

Energy breakdown in own operations

In analyzing the energy breakdown of G-Star’s own and operated sites, we employed the same comprehensive dataset utilized for the company's 2022 carbon footprint calculations. This examination integrates both primary data and proxy data to ensure an accurate and detailed representation of energy consumption across our sites. G-Star is committed to understanding and managing energy use effectively, laying the groundwork for informed sustainability initiatives and targeted reductions in our environmental impact.

It is important to note that G-Star does not generate energy in any of its own and operated sites. 100% of energy types are purchased via local contracts with utility providers.

In 2022, G-Star’s owned and operated sites had the following energy consumption:

Table 1 – Energy breakdown in own operations

Energy Type	Consumption	Unit
Total purchased electricity	7,066	MWh
Total purchased cooling	91	MWh
Natural gas	107,342	m3

These three energy sources were distributed geographically, as per below:

Purchased electricity:

Purchased electricity was consumed in a total of 15 different countries, with Netherlands being the country with the biggest consumption, followed by France, Belgium, United States, and Japan.

Table 2 – Purchased electricity consumption breakdown per country

Purchased Electricity	Consumption (MWh)
Austria	30
Bangladesh	46
Belgium	528
Canada	70

China	2
France	689
Germany	144
Ireland	2
Japan	365
Macau	11
Netherlands	4,578
South Africa	84
Spain	5
Switzerland	56
United States	456
Total	7,066

Natural gas:

Seven different countries consumed natural gas, with Netherlands, Belgium and Switzerland being significant consumption areas.

Table 3 – Natural gas consumption breakdown per country

Natural Gas	Consumption (m3)
Austria	458
Belgium	12,523
Canada	1,901
Germany	2,039
Netherlands	83,396
Switzerland	4,290
United States	2,735
Total	107,342

Purchased cooling:

Japan and South Africa were responsible for 100% of the purchased cooling consumption.

Table 4 – Purchased cooling consumption breakdown per country

Purchased cooling	Consumption (MWh)
Japan	69
South Africa	22
Total	91

Energy breakdown in the supply chain

The energy data of the supply chain has been analyzed using the third-party verified data from the 2021 Higg Facility Environmental Module (FEM), which is the same data set used for the 2022 carbon footprint calculations. This analysis aimed to identify the sources of energy and the contribution of each source in different countries where G-Star has suppliers. The data covers eleven countries where G-Star has manufacturing activities. In terms of number of factories within the supply chain, this data represents 59 percent of the suppliers (Tier 1 and 2); however, in terms of production, it accounts for 76 percent of 2022 G-Star collection.

Regarding total energy consumption, Japan has the largest energy footprint, followed by Tunisia, China, Bangladesh, and India. In terms of energy sources, LNG is the largest contributor, followed by diesel, natural gas, LPG, and purchased electricity.

Table 1 - Supply chain energy breakdown

Country	Biomass Generation (MJ)	Biomass wood (MJ)	Coal (MJ)	Diesel (MJ)	Purchased electricity (MJ)	Fuel Oil (MJ)	LPG (MJ)	LNG (MJ)	Natural Gas (MJ)	Petrol (MJ)	Propane (MJ)	Purchase renewable (MJ)	Solar photovoltaic (MJ)	Purchased steam (MJ)	Wind (MJ)	Total Energy (MJ)
Bangladesh	0	0	0	2.309.721	3.675.111	3.675.111	28.234	0	82.879.547	28.702	0	0	49.769	0	0	92.646.195
China	591.357	0	19.231.557	2.239.446	10.017.142	0	49.854.058	0	6.706.263	112.092	0	0	186.716	15.294.622	0	104.233.254
India	405.110	844.360	8.477.357	870.000	5.445.089	2.406.864	17.310.317	0	0	180	19.150.390	35.590	199.436	70.857	0	55.215.551
Indonesia	0	0	0	1.702.492	32.077	0	0	0	0	2.545	0	0	0	0	0	1.737.114
Italy	0	0	0	32.977	10.010.184	0	0	0	13.737.753	0	0	0	0	0	0	23.780.914
Japan	0	0	0	7.010	4.635.872	0	35.204.353	7.355.823.348	0	18.951	0	0	26.865	0	0	7.395.716.398

Mauritius	0	0	1.600.618	41.276	1.123.194	381.938	102.388	0	0	15.860	0	0	0	0	0	3.265.274
Pakistan	1.083.862	0	0	389.493	122.144	0	133.517	0	32.207.577	0	0	0	0	0	0	33.936.593
Tunisia	0	0	0	1.160.025.985	3.633.443	0	0	0	12.154.680	0	0	0	0	0	0	1.175.814.108
Turkey	0	0	18.979.656	43.351	3.560.281	0	21.598	0	13.530.795	67	0	509.700	163.873	0	768.361	37.577.682
Vietnam	0	0	0	114.474	7.488.853	0	560.015	0	0	159.057	0	0	4.858	9.594.016	0	17.921.273
Total	2.080.330	844.360	48.289.188	1.167.776.225	49.743.390	6.463.912	103.214.481	7.355.823.348	161.216.615	337.455	19.150.390	545.291	631.516	24.959.494	768.361	8.941.844.356

Breaking down the energy sources per main sourcing countries: In Bangladesh, circa 90 percent of energy comes from natural gas, with purchased electricity, fuel oil, and diesel contributing 3.97, 3.97, and 2.49 percent respectively. In China, LPG is the most prevalent energy source, contributing circa 48 percent, while other notable sources include purchased steam and coal, which account for 14.67 and 18.45 percent respectively. In terms of renewable energy purchases, Turkey has the highest percentage, which is 1.36 percent of the total energy contribution. Turkey is also the only country where wind energy is available, contributing 2.04 percent to the country's total energy consumption. In Pakistan, the main source is natural gas, which accounts for 94.91 percent, while in Japan, LNG contributes 99.46 percent of the total energy.

