epd-global
Powered by EPD-Norway

EPD
INTERNATIONAL EPD SYSTEM

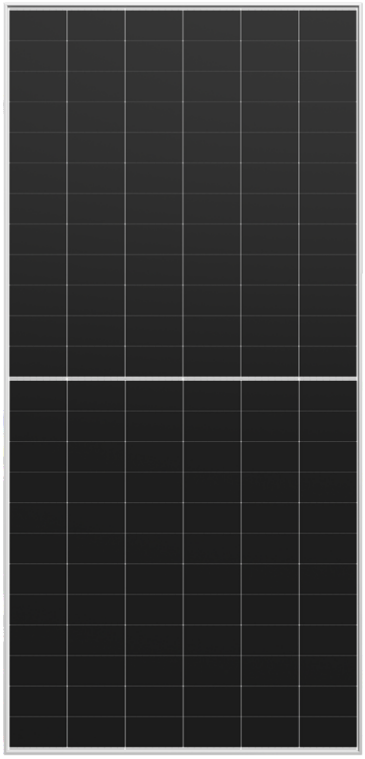
ECO PLATFORM EPD VERIFIED

EPD® International ref. number
EPD-IES-0027342

Environmental Product Declaration

In accordance with ISO14025:2006 and EN15804:2012+A2:2019/AC: 2021

LONGi MONOCRYSTALLINE TOPCon PV MODULE LR8-66HYD



LONGi

Owner of the declaration:
LONGi Green Energy Technology Co., Ltd.

Product name:
LONGi PV module (LR8-66HYD)

Functional unit:
1 Wp

Product category /PCR:
[NPCR 029 Version 1.2]

Program holder and publisher:
The Norwegian EPD foundation

Declaration number:
NEPD-14278-14629

6

Registration number:
NEPD-14278-14629

Issue date: 28.11.2025

Valid to: 28.11.2030

General information

Product:
LR8-66HYD (Power range: 635~670 Wp)

Program holder:
EPD-Global
Post Box 5250 Majorstuen, 0303 Oslo, Norway
Phone: +47 23 08 80 00
E-mail: post@epd-norge.no

Declaration Number:
NEPD-14278-14629

This declaration is based on Product Category Rules:
NPCR 029 version 1.2

This EPD follows additional requirements for construction products considered as Electronic or Electric Equipment.

Statements:
The owner of the declaration shall be liable for the underlying information and evidence. EPD-Global shall not be liable with respect to manufacturer, life cycle assessment data and evidences.

Functional unit:
1 Wp

Verification:
Independent verification of the declaration and data, according to ISO14025:2010

internal ☐ external √

Sign

Lucas Pedro Berman

Independent verifier approved by EPD-Global

Owner of the declaration:
LONGi Green Energy Technology Co., Ltd.
e-mail: market@longi.com

Manufacturer:
LONGi Solar Technology (Wuhu) Co., Ltd.

Place of production:
North of Wanxing Road and West of Yudai Road, Shenxiang Area, Economic Technology Development Zone, Wuhu City, Anhui Province, P.R.China

Management system:
ISO 9001, ISO 14001, ISO 45001

Organisation no:
916101167101813521

Issue date:
28.11.2025

Valid to:
28.11.2030

Year of study:
2024.5-2025.4

Comparability:
EPDs from other programmes than EPD-Global may not be comparable.

The EPD has been worked out by:
TÜV SÜD Certification and Testing (China) Co., Ltd. Shanghai Branch

Approved

Manager of EPD-Global

Product

Product description:

LONGi's latest generation of photovoltaic modules is built on its self-developed HPBC (Hybrid Passivated Back Contact) cell technology. This breakthrough design eliminates front-side grid lines, presenting a sleek, pure black appearance that not only enhances aesthetics but also maximizes light absorption and photovoltaic conversion efficiency. Through refinements in internal cell structure and passivation processes, HPBC technology significantly increases module output power, with conventional HPBC cell efficiency exceeding 25.5%, and advanced HPBC+ cells surpassing 25.8%, setting new benchmarks for high-efficiency solar technology. LONGi's HPBC portfolio includes the Hi-MO X9, designed for utility-scale and distributed projects with record-high output and enhanced safety and reliability features, and the EcoLife series, tailored for residential rooftops with refined aesthetics, compact 54-cell design, and strong performance under challenging conditions such as shading, snow, or low light—both backed by industry-leading long-term warranties.

