LIFE CYCLE ASSESSMENT

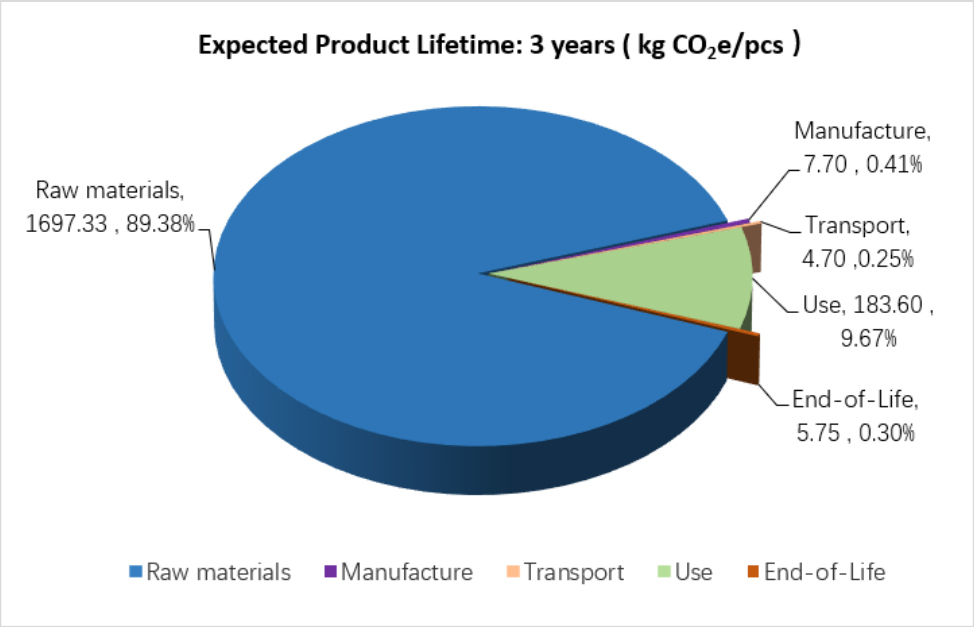
MMD (PHILIPS monitor manufacturer) has been evaluated LCA (life cycle assessment) with standards ISO 14040/14044 from cradle to grave, including raw material, manufacturing, distribute, usage and waste. The LCA analysis for example PHILIPS model 65BDL3650QE has been completed in June-2024 which is valid till June 2027.

A. Result

1. Evaluation summary of product environmental impact (IPCC 2021 GWP 100a)

Factor	Unit	Total	Raw Material	Manufacture	Transport	Use	End-of-life
Global warming	$kgCO_2e$	1899.08	1697.33	7.70	4.70	183.60	5.75

