ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025 / ISO 21930

Philips TownTune Asymmetric Lyre DTC

BDP272
Signify N.V.

EPD HUB
Publishing 2024-07-02

GENERAL INFORMATION

MANUFACTURER

Manufacturer	Signify N.V.
Address	High Tech Campus 48, 5656 AE Eindhoven, The Netherlands
Contact details	sustainability@signify.com
Website	https://www.signify.com/global

EPD STANDARDS, SCOPE AND VERIFICATION

Program operator	EPD Hub, hub@epdhub.com
Reference standard	EN 15804+A2:2019 and ISO 14025
PCR	EPD Hub Core PCR version 1.0, 1 Feb 2022
Sector	Electrical product
Category of EPD	Pre-verified EPD
Scope of the EPD	Cradle to gate with options, A4-B7, and modules C1-C4, D
EPD author	Sustainability Signify
EPD verification	Independent verification of this EPD and data, according to ISO 14025: ☑ Internal certification ☐External verification

The manufacturer has the sole ownership, liability, and responsibility for the EPD. EPDs within the same product category but from different programs may not be comparable. EPDs of lighting products may not be comparable if they do not comply with EN 15804 and if they are not compared in a lighting context.

PRODUCT

Product name	Philips TownTune Asymmetric Lyre DTC
Additional labels	BDP272 LED59-4S/830 II DW50 DR CLO LS-6
Product reference	912300024208
Place of production	Spain
Period for data	2022
Averaging in EPD	No averaging
Variation in GWP-fossil for A1-A3	%

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 unit
Declared unit mass	10.274 kg
GWP-fossil, A1-A3 (kgCO2e)	9,43E+01
GWP-total, A1-A3 (kgCO2e)	9,41E+01
Secondary material, inputs (%)	52.8
Secondary material, outputs (%)	59.1
Total energy use, A1-A3 (kWh)	326
Total water use, A1-A3 (m3e)	0.55

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

Signify is the world leader in lighting for professionals, consumers and lighting for the Internet of Things. Our energy efficient lighting products, systems and services enable our customers to enjoy a superior quality of light, and make people's lives safer and more comfortable, businesses more productive and cities more liveable.

For more information, please visit: https://www.signify.com/global

PRODUCT DESCRIPTION

Designed to enhance existing and scalable urban spaces, the Philips TownTune family offers all the latest lighting innovations in terms of performance, quality of light and connectivity. The family consists of four solutions: a Central Post Top (CPT), an Asymmetric Spigot Post Top / Side Entry version (ASY), a version with an extending Lyre post top bracket (Lyre), and a Central Post Top with a Conical Comfort Bowl (CCB). Each TownTune luminaire can be customized with a choice of different shapes on top of the housing, plus there's the option to add a decorative ring, which comes in two colors (excluding CCB). Design options that enable you to create your very own lighting signature and bring a distinctive identity to districts and cities. In addition, every luminaire in the TownTune family is uniquely identifiable, thanks to the Signify Service tag app. By simply scanning a QR code, placed inside the door of the mast or directly on the luminaire, you can instantly access the configuration of the luminaire. This makes maintenance and programing operations faster and easier and enables you to create your digital library of lighting assets and spare parts. TownTune also uses the Philips LEDGINE-O lighting platform, ensuring you always have the right amount and direction of light on your street. Furthermore, thanks to being system ready (SR), TownTune is also future proof. A solution that's ready to be paired with both standalone and advanced control and lighting software applications such as Interact City.

For more information, please visit
https://www.lighting.philips.com/link/BDP272/fam/aa/en

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass- %	Material origin
Metals	72	EUR, ASIA
Minerals	1.86	EU
Fossil materials	26.14	EUR, ASIA
Bio-based materials	0	Not applicable

BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate

Biogenic carbon content in product, kg C	0
Biogenic carbon content in packaging, kg C	0.059

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 Product
Mass per declared unit	10.274 kg
Functional unit	1 unit of 4312 lumens over 100000 hours
Reference service life	100000 hours

SUBSTANCES, REACH - VERY HIGH CONCERN

The product does not contain any REACH SVHC substances in amounts greater than 0,1 % (1000 ppm).

PRODUCT LIFE-CYCLE

SYSTEM BOUNDARY

This EPD covers the life-cycle modules listed in the following table.

Product stage			Assembly stage		Use stage							End of life stage				Beyond the system boundaries		
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D		
x	x	x	x	x	MNR	MNR	MNR	MNR	MNR	x	MNR	MNR	x	x	x	x		
Raw materials	Transport	Manufacturing	Transport	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstr./demol.	Transport	Waste processing	Disposal	Reuse	Recovery	Recycling

Modules not relevant = MNR.

MANUFACTURING AND PACKAGING (A1-A3)

The environmental impacts considered for the product stage cover the manufacturing of raw materials used in the production as well as packaging materials and other ancillary materials. Also, electricity, and waste formed in the production processes at Signify's manufacturing facilities are included in this stage.

The product is made of metals, plastics, and electronic components. All components are transported to Signify's production facility, where the main manufacturing processes primarily are associated with assembly. The finished product is packaged with polyethylene, cardboard, and/or paper as packaging material before being sent to customers. Manufacturing loss, ancillaries and wastes are calculated according to the data that each manufacturing site is sharing with Signify. The total annual amount of waste in kg is allocated to the total annual production in kg at the specific manufacturing site responsible for the production of the studied luminaire.

Thus, it is possible to allocate it according to the weight of the product analysed in this study. Some of the wastes are due to ancillary materials used during manufacturing while the rest is due to material losses.

TRANSPORT AND INSTALLATION (A4-A5)

Transport distances were calculated on the base of the supplier location and manufacturing location and then made a cumulative group choosing the conservative scenario. Environmental impacts from installation include waste packaging materials (A5). The impacts of energy consumption and the used ancillary materials during installation are considered negligible.

PRODUCT USE AND MAINTENANCE (B1-B7)