Product specification:

LR8-66HYD has a power range from 635Wp to 670Wp and a weight of 33.5 kg. 670Wp is chosen as the representative product power output. Material compositions and technical data are shown below.

Materials	LR8-66HYD	
	KG/FU	%
Aluminium Frame	2.392	7.00%
Glass	26.802	78.49%
Single-Si Cell	0.741	2.17%
Ribbon ($Sn_{63}Pb_{37}$)	0.274	0.80%
EVA (Ethylene-vinyl acetate)	0.966	2.83%
POE (Polyolefin Elastomer)	1.130	3.31%
Junction box	0.103	0.30%
Flux (1-propanol)	0.001	0.001%
Silica gel	0.391	1.15%
Solder paste ($Sn_{63}Pb_{37}$)	0.023	0.07%
Adhesive (Resin)	0.016	0.05%
Pallet	1.015	2.97%
Corrugated board box	0.192	0.56%
Packaging bag (PE)	0.04696	0.14%
Packaging film (PE)	0.025	0.07%
Corner Protector (PP)	0.030	0.09%

Technical data:

Series	LR8-66HYD
Power output range (W)	635-670
Dimensions (mm)	2382*1134*30
Area (m^2)	2.70
Module efficiency (%)	23.5-24.8
Weight (kg)	33.5
Weight (incl. package)	34.8
First year degradation (%)	1
Annual degradation (%)	0.35

Market:

The product is manufactured in China for a global market. However, this EPD is evaluated based on European market.

Reference service life:

30 years (based on ≥80% of the labelled power output). The product has a 30-year power warranty as specified in the product specification.

Type of EPD

This declaration is a specific EPD using a representative power output for each product. LCA Results of various power output ranges could be obtained using the conversion factors presented in the Chapter "additional requirements".

LCA: Calculation rules

Functional unit:

Functional unit is 1 Wp of manufactured photovoltaic module, with activities needed for a study period for a defined reference service life (≥80% of the labelled power output).

Cut-off criteria:

For the processes within the system boundary, all available energy and material flow data have been included in the model. In cases where no matching life cycle inventories are available to represent a flow, proxy data have been applied based on conservative assumptions regarding environmental impacts. The following steps/stages are not included in the system boundary due to the reason that the elements below are considered irrelevant or not within the boundary:

• Impacts related to the production, transportation and installation of capital goods (buildings, infrastructure, machinery, internal transport packaging) and general operations (staff travel, marketing and communication actions) that cannot be directly allocated to products are excluded from the LCA study.

• The packaging for silicon wafer and solar cells is reused internally and its impact was excluded from the system;

• Emissions during the PV module installation and operation due to no obvious emission observable.

• Storage phases and sales of PV products due to no observable impact. Product losses due to abnormal damage such as natural disasters or fire accidents would occur at a rather low frequency.

• Handling operations at the distribution center and retail outlet due to small contribution and negligible impact.

• Research and development activities.

• Long-term emissions.

Allocation:

