# ENERGY

| Indicator | |
|---|---|
| 302-1 | 302-1 Energy consumption within the organization (GJ) |
| DJSI 2.3.3 | Total energy consumption |

Explain what standards, methodologies, and assumptions were used in the calculation, the source of the factors used, and the link from which the information was taken.

For the CCA region, consumption and LCVs (Lower Calorific Values) of fossil fuels and other fuels used in the plants and mines, as well as the consumption of electric power, were supplied by the facilities.
For the Colombia region, fuel consumptions for the process inside the kiln were extracted from SAP, as well as electric power consumption. Quarry and third-party diesel consumptions were supplied by the facilities.
For the USA region, all fossil and alternative fuel consumption and LCVs (lower caloric values) used in the process of the kiln were supplied by the plants, as well as the electric power consumption

| Energy consumption within the organization (Cement) GJ | 2019 | 2020 | 2021 | 2022 |
|---|---|---|---|---|
| Coal consumption | 22.612.479 | 21.435.283 | 25.403.542 | 25.626.426 |
| Natural gas consumption | 8.944.215 | 5.049.408 | 6.000.818 | 7.246.011 |
| Petcoke | 2.303.126 | 2.749.205 | 2.755.204 | 2.807.538 |
| Other fuels | 821.199 | 759.414 | 816.080 | 816.053 |
| *Fueloil* | | | 170.832 | 148.071 |
| *Diesel* | | | 631.336 | 659.165 |
| *Gasoline* | | | 6.973 | 5.609 |
| *Other* | | | 6.938 | 3.209 |
| **Primary energy from non-renewable sources** | **34.681.019** | **29.993.310** | **34.975.644** | **36.496.028** |
| Biomass | 273.024 | 557.090 | 612.734 | 629.854 |
| Other renewable fuels | 0 | 0 | 0 | 0 |
| **Primary energy from renewable sources** | **273.024** | **557.090** | **612.734** | **629.854** |
| Llantas | 341.537 | 280.140 | 380.617 | 237.102 |
| Reduse-derived fuel - RDF including plastic material | 644.599 | 440.610 | 750.068 | 358.527 |
| Other fuels | 724.417 | 659.063 | 555.426 | 930.967 |
| *Mixed industrial waste* | | | 476.212 | 796.427 |
| *Waste oils and others* | | | 79.214 | 134.540 |
| **Primary energy from alternative sources** | **1.710.553** | **1.379.813** | **1.686.110** | **1.526.597** |
| Energy consumed from self-generated hydroelectric power | 0 | 0 | 0 | 0 |
| Energy consumed from self-generated thermoelectric power | 1.355.008 | 1.361.580 | 1.446.357 | 1.583.848 |

| Energy consumption within the organization (Cement) GJ | 2019 | 2020 | 2021 | 2022 |
|---|---|---|---|---|
| **Energy consumed from self-generating power plants** | **1.355.008** | **1.361.580** | **1.446.357** | **1.583.848** |
| Consumption of electricity purchased from the network | 4.259.866 | 3.767.077 | 4.212.449 | 4.296.269 |
| Consumption of electricity transferred by other plants | 0 | 0 | 0 | 0 |
| Electricity from the network | 4.259.866 | 3.767.077 | 4.212.449 | 4.296.269 |
| Total thermal energy | 36.664.595 | 31.930.213 | 37.274.489 | 38.652.479 |
| Total electrical energy | 5.614.874 | 5.128.657 | 5.658.806 | 5.880.117 |
| **Total energy consumption in cement** | **42.279.469** | **37.058.870** | **42.933.295** | **44.532.596** |

Explain what standards, methodologies, and assumptions were used in the calculation, the source of the factors used, and the link from which the information was taken.

Lower Calorific Value (LCV) for diesel and gasoline found in: Units & Conversion Fact Sheet (MIT)

| Energy consumption within the organization (Concrete) GJ | 2019 | 2020 | 2021 | 2022 |
|---|---|---|---|---|
| Diesel oil consumption | 1.711.147 | 972.006 | 1.047.704 | 1.010.554 |
| Other fuels (specify the type of fuels included in this category in the comments box). | 0 | 0 | 2 | 0 |
| **Primary energy from non-renewable sources** | **1.711.147** | **972.006** | **1.047.706** | **1.010.554** |
| Purchased electricity consumption | 125.364 | 130.258 | 115.484 | 107.097 |
| Purchased electricity | 125.364 | 130.258 | 115.484 | 107.097 |
| Total thermal energy | 1.711.147 | 972.006 | 1.047.706 | 1.010.554 |
| Total electrical energy | 125.364 | 130.258 | 115.484 | 107.097 |
| **Total energy consumption in particular** | **1.836.511** | **1.102.264** | **1.163.190** | **1.117.651** |

Total energy consumption in particular

Lower Calorific Value (LCV) for diesel and gasoline found in: Units & Conversion Fact Sheet (MIT).

| Energy consumption within the organization (Aggregates) GJ | 2019 | 2020 | 2021 | 2022 |
|---|---|---|---|---|
| Diesel oil consumption | 54.099 | 37.862 | 57.644 | 70.208 |
| Other fuels | 0 | 0 | 48 | 90 |
| *Fueloil* | | | 40 | 0 |
| *Gasoline* | | | 8 | 90 |
| **Primary energy from non-renewable sources** | **54.099** | **37.862** | **57.693** | |
| Purchased electricity consumption | 17.687 | 12.673 | 11.608 | 12.495 |
| Purchased electricity | 17.687 | 12.673 | 11.608 | 12.495 |
| Total thermal energy | 54.099 | 37.862 | 57.693 | 70.297 |
| Total electrical energy | 17.687 | 12.673 | 11.608 | 12.495 |
| **Total energy consumption in aggregates** | **71.786** | **50.535** | **69.301** | **82.792** |

Explain what standards, methodologies, and assumptions were used in the calculation, the source of the factors used, and the link from which the information was taken..