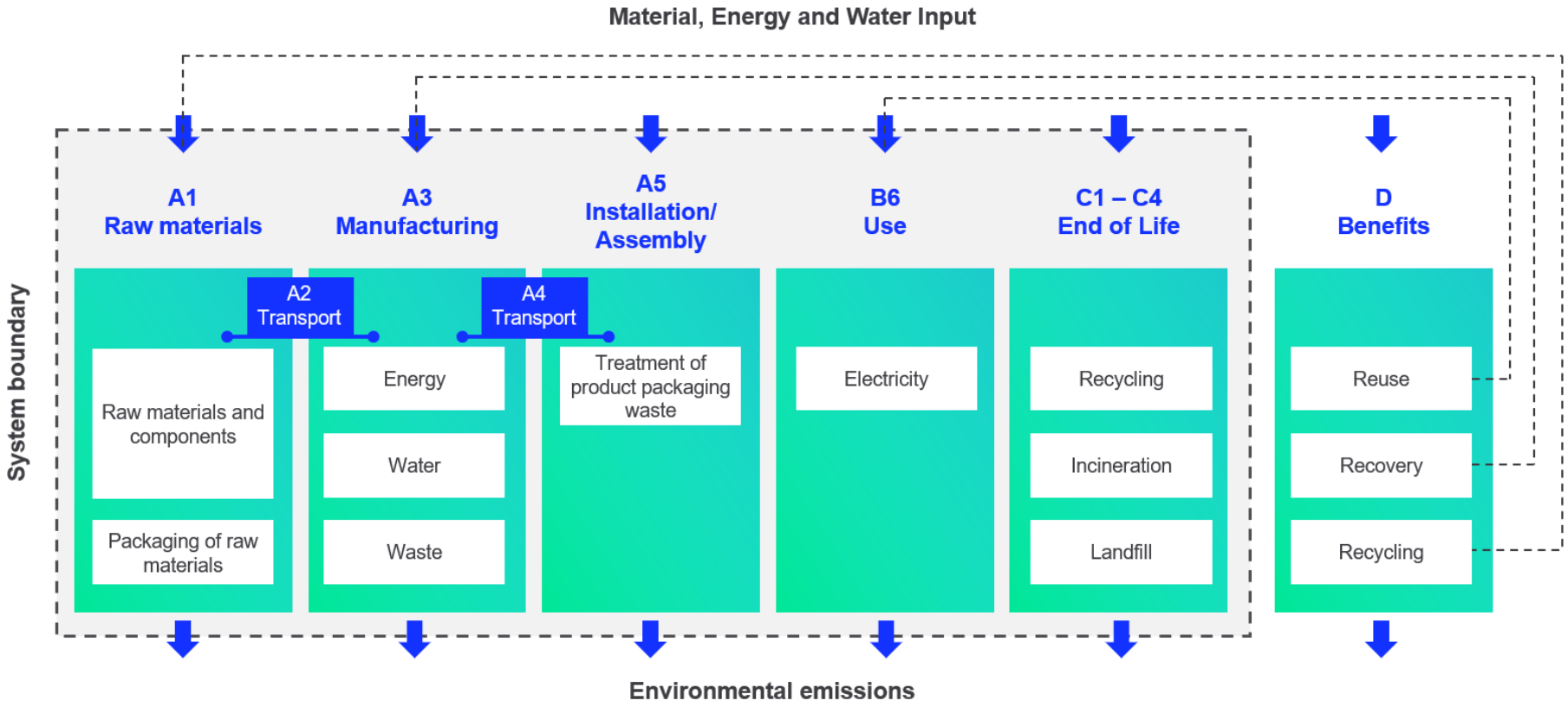
During the use phase, the product consumes electricity from Europe's electricity grid mix (B6). The total power consumption of the reference product is calculated as follows: Wattage x Reference lifetime = kWh consumed throughout the entire use phase B6.

PRODUCT END OF LIFE (C1-C4, D)

Consumption of energy and natural resources in demolition process is assumed to be negligible. It is assumed that the waste is collected separately and transported to the waste treatment centre. Transportation distance to treatment is assumed as 150 km and the transportation method is assumed to be lorry (C2). According to EN 50693:2019, the sequence of treatment operations occurring to the product shall include de-pollution, fractions separation and preparation (dismantling, crushing, shredding, sorting), recycling, other material recovery, energy recovery and disposal. In this study, the default values from table G.4 of EN 50693 is used for treating materials in different waste treatment methods. Due to the material and energy recovery potential of parts in the lighting system, the end-of-life product is converted into recycled raw materials, while the energy recovered from incineration displaces electricity and heat

production (D). The benefits and loads of incineration and recycling are included in Module D.

SYSTEM BOUNDARY



LIFE-CYCLE ASSESSMENT

CUT-OFF CRITERIA

The study does not exclude any modules or processes which are stated mandatory in the reference standard and the applied PCR. The study does not exclude any hazardous materials or substances. The study includes all major raw material and energy consumption. All inputs and outputs of the unit processes, for which data is available for, are included in the calculation. There is no neglected unit process more than 1% of total mass or energy flows. The module specific total neglected input and output flows also do not exceed 5% of energy usage or mass.

ALLOCATION, ESTIMATES AND ASSUMPTIONS

Allocation is required if some material, energy, and waste data cannot be measured separately for the product under investigation. All allocations are done as per the reference standards and the applied PCR. In this study, ancillary materials, energy & water consumption, material loss and waste generation at the manufacturing site are attributed to the bill of materials of the products, therefore, they are allocated by partitioning the quantities on the base of the total production in kg throughout the year. Thus, allocation has been done in the following ways:

Data type	Allocation
Raw materials	No allocation
No allocation	No allocation
No allocation	Allocated by mass or volume
Allocated by mass or volume	Allocated by mass or volume

This EPD is created with a most conservative scenario in A1-A3 in terms of material composition.

AVERAGES AND VARIABILITY

Type of average	No averaging
Averaging method	Not applicable
Variation in GWP-fossil for A1-A3	Not applicable

This EPD is product and factory specific and does not contain average calculations. It is created with a most conservative scenario in A1-A3 in terms of material composition.

LCA SOFTWARE AND BIBLIOGRAPHY

This EPD has been created using One Click LCA EPD Generator. The LCA and EPD have been prepared according to the reference standards and ISO 14040/14044. EcoInvent 3.8 database was used as the source of environmental data.

ENVIRONMENTAL IMPACT DATA

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP – total[1)]	kg CO_2e	9,18E+01	1,96E+00	3,39E-01	9,41E+01	1,96E+00	2,22E-01	MNR	MNR	MNR	MNR	MNR	1,72E+03	MNR	MNR	1,44E-01	2,63E+00	1,70E+00	-1,65E+01
GWP – fossil	kg CO_2e	9,18E+01	1,96E+00	5,49E-01	9,43E+01	1,96E+00	8,22E-03	MNR	MNR	MNR	MNR	MNR	1,72E+03	MNR	MNR	1,44E-01	2,63E+00	1,62E+00	-1,65E+01
GWP – biogenic	kg CO_2e	-7,26E-02	0,00E+00	-2,14E-01	-2,86E-01	7,57E-04	2,14E-01	MNR	MNR	MNR	MNR	MNR	0,00E+00	MNR	MNR	0,00E+00	0,00E+00	7,26E-02	-4,29E-03
GWP – LULUC	kg CO_2e	1,53E-01	7,26E-04	3,98E-03	1,58E-01	7,22E-04	2,32E-06	MNR	MNR	MNR	MNR	MNR	4,02E+00	MNR	MNR	5,30E-05	1,97E-04	1,32E-04	-1,98E-03
Ozone depletion pot.	kg CFC_{-11}e	5,16E-06	4,50E-07	6,30E-08	5,67E-06	4,50E-07	5,70E-10	MNR	MNR	MNR	MNR	MNR	8,73E-05	MNR	MNR	3,31E-08	1,96E-08	1,56E-08	-4,35E-07
Acidification potential	mol H^+e	6,11E-01	8,60E-03	2,37E-03	6,22E-01	8,28E-03	4,99E-05	MNR	MNR	MNR	MNR	MNR	9,82E+00	MNR	MNR	6,09E-04	2,08E-03	8,82E-04	-1,65E-01
EP-freshwater[2)]	kg Pe	6,39E-03	1,60E-05	2,53E-05	6,43E-03	1,60E-05	6,28E-08	MNR	MNR	MNR	MNR	MNR	1,82E-01	MNR	MNR	1,18E-06	6,47E-06	6,68E-06	-1,00E-03
EP-marine	kg Ne	9,43E-02	2,54E-03	8,10E-04	9,76E-02	2,46E-03	2,22E-05	MNR	MNR	MNR	MNR	MNR	1,30E+00	MNR	MNR	1,81E-04	5,89E-04	1,43E-03	-1,82E-02
EP-terrestrial	mol Ne	1,00E+00	2,80E-02	6,08E-03	1,03E+00	2,72E-02	2,28E-04	MNR	MNR	MNR	MNR	MNR	1,48E+01	MNR	MNR	2,00E-03	6,45E-03	3,15E-03	-2,09E-01
POCP ("smog")[3)]	kg NMVOCe	3,16E-01	8,90E-03	3,10E-03	3,28E-01	8,69E-03	5,66E-05	MNR	MNR	MNR	MNR	MNR	4,06E+00	MNR	MNR	6,39E-04	1,68E-03	1,05E-03	-6,04E-02
ADP-minerals & metals[4)]	kg Sbe	2,68E-03	4,58E-06	3,11E-06	2,69E-03	4,59E-06	1,80E-08	MNR	MNR	MNR	MNR	MNR	1,61E-02	MNR	MNR	3,37E-07	1,52E-05	3,58E-07	-2,22E-04
ADP-fossil resources	MJ	1,12E+03	2,94E+01	7,92E+00	1,16E+03	2,94E+01	4,88E-02	MNR	MNR	MNR	MNR	MNR	3,66E+04	MNR	MNR	2,16E+00	2,06E+00	1,54E+00	-1,61E+02
Water use[5)]	m^3e depr.	3,15E+01	1,31E-01	3,75E-01	3,20E+01	1,32E-01	1,04E-02	MNR	MNR	MNR	MNR	MNR	1,00E+03	MNR	MNR	9,66E-03	1,26E-01	1,06E-01	-1,17E+00