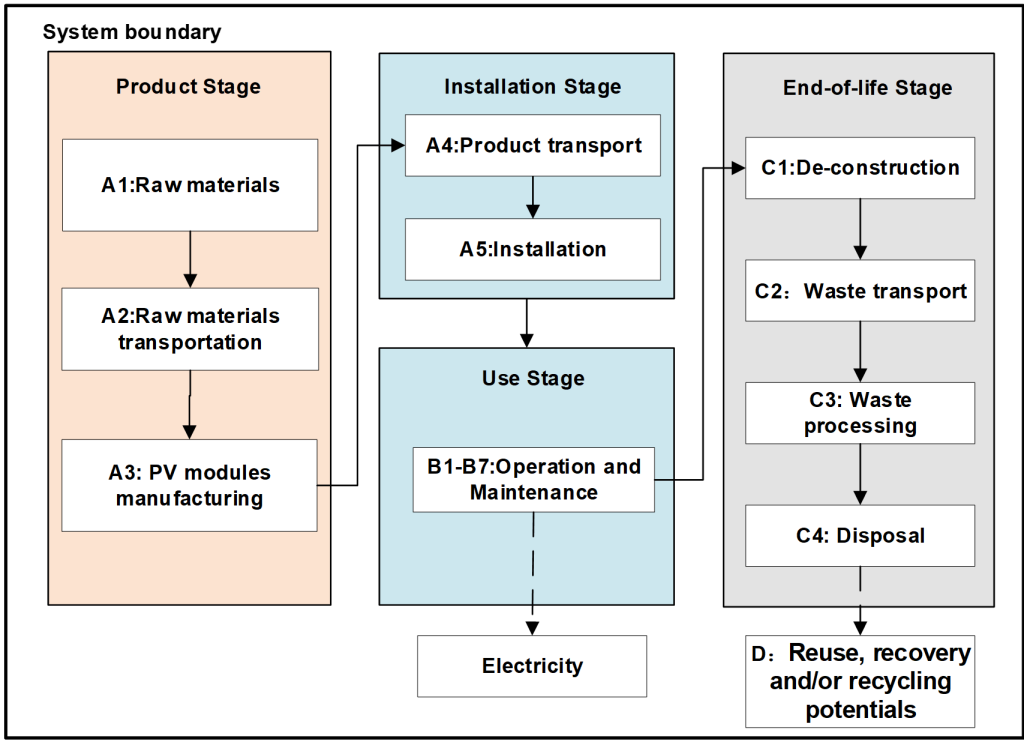
The allocation is made in accordance with the provisions of EN 15804. Incoming energy and water and waste production in-house is allocated equally among all products through power output allocation. For the end-of-life allocation of background data (energy and materials), the model “allocation cut-off by classification (ISO standard)" is used. As for the end-of-life stage of the solar PV modules, the load and benefit of reuse, recycling, and recovery processes is reported separately following the PCR’s recommendation.

Data quality:

Primary data (such as materials or energy flows that enter and leave the production system) is from LONGi's manufacturing facilities for the period spanning from May. 2024 to April. 2025 (annual average). Generic data related to the life cycle impacts of the material or energy flows that enter and leave the production system is sourced from Ecoinvent 3.11 "allocation, cut-off by classification - unit" database.

System boundary:

The system boundary for this LCA study of PV modules encompasses product stage, installation stage, use stage, and end-of-life stage, from cradle to grave and module D.



LCA: Scenarios and additional technical information

The following information describe the scenarios in the different modules of the EPD.

Transport from production place to assembly/user (A4)

Transport from production place to assembly/user (A4)	Capacity utilisation (incl. return) %	Distance (km)	Fuel/Energy consumption	Unit	Value
Truck (domestic)	36.7	200	Diesel	kg/tkm	0.0366
Ship	70	19240	Heavy oil	kg/tkm	0.0025
Truck (overboard)	36.7	796	Diesel	kg/tkm	0.0366

The product distribution involves a scenario for transporting the product to Europe

Assembly (A5)

	Unit	LR8-66HYD
Water consumption	m^3/FU	-
Electricity consumption	kWh/FU	6.32E-5
Other energy carriers	MJ/FU	Diesel: 1.35E-2
Material loss	kg/FU	-
Output materials from waste treatment	kg/FU	4.88E-04

According to PCR, mounting structures and electrical components will not be included in this stage, only energy consumption, waste generation and treatment of packaging materials will be considered. The waste from the products' packaging is considered in this stage, and waste treatment of wood pallet is modeled as 75% recycling and 25% incineration. Other packaging materials including paper and plastic film are modeled with 100% incineration.

