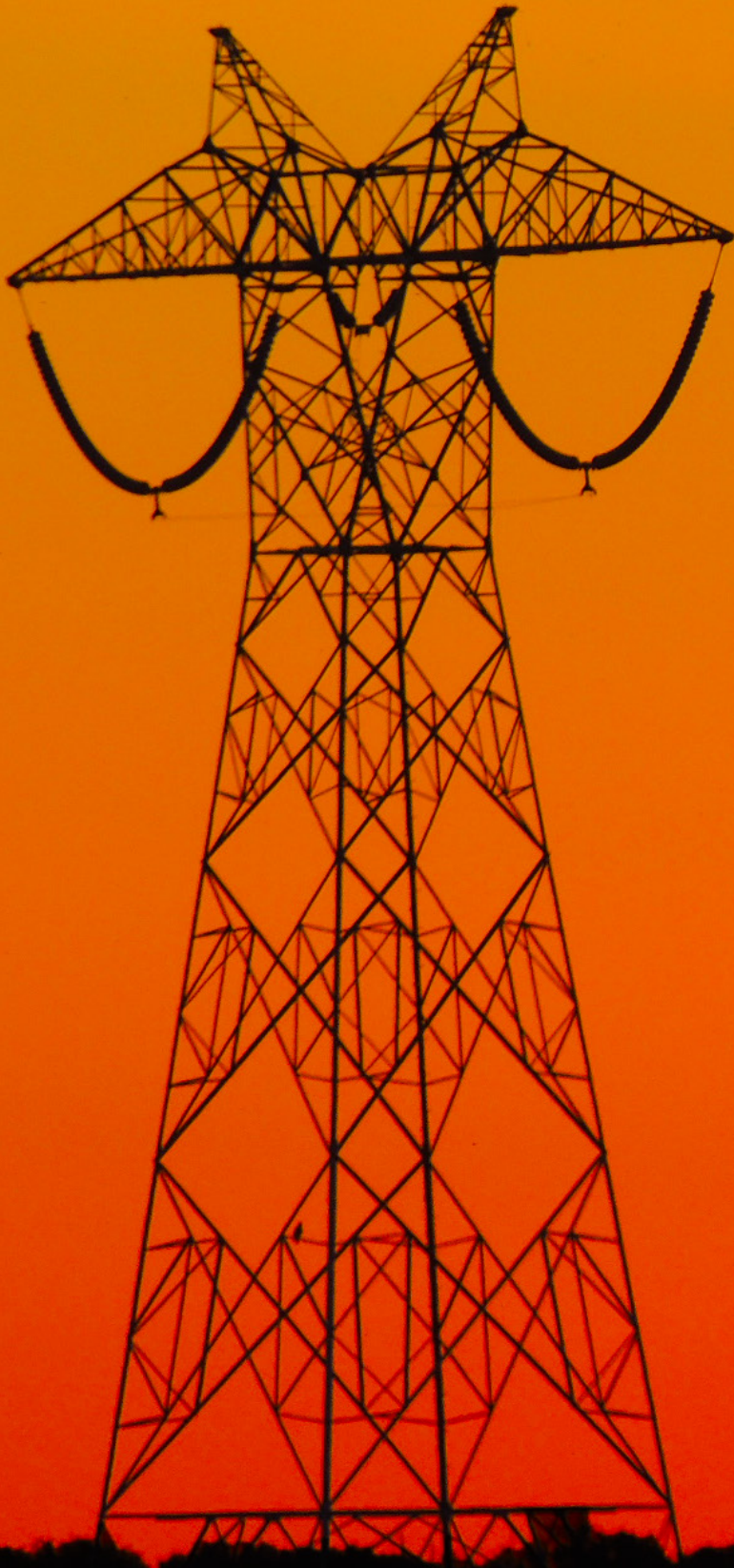
/SimaPro/ SimaPro LCA Software, Pré Consultants, the Netherlands,  
[www.pre-sustainability.com](http://www.pre-sustainability.com)

/TLCID/ Turkish Life Cycle Inventory Database, Turkish Center for Sustainable Production Research and Design (SURATAM), [www.suratam.org](http://www.suratam.org)

# Contact Information

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**MİTAŞ INDUSTRY**