1) GWP = Global Warming Potential; 2) EP = Eutrophication potential. Required characterisation method and data are in kg P-eq. Multiply by 3,07 to get PO4e; 3) POCP = Photochemical ozone formation; 4) ADP = Abiotic depletion potential; 5) EN 15804+A2 disclaimer for Abiotic depletion and Water use and optional indicators except Particulate matter and Ionizing radiation, human health. The results of these environmental impact indicators shall be used with care as the uncertainties on these results are high or as there is limited experience with the indicator.

ADDITIONAL (OPTIONAL) ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Particulate matter	Incidence	6,55E-06	2,25E-07	4,68E-08	6,82E-06	2,26E-07	4,48E-10	MNR	MNR	MNR	MNR	MNR	3,23E-05	MNR	MNR	1,66E-08	2,37E-08	1,20E-08	-9,98E-07
Ionizing radiation[6)]	kBq U235e	5,29E+00	1,40E-01	2,84E-02	5,46E+00	1,40E-01	1,60E-04	MNR	MNR	MNR	MNR	MNR	9,90E+02	MNR	MNR	1,03E-02	1,12E-02	7,91E-03	-9,42E-01

Ecotoxicity (freshwater)	CTUe	4,06E+03	2,64E+01	1,66E+01	4,11E+03	2,64E+01	2,49E-01	MNR	MNR	MNR	MNR	MNR	2,49E+04	MNR	MNR	1,94E+00	1,27E+01	6,69E+02	-3,51E+02
Human toxicity, cancer	CTUh	2,47E-07	6,52E-10	4,11E-10	2,48E-07	6,49E-10	1,81E-11	MNR	MNR	MNR	MNR	MNR	8,15E-07	MNR	MNR	4,77E-11	4,47E-10	5,89E-10	-6,27E-10
Human tox. non-cancer	CTUh	3,57E-06	2,61E-08	7,84E-09	3,60E-06	2,62E-08	7,16E-10	MNR	MNR	MNR	MNR	MNR	2,68E-05	MNR	MNR	1,92E-09	1,80E-08	1,53E-08	-3,64E-07
SQP[7)]	-	2,93E+02	3,37E+01	2,09E+01	3,47E+02	3,39E+01	3,00E-02	MNR	MNR	MNR	MNR	MNR	6,62E+03	MNR	MNR	2,49E+00	3,28E+00	2,11E+00	-3,67E+01

6) EN 15804+A2 disclaimer for Ionizing radiation, human health. 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; 7) SQP = Land use related impacts/soil quality.

USE OF NATURAL RESOURCES

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Renew. PER as energy[8)]	MJ	8,11E+01	3,30E-01	6,62E+00	8,80E+01	3,31E-01	1,30E-03	MNR	MNR	MNR	MNR	MNR	7,45E+03	MNR	MNR	2,43E-02	2,63E-01	6,91E-02	-3,78E+00
Renew. PER as material	MJ	1,14E+00	0,00E+00	2,03E+00	3,17E+00	0,00E+00	-2,03E+00	MNR	MNR	MNR	MNR	MNR	0,00E+00	MNR	MNR	0,00E+00	-1,64E-01	-9,78E-01	0,00E+00
Total use of renew. PER	MJ	8,22E+01	3,30E-01	8,65E+00	9,12E+01	3,31E-01	-2,03E+00	MNR	MNR	MNR	MNR	MNR	7,45E+03	MNR	MNR	2,43E-02	9,87E-02	-9,09E-01	-3,78E+00
Non-re. PER as energy	MJ	1,05E+03	2,94E+01	7,33E+00	1,08E+03	2,94E+01	4,88E-02	MNR	MNR	MNR	MNR	MNR	3,65E+04	MNR	MNR	2,16E+00	2,06E+00	1,54E+00	-1,60E+02
Non-re. PER as material	MJ	7,17E+01	0,00E+00	4,12E-02	7,18E+01	0,00E+00	-4,12E-02	MNR	MNR	MNR	MNR	MNR	0,00E+00	MNR	MNR	0,00E+00	-3,55E+01	-3,63E+01	5,53E-01
Total use of non-re. PER	MJ	1,12E+03	2,94E+01	7,37E+00	1,16E+03	2,94E+01	7,63E-03	MNR	MNR	MNR	MNR	MNR	3,65E+04	MNR	MNR	2,16E+00	-3,34E+01	-3,47E+01	-1,60E+02
Secondary materials	kg	5,43E+00	8,18E-03	6,11E-02	5,50E+00	8,16E-03	5,46E-05	MNR	MNR	MNR	MNR	MNR	3,77E+00	MNR	MNR	6,00E-04	2,13E-03	3,51E-03	6,25E-01
Renew. secondary fuels	MJ	5,13E-02	8,20E-05	4,22E-03	5,56E-02	8,23E-05	6,20E-07	MNR	MNR	MNR	MNR	MNR	3,05E-02	MNR	MNR	6,05E-06	1,01E-04	2,99E-05	-1,21E-03
Non-ren. secondary fuels	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	MNR	MNR	MNR	MNR	MNR	0,00E+00	MNR	MNR	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of net fresh water	m^3	5,35E-01	3,79E-03	8,90E-03	5,48E-01	3,81E-03	8,99E-05	MNR	MNR	MNR	MNR	MNR	3,15E+01	MNR	MNR	2,80E-04	4,47E-03	2,50E-03	-5,10E-02

8) PER = Primary energy resources.

END OF LIFE – WASTE

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Hazardous waste	kg	1,44E+01	3,89E-02	3,77E-02	1,45E+01	3,90E-02	3,57E-03	MNR	MNR	MNR	MNR	MNR	1,31E+02	MNR	MNR	2,86E-03	1,23E-02	6,08E-03	-2,46E+00
Non-hazardous waste	kg	1,36E+02	6,38E-01	7,19E-01	1,37E+02	6,40E-01	6,26E-02	MNR	MNR	MNR	MNR	MNR	8,31E+03	MNR	MNR	4,70E-02	1,36E+00	4,16E+00	-4,62E+01
Radioactive waste	kg	2,11E-03	1,96E-04	1,76E-05	2,32E-03	1,97E-04	1,35E-07	MNR	MNR	MNR	MNR	MNR	2,66E-01	MNR	MNR	1,44E-05	6,98E-06	0,00E+00	-3,48E-04

END OF LIFE – OUTPUT FLOWS

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Components for re-use	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	MNR	MNR	MNR	MNR	MNR	0,00E+00	MNR	MNR	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for recycling	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	MNR	MNR	MNR	MNR	MNR	0,00E+00	MNR	MNR	0,00E+00	5,04E+00	0,00E+00	0,00E+00
Materials for energy rec	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	MNR	MNR	MNR	MNR	MNR	0,00E+00	MNR	MNR	0,00E+00	1,02E+00	0,00E+00	0,00E+00
Exported energy	MJ	0,00E+00	0,00E+00	5,69E-01	5,69E-01	0,00E+00	0,00E+00	MNR	MNR	MNR	MNR	MNR	0,00E+00	MNR	MNR	0,00E+00	2,31E+01	0,00E+00	0,00E+00