Use (B1)

There are no material or energy inputs, nor emissions during the use phase (B1) of the PV module.

Maintenance (B2)/Repair (B3)

	Unit	LR8-66HYD
Water consumption	m3/FU	2.06E-05

As for the maintenance stage (B2), water used for cleaning to maintain the performance is considered, 0.23L water used per module each time, and 2 times in a year are assumed. During the operation of PV module, no repair (B3) is required.

Replacement (B4)/Refurbishment (B5)

It is assumed that the PV module itself does not require replacement and refurbishment during its RSL.

Operational energy (B6) and water consumption (B7)

It is assumed that there is no operational electricity (B6) or water consumption (B7). To calculate the expected energy production over the lifetime of the panels, the following formula may be used:

$$E_1 = S_{\text{rad}} * A * y * PR * (1 - \text{deg})$$

Where:

E_1= Energy produced in the first year of operation, kWh/year

S_{rad} = Site specific annual average solar radiation on module (shadings not included), kWh/kWp/year. The annual radiation must take into consideration the specific inclination (slope, tilt) and orientation.

A = Area of module, m^2.

y = Module yield: electrical power, kWp for standard test conditions (STC) of the module divided by the area of the module.

STC: The ratio is given for standard test conditions: irradiance 1000 W/m^2, cell temperature 25 °C, wind speed 1 m/s, AM1.5.

PR = Performance ratio, coefficient for losses. Site specific performance ratio can be modelled with PV simulation software tools, such as PVSYST or similar.

Energy production second year of operation:

$$E_2 = E_1 * (1 - \text{deg})$$

Energy production n year of operation:

$$E_n = E_1 * (1 - \text{deg})^{n-1}$$

Energy production over reference service life of module, assuming linear annual degradation:

$$E_{RSL} = E_1 * (1 + \sum_{n=1}^{RSL-1} (1 - deg)^n)$$

Operational energy (B6) and water consumption (B7)

No inputs and outputs during operation stage.

End of Life (C1, C3, C4)

	Unit	LR8-66HYD
Hazardous waste disposed	kg/FU	-
Collected as mixed construction waste	kg/FU	5.00E-02
Reuse	kg/FU	-

Recycling	kg/FU	3.80E-02
Energy recovery	kg/FU	3.28E-03
To landfill	kg/FU	7.11E-03

Assumptions are made for C1, C3 and C4 stage. Decommissioning stage (C1) of PV modules is assumed to be taken with same energy and fuel consumption as for installation stage. Waste processing (C3) stage is assumed to be mechanically treated to yield the bulk materials. Modelling of disposal stage (C4) refers to legal requirements issued by Waste Electrical and Electronic Equipment (WEEE) under the EU scenario.

Transport to waste processing (C2)

Transport from production place to assembly/user (C2)	Capacity utilisation (incl. return) %	Distance (km)	Fuel/Energy consumption	Unit	Value
Truck	36.7	50	Diesel	kg·km	0.036

50km transportation distance from the plant site to waste treatment site (C2) is assumed according to PCR.

Benefits and loads beyond the system boundaries (D)

Benefits and loads beyond the system boundaries (D)	Unit	LR8-66HYD
Substitution of electricity	MJ/FU	2.09E-02
Substitution of thermal energy, district heating	MJ/FU	3.76E-02
Substitution of aluminum with net scrap	kg/FU	9.28E-04
Substitution of primary silver with net scrap	kg/FU	8.62E-06
Substitution of primary copper with net scrap	kg/FU	3.89E-04
Substitution of primary glass with glass gullets	kg/FU	2.89E-02
Substitution of primary wood pallet with recycled wood	kg/FU	1.14E-03

LCA: Results

System boundaries (X=included, MND=module not declared, MNR=module not relevant)

Product stage			Assembly stage		Use stage							End of life stage				Benefits & loads beyond system boundary
Raw materials	Transport	Manufacturing	Transport	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	X	X	X	X	X	X	X	X	X	X	X	X	X

The LCA results show the environmental impacts and resource input and output flows calculated according to EN 15804:2012+A2. The results are shown per functional unit (1Wp). The LCA results have been calculated using the LCA software SimaPro 10.2.

