

Workshop on Capacity Development for Mainstreaming Energy SDGs, Targets and Indicators into Statistical Programmes in Selected LA Countries

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UNSD Energy Statistics



Energy Balances – Applications (derived indicators)

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Energy indicators – economic dimension

Economic dimension:

- → Overall Use: Energy use per capita
 - → Overall Productivity: Energy use per unit of GDP
 - → Supply Efficiency: Efficiency of energy conversion and distribution
 - → Production: Reserves (/resources)-to-production ratio
 - \rightarrow End Use:
 - → Industrial energy intensities
 - → Agricultural energy intensities
 - → Service/ commercial energy intensities
 - → Household energy intensities
 - → Transport energy intensities
 - → Diversification (Fuel Mix):
 - → Fuel shares in energy and electricity
 - \rightarrow Non-carbon energy share in energy and electricity
 - \rightarrow Renewable energy share in energy and electricity

→ Imports: Net energy import dependency

Energy Indicators for Sustainable Development: Guidelines and Methodologies



| | Overall u | se/ | Ecuador Terajoules | Electricity Electricité | Total energy Energie totale |
|---|--|--|--|-----------------------------|--------------------------------|
| > Extra | a info (not found ir | $\frac{1}{2}$ | 2 Production of primary energy Imports Exports | 011 31100 3143 -30 | 216508 816172 |
| | se per capita; GD | P fc₅ | Marine / aviation bunkers Stock changes Total energy supply | 34207 | |
| ECO1: Energy use per capita Brief Definition | Energy use in terms of total primary energy supply (TPES, total final consumption (TFC) and final electricity use per capita | 8 9 10 | | 38282 | -84368 |
| Units | Energy: tonnes of oil equivalent (toe) per capita Electricity: kilowatt-hours (kWh) per capita | 11 12 13 | 2 Oil refineries | | 4249 . 222 |
| Alternative Definitions | None | 14 | Electric power plants | 38282 | -78252 |
| Agenda 21 | Chapter 4: Consumption and production patterns | 15 | 01 | | |
| | | 17 18 19 | Net transfers Energy industries own use Losses in transport and distributio Cons. for non-energy uses | -10822 n -11844 | |
| ECO2: Energy use per unit of | GDP | | Statistical differences | -889 | |
| Brief Definition | Ratio of total primary energy supply (TPES), total final consumption (TFC) and electricity use to gross domestic product (GDP) | | | 50713 15901 | |
| Units | Energy: tonnes of oil equivalent (toe) per US dollar Electricity: kilowatt-hours (kWh) per US dollar | 25 26 27 | | | |
| Alternative Definitions | Sectoral energy intensities | 28 | 8 Road | | 180082 |
| Agenda 21 | Chapter 4: Consumption and production patterns | 29 | | | · <u>.</u> |
| | | 30 31 32 33 34 35 36 | Inland and coastal waterways By other modes of transportation By households and other consume Households Agriculture | | 2 119254 98141 3887 |



Supply Efficiency: Efficiency of energy conversion and distribution

ECO3: Efficiency of energy conversion and distribution

| Brief Definition | Efficiency of energy conversion and distribution, including fossil fuel efficiency for electricity generation, efficiency of oil refining and losses occurring during electricity transmission and distribution, and gas transportation and distribution |
|-------------------------|--|
| Units | Percentage |
| Alternative Definitions | None |
| Agenda 21 | Chapter 4: Consumption and production patterns |