ENVIRONMENTAL IMPACTS – EN 15804+A1, CML / ISO 21930

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Global Warming Pot.	kg CO_2e	8,95E+01	1,94E+00	5,57E-01	9,20E+01	1,94E+00	7,88E-03	MNR	MNR	MNR	MNR	MNR	1,70E+03	MNR	MNR	1,42E-01	2,62E+00	2,10E+00	-1,61E+01
Ozone depletion Pot.	kg CFC_{-11}e	4,57E-06	3,56E-07	5,28E-08	4,98E-06	3,57E-07	4,89E-10	MNR	MNR	MNR	MNR	MNR	7,57E-05	MNR	MNR	2,62E-08	1,63E-08	1,28E-08	-3,68E-07
Acidification	kg SO_2e	5,15E-01	6,69E-03	1,87E-03	5,23E-01	6,44E-03	3,60E-05	MNR	MNR	MNR	MNR	MNR	8,33E+00	MNR	MNR	4,73E-04	1,63E-03	6,72E-04	-1,42E-01
Eutrophication	kg PO_4^3e	1,93E-01	1,49E-03	1,05E-03	1,96E-01	1,47E-03	2,80E-05	MNR	MNR	MNR	MNR	MNR	6,41E+00	MNR	MNR	1,08E-04	6,90E-04	6,33E-03	-3,92E-02
POCP (“smog”)	kg C_2H_4e	3,49E-02	2,57E-04	2,36E-04	3,54E-02	2,51E-04	1,02E-06	MNR	MNR	MNR	MNR	MNR	3,41E-01	MNR	MNR	1,85E-05	5,55E-05	1,52E-04	-6,97E-03
ADP-elements	kg Sbe	2,65E-03	4,43E-06	2,95E-06	2,66E-03	4,44E-06	1,43E-08	MNR	MNR	MNR	MNR	MNR	1,60E-02	MNR	MNR	3,26E-07	1,51E-05	3,20E-07	-2,20E-04
ADP-fossil	MJ	1,11E+03	2,94E+01	7,91E+00	1,15E+03	2,94E+01	4,88E-02	MNR	MNR	MNR	MNR	MNR	3,65E+04	MNR	MNR	2,16E+00	2,06E+00	1,54E+00	-1,61E+02

APPENDIX (EPD HUB ALIGNED)

This section represents the scaling method for the **B6 module**, following the PEP EcoPassport PSR for luminaries (PSR-0014-ed2.0-EN-2023 07 13). The GWP results were scaled from a refernce variant of a product family, based on various light management scenarios and power inputs of the luminaires within the same product familiy

To calculate the Scaled Impact (*SI*), we have followed the below methods:

1. Calculate the power scaling factor (PSF), which is the ratio of the power input of the variant in questions P_{in} and the power input of the base variant P_{base}.

$$PSF = \frac{P_{in}}{P_{base}}$$

2. Calculate the Total Scaling factor by multiplying the PSF by the control scaling factor (CSF), where the CSF is determined according the relevant control factor scenario (e.g. if the luminaire has a presence detection system). The presented controls factors values in Table A1 are based on BS EN 15193-1:2017. Please refer to this publication or contact Signify directly for more information.

$$TSF = PSF * CSF$$

Table A1: Light management function (PEP EcoPassport aligned)

Scenario	Abbrev.	CSF
No control	NC	1
Daylight dependency factor	DD	0.75
Presence sensing	PS	0.75
Daylight dependency and presence sensing	DD+PS	0.55

3. Lastly, the GWP of the base variant is then scaled by the TSF.

$$Scaled\ Impact = GWP_{case} * TSF$$

Table A2 Scaled GWP per scaling factor (EPD Hub aligned)

Configuration	Flux [lm]	Power [W]	Efficacy [lm/W]	PSF	Total Scaling Factor (TSF)				Scaled Impacts (GWP100 B6 - kg CO2eq.)			
					NC	DD	PS	DD+PS	NC	DD	PS	DD+PS
BDP270,271,272,273 LED8-4S	624.0	6.2	100.6	0.151	0.151	0.113	0.113	0.083	259.7	194.4	194.4	142.8
BDP270,271,272,273 LED10-4S	780.0	7.4	105.4	0.18	0.18	0.135	0.135	0.099	309.6	232.2	232.2	170.3
BDP270,271,272,273 LED12-4S	936.0	8.3	112.8	0.202	0.202	0.152	0.152	0.111	347.4	261.4	261.4	190.9
BDP270,271,272,273 LED14-4S	1092.0	9.6	113.8	0.234	0.234	0.176	0.176	0.129	402.5	302.7	302.7	221.9
BDP270,271,272,273 LED16-4S	1248.0	10.8	115.6	0.263	0.263	0.197	0.197	0.145	452.4	338.8	338.8	249.4
BDP270,271,272,273 LED18-4S	1404.0	12.0	117.0	0.293	0.293	0.22	0.22	0.161	504.0	378.4	378.4	276.9
BDP270,271,272,273 LED20-4S	1540.0	13.4	114.9	0.327	0.327	0.245	0.245	0.18	562.4	421.4	421.4	309.6
BDP270,271,272,273 LED22-4S	1694.0	14.6	116.0	0.356	0.356	0.267	0.267	0.196	612.3	459.2	459.2	337.1
BDP270,271,272,273 LED24-4S	1848.0	16.0	115.5	0.39	0.39	0.292	0.292	0.215	670.8	502.2	502.2	369.8
BDP270,271,272,273 LED27-4S	2079.0	18.2	114.2	0.444	0.444	0.333	0.333	0.244	763.7	572.8	572.8	419.7
BDP270,271,272,273 LED30-4S	2310.0	20.5	112.7	0.5	0.5	0.375	0.375	0.275	860.0	645.0	645.0	473.0
BDP270,271,272,273 LED34-4S	2618.0	21.0	124.7	0.512	0.512	0.384	0.384	0.282	880.6	660.5	660.5	485.0