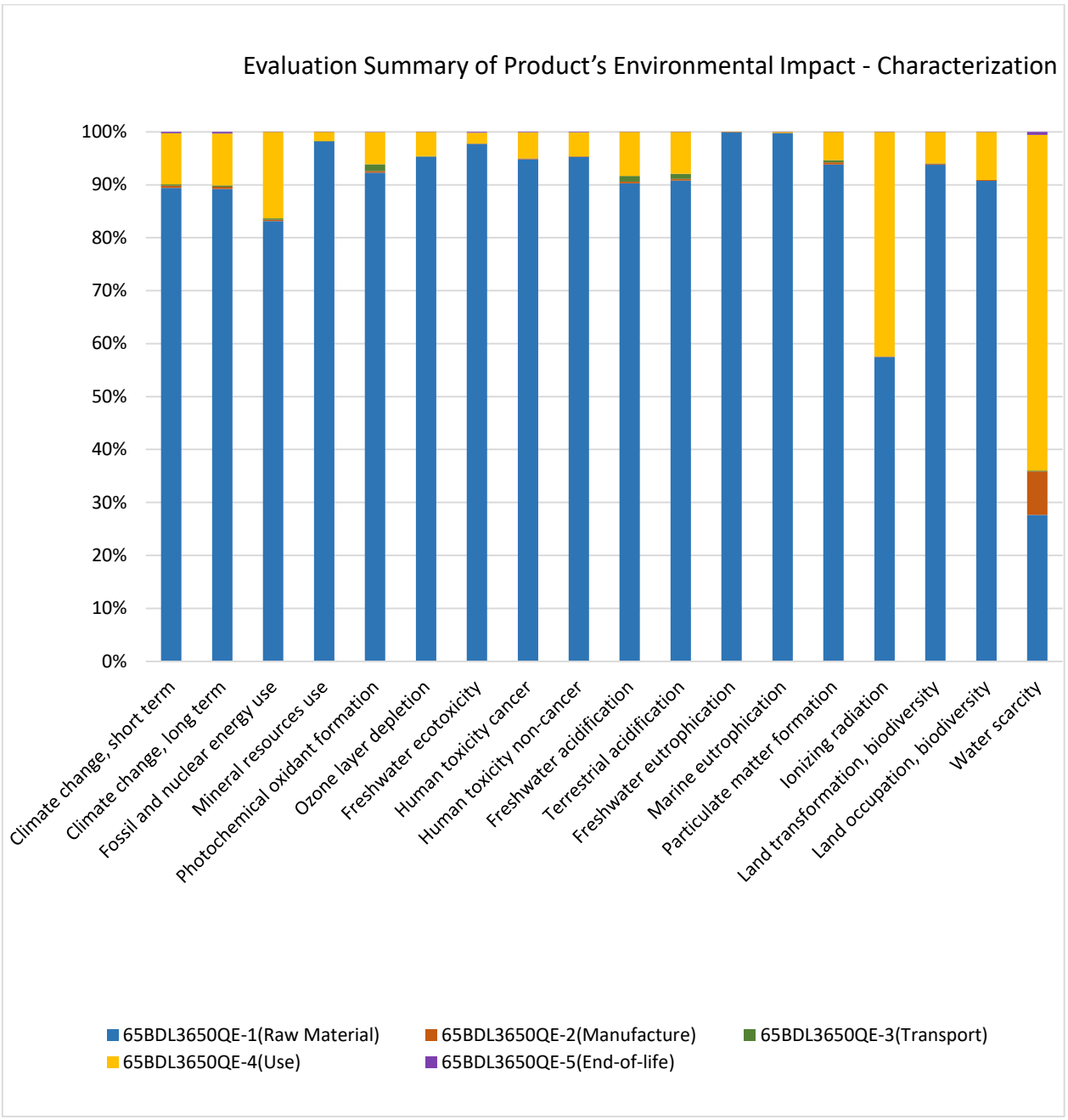
Table 1: Evaluation Summary of Product Environmental Impact