Efficiency of electricity generation and transmission & distribution

| | | - | nama | | | | | | | | | | | | |
|--|------------------|---------------|---------------|-----------------------|-----------------------|-----------------------|------------------------------|-------------|---------------------|-------------|---------------------|--------------------|---------|----------------|---|
| | | | | Panama | | | | | | | | | | | |
| | | Tera | ajoules | | | | | | | | | Térajoul | les | | |
| Energy sources and products \rightarrow | Hard coal. | Coal products | | | | | 100 5 | | | | Deiman | rerujou | | | ← Sources et produits d'énergie |
| | brown coal | and peat | Primary oil | Light oil products | Heavy oil products | Other oil products | LPG, refinery gas, ethane | Natural gas | Manufactured | Electricity | Primary biomass/ | Charcoal | Heat | Total energy | ← Sources et produits denergie |
| | and peat | products | - | | | products | | Natural gas | gases | Liccurcity | waste | Charcoar | ricat | iotar energy | |
| | Houille, lignite | | Pétrole brut, | Produits | Produits | Autres produits | GPL, gaz de | | 0 | | Biomasse | Ohashaa da | | | |
| | et tourbe | | LGN, autres | pétroliers | pétroliers | pétroliers | raffinerie, | Gaz naturel | Gaz manufacturés | Electricité | primaire/ | Charbon de bois | Chaleur | Energie totale | |
| Production and utilisation ↓ 2011 | | tourbe | hydrocarbures | légers | lourds | | éthane | | manufactures | | déchets | DOIS | | - | Production et utilisation |
| 1 Production of primary energy | | | | | | | | | | | | | | | 2011 |
| 2 Imports | 6946 | 2228 | | 46370 | 153477 | 5025 | 7190 | | | 14753 | 16574 | | | 31327 | |
| 3 Exports | 0340 | 2220 | | 40370 | 100477 | -40 | | | | 259 | | | | | 2 Importations |
| 4 Marine / aviation bunkers | | | | -17155 | -100509 | | - | | | -29 | | | | 117664 | 3 Exportations 4 Soutes |
| 5 Stock changes | | | | 3005 | 22273 | | | | | | | | | | 5 Variations des stocks |
| 6 Total energy supply | 6946 | 2228 | | 32220 | 75241 | | | | | 14983 | 16574 | | | | 6 Approv. totaux en énergie |
| 7 Transformation | -6946 | | | | -30100 | | | | | 13534 | -2599 | 148 | | 25964 | |
| 8 Briquetting plants | | | | | | | | | | 10001 | 2000 | | | | 8 Usines de briguettes |
| 9 Coke ovens | | | | | | | | | | | | | | | 9 Cokeries |
| 10 Gas works | | | | | | | | | | | | | | | 10 Usines de gaz |
| 11 Blast furnaces | | | | | | | | | | | | | | | 11 Hauts fourneaux |
| 12 Oil refineries | | | | | | | | | | | | | | | 12 Raffineries de pétrole |
| 13 NGL plants and gas blending | | | | · · · | | | | | | | X | | | | 13 Usines de LGN et mélange de gaz |
| 14 Electric power plants | -6946 | | | | -30100 | | | | | 13534 | -2221 | | | 25734 | |
| 15 Heating plants 16 Other transformation | | | | | | · · · | | | | | 070 | | | | 15 Centrales thermiques |
| 17 Net transfers | - | | | | | | | | | | | 148 | | 231 | 16 Autre transformation 17 Transferts nets |
| 18 Energy industries own use | | | | | | | | | | ä | | | | | 18 Consom. propre de l'ind. énergétique |
| 19 Losses in transport and distribution | | \ | | | | | | | | -3896 | | | | | |
| 20 Cons. for non-energy uses | | | | | | | | | | 1 -200 |) " | | | | 20 Utilis, à fins non énergétiques |
| 21 Statistical differences | Ö | | | 3617 | -2448 | -44 | 43 | | | 1 407 | -5 | ö | | | 21 Ecarts statistiques |
| 22 Final energy consumption | | 2228 | | 28603 | 47588 | 2738 | 7190 | | / | 24102 | 13980 | 148 | | 11 6576 | 22 Consommation d'énergie finale |
| 23 By industry and construction | | 1 2220 | | 2378 | 20200 | | | | | 2376 | 3573 | | | | 23 Industries et construction |
| 24 Iron and steel industry | | \ | | | | | | | | · / | | | | | 24 Industrie sidérurgique |
| 25 Chemical industry | | | | | | | | | | | | | | | 25 Industrie chimique |
| 26 Other industry and construction | | 2228 | | 2378 | 20200 | | | | / / % | 2376 | 3573 | | | 85576 | |
| 27 By transport | | \ | | 25650 | 25499 | | 47 | 7 | ///- | | | | | | 27 Transports |
| 28 Road | | \ | | 25650 | 25499 | | | | /// " | | | | | 51149 | |
| 29 Rail 30 Air | | \ | | | | | | / 7 | /// " | | | | | | 29 Transports ferroviaires 30 Transports aériens |
| 30 Air 31 Inland and coastal waterways | | \ | | | | | | | / / " | | | | | | 31 Transports fluviaux cabotage |
| 31 Inland and coastal waterways 32 By other modes of transportation | | t t | | | | 40 | 47 | /// | · / · · | | | | | | |
| 33 By households and other consumers | | | | 575 | 1889 | | 5014 | ///" | / " | 21726 | 10408 | 148 | | | 33 Ménages et autres consom. |
| 34 Households | | | \ | 88 | 1003 | 4 | 4919 | // " | _ / _ ¨ | 7560 | 10408 | 89 | | 23063 | |
| 35 Agriculture | | | ·∖ " | 44 | 516 | | | | / | | | | | 560 | 35 Agriculture |
| 36 Other consumers | | | \ | 448 | 1373 | | 85 | / | | 14166 | | 59 | | 16140 | 36 Autres consommateurs |
| | | | | | | | | | 4 | | | | | | |