Table 2 – Energy breakdown (%)

Country	Biomass Generation	Biomass wood	Coal	Diesel	Purchased electricity	Fuel Oil	LPG	LNG	Natural Gas	Petrol	Propane	Purchase renewable	Solar photovoltaic	Purchased steam	Wind	Total
Bangladesh				2,49	3,97	3,97	0,03	0,00	89,46	0,03	0,00	0,00	0,05	0,00	0,00	100
China	0,57	0,00	18,45	2,15	9,61	0,00	47,83	0,00	6,43	0,11	0,00	0,00	0,18	14,67	0,00	100
India	0,73	1,53	15,35	1,58	9,86	4,36	31,35	0,00	0,00	0,00	34,68	0,06	0,36	0,13	0,00	100
Indonesia	0,00	0,00	0,00	98,01	1,85	0,00	0,00	0,00	0,00	0,15	0,00	0,00	0,00	0,00	0,00	100
Italy	0,00	0,00	0,00	0,14	42,09	0,00	0,00	0,00	57,77	0,00	0,00	0,00	0,00	0,00	0,00	100
Japan	0,00	0,00	0,00	0,00	0,06	0,00	0,48	99,46	0,00	0,00	0,00	0,00	0,00	0,00	0,00	100
Mauritius	0,00	0,00	49,02	1,26	34,40	11,70	3,14	0,00	0,00	0,49	0,00	0,00	0,00	0,00	0,00	100
Pakistan	3,19	0,00	0,00	1,15	0,36	0,00	0,39	0,00	94,91	0,00	0,00	0,00	0,00	0,00	0,00	100
Tunisia	0,00	0,00	0,00	98,66	0,31	0,00	0,00	0,00	1,03	0,00	0,00	0,00	0,00	0,00	0,00	100
Turkey	0,00	0,00	50,51	0,12	9,47	0,00	0,06	0,00	36,01	0,00	0,00	1,36	0,44	0,00	2,04	100
Vietnam	0,00	0,00	0,00	0,64	41,79	0,00	3,12	0,00	0,00	0,89	0,00	0,00	0,03	53,53	0,00	100

Coal phase-out: As signatories of the UN Fashion Charter, G-Star has committed to phase-out coal within its supply chain (Tier 1 and 2) as soon as possible and latest by 2030, including no new coal power by January 2023 at the latest (Commitment #8 of the [Charter](#)). Coal represented 0,5% of total energy consumed within the supply chain.

Table 3 – Renewable energy breakdown

Renewable category	Consumption (MJ)
Biomass	2,080,330
Biomass wood	844,360
Purchase renewables	545,291
Solar photovoltaic	631,516
Wind	768,361
Total	4,869,857

Renewable energy consumption: For G-Star, renewable energy is energy that is generated from natural processes that are continuously replenished. This includes sources like sunlight, wind, rain, waves, and geothermal heat. Unlike fossil fuels, which are finite and can deplete over time, renewable energy sources are virtually inexhaustible. Renewable energy represented 0.05% of total energy usage across the supply chain. The breakdown of renewable energy consumption within the supply chain reveals that biomass is the most significant contributor, accounting for approximately 43% of the total renewable energy used. Biomass wood follows at 17%, making biomass-based sources collectively the dominant form of renewable energy. Wind energy also makes a notable contribution at 16%, closely followed by solar photovoltaic at 13%. Purchased renewable energy sources contribute the least, at 11%.

Investment for renewable energy: G-Star is committed to limiting global temperature rise to 1.5°C above pre-industrial levels, having set Science Based Targets (SBTs) validated by SBTi (Science Based Targets initiative). Given that most of G-Star's emissions originate from the supply chain, the company is actively engaged in efforts to decarbonize this sector. A primary strategy involves increasing the use of renewable energy, which requires substantial support for suppliers. To aid suppliers in this transition, G-Star participates in programs that facilitate collaboration between stakeholders and the supply chain through both direct and indirect investments.

A notable initiative is the engagement of six suppliers in the Carbon Leadership Program (CLP), an effective and innovative program developed by Reset Carbon and the Apparel Impact Institute (aii). This program focuses on driving significant reductions in carbon emissions within the supply chain by setting facility-level carbon reduction targets, which also include energy efficiency and renewable energy action plans.

Additionally, G-Star has nominated four facilities to participate in the Cascale (formerly Sustainable Apparel Coalition) 'Top Action Club' initiative. Cascale, in partnership with GIZ (The Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH or German Development Agency), through its Project Development Program (PDP), aims to accelerate decarbonization efforts. This is achieved by conducting pre-feasibility studies for rooftop solar applications, supporting manufacturing units in developing technically sound and financially attractive rooftop solar projects.