Environmental impact

LR8-66HYD (670Wp)

Indicator	Unit	A1-A3	A4	A5	B1	B2	B3-B7	C1	C2	C3	C4	D
GWP - total	kg CO_2 eq	3.12E-01	2.00E-02	4.34E-03	0	6.17E-06	0	1.38E-03	4.67E-04	4.42E-03	7.82E-03	-7.21E-02
GWP - fossil	kg CO_2 eq	3.14E-01	2.00E-02	1.74E-03	0	6.15E-06	0	1.38E-03	4.67E-04	4.41E-03	7.82E-03	-7.20E-02
GWP - biogenic	kg CO_2 eq	-2.60E-03	0.00E+00	2.60E-03	0	0.00E+00	0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
GWP - luluc	kg CO_2 eq	2.70E-04	9.03E-06	2.13E-07	0	1.22E-08	0	2.04E-07	1.57E-07	1.43E-05	3.88E-08	-1.32E-04
ODP	kg CFC11 eq	4.60E-08	3.41E-10	2.11E-11	0	1.62E-14	0	2.05E-11	1.02E-11	7.54E-11	3.79E-12	-9.20E-10
AP	molc H+ eq	1.96E-03	3.22E-04	1.24E-05	0	3.29E-08	0	1.22E-05	1.00E-06	2.09E-05	2.00E-06	-3.80E-04
EP- freshwater	kg P eq	1.53E-05	1.22E-07	7.14E-09	0	4.25E-10	0	6.81E-09	3.47E-09	4.53E-07	2.23E-09	-2.39E-06

EP -marine	kg N eq	4.39E-04	7.97E-05	5.73E-06	0	5.45E-09	0	5.64E-06	2.36E-07	2.74E-06	9.38E-07	-8.11E-05
EP - terrestrial	molc N eq	4.24E-03	8.86E-04	6.28E-05	0	6.13E-08	0	6.19E-05	2.61E-06	3.12E-05	9.70E-06	-9.65E-04
POCP	kg NMVOC eq	1.29E-03	2.58E-04	1.88E-05	0	2.00E-08	0	1.85E-05	1.59E-06	1.00E-05	2.57E-06	-2.85E-04
ADP-fossil	MJ	3.76E+00	2.63E-01	1.85E-02	0	7.52E-05	0	1.81E-02	6.63E-03	1.02E-01	2.29E-03	-9.55E-01
ADP-M&M	kg Sb-Eq	3.12E-01	2.00E-02	4.34E-03	0	3.38E-11	0	1.38E-03	4.67E-04	4.42E-03	7.82E-03	-7.21E-02
WDP[2]	m^3	3.14E-01	2.00E-02	1.74E-03	0	8.83E-04	0	1.38E-03	4.67E-04	4.41E-03	7.82E-03	-7.20E-02

GWP-total: *Global Warming Potential;* ***GWP-fossil:*** *Global Warming Potential fossil fuels;* ***GWP-biogenic:*** *Global Warming Potential biogenic;* ***GWP-LULUC:*** *Global Warming Potential land use and land use change;* ***ODP:*** *Depletion potential of the stratospheric ozone layer;* ***AP:*** *Acidification potential, Accumulated Exceedance;* ***EP-freshwater:*** *Eutrophication potential, fraction of nutrients reaching freshwater end compartment; See "additional Norwegian requirements" for indicator given as PO4 eq.* ***EP-marine:*** *Eutrophication potential, fraction of nutrients reaching freshwater end compartment;* ***EP-terrestrial:*** *Eutrophication potential, Accumulated Exceedance;* ***POCP****: Formation potential of tropospheric ozone;* ***ADP-M&M****: Abiotic depletion potential for non-fossil resources (minerals and metals);* ***ADP-fossil:*** *Abiotic depletion potential for fossil resources;* ***WDP:*** *Water deprivation potential, deprivation weighted water consumption*