Transmission & Positive: electricity distribution losses generated from Negative: fuel burned to officiency can be assessed generate electricity



Efficiency of oil refining

| | | (| | | | | | | | Cub | а | | | | |
|--|------------------|---------------|----------------|------------------|------------------------|-----------------|-----------------------|-------------|--------------|-------------|-----------|------------|---------|----------------|--|
| | | | erajoules | | | | | | | | | | | | |
| | | | | | | | | | Térajou | les | | | | | |
| Energy sources and products → | Hard coal, | Coal products | | Light oil | Heavy oil | Other oil | LPG, refinery | | Manufactured | | Primary | | | | ← Sources et produits d'énergie |
| | brown coal | and peat | Primary oil | products | products | products | gas, ethane | Natural gas | gases | Electricity | biomass/ | Charcoal | Heat | Total energy | |
| | and peat | products | Pétrole brut. | Produits | | | | | gases | | waste | | | | |
| | Houille, lignite | Produits de | | pétroliers | Produits pétroliers | Autres produits | GPL, gaz de | | Gaz | | Biomasse | Charbon de | | L | |
| Production and utilisation 1 | et tourbe | charbon et de | bydrocarbures | légers | lourds | pétroliers | raffinerie, éthane | Gaz naturel | manufacturés | Electricité | primaire/ | bois | Chaleur | Energie totale | |
| 2011 | | tourbe | Invorocarbures | legers | lourds | | einane | | | | déchets | | | <u> </u> | ↓ Production et utilisation |
| 1 Production of primary energy | | | . 127408 | | | | | | | | 10005 | | | | 2011 |
| 2 Imports | 59 | 8 | | 42945 | 85574 | 643 | 4399 | 39801 | | 356 | 42835 | | | | 1 Production d'énergie primaire |
| 3 Exports | | - | | | | | | | | | | | | 341694 | 2 Importations 3 Exportations |
| 4 Marine / aviation bunkers | | | | *-5909 | *-1290 | | | | | | | | | * 7100 | 4 Soutes |
| 5 Stock changes | | | | | | | | - | | | | | | | 5 Variations des stocks |
| 6 Total energy supply | 59 | | | 37036 | 84284 | 643 | | 3980 | | 356 | 42835 | | | | 6 Approv. totaux en énergie |
| 7 Transformation | | *-8 | 5 *-317927 | 49061 | 53073 | 5413 | 4048 | | . 3976 | | | 1564 | | *-170708 | |
| 8 Briquetting plants | | | | | | | | | | | | | | | 8 Usines de briquettes |
| 9 Coke ovens | | | | | | | | | | | | | | | 9 Cokeries |
| 10 Gas works | | | 0 | | | | | | . 3852 | | | | | 3852 | 10 Usines de gaz |
| 11 Blast furnaces | | *-8 | | 40004 | 440040 | 5440 | 1010 | | . *124 | | | | | | 11 Hauts fourneaux |
| 12 Oil refineries | | | *-209893 | 49061 | 146312 | 5413 | 4048 | | | | | | | *-5058 | 12 Raffineries de pétrole |
| 13 NGL plants and gas blending 14 Electric power plants | | · · · · | *-108034 | | *-93239 | | | | | | | | | | 13 Usines de LGN et mélange de gaz |
| 15 Heating plants | | · · · · | 106034 | | -93239 | | | | | 63576 | *-30502 | | | | 14 Centrales électriques |
| 16 Other transformation | | · · · | | | | | | | | | *-2905 | 1564 | | | 15 Centrales thermiques 16 Autre transformation |
| 17 Net transfers | | | | | | | | | | | -2905 | 1504 | | | 17 Transferts nets |
| 18 Energy industries own use | | | | | | | -1683 | | | -3409 | | | | | 18 Consom, propre de l'ind, énergétique |
| 19 Losses in transport and distribution | | | | | | | | | | -10033 | | | | | 19 Pertes trans et distrib |
| 20 Cons. for non-energy uses | | | | | N N | -4904 | | | | | | | | | 20 Utilis. à fins non énergétiques |
| 21 Statistical differences | 0 | | | 50134 | -1650 | 925 | | 5189 |) 0 | -13446 | -2874 | -30 | | 9667 | 21 Ecarts statistiques |
| 22 Final energy consumption | 59 | | 0 *17470 | *35963 | 139007 | 228 | | 34612 | | | | 1593 | | 3 4490 | 22 Consommation d'énergie finale |
| 23 By industry and construction | 59 | | | 5111 | 106580 | 228 | 378 | 34573 | | 17212 | 1215 | | | 1 3319 | 23 Industries et construction |
| 24 Iron and steel industry | | | 0 | | | | | | . *124 | | | | | | |
| 25 Chemical industry | | · · · · | | | | | | | | | | | | | 25 Industrie chimique |
| 26 Other industry and construction 27 By transport | 59 | 1 | *17470 | 5111 | 106580 8643 | 228 | 378 | 34573 | 3 370 | | | | | 83195 | |
| 27 By transport 28 Road | | · · · | | *20482 *11740 | 8643 | | | | | 914 | | | | 20202 | 27 Transports 28 Transports routiers |
| 28 Road 29 Rail | | · | | -11740 | 6043 | | | | | 914 | | | | 914 | |
| 30 Air | | 1 | | 6528 | | | | - | | 314 | | | | 6500 | |
| 31 Inland and coastal waterways | | · | | 0520 | | | | | | | | | | | 31 Transports fluviaux cabotage |
| 32 By other modes of transportation | | 1 | | 2215 | - 3 | | | | | | | | | 2215 | 32 Autres modes de transport |
| 33 By households and other consumers | | | | 10370 | 23784 | | 4967 | 39 | | | | 1593 | | | 33 Ménages et autres consom. |
| 34 Households | | 1 | | 5896 | 3010 | | 3169 | | . 2691 | 24764 | 609 | 590 | | 40730 | 34 Ménages |
| 35 Agriculture | | 1 | | 266 | 6480 | | | | | 1148 | | | | | |
| 36 Other consumers | | | | 4208 | 14294 | | 1797 | 39 | 791 | 19897 | 9601 | 1003 | | 51631 | 36 Autres consommateurs |
| | | | | | | | | | | | | | | | |