BDP270,271,272,273 LED35-4S	2695.0	21.5	125.3	0.524	0.524	0.393	0.393	0.288	901.3	676.0	676.0	495.4
BDP270,271,272,273 LED39-4S	3003.0	24.0	125.1	0.585	0.585	0.439	0.439	0.322	1006.2	755.1	755.1	553.8
BDP270,271,272,273 LED40-4S	3080.0	25.0	123.2	0.61	0.61	0.458	0.458	0.336	1049.2	787.8	787.8	577.9
BDP270,271,272,273 LED44-4S	3388.0	27.5	123.2	0.671	0.671	0.503	0.503	0.369	1154.1	865.2	865.2	634.7
BDP270,271,272,273 LED45-4S	3465.0	28.0	123.8	0.683	0.683	0.512	0.512	0.376	1174.8	880.6	880.6	646.7
BDP270,271,272,273 LED50-4S	3850.0	30.5	126.2	0.744	0.744	0.558	0.558	0.409	1279.7	959.8	959.8	703.5
BDP270,271,272,273 LED55-4S	4312.0	33.5	128.7	0.817	0.817	0.613	0.613	0.449	1405.2	1054.4	1054.4	772.3
BDP270,271,272,273 LED59-4S/730	4620.0	36.0	128.3	0.878	0.878	0.658	0.658	0.483	1510.2	1131.8	1131.8	830.8
BDP270,271,272,273 LED64-4S/730	4864.0	39.5	123.1	0.963	0.963	0.722	0.722	0.53	1656.4	1241.8	1241.8	911.6
BDP270,271,272,273 LED69-4S/730	5320.0	42.5	125.2	1.037	1.037	0.778	0.778	0.57	1783.6	1338.2	1338.2	980.4
BDP270,271,272,273 LED74-4S/730	5624.0	46.0	122.3	1.122	1.122	0.842	0.842	0.617	1929.8	1448.2	1448.2	1061.2
BDP270,271,272,273 LED79-4S/730	6080.0	47.5	128.0	1.159	1.159	0.869	0.869	0.637	1993.5	1494.7	1494.7	1095.6
BDP270,271,272,273 LED84-4S/730	6384.0	51.0	125.2	1.244	1.244	0.933	0.933	0.684	2139.7	1604.8	1604.8	1176.5
BDP270,271,272,273 LED90-4S/730	6840.0	55.0	124.4	1.341	1.341	1.006	1.006	0.738	2306.5	1730.3	1730.3	1269.4
BDP270,271,272,273 LED94-4S/730	7144.0	58.0	123.2	1.415	1.415	1.061	1.061	0.778	2433.8	1824.9	1824.9	1338.2
BDP270,271,272,273 LED109-4S/730	8250.0	68.0	121.3	1.659	1.659	1.244	1.244	0.912	2853.5	2139.7	2139.7	1568.6
BDP270,271,272,273 LED120-4S/730	9000.0	76.0	118.4	1.854	1.854	1.39	1.39	1.02	3188.9	2390.8	2390.8	1754.4
BDP270,271,272,273 LED6-4S/722	468.0	5.9	79.3	0.144	0.144	0.108	0.108	0.079	247.7	185.8	185.8	135.9
BDP270,271,272,273 LED8-4S/722	624.0	7.4	84.3	0.18	0.18	0.135	0.135	0.099	309.6	232.2	232.2	170.3
BDP270,271,272,273 LED10-4S/722	770.0	9.1	84.6	0.222	0.222	0.166	0.166	0.122	381.8	285.5	285.5	209.8
BDP270,271,272,273 LED12-4S/722	936.0	10.2	91.8	0.249	0.249	0.187	0.187	0.137	428.3	321.6	321.6	235.6
BDP270,271,272,273 LED14-4S/722	1092.0	11.6	94.1	0.283	0.283	0.212	0.212	0.156	486.8	364.6	364.6	268.3
BDP270,271,272,273 LED16-4S/722	1232.0	13.4	91.9	0.327	0.327	0.245	0.245	0.18	562.4	421.4	421.4	309.6
BDP270,271,272,273 LED18-4S/722	1386.0	15.0	92.4	0.366	0.366	0.274	0.274	0.201	629.5	471.3	471.3	345.7
BDP270,271,272,273 LED20-4S/722	1540.0	16.8	91.7	0.41	0.41	0.308	0.308	0.226	705.2	529.8	529.8	388.7

BDP270,271,272,273 LED22-4S/722	1694.0	18.6	91.1	0.454	0.454	0.34	0.34	0.25	780.9	584.8	584.8	430.0
BDP270,271,272,273 LED24-4S/722	1848.0	20.5	90.1	0.5	0.5	0.375	0.375	0.275	860.0	645.0	645.0	473.0
BDP270,271,272,273 LED27-4S/722	2079.0	21.0	99.0	0.512	0.512	0.384	0.384	0.282	880.6	660.5	660.5	485.0
BDP270,271,272,273 LED30-4S/722	2310.0	23.0	100.4	0.561	0.561	0.421	0.421	0.309	964.9	724.1	724.1	531.5
BDP270,271,272,273 LED34-4S/722	2618.0	26.5	98.8	0.646	0.646	0.485	0.485	0.355	1111.1	834.2	834.2	610.6
BDP270,271,272,273 LED35-4S/722	2695.0	27.5	98.0	0.671	0.671	0.503	0.503	0.369	1154.1	865.2	865.2	634.7
BDP270,271,272,273 LED39-4S/722	2964.0	30.5	97.2	0.744	0.744	0.558	0.558	0.409	1279.7	959.8	959.8	703.5
BDP270,271,272,273 LED40-4S/722	3040.0	31.5	96.5	0.768	0.768	0.576	0.576	0.422	1321.0	990.7	990.7	725.8
BDP270,271,272,273 LED44-4S/722	3344.0	35.0	95.5	0.854	0.854	0.64	0.64	0.47	1468.9	1100.8	1100.8	808.4
BDP270,271,272,273 LED45-4S/722	3420.0	36.0	95.0	0.878	0.878	0.658	0.658	0.483	1510.2	1131.8	1131.8	830.8
BDP270,271,272,273 LED50-4S/722	3800.0	38.5	98.7	0.939	0.939	0.704	0.704	0.516	1615.1	1210.9	1210.9	887.5
BDP270,271,272,273 LED55-4S/722	4256.0	42.5	100.1	1.037	1.037	0.778	0.778	0.57	1783.6	1338.2	1338.2	980.4
BDP270,271,272,273 LED59-4S/722	4560.0	46.0	99.1	1.122	1.122	0.842	0.842	0.617	1929.8	1448.2	1448.2	1061.2
BDP270,271,272,273 LED64-4S/722	4800.0	50.0	96.0	1.22	1.22	0.915	0.915	0.671	2098.4	1573.8	1573.8	1154.1
BDP270,271,272,273 LED69-4S/722	5250.0	55.0	95.5	1.341	1.341	1.006	1.006	0.738	2306.5	1730.3	1730.3	1269.4
BDP270,271,272,273 LED74-4S/722	5550.0	59.0	94.1	1.439	1.439	1.079	1.079	0.791	2475.1	1855.9	1855.9	1360.5
BDP270,271,272,273 LED79-4S/722	6000.0	61.0	98.4	1.488	1.488	1.116	1.116	0.818	2559.4	1919.5	1919.5	1407.0
BDP270,271,272,273 LED84-4S/722	6300.0	65.0	96.9	1.585	1.585	1.189	1.189	0.872	2726.2	2045.1	2045.1	1499.8
BDP270,271,272,273 LED90-4S/722	6750.0	70.0	96.4	1.707	1.707	1.28	1.28	0.939	2936.0	2201.6	2201.6	1615.1
BDP270,271,272,273 LED94-4S/722	7050.0	74.0	95.3	1.805	1.805	1.354	1.354	0.993	3104.6	2328.9	2328.9	1708.0
BDP270,271,272,273 LED6-4S/830	468.0	5.4	86.7	0.132	0.132	0.099	0.099	0.073	227.0	170.3	170.3	125.6
BDP270,271,272,273 LED8-4S/830	624.0	6.8	91.8	0.166	0.166	0.124	0.124	0.091	285.5	213.3	213.3	156.5
BDP270,271,272,273 LED10-4S/830	780.0	8.2	95.1	0.2	0.2	0.15	0.15	0.11	344.0	258.0	258.0	189.2
BDP270,271,272,273 LED12-4S/830	936.0	9.2	101.7	0.224	0.224	0.168	0.168	0.123	385.3	289.0	289.0	211.6
BDP270,271,272,273 LED14-4S/830	1092.0	10.6	103.0	0.259	0.259	0.194	0.194	0.142	445.5	333.7	333.7	244.2