Reading example: 9.0 E-03 = $9.0*10^{-3}$ = 0.009

Additional environmental impact indicators

LR8-66HYD (670Wp)

Indicator	Unit	A1-A3	A4	A5	B1	B2	B3-B7	C1	C2	C3	C4	D
PM	Disease incidence	2.64E-08	1.03E-09	3.49E-10	0	3.67E-13	0	3.46E-10	3.48E-11	6.37E-11	1.47E-11	-3.70E-09
IRP[1]	kBq U235 eq.	5.46E-03	7.83E-05	7.34E-06	0	7.24E-07	0	7.10E-06	2.90E-06	9.13E-04	2.00E-06	-2.32E-03
ETP-fw[2]	CTUe	2.32E+00	2.88E-02	1.68E-03	0	2.01E-05	0	1.00E-03	8.90E-04	1.00E-02	1.67E-02	-1.93E-01
HTP-c[2]	CTUh	1.21E-10	3.79E-12	1.74E-13	0	7.43E-15	0	1.41E-13	7.79E-14	6.63E-13	4.44E-13	-1.97E-11
HTP-nc[2]	CTUh	2.63E-09	1.17E-10	4.04E-12	0	3.42E-13	0	2.31E-12	4.16E-12	3.14E-11	1.81E-11	-5.39E-10
SQP[2]	Dimensionless	1.24E+00	9.19E-02	1.43E-03	0	2.39E-05	0	1.24E-03	3.98E-03	1.55E-02	2.68E-03	-3.76E-01

PM: Particulate matter emissions; IRP: Ionising radiation, human health; ETP-fw: Ecotoxicity (freshwater); ETP-c: Human toxicity, cancer effects; HTP-nc: Human toxicity, non-cancer effects; SQP: Land use related impacts / soil quality

[1] This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator.

[2] 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 experienced with the indicator

Resource use

LR8-66HYD (670Wp)

Parameter	Unit	A1-A3	A4	A5	B1	B2	B3-B7	C1	C2	C3	C4	D
RPEE	MJ	3.29E-01	3.18E-03	2.35E-04	0	1.90E-05	0	2.25E-04	1.10E-04	2.50E-02	2.43E-02	-1.24E-01
RPEM	MJ	2.42E-02	0.00E+00	0.00E+00	0	0.00E+00	0	0.00E+00	0.00E+00	0.00E+00	-2.42E-02	0.00E+00
TPE	MJ	3.53E-01	3.18E-03	2.35E-04	0	1.90E-05	0	2.25E-04	1.10E-04	2.50E-02	9.36E-05	-1.24E-01
NRPE	MJ	2.91E+00	2.23E-02	1.35E-01	0	4.11E-05	0	9.56E-04	5.97E-04	1.81E-02	2.29E-04	-4.99E-01
NRPM	MJ	1.34E-01	0.00E+00	-1.34E-01	0	0.00E+00	0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TRPE	MJ	3.04E+00	2.23E-02	1.01E-03	0	4.11E-05	0	9.56E-04	5.97E-04	1.81E-02	2.29E-04	-4.99E-01
SM	kg	0.00E+00	0.00E+00	0.00E+00	0	0.00E+00	0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	MJ	0.00E+00	0.00E+00	0.00E+00	0	0.00E+00	0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	MJ	0.00E+00	0.00E+00	0.00E+00	0	0.00E+00	0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
W	m3	8.52E-03	2.68E-05	2.05E-06	0	2.06E-05	0	1.54E-06	8.32E-07	6.74E-05	6.79E-06	-3.51E-04

RPEE *Renewable primary energy resources used as energy carrier;* ***RPEM*** *Renewable primary energy resources used as raw materials;* ***TPE*** *Total use of renewable primary energy resources;* ***NRPE*** *Nonrenewable primary energy resources used as energy carrier;* ***NRPM*** *Nonrenewable primary energy resources used as materials;* ***TRPE*** *Total use of non-renewable primary energy resources;* ***SM*** *Use of secondary materials;* ***RSF*** *Use of renewable secondary fuels;* ***NRSF*** *Use of non-renewable secondary fuels;* ***W*** *Use of net fresh water.*