Refinery row <u>fi</u> Refineryuoutput summary of inputs and outputs fuel (refinery gas) efficiency can be assessed

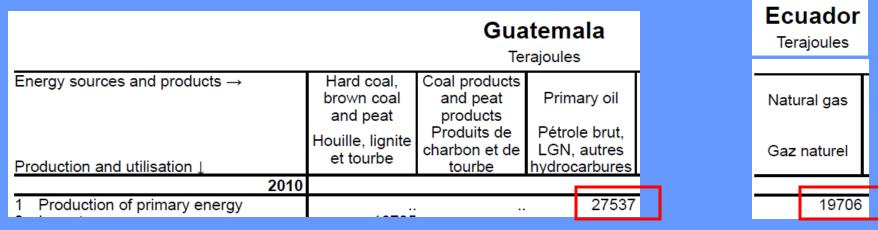


Production: Reserves (/resources)to-production ratio

Extra info (not found in the balance): reserves and resources of primary fossil fuels.

ECO5: Resources-to-production ratio

| ECO4: Reserves-to-production | i ratio | |
|------------------------------|--|--|
| Brief Definition | Ratio of energy reserves remaining at the end of a year to the production of energy in that year. Also, lifetime of proven energy reserves or the production life index | Ratio of the energy resources remaining at the end of a year to the production of energy in that year Also, lifetime of proven energy resources years |
| Units | years | Total resources |
| Alternative Definitions | Total reserves | Depletion rate of resources |
| | Depletion rate of reserves | Chapter 4: Consumption and production patterns |
| Agenda 21 | Chapter 4: Consumption and production patterns | |





End-use intensities

| ECO6: Industrial energy inte | ensities | al energy in | tensities | | | | | |
|------------------------------|--|--|-------------------------------------|---|--|--|--|--|
| Brief Definition | Energy use per unit of value adda sector and by selected energy-int | | | Final energy u added | ise per unit of agricultural value | | | |
| Units | Energy: tonnes of oil equivalent Electricity: kilowatt-hours (kWh) | | | | s of oil equivalent (toe) per US dollar owatt-hours (kWh) per US dollar | | | |
| Alternative Definition | Energy use per unit of physical o | | tion | | r unit of agricultural output | | | |
| <u></u> | ECO8: Service/commercial en | ergy intensities | | | sumption and production patterns | | | |
| Agenda 21 | Brief Definition | Final energy use per unit o value added or per floor ar | | d commercial | | | | |
| ECO9: Household energy | intensities | | · · | energy and er US dollar | | | | |
| Brief Definition | or household or unit of fl energy use by residential | | quare metr | purchasing re of floor | | | | |
| Units | Tonnes of oil kilowatt-hou household or | finition | | - | of freight-kilometre (km) f passenger-km travelled by | | | |
| | kWh of electi floor area; kV toe and kWh kWh for wate | | - | onnes of oil be per passer | equivalent (toe) per tonne-km nger-km | | | |
| | consumption Alternation | ive Definitions | | average fuel consumption for all modes per er-km or tonne-km | | | | |
| Alternative Definitions | None | | | | | | | |
| Agenda 21 | Chapter 4: C Agenda 2 | <u></u> | Consumption and production patterns | | | | | |



End-use intensities

Possible additional data (not in the balances):

- Agricultural, commercial, industrial value added;
- Commercial or residential floor area;
- Population or number of households;
- Freight-kilometre hauled; passenger-km transported.
- Info from the balance: final energy/electricity consumption per sector

End-use intensities

| | | | | | _ | |
|----------|------------------------|--|---|-------------|---|----------------|
| | | Costa Rica | 1 | Electricity | | Total energy |
| | | Terajoules | | | | |
| | | 2011 | | Electricité | | Energie totale |
| 1 | Production of | f primary energy | | 31785 | | 63158 |
| | Imports | princip energy | | 1018 | | 104718 |
| 2 3 | Exports | | | -1151 | | -3469 |
| 4 | Marine / avia | | | | | |
| 5 | Stock change | | | 24052 | | -987 |
| 6 | Total energy | | | 31652 | | 163420 |
| 7 | Transformat | | | 3608 | | -7007 |
| 8 9 | Briquetting | | | | | |
| 9 10 | Coke over Gas works | | | | | |
| 11 | Blast furna | - | | | | *-1173 |
| 12 | | | | | | -1173 |
| 13 | | s and gas blending | | | | 00 |
| 14 | | ower plants | | 3608 | | -5698 |
| 15 | | | | | | |
| 16 | | sformation | | | | -97 |
| | Net transfers | | | -327 | | 28 |
| | | stries own use | | -327 | | -893 |
| | | nsport and distribution n-energy uses | | -3010 | | -3816 -1697 |
| | Statistical d | | | -106 | | -649 |
| | | consumption | | 31223 | | 150683 |
| 23 | By industry a | ind construction | | 6544 | | 34817 |
| 24 | | teel industry | | | | 1272 |
| 25 | | | | 1333 | | 2063 |
| 26 | | ustry and construction | | 5212 | | 31481 |
| | By transport | | | | | 71672 |
| 28 29 | | | | | | 64381 51 |
| 29 30 | | | | | | 7156 |
| 31 | | coastal waterways | | | | 84 |
| 32 | | nodes of transportation | | | | 01 |
| | | ds and other consumers | | 24679 | | 44195 |
| 34 | Household | ds | | 12188 | | 26420 |
| 35 | | | | 1120 | | 2763 |
| 36 | Other con | sumers | | 11371 | | 15011 |

Final consumption breakdown by sector is available from the energy balance. Detailed data on this breakdown makes for more accurate indicators.