BDP270,271,272,273 LED16-4S/830	1248.0	12.0	104.0	0.293	0.293	0.22	0.22	0.161	504.0	378.4	378.4	276.9
BDP270,271,272,273 LED18-4S/830	1386.0	13.4	103.4	0.327	0.327	0.245	0.245	0.18	562.4	421.4	421.4	309.6
BDP270,271,272,273 LED20-4S/830	1540.0	15.0	102.7	0.366	0.366	0.274	0.274	0.201	629.5	471.3	471.3	345.7
BDP270,271,272,273 LED22-4S/830	1694.0	16.4	103.3	0.4	0.4	0.3	0.3	0.22	688.0	516.0	516.0	378.4
BDP270,271,272,273 LED24-4S/830	1848.0	18.0	102.7	0.439	0.439	0.329	0.329	0.241	755.1	565.9	565.9	414.5
BDP270,271,272,273 LED27-4S/830	2079.0	18.6	111.8	0.454	0.454	0.34	0.34	0.25	780.9	584.8	584.8	430.0
BDP270,271,272,273 LED30-4S/830	2310.0	20.5	112.7	0.5	0.5	0.375	0.375	0.275	860.0	645.0	645.0	473.0
BDP270,271,272,273 LED34-4S/830	2618.0	23.5	111.4	0.573	0.573	0.43	0.43	0.315	985.6	739.6	739.6	541.8
BDP270,271,272,273 LED35-4S/830	2695.0	24.5	110.0	0.598	0.598	0.448	0.448	0.329	1028.6	770.6	770.6	565.9
BDP270,271,272,273 LED39-4S/830	3003.0	27.5	109.2	0.671	0.671	0.503	0.503	0.369	1154.1	865.2	865.2	634.7
BDP270,271,272,273 LED40-4S/830	3080.0	28.0	110.0	0.683	0.683	0.512	0.512	0.376	1174.8	880.6	880.6	646.7
BDP270,271,272,273 LED44-4S/830	3344.0	31.0	107.9	0.756	0.756	0.567	0.567	0.416	1300.3	975.2	975.2	715.5
BDP270,271,272,273 LED45-4S/830	3420.0	32.0	106.9	0.78	0.78	0.585	0.585	0.429	1341.6	1006.2	1006.2	737.9
BDP270,271,272,273 LED50-4S/830	3800.0	36.0	105.6	0.878	0.878	0.658	0.658	0.483	1510.2	1131.8	1131.8	830.8
BDP270,271,272,273 LED55-4S/830	4256.0	38.0	112.0	0.927	0.927	0.695	0.695	0.51	1594.4	1195.4	1195.4	877.2
BDP270,271,272,273 LED59-4S/830	4560.0	41.0	111.2	1.0	1.0	0.75	0.75	0.55	1720.0	1290.0	1290.0	946.0
BDP270,271,272,273 LED64-4S/830	4864.0	44.5	109.3	1.085	1.085	0.814	0.814	0.597	1866.2	1400.1	1400.1	1026.8
BDP270,271,272,273 LED69-4S/830	5250.0	48.5	108.2	1.183	1.183	0.887	0.887	0.651	2034.8	1525.6	1525.6	1119.7
BDP270,271,272,273 LED74-4S/830	5550.0	52.0	106.7	1.268	1.268	0.951	0.951	0.697	2181.0	1635.7	1635.7	1198.8
BDP270,271,272,273 LED79-4S/830	6080.0	54.0	112.6	1.317	1.317	0.988	0.988	0.724	2265.2	1699.4	1699.4	1245.3
BDP270,271,272,273 LED84-4S/830	6384.0	58.0	110.1	1.415	1.415	1.061	1.061	0.778	2433.8	1824.9	1824.9	1338.2
BDP270,271,272,273 LED90-4S/830	6750.0	62.0	108.9	1.512	1.512	1.134	1.134	0.832	2600.6	1950.5	1950.5	1431.0
BDP270,271,272,273 LED94-4S/830	7050.0	65.0	108.5	1.585	1.585	1.189	1.189	0.872	2726.2	2045.1	2045.1	1499.8
BDP270,271,272,273 LED109-4S/830	8250.0	77.0	107.1	1.878	1.878	1.408	1.408	1.033	3230.2	2421.8	2421.8	1776.8

** Note that if the product is non-dimmable, only the values for "NC (No Control)" are valid; if the driver type is PSU, only the values for "NC (No Control)"and "PS (presence sensing)" for are valid.*

APPENDIX (PEP ECOPASSPORT ALIGNED)

This section represents the scaling method for the **B6 module**, following the PEP EcoPassport PSR for luminaries (PSR-0014-ed2.0-EN-2023 07 13). The GWP results were scaled from a refernce variant of a product family, based on various light management functions, the lumen output (O_{lum}) and reference service life (*RSL*) of each product within the same product familiy.

To calculate the Scaled Impact (SI_{pep}), we have followed the below methods:

1. Calculate the power scaling factor (PSF), which is the ratio of the power input of the variant in questions P_{in} and the power input of the base variant P_{base}.

$$PSF = \frac{P_{in}}{P_{base}}$$

2. Using this scaled GWP, we then can apply the PEP Ecopassport method for calculating the environmental impact of the functional unit for a luminary (1000 lumens over 35000 hours), applied to B6, where the Functional Unit application considers the lumen output (Olum) and reference service lifetime (RSL) of the product to estimate the final environmental impact. The scaled impact (SIpep) is presented in Table A4.

$$GSF = \frac{FU_{pep}}{FU_p} = \frac{1{,}000}{O_{lum}} * \frac{35{,}000}{RSL}$$

3. Calculate the GWP scaling factor (P*GSF*), by multiplying the PSF by the GSF.

$$PGSF = PSF * GSF$$

4. Calculate the Total Scaling factor by multiplying the PSF by the control scaling factor (CSF), where the CSF is determined according the relevant control factor scenario (e.g. if the luminaire has a presence detection system), as presented in Table A1.

$$TSF = PGSF * CSF$$

Table A3: Light management functions (PEP EcoPassport aligned)

Scenario	Abbrev.	CSF
No control	NC	1
Daylight dependency factor	DD	0.75
Presence sensing	PS	0.75
Daylight dependency and presence sensing	DD+PS	0.55

5. Lastly, the GWP of the base variant is then scaled by the TSF.

$$Scaled\ GWP = GWP_{\ case} * TSF$$

As described in the EPD, calculations are made based on dataset describing electricity available on the low voltage level in Europe for year 2022 (source Ecoinvent 3.8 database). This value should be adjusted depending on specific project requirements. Presented controls factors and functional unit conversion values are based on the PEP EcoPassport PSR for luminaries (PSR-0014-ed2.0-EN-2023 07 13). Please refer to this publication or contact Signify directly for more information.

Table A4 Scale impact per scaling factor (PEP EcoPassport aligned)

Configuration	Flux [lm]	Power [W]	Efficacy [lm/W]	PSF	Total Scaling Factor (TSF)				Scaled Impacts (GWP100 B6 - kg CO2eq.)			
					NC	DD	PS	DD+PS	NC	DD	PS	DD+PS
BDP270,271,272,273 LED8-4S	624.0	6.2	100.6	0.151	0.085	0.064	0.064	0.047	146.2	110.1	110.1	80.8
BDP270,271,272,273 LED10-4S	780.0	7.4	105.4	0.18	0.081	0.061	0.061	0.045	139.3	104.9	104.9	77.4
BDP270,271,272,273 LED12-4S	936.0	8.3	112.8	0.202	0.076	0.057	0.057	0.042	130.7	98.0	98.0	72.2
BDP270,271,272,273 LED14-4S	1092.0	9.6	113.8	0.234	0.075	0.056	0.056	0.041	129.0	96.3	96.3	70.5
BDP270,271,272,273 LED16-4S	1248.0	10.8	115.6	0.263	0.074	0.055	0.055	0.041	127.3	94.6	94.6	70.5
BDP270,271,272,273 LED18-4S	1404.0	12.0	117.0	0.293	0.073	0.055	0.055	0.04	125.6	94.6	94.6	68.8
BDP270,271,272,273 LED20-4S	1540.0	13.4	114.9	0.327	0.074	0.055	0.055	0.041	127.3	94.6	94.6	70.5
BDP270,271,272,273 LED22-4S	1694.0	14.6	116.0	0.356	0.074	0.055	0.055	0.041	127.3	94.6	94.6	70.5
BDP270,271,272,273 LED24-4S	1848.0	16.0	115.5	0.39	0.074	0.055	0.055	0.041	127.3	94.6	94.6	70.5
BDP270,271,272,273 LED27-4S	2079.0	18.2	114.2	0.444	0.075	0.056	0.056	0.041	129.0	96.3	96.3	70.5
BDP270,271,272,273 LED30-4S	2310.0	20.5	112.7	0.5	0.076	0.057	0.057	0.042	130.7	98.0	98.0	72.2
BDP270,271,272,273 LED34-4S	2618.0	21.0	124.7	0.512	0.068	0.051	0.051	0.037	117.0	87.7	87.7	63.6
BDP270,271,272,273 LED35-4S	2695.0	21.5	125.3	0.524	0.068	0.051	0.051	0.037	117.0	87.7	87.7	63.6
BDP270,271,272,273 LED39-4S	3003.0	24.0	125.1	0.585	0.068	0.051	0.051	0.037	117.0	87.7	87.7	63.6
BDP270,271,272,273 LED40-4S	3080.0	25.0	123.2	0.61	0.069	0.052	0.052	0.038	118.7	89.4	89.4	65.4
BDP270,271,272,273 LED44-4S	3388.0	27.5	123.2	0.671	0.069	0.052	0.052	0.038	118.7	89.4	89.4	65.4
BDP270,271,272,273 LED45-4S	3465.0	28.0	123.8	0.683	0.069	0.052	0.052	0.038	118.7	89.4	89.4	65.4