End of life – Waste

LR8-66HYD (670Wp)

Parameter	Unit	A1-A3	A4	A5	B1	B2	B3-B7	C1	C2	C3	C4	D
HW	kg	6.19E-04	1.59E-06	1.28E-07	0	5.28E-10	0	1.24E-07	4.52E-08	2.15E-07	3.89E-08	-2.82E-06
NHW	kg	1.73E-02	6.79E-03	3.07E-05	0	9.41E-07	0	1.30E-05	3.23E-04	3.95E-02	1.05E-02	-3.75E-03
RW	kg	3.90E-06	5.15E-08	5.41E-09	0	5.88E-10	0	5.24E-09	1.98E-09	7.44E-07	1.42E-09	-1.40E-06

HW *Hazardous waste disposed;* ***NHW*** *Non-hazardous waste disposed;* ***RW*** *Radioactive waste disposed.*

End of life – output flow

LR8-66HYD (670Wp)

Parameter	Unit	A1-A3	A4	A5	B1	B2	B3-B7	C1	C2	C3	C4	D
CR	kg	0.00E+00	0.00E+00	0.00E+00	0	0.00E+00	0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MR	kg	7.61E-04	0.00E+00	1.14E-03	0	0.00E+00	0	0.00E+00	0.00E+00	3.95E-02	0.00E+00	0.00E+00
MER	kg	1.18E-04	0.00E+00	6.65E-04	0	0.00E+00	0	0.00E+00	0.00E+00	0.00E+00	3.28E-03	0.00E+00
EEE	MJ	0.00E+00	0.00E+00	0.00E+00	0	0.00E+00	0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.84E-02
ETE	MJ	0.00E+00	0.00E+00	0.00E+00	0	0.00E+00	0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.76E-02

CR *Components for reuse;* ***MR*** *Materials for recycling;* ***MER*** *Materials for energy recovery;* ***EEE*** *Exported electric energy;* ***ETE*** *Exported thermal energy.*

Information describing the biogenic carbon content at the factory gate

Biogenic carbon content	Unit	LR8-66HYD
Biogenic carbon content in product	kg C/FU	0
Biogenic carbon content in the accompanying packaging	kg C/FU	7.09E-04

Note: 1 kg biogenic carbon is equivalent to 44/12 kg CO_2

Additional requirements

Location based electricity mix from the use of electricity in manufacturing

In the context of China, a market-based approach is not applicable due to the absence of a Guarantee of Origin system. Therefore, a location-based approach is employed to assess the environmental impact of electricity in this EPD. Regional production mix from medium voltage (production of transmission lines, in addition to direct emissions and losses in grid) of applied electricity for the manufacturing process (A3).

Regional electricity grid	Data source	GWP_{total} [kg CO_2-eq/kWh]
Electricity, medium voltage {CN-ECGC}| market for electricity, medium voltage | Cut-off, U	*ecoinvent 3.11*	0.764
Electricity, low voltage {CN-SH}| electricity production, photovoltaic, 3kWp slanted-roof installation, single-Si, panel, mounted | Cut-off, U	*ecoinvent 3.11*	0.0879

Additional environmental impact indicators required for construction products

In order to increase the transparency of biogenic carbon contribution to climate impact, the indicator GWP-IOBC is required as it declares climate impacts calculated according to the principle of instantaneous oxidation. GWP-IOBC is also referred to as GWP-GHG in context to Swedish public procurement legislation.