Diversification (Fuel Mix):

| <u>ECO11:</u> Fi | Fuel shares in energy and electricity | | | | | | | | | | | | |
|-------------------------|---------------------------------------|----------------------------|---|--|---|--|--|--|--|--|--|--|--|
| Brief Defin Units | | of energy f (TPES), tot | upply in terms of shares imary energy supply mption (TFC) and generating capacity and electricity | | | | | | | | | | |
| Alternativ Agenda 21 | Brief Definit Units | | energy supply and generatin | The share of non-carbon energy sources in primary energy supply (TPES) and in electricity generation and generating capacity le energy share in energy and electricity | | | | | | | | | |
| | Alternative] Agenda 21 | Brief Definition | | The share of renewable en energy supply (TPES), tota (TFC) and electricity gene capacity (excluding non-co | al final consumption ration and generating | | | | | | | | |
| | | Units | | Percentage | | | | | | | | | |
| | | Alternative Defin | itions | None | | | | | | | | | |
| | | Agenda 21 | | Chapter 4: Changing consumption and production patterns | | | | | | | | | |



Diversification (Fuel Mix):

- Total Energy Supply (TPES) and Total Final Consumption (TFC) rows as shown before in this presentation
- For these indicators, a more detailed energy balance (disaggregation by products) allows a better analysis:
 - So that different electricity sources can be identified;
 - Renewables (and wastes) can be distinguished from non-renewables;
 - Non-carbon (nuclear + renewables) can be distinguished from carbon energy;
 - Current UNSD balance does not allow some of these indicators to be derived, but the forthcoming one (based on IRES recommendations) will allow.



Ex. of product disaggregation: Costa Rica

Cuadro No. 1 MATRIZ DEL BALANCE NACIONAL DE ENERGÍA PERÍODO 2011

(Terajulios)