The LCV (lower calorific value) of coal and natural gas were supplied by the plants. Diesel and Gasoline: Units & Conversion Fact Sheet (MIT)

| Energy consumption within the organization (Power Generation) GJ | 2019 | 2020 | 2021 | 2022 |
|---|---|---|---|---|
| Coal consumption | 2.770.590 | 2.431.087 | 3.031.866 | 3.372.976 |
| Natural gas consumption | 2.024.470 | 1.962.198 | 1.985.163 | 2.209.709 |
| Other fuels | 219.319 | 221.021 | 173.609 | 120.747 |
| *Fueloil* | | | 55 | 26 |
| *Diesel* | | | 173.554 | 120.721 |
| **Primary energy from non-renewable sources** | **5.014.380** | **4.614.307** | **5.190.638** | **5.703.431** |
| **Total energy consumption in power generation** | **5.014.380** | **4.614.307** | **5.190.638** | **5.703.431** |

| Energy consumption within the organization (Company) GJ | 2019 | 2020 | 2021 | 2022 |
|---|---|---|---|---|
| **Energy sold (Electricity** | 161.688 | 211.309 | 41.602 | 47.578 |
| **Total energy consumption within the organization (GJ** | **47.685.449** | **41.253.086** | **47.868.464** | **49.805.044** |

| DJSI Total Power Consumption | 2019 | 2020 | 2021 | 2022 |
|---|---|---|---|---|
| **Total non-renewable energy consumption (A+B+C-E** | **12.368.809** | **10.579.857** | **12.123.511** | **13.125.127** |
| **Total renewable energy consumption (MWh)** | **550.993** | **538.029** | **734.784** | **709.608** |
| **Total energy consumption (MWh)** | **12.694.966** | **10.921.163** | **12.562.012** | **13.834.736** |

| SASB EM-CM-130a.1. (1) Total energy consumed, (2) percentage of grid electricity, (3) alternative percentage, (4) renewable percentage | 2021 | 2022 |
|---|---|---|
| Total energy consumption within the organization (GJ/year) | 47.868.464 | 49.805.044 |
| The percentage of energy consumed that was supplied from grid electricity | 9,07% | 8,87% |
| The percentage of energy consumed that came from alternative sources, in terms of their energy content | 3,52% | 4,33% |
| The percentage of energy consumed that is renewable energy | 0,7% | 0,8% |

# ENERGY

| Indicator | |
|---|---|
| 302-4 | Reduction of energy consumption |

| Initiative | Reference year for calculating the reduction | Reduction in energy consumption in MJ by 2021 | Indicate whether it is fuel or energy consumption | Investments (COP) | Investments (US) | Savings (COP) | Savings (USD) | Description of the initiative |
|---|---|---|---|---|---|---|---|---|
| COL: Increase in use of Artificial Pozzolan | *2021* | 2.975.407 | Energy | **6.385.680.000** | **1.500.000** | **305.367.698** | **71.731** | The greater use of clays and the consequent reduction of clinker (-1.9% in cement), has allowed to impact amicably the energy index up to cement in silos. |
| RCCA - HN: Injection of H2 into the furnace | *2021* | 10.760 | Fuel consumption | **3.831.408.000** | **900.000** | **242.474.912** | **56.958** | The industrial test of H2 injection in the Pia furnace is implemented with the following results:<br>- Increased productivity of clinker (3%)<br>- reduction of petocoke consumption and therefore reduction of caloric consumption (2% -20 Kcal/kg KK).<br>- Increase in % replacement of whole tires (21%) |
| RCCA - RDOM: Hot Gas Generator | *2021* | 239.623 | Energy consumption | **1.875.891.414** | **440.648** | **334.809.717** | **78.647** | The hot gas generator project was implemented to increase the productivity of the plant. The increase in tons produced is 2,030. This number is affected by the stoppages that the plant had. |
| RCCA - PAN: Implementation of ash post-addition | *2021* | 210.214 | Energy consumption | **725.551.008** | **170.432** | **19.733.239** | **4.635** | The implementation of ash post-addition in mill 3 was successful, giving as caloric savings of 586 Gl of bunker and electric of 58,393 kWh. |
| RCCA - PAN: Implementation of ash post-addition | *2021* | 85.860 | Fuel consumption | **725.551.008** | **170.432** | **2.996.381** | **704** | The implementation of ash post-addition in mill 3 was successful, giving as caloric savings of 586 Gl of bunker and electric of 58,393 kWh. |
| Total | | 3.521.864 | | **13.544.081.431** | **3.181.513** | **905.381.946** | **212.675** | |