BDP270,271,272,273 LED50-4S	3850.0	30.5	126.2	0.744	0.068	0.051	0.051	0.037	117.0	87.7	87.7	63.6
BDP270,271,272,273 LED55-4S	4312.0	33.5	128.7	0.817	0.066	0.05	0.05	0.036	113.5	86.0	86.0	61.9
BDP270,271,272,273 LED59-4S/730	4620.0	36.0	128.3	0.878	0.067	0.05	0.05	0.037	115.2	86.0	86.0	63.6
BDP270,271,272,273 LED64-4S/730	4864.0	39.5	123.1	0.963	0.069	0.052	0.052	0.038	118.7	89.4	89.4	65.4
BDP270,271,272,273 LED69-4S/730	5320.0	42.5	125.2	1.037	0.068	0.051	0.051	0.037	117.0	87.7	87.7	63.6
BDP270,271,272,273 LED74-4S/730	5624.0	46.0	122.3	1.122	0.07	0.053	0.053	0.039	120.4	91.2	91.2	67.1
BDP270,271,272,273 LED79-4S/730	6080.0	47.5	128.0	1.159	0.067	0.05	0.05	0.037	115.2	86.0	86.0	63.6
BDP270,271,272,273 LED84-4S/730	6384.0	51.0	125.2	1.244	0.068	0.051	0.051	0.037	117.0	87.7	87.7	63.6
BDP270,271,272,273 LED90-4S/730	6840.0	55.0	124.4	1.341	0.069	0.052	0.052	0.038	118.7	89.4	89.4	65.4
BDP270,271,272,273 LED94-4S/730	7144.0	58.0	123.2	1.415	0.069	0.052	0.052	0.038	118.7	89.4	89.4	65.4
BDP270,271,272,273 LED109-4S/730	8250.0	68.0	121.3	1.659	0.07	0.053	0.053	0.039	120.4	91.2	91.2	67.1
BDP270,271,272,273 LED120-4S/730	9000.0	76.0	118.4	1.854	0.072	0.054	0.054	0.04	123.8	92.9	92.9	68.8
BDP270,271,272,273 LED6-4S/722	468.0	5.9	79.3	0.144	0.108	0.081	0.081	0.059	185.8	139.3	139.3	101.5
BDP270,271,272,273 LED8-4S/722	624.0	7.4	84.3	0.18	0.101	0.076	0.076	0.056	173.7	130.7	130.7	96.3
BDP270,271,272,273 LED10-4S/722	770.0	9.1	84.6	0.222	0.101	0.076	0.076	0.056	173.7	130.7	130.7	96.3
BDP270,271,272,273 LED12-4S/722	936.0	10.2	91.8	0.249	0.093	0.07	0.07	0.051	160.0	120.4	120.4	87.7
BDP270,271,272,273 LED14-4S/722	1092.0	11.6	94.1	0.283	0.091	0.068	0.068	0.05	156.5	117.0	117.0	86.0
BDP270,271,272,273 LED16-4S/722	1232.0	13.4	91.9	0.327	0.093	0.07	0.07	0.051	160.0	120.4	120.4	87.7
BDP270,271,272,273 LED18-4S/722	1386.0	15.0	92.4	0.366	0.092	0.069	0.069	0.051	158.2	118.7	118.7	87.7
BDP270,271,272,273 LED20-4S/722	1540.0	16.8	91.7	0.41	0.093	0.07	0.07	0.051	160.0	120.4	120.4	87.7
BDP270,271,272,273 LED22-4S/722	1694.0	18.6	91.1	0.454	0.094	0.07	0.07	0.052	161.7	120.4	120.4	89.4
BDP270,271,272,273 LED24-4S/722	1848.0	20.5	90.1	0.5	0.095	0.071	0.071	0.052	163.4	122.1	122.1	89.4
BDP270,271,272,273 LED27-4S/722	2079.0	21.0	99.0	0.512	0.086	0.064	0.064	0.047	147.9	110.1	110.1	80.8
BDP270,271,272,273 LED30-4S/722	2310.0	23.0	100.4	0.561	0.085	0.064	0.064	0.047	146.2	110.1	110.1	80.8
BDP270,271,272,273 LED34-4S/722	2618.0	26.5	98.8	0.646	0.086	0.064	0.064	0.047	147.9	110.1	110.1	80.8