| Etch and a second | | | | | | | | | | | | | (| loid | ijune | ,,, | | | | | | | | | - | | | | | | | |
|---|-----|--------|------------------|---------|-----|----------|-----------|---------|---------|--------|----------|-----|--------------------|-------|----------|---------|--------|--------|-----|-----|-----|-------|---------------|-----|-------|----------|-----|-------|----------|--------|-------------|------------------|
| Elaborado por: Ing. Arturo Molina Soto | СМ | | F 33.6643 | | | | Energía P | | 050 | 501 | DIO. | SOL | T-1-1 | 014 | cv | LPG | GR | 00 | NCO | | WE. | JF | gía Sec DO | | IF380 | FO | 540 | 0.05 | 011 | | Total | T |
| ing. Arturo monna soto | CM | LE | RV(*) | BG | cc | ORV | PT | HE | GEO | EOL | BIG | SOL | Total primarias | ск | CV. | LPG | GR | GS | NFP | AVG | KE | JF | 00 | GO | 1-380 | FO | EAS | ASF | он | EE | secundarias | Total |
| Transferencias | | | | | - | | | | | | | | primarias | | | - | | | | - | - | - | | | | | | | | | | |
| | | | | | | | -15 | | | | | | | | | 0 | 8 984 | -8 949 | 30 | 0 | | 0 | -181 | 247 | | -3 950 | 157 | -142 | -23 | | 44 | 44 |
| Producción | | 17 163 | 15 132 | 8 6 1 3 | 407 | 6 112 | | 36 625 | 56 954 | 1 492 | 7 | 2 | 127 375 | | 32 | 59 | 1 185 | 198 | 0 | 0 | 100 | 18 | 2 249 | 0 | 589 | 1 891 | 0 | 65 | 632 | 35 393 | 42 409 | 127 375 |
| Importación | 229 | | | | | | 7 465 | | | | | | 7 694 | 2 445 | | 5 448 | 7 986 | 21 726 | 0 | 58 | 0 | 8 043 | 39 976 | | 0 | 8 832 | 0 | 1 492 | 0 | 1 018 | 97 025 | 104 718 |
| Exportación | | | | | | | | | | | | | 0 | | | 0 | 0 | 0 | 0 | 7 | • | 0 | 749 | 0 | 1 033 | 0 | 0 | 0 | 529 | 1 151 | 3 469 | 3 469 |
| Variación de Inventario | | | | | | | -1 027 | 63 | | | | | -964 | | | 71 | 356 | -109 | 1 | 17 | 2 | -221 | 160 | 0 | 50 | -354 | 0 | 46 | 20 | | 40 | -924 |
| No aprovechada | | | 0 | | | | | 10 421 | 13 907 | | 4 | | 24 332 | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | 0 | 24 332 |
| Oferta Interna | 229 | 17 163 | 15 132 | 8 613 | 407 | 6 112 | 6 422 | 26 268 | 43 046 | 1 492 | 4 | 2 | 109 758 | 2 445 | 32 | 5 578 | 18 511 | 12 865 | 31 | 68 | 102 | 7 841 | 41 455 | 248 | 3 475 | 6 4 1 9 | 157 | 1 461 | 100 | 35 261 | 136 049 | 203 412 |
| Total Transformado | 0 | -129 | -992 | -883 | 0 | -109 | -6 391 | -26 268 | -43 046 | -1 492 | -1 | -2 | -78 322 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -3 575 | 0 | -2 | -1 764 | 0 | 0 | 0 | 0 | -8 314 | -44 858 |