2. Evaluation summary of Product environmental impact- (IMPACT World+ Midpoint V1.03)

Table 2: Evaluation Summary of Product Environmental Impact

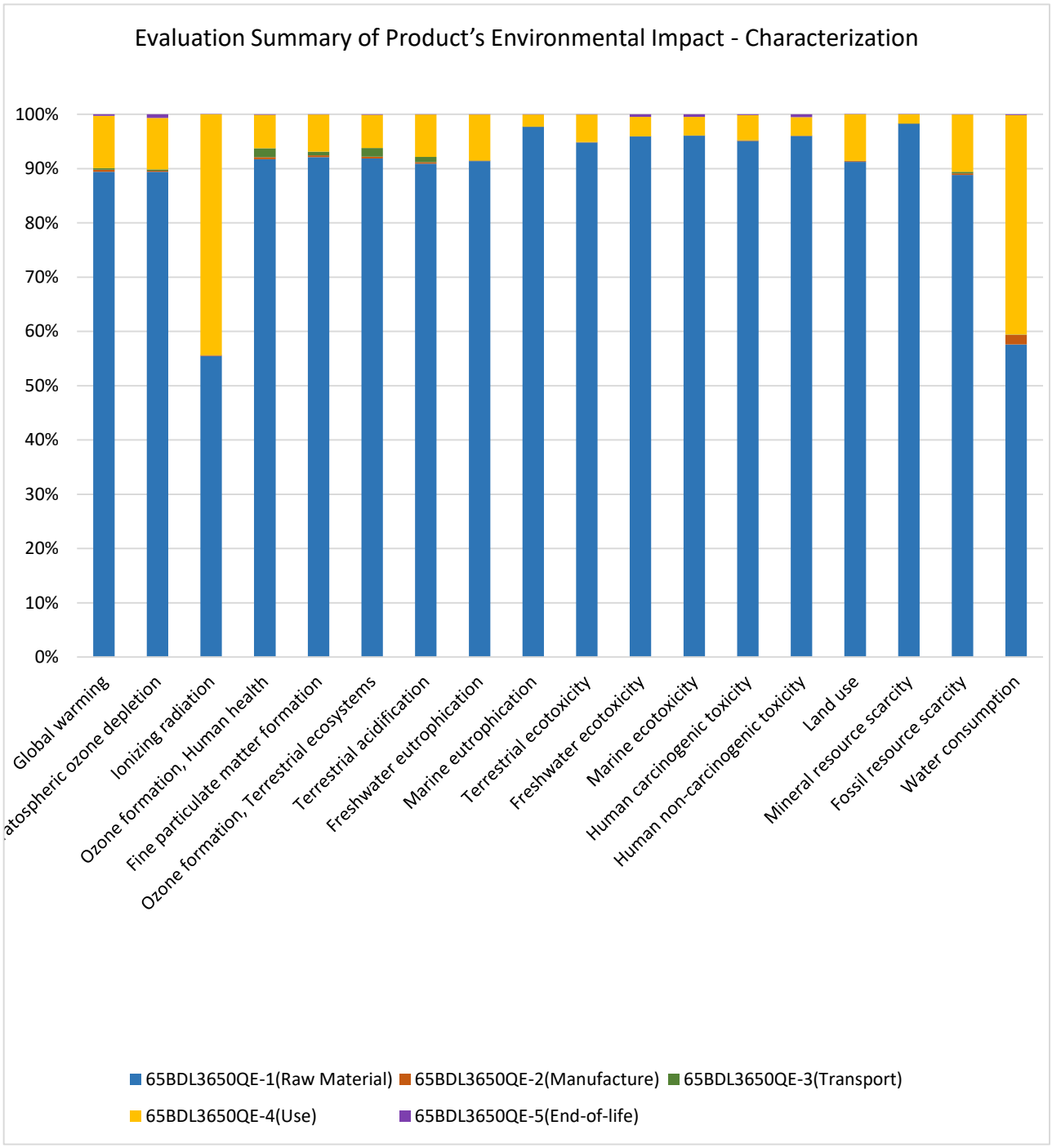
Factor	Unit	Total	Raw Material	Manufacture	Transport	Use	End-of-life
Climate change, short term	kg CO2 eq	1.95E+03	1.74E+03	7.95E+00	4.78E+00	1.88E+02	5.77E+00
Climate change, long term	kg CO2 eq	1.82E+03	1.62E+03	7.07E+00	4.52E+00	1.79E+02	5.75E+00
Fossil and nuclear energy use	MJ deprived	2.71E+04	2.25E+04	7.81E+01	6.14E+01	4.42E+03	3.73E+00
Mineral resources use	kg deprived	9.29E+01	9.12E+01	3.41E-02	7.35E-02	1.58E+00	2.05E-02
Photochemical oxidant formation	kg NMVOC eq	8.15E+00	7.52E+00	2.47E-02	1.05E-01	4.96E-01	4.07E-03
Ozone layer depletion	kg CFC-11 eq	8.27E-05	7.87E-05	5.56E-08	8.03E-08	3.78E-06	1.39E-08
Freshwater ecotoxicity	CTUe	2.51E+08	2.45E+08	1.18E+05	7.12E+03	5.07E+06	4.63E+05
Human toxicity cancer	CTUh	3.82E-04	3.62E-04	4.14E-07	2.64E-07	1.86E-05	5.36E-07
Human toxicity non-cancer	CTUh	1.23E-03	1.17E-03	1.19E-06	1.81E-07	5.54E-05	1.30E-06
Freshwater acidification	kg SO2 eq	2.48E-05	2.24E-05	8.06E-08	2.56E-07	2.07E-06	5.54E-09
Terrestrial acidification	kg SO2 eq	2.11E-02	1.92E-02	6.54E-05	2.11E-04	1.67E-03	4.77E-06
Freshwater eutrophication	kg PO4 eq	4.28E-01	4.27E-01	4.38E-06	1.02E-05	4.08E-04	6.41E-05
Marine eutrophication	kg N eq	4.31E+00	4.30E+00	4.89E-04	2.05E-03	9.53E-03	1.57E-04
Particulate matter formation	kg PM2.5 eq	1.11E+00	1.04E+00	5.09E-03	4.46E-03	5.91E-02	2.22E-04
Ionizing radiation	Bq C-14 eq	2.78E+04	1.60E+04	3.45E+01	2.77E+00	1.18E+04	5.89E-01
Land transformation, biodiversity	m2yr arable	3.99E-01	3.74E-01	7.54E-04	2.72E-04	2.38E-02	6.45E-05
Land occupation, biodiversity	m2yr arable	5.65E+01	5.13E+01	8.50E-02	1.54E-02	5.12E+00	9.53E-03
Water scarcity	m3 world eq	7.39E+01	2.04E+01	6.07E+00	1.30E-01	4.69E+01	4.35E-01