BDP270,271,272,273 LED35-4S/722	2695.0	27.5	98.0	0.671	0.087	0.065	0.065	0.048	149.6	111.8	111.8	82.6
BDP270,271,272,273 LED39-4S/722	2964.0	30.5	97.2	0.744	0.088	0.066	0.066	0.048	151.4	113.5	113.5	82.6
BDP270,271,272,273 LED40-4S/722	3040.0	31.5	96.5	0.768	0.088	0.066	0.066	0.048	151.4	113.5	113.5	82.6
BDP270,271,272,273 LED44-4S/722	3344.0	35.0	95.5	0.854	0.089	0.067	0.067	0.049	153.1	115.2	115.2	84.3
BDP270,271,272,273 LED45-4S/722	3420.0	36.0	95.0	0.878	0.09	0.068	0.068	0.05	154.8	117.0	117.0	86.0
BDP270,271,272,273 LED50-4S/722	3800.0	38.5	98.7	0.939	0.086	0.064	0.064	0.047	147.9	110.1	110.1	80.8
BDP270,271,272,273 LED55-4S/722	4256.0	42.5	100.1	1.037	0.085	0.064	0.064	0.047	146.2	110.1	110.1	80.8
BDP270,271,272,273 LED59-4S/722	4560.0	46.0	99.1	1.122	0.086	0.064	0.064	0.047	147.9	110.1	110.1	80.8
BDP270,271,272,273 LED64-4S/722	4800.0	50.0	96.0	1.22	0.089	0.067	0.067	0.049	153.1	115.2	115.2	84.3
BDP270,271,272,273 LED69-4S/722	5250.0	55.0	95.5	1.341	0.089	0.067	0.067	0.049	153.1	115.2	115.2	84.3
BDP270,271,272,273 LED74-4S/722	5550.0	59.0	94.1	1.439	0.091	0.068	0.068	0.05	156.5	117.0	117.0	86.0
BDP270,271,272,273 LED79-4S/722	6000.0	61.0	98.4	1.488	0.087	0.065	0.065	0.048	149.6	111.8	111.8	82.6
BDP270,271,272,273 LED84-4S/722	6300.0	65.0	96.9	1.585	0.088	0.066	0.066	0.048	151.4	113.5	113.5	82.6
BDP270,271,272,273 LED90-4S/722	6750.0	70.0	96.4	1.707	0.089	0.067	0.067	0.049	153.1	115.2	115.2	84.3
BDP270,271,272,273 LED94-4S/722	7050.0	74.0	95.3	1.805	0.09	0.068	0.068	0.05	154.8	117.0	117.0	86.0
BDP270,271,272,273 LED6-4S/830	468.0	5.4	86.7	0.132	0.099	0.074	0.074	0.054	170.3	127.3	127.3	92.9
BDP270,271,272,273 LED8-4S/830	624.0	6.8	91.8	0.166	0.093	0.07	0.07	0.051	160.0	120.4	120.4	87.7
BDP270,271,272,273 LED10-4S/830	780.0	8.2	95.1	0.2	0.09	0.068	0.068	0.05	154.8	117.0	117.0	86.0
BDP270,271,272,273 LED12-4S/830	936.0	9.2	101.7	0.224	0.084	0.063	0.063	0.046	144.5	108.4	108.4	79.1
BDP270,271,272,273 LED14-4S/830	1092.0	10.6	103.0	0.259	0.083	0.062	0.062	0.046	142.8	106.6	106.6	79.1
BDP270,271,272,273 LED16-4S/830	1248.0	12.0	104.0	0.293	0.082	0.062	0.062	0.045	141.0	106.6	106.6	77.4
BDP270,271,272,273 LED18-4S/830	1386.0	13.4	103.4	0.327	0.083	0.062	0.062	0.046	142.8	106.6	106.6	79.1
BDP270,271,272,273 LED20-4S/830	1540.0	15.0	102.7	0.366	0.083	0.062	0.062	0.046	142.8	106.6	106.6	79.1
BDP270,271,272,273 LED22-4S/830	1694.0	16.4	103.3	0.4	0.083	0.062	0.062	0.046	142.8	106.6	106.6	79.1
BDP270,271,272,273 LED24-4S/830	1848.0	18.0	102.7	0.439	0.083	0.062	0.062	0.046	142.8	106.6	106.6	79.1

BDP270,271,272,273 LED27-4S/830	2079.0	18.6	111.8	0.454	0.076	0.057	0.057	0.042	130.7	98.0	98.0	72.2
BDP270,271,272,273 LED30-4S/830	2310.0	20.5	112.7	0.5	0.076	0.057	0.057	0.042	130.7	98.0	98.0	72.2
BDP270,271,272,273 LED34-4S/830	2618.0	23.5	111.4	0.573	0.077	0.058	0.058	0.042	132.4	99.8	99.8	72.2
BDP270,271,272,273 LED35-4S/830	2695.0	24.5	110.0	0.598	0.078	0.058	0.058	0.043	134.2	99.8	99.8	74.0
BDP270,271,272,273 LED39-4S/830	3003.0	27.5	109.2	0.671	0.078	0.058	0.058	0.043	134.2	99.8	99.8	74.0
BDP270,271,272,273 LED40-4S/830	3080.0	28.0	110.0	0.683	0.078	0.058	0.058	0.043	134.2	99.8	99.8	74.0
BDP270,271,272,273 LED44-4S/830	3344.0	31.0	107.9	0.756	0.079	0.059	0.059	0.043	135.9	101.5	101.5	74.0
BDP270,271,272,273 LED45-4S/830	3420.0	32.0	106.9	0.78	0.08	0.06	0.06	0.044	137.6	103.2	103.2	75.7
BDP270,271,272,273 LED50-4S/830	3800.0	36.0	105.6	0.878	0.081	0.061	0.061	0.045	139.3	104.9	104.9	77.4
BDP270,271,272,273 LED55-4S/830	4256.0	38.0	112.0	0.927	0.076	0.057	0.057	0.042	130.7	98.0	98.0	72.2
BDP270,271,272,273 LED59-4S/830	4560.0	41.0	111.2	1.0	0.077	0.058	0.058	0.042	132.4	99.8	99.8	72.2
BDP270,271,272,273 LED64-4S/830	4864.0	44.5	109.3	1.085	0.078	0.058	0.058	0.043	134.2	99.8	99.8	74.0
BDP270,271,272,273 LED69-4S/830	5250.0	48.5	108.2	1.183	0.079	0.059	0.059	0.043	135.9	101.5	101.5	74.0
BDP270,271,272,273 LED74-4S/830	5550.0	52.0	106.7	1.268	0.08	0.06	0.06	0.044	137.6	103.2	103.2	75.7
BDP270,271,272,273 LED79-4S/830	6080.0	54.0	112.6	1.317	0.076	0.057	0.057	0.042	130.7	98.0	98.0	72.2
BDP270,271,272,273 LED84-4S/830	6384.0	58.0	110.1	1.415	0.078	0.058	0.058	0.043	134.2	99.8	99.8	74.0
BDP270,271,272,273 LED90-4S/830	6750.0	62.0	108.9	1.512	0.078	0.058	0.058	0.043	134.2	99.8	99.8	74.0
BDP270,271,272,273 LED94-4S/830	7050.0	65.0	108.5	1.585	0.079	0.059	0.059	0.043	135.9	101.5	101.5	74.0
BDP270,271,272,273 LED109-4S/830	8250.0	77.0	107.1	1.878	0.08	0.06	0.06	0.044	137.6	103.2	103.2	75.7

** Note that if the product is non-dimmable, only the values for "NC (No Control)" are valid; if the driver type is PSU, only the values for "NC (No Control)"and "PS (presence sensing)" for are valid.*

ANNEX

USE PHASE (B6) VALUES FOR DIFFERENT COUNTRY MIX

The table in this annex is useful for conversion and comparison of B6 values with other energy country mix. The Global Warming Potential Total (GWP tot) value is illustrated for each country. The value refers to 1 kwh.

Example on how to use the table:

This EPD was done according to a specific customer use location that can be read in the paragraph **PRODUCT USE AND MAINTENANCE (B1-B7).**

If for example the EPD was done according to EU energy mix and you want to see how the GWP total changes according to a Finland country energy mix, you can take the original value in the results table here highlighed in yellow:

ENVIRONMENTAL IMPACT DATA

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP – total[1)]	kg CO2e	5,88E+00	2,61E-01	-1,25E-01	6,02E+00	3,02E-01	5,41E-01	MND	MND	MND	MND	MND	4,06E+02	MND	MNR	1,77E-02	2,62E-01	1,88E-01	-1,09E+01

Divide that value according to the EU value from the following table (EU = 3,96E-01) and then multilplying for the Finland value from the same table (FINLAND = 2,70E-01).

Thus, the calculation of this example would be:

New B6 GWP tot for Finland = (4,06E+02 / 3,96E-01) x 2,70E-01 = 2,76 E+02

Country	GWP tot (kg CO2 eq. per kwh)
AUSTRALIA	9,59E-01
AUSTRIA	3,37E-01
BELGIUM	2,63E-01
CHINA	1,14E+00
DENMARK	2,91E-01
EU	3,96E-01
FINLAND	2,70E-01
FRANCE	8,77E-02
GERMANY	5,32E-01
HUNGARY	4,67E-01
IRELAND	4,26E-01
ITALY	3,94E-01
LATAM	3,50E-01
NAM	4,83E-01
NETHERLANDS	5,88E-01
NORWAY	2,59E-02
POLAND	1,05E+00

PORTUGAL	4,22E-01
ROW	7,32E-01
SPAIN	3,34E-01
SWEDEN	4,95E-02
SWITZERLAND	5,38E-02
UK	3,17E-01

Source Ecoinvent 3.8