| | | | | | | | | | | | | | | | | | | | | | | | | | 975 | | | | | | | |
| Carboneras | | -129 | | | | | | | | | | | -129 | | 32 | | | | | | | | | | | | | | | | 32 | -97 |
| Refinerias | | | | | | | -6 391 | | | | | | -6 391 | | | 59 | 1 185 | 198 | 0 | 0 | 100 | 18 | 2 249 | | 589 | 1 891 | 0 | 65 | | | 6 352 | -39 |
| Centrales Eléctricas Sector | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -20 747 | -38 075 | -286 | 0 | -2 | -59 109 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -3 575 | 0 | -2 | -1 764 | 0 | 0 | 0 | 28 212 | 28 212 | -39 212 |
| Público | | | | | | | | | | | | | | | | | | | | | | | | | 975 | | | | | | | |
| Central Hidroeléctrica | | | | | | | | -20 747 | | | | | -20 747 | | | | | | | | | | | | | | | | | 20 990 | 20 990 | 244 |
| Centrales Termoeléctricas | | | | | | | | | | | | | 0 | | | | | | | | | | -3 575 | 0 | -2 | -1 764 | | 0 | | 3 108 | 3 108 | -5 206 |
| 5 | | | | | | | | | | | | | | | | | | | | | | | | | 975 | | | | | | | |
| Centrales Geotérmicas | | | | | | | | | -38 075 | | | | -38 075 | | | | | | | | | | | | | | | | | 3 826 | 3 826 | -34 249 |
| Centrales Eólicas | | | | | | | | | | -286 | | | -286 | | | | | | | | | | | | | | | | | 286 | 286 | 0 |
| Central Solar | | | | | | | | | | | | -2 | -2 | | | | | | | | | | | | | | | | | 2 | 2 | 0 |
| Centrales Eléctricas Sector | 0 | 0 | -992 | -883 | 0 | -109 | 0 | -5 521 | -4 972 | -1 206 | -1 | | -12 692 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 181 | 7 181 | -5 511 |
| Privado Central Hidroeléctrica | | | | | | - | | 5.504 | | - | | | 5.504 | | | | | | | | | | - | - | | | | | | 4.004 | 4.004 | 007 |
| Centrales Geotérmicas | | | | | | <u> </u> | | -5 521 | | | <u> </u> | | -5 521 | | <u> </u> | | - | | | | | | | - | | | | | | 4 694 | 4 694 | -827 |
| (Miravalles III) | | | | | | | | | -4 972 | | | | -4 972 | | | | | | | | | | | | | | | | | 781 | 781 | -4 191 |
| Centrales Blomasa | | | -992 | -883 | | -109 | | | | | -1 | | -993 | | | | | | | | | | | | | | | | | 500 | 500 | -493 |
| Centrales Eólicas | | | | | | | | | | -1 206 | - | | -1 206 | | | | | | | | | | | | | | | | | 1 206 | 1 206 | 0 |
| Destlierias | | | | | | | | | | 1.200 | | | 0 | | | | | | | | | | | | | | | | 632 | 1200 | 632 | 632 |
| Consumo propio | | - | 0 | - | - | - | - | | - | + | + | - | 0 | | + | 0 | | + | + | - | + | | 0 | 0 | 566 | 0 | 0 | 0 | | 327 | 893 | 893 |