Series	Unit	A1-A3	A4	A5	B1	B2	B3 - B7	C1	C2	C3	C4	D
LR8-66HYD	kg CO_2 eq	3.14E-01	2.00E-02	1.74E-03	0	6.15E-06	0	1.38E-03	4.67E-04	4.42E-03	7.82E-03	-7.21E-02

GWP-IOBC *Global warming potential calculated according to the principle of instantaneous oxidation.*

Dangerous substances

The declaration is based upon reference to threshold values and/or test results and/or material safety data sheets provided to EPD verifiers. Documentation available upon request to EPD owner.

- ☐ The product contains no substances given by the REACH Candidate list.
- ✓ The product contains substances given by the REACH Candidate list that are less than 0,1 % by weight.

- ☐ The product contains dangerous substances, more than 0,1% by weight, given by the REACH Candidate List, see table.
- ☐ The product contains no substances given by the REACH Candidate list.
- ☐ The product is classified as hazardous waste, see table.

Indoor environment

This is not relevant to the product under study.

Carbon footprint (A1-C4)

Product	Unit	EU (Irad=2340 kWh·m^{-2}·year^{-1})
LR8-66HYD (670 Wp)	g CO2 eq./kWh	6.08

Note: the carbon footprint (per kWh) results do not include the impacts caused by electrical equipment and mounting structures, and the distribution losses. Irad: Incident irradiation in collector plane

EPD results conversion factors of various power output ranges

LR8-66HYD

Rated power output range (Wp)	635	640	645	650	655	660	665
Conversion factor*	1.055	1.047	1.039	1.031	1.023	1.015	1.008

*Note: Environmental impacts of other power outputs are determined by multiplying the results for 670 Wp by relevant conversion factors.

Bibliography

ISO 14025:2010	Environmental labels and declarations - Type III environmental declarations - Principles and procedures
ISO 14044:2006	Environmental management - Life cycle assessment - Requirements and guidelines
EN15804:2012+A2:2019 /AC:2021	Sustainability of construction works - Environmental product declaration - Core rules for the product category of construction products
Ecoinvent: 2024	Swiss Centre for Life Cycle Assessment, v3.11 (www.ecoinvent.ch).
ISO 21930:2017	Sustainability in buildings and civil engineering works – Core rules for environmental product declarations of construction products and services.
NPCR Part A:	Construction products and services. Ver. 2.0. April 2021, EPD-Norge.
PCR NPCR 029 version 1.2	PCR – Part B for photovoltaic modules used in the building and construction industry, including production of cell, wafer, ingot block, solar grade silicon, solar substrates, solar superstrates and other solar grade semiconductor materials.
IEA PVPS Task 12, 2020	Life Cycle Inventories and Life Cycle Assessment of Photovoltaic Systems.
WEEE Directive:2012/19	EU Article 4,11&15.
LCA Report, 2025	LCA Report of LONGi Photovoltaic Modules for Environmental Product Declaration

epd-global Powered by EPD-Norway	**Program Operator**	tlf	+47 23 08 80 00
	EPD-Global		
	Post Box 5250 Majorstuen, 0303 Oslo	e-post:	post@epd-norge.no
	Norway	web	www.epd-global.com
epd-global Powered by EPD-Norway	**Publisher**	tlf	+47 23 08 80 00
	EPD-Global		
	Post Box 5250 Majorstuen, 0303 Oslo	e-post:	post@epd-norge.no
	Norway	web	www.epd-norge.no
LONGi	**Owner of the declaration**	Tel:	+86 4008601012
	LONGi Green Energy Technology Co., Ltd.		
	Block B, No. 8989 Shangji Road, Economic & Technological Development Zone, Xi'an, Shaanxi, China	E-mail:	market@longi.com
	China	Web:	www.longi.com
TÜV SÜD	**Author of the life cycle assessment**	Tel:	+86 512 6809 5318
	TÜV SÜD Certification and Testing (China) Co., Ltd. Shanghai Branch		
	3-13, No.151 Heng Tong Road, Jingan District Shanghai	E-mail:	hongyu.tian@tuvsud.com
	China	Web:	www.tuvsud.cn
ECO PLATFORM EPD VERIFIED	ECO Platform ECO Portal	web web	www.eco-platform.org ECO Portal