Table S3. Impact categories used when assessing complex technical devices

Object	Source	Number of impact categories	Categories of impact	Impact calculation		Information sources			
				Method	Software	Database	Manufactu-rers' data	Own research	Publications by other researchers
Offshore wind turbine (Brazil, 2022)	**[20]**	2	GWP, total energy demand	Calculation		Ecoinvent	+	-	+
Onshore wind turbine (USA, 2014)	**[22]**	18	Fossil resource depletion, metal depletion, natural land conversion, occupation of urban lands, occupation of agricultural lands, marine ecotoxicity, freshwater ecotoxicity, terrestrial acidification, climate-ecosystem change, terrestrial ecotoxicity, ionizing radiation, freshwater eutrophication, particulate matter formation, photochemical oxidant formation, water depletion, human toxicity, ozone depletion, climate change-human health	ReCiPe 2008 v. 1.03	SimaPro 7.3	Ecoinvent	-	-	+
Onshore wind turbine (USA, 2019)	**[23]**	12	GWP, smog, ozone depletion, acidification, eutrophication, carcinogenic and non-carcinogenic substances, ecotoxicity, respiratory effects, fossil fuel depletion, aggregate energy demand, water depletion index	-	SimaPro 8	Ecoinvent	+	-	+
Onshore wind turbine (USA, 2022)	**[24]**	2	GWP, total energy demand	-	SimaPro 9.1	Ecoinvent 3.6, US-EI 2.2	-	-	+
Wind power plant (Jordan, 2019)	**[25]**	9	GWP, smog, ozone depletion, acidification, eutrophication, carcinogenic and non-carcinogenic substances, ecotoxicity, respiratory effects	-	SimaPro 7.1	Ecoinvent	+	-	+
Onshore wind turbine (Iran, 2018)	**[26]**	1	Total energy demand	Calculation		-	+	-	+
Electric vehicle (Canada, 2018)	**[29]**	2	GWP, total energy demand	Calculation		European Energy Agency, 2016	+	-	+
Electric vehicle (EU, 2022)	**[30]**	5	GWP, formation of fine particulate matter, carcinogenic and non-carcinogenic substances, mineral resource deficiency	-	SimaPro	Ecoinvent 3.6, BRUSA, 2019	+	-	+
Hydrogen fuel cell power plant for a	**[31]**	2	CO_2 emissions, energy costs	Methodology for assessing cars	-		-	-	+

bus (Russian Federation, 2021)				and their power plants FSUE «NAMI»		Ecoinvent v.3, GREET, ELPICA			
Hydrogen fuel cell propulsion system for bus (Russian Federation, 2021)	**[31]**	2	CO_2 emissions, energy costs				-	-	+
Passenger plane (Switzerland, 2015)	**[32]**	4	GWP, soil acidification, photochemical oxidant formation, particulate matter formation	-	SimaPro 8	Ecoinvent 3.1	-	+	+
Passenger plane (UK, 2013)	**[33]**	11	Fossil fuels, minerals, land use, acidification/eutrophication, ecotoxicity, ozone depletion, radiation, climate change, organic and inorganic substances, carcinogens	Eco-Indicator 99	SimaPro 7.1.8	Ecoinvent v.2	-	-	+
Gas turbine power plant (Brazil, 2003)	**[14]**	11	Climate change, ozone depletion, acidification/eutrophication, carcinogens, radiation, ecotoxicity, land use, respiratory organic and inorganic substances, fossil fuels, minerals	-	SimaPro 5.1	Ecoinvent	+	-	+
Combined cycle steam power plant (Indonesia, 2021)	**[15]**	8	Acidification, eutrophication, GWP, human toxicity potential, marine aquatic ecotoxicity, ozone depletion, photochemical oxidation, terrestrial ecotoxicity	Calculation	OpenLCA 1.9	Ecoinvent	+	+	+
Combined cycle steam power plant (Indonesia, 2022)	**[16]**	13	GWP: fossil fuel, biogenic, land use change, general, acidification potential, eutrophication potential: terrestrial, freshwater, seawater, photochemical oxidant generation potential, ozone depletion potential, abiotic depletion potential: elements, fossil fuels, water scarcity footprint	-	OpenLCA 1.11	Ecoinvent 3.7.1	+	-	+
Combined cycle steam power plant (China, 2023)	**[17]**	2	GHG emissions, NOx	Calculation		-	+	-	+
Combined cycle power plant (Italy, 2019)	**[18]**	6	GHG emissions, ozone-depleting gases, ground-level ozone formation, acidification, eutrophication, fossil resource depletion	Calculation		Ecoinvent	+	+	+
Thermal power plant (Russian Federation, 2021)	**[19]**	6	Conditional mass of harmful substances in wastewater, reduced mass of harmful substances released into the atmosphere, GHG emissions, thermal pollution, electricity consumption	Methodology «Determining the economic efficiency of environmental protection measures..»	-	-	+	-	+