Evaluation Summary of Product's Environmental Impact - Characterization
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Climate change, short term
Climate change, long term
Fossil and nuclear energy use
Mineral resources use
Photochemical oxidant formation
Ozone layer depletion
Freshwater ecotoxicity
Human toxicity cancer
Human toxicity non-cancer
Freshwater acidification
Terrestrial acidification
Freshwater eutrophication
Marine eutrophication
Particulate matter formation
Ionizing radiation
Land transformation, biodiversity
Land occupation, biodiversity
Water scarcity
65BDL3650QE-1(Raw Material)
65BDL3650QE-2(Manufacture)
65BDL3650QE-3(Transport)
65BDL3650QE-4(Use)
65BDL3650QE-5(End-of-life)

3. Evaluation summary of Product environmental impact- (ReCiPe2016 Midpoint (H) V1.08)

Table 3: Evaluation Summary of Product Environmental Impact

Factor	Unit	Total	Raw Material	Manufacture	Transport	Use	End-of-life
Global warming	kg CO2 eq	1.95E+03	1.74E+03	7.95E+00	4.78E+00	1.88E+02	5.77E+00
Stratospheric ozone depletion	kg CFC11 eq	9.17E-04	8.20E-04	1.77E-06	2.30E-06	8.72E-05	5.90E-06
Ionizing radiation	kBq Co-60 eq	2.46E+02	1.36E+02	3.24E-01	2.18E-02	1.09E+02	4.99E-03
Ozone formation, Human health	kg NOx eq	5.61E+00	5.15E+00	2.17E-02	9.12E-02	3.48E-01	3.64E-03
Fine particulate matter formation	kg PM2.5 eq	4.19E+00	3.86E+00	1.24E-02	2.85E-02	2.88E-01	7.21E-04
Ozone formation, Terrestrial ecosystems	kg NOx eq	5.86E+00	5.38E+00	2.19E-02	9.24E-02	3.60E-01	3.68E-03
Terrestrial acidification	kg SO2 eq	9.37E+00	8.52E+00	2.80E-02	8.85E-02	7.33E-01	1.87E-03
Freshwater eutrophication	kg P eq	2.06E+00	1.89E+00	1.59E-03	1.77E-04	1.75E-01	9.99E-04
Marine eutrophication	kg N eq	5.58E-01	5.45E-01	1.03E-04	9.49E-05	1.25E-02	1.25E-04
Terrestrial ecotoxicity	kg 1,4-DCB	2.18E+04	2.06E+04	1.75E+01	1.16E+01	1.10E+03	2.86E+00
Freshwater ecotoxicity	kg 1,4-DCB	6.56E+02	6.29E+02	3.31E-01	3.95E-02	2.34E+01	3.00E+00
Marine ecotoxicity	kg 1,4-DCB	8.62E+02	8.28E+02	4.20E-01	5.94E-02	2.97E+01	3.91E+00
Human carcinogenic toxicity	kg 1,4-DCB	2.86E+02	2.72E+02	3.07E-01	2.09E-01	1.33E+01	3.66E-01
Human non-carcinogenic toxicity	kg 1,4-DCB	1.04E+04	9.99E+03	5.49E+00	6.92E-01	3.56E+02	5.27E+01
Land use	m2a crop eq	7.23E+01	6.59E+01	1.01E-01	3.36E-02	6.19E+00	7.42E-03
Mineral resource scarcity	kg Cu eq	4.43E+01	4.35E+01	1.06E-02	9.58E-03	7.41E-01	2.15E-03
Fossil resource scarcity	kg oil eq	4.82E+02	4.28E+02	1.58E+00	1.33E+00	5.09E+01	7.80E-02
Water consumption	m3	8.37E+00	4.82E+00	1.49E-01	4.63E-03	3.38E+00	1.23E-02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Ionizing radiation
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Fine particulate matter formation
Ozone formation, Terrestrial ecosystems
Terrestrial acidification
Freshwater eutrophication
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65BDL3650QE-5(End-of-life)

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