| Pérdidas | | | 0 | | - | - | | | | | 0 | | 0 | | <u> </u> | · | | | | | | | , | , v | 300 | <u> </u> | | • | | 3 816 | 3 816 | 3 816 |
| Aluste | 0 | 0 | 0 | 0 | | 0 | 31 | 0 | 0 | 0 | 0 | 0 | 31 | 0 | 0 | 35 | -562 | -335 | 3.0 | 12 | -62 | 404 | 34 | -6 | -66 | -122 | 0 | -51 | -5 | -106 | -827 | -795 |
| | 0 | 0 | | 0 | 407 | 0 | 31 | U | 10 | 0 | 3 | U | | 2 445 | | | | | | 56 | 164 | | 37 846 | | -00 | | 0 | | | | | |
| Consumo final total | 229 | 17 034 | 14139 | 7 729 | 407 | 6003 | | | | | 3 | | | 2 440 | 32 | 5 542 | 19 073 | 13 201 | | 00 | 104 | 7 437 | 37 840 | 203 | U | 4 777 | 157 | 1 512 | 105 | 31 223 | 123 852 | 155 257 |
| Consumo final (no energ.) | 0 | 0 | 1 554 | | | 1 554 | | | | | <u> </u> | | 1 554 | | | | | | 28 | | | 0 | | | | | 157 | 1 512 | 105 | | 1 802 | 3 356 |
| Consumo final (energético) | 229 | 17 034 | 12 585 | 7 729 | 407 | 4 449 | | | | | 3 | | 29 851 | 2 445 | | 5 542 | 19 073 | 13 201 | | 56 | | 7 436 | 37 846 | - | _ | 4 777 | | | | 31 223 | | 151 901 |
| Residencial | | 12 051 | | | | | | | | | 3 | | 12 054 | | 32 | 2 021 | 0 | 0 | | 0 | 128 | 0 | 0 | 0 | | 0 | | | | 12 188 | 14 369 | 26 423 |
| 1. Urbano | | 2 140 | | | | | | | | | | | 2 140 | | 27 | 1 0 2 6 | 0 | 0 | | 0 | | 0 | 0 | 0 | | 0 | | | | 8 006 | 9 088 | 11 228 |
| 2. Rural | | 9 911 | | | | | | | | | 3 | | 9 914 | | 6 | 995 | 0 | 0 | | 0 | 99 | 0 | 0 | 0 | | 0 | | | | 4 182 | 5 281 | 15 195 |
| Servicios | | 932 | I | 1 | | T | | | | I | T | | 932 | | | 779 | 9 | 13 | I | 2 | 0 | 45 | 397 | 0 | | 4 | | | | 4 067 | 5 317 | 6 249 |
| Comercial | | | | | | | | | | 1 | | | 0 | | | 42 | 2 | 1 | 1 | 0 | 0 | 1 | 220 | 0 | | 0 | | | | 3 332 | 3 598 | 3 598 |
| Público | | | | 1 | | 1 | | | 1 | t | 1 | | 0 | | | 0 | 0 | 0 | t | 5 | 0 | 0 | 66 | 0 | | 143 | | | <u>†</u> | 3 738 | 3 951 | 3 951 |
| Transporte | - | - | + | + | - | + | <u> </u> | | | + | + | - | 0 | | + | 333 | 18 802 | 13 186 | + | - | _ | 7 101 | 32 195 | | - | 0 | - | | <u> </u> | | 71 665 | 71 665 |
| Terrestre | | | | | | | | | | | | | 0 | | | 333 | 18 802 | 13 180 | | | | 0 | 32 195 | | | 0 | | | | | 64 432 | 64 432 |
| 1. Privado | | | | | | | | | | | | | 0 | | | 333 | | 13 180 | | | | | | | | 0 | | | | | 30 162 | 04 432 30 162 |
| 1.a Automóviles | | | | | | | | | | | | | 0 | | | 0 | 15 774 | 12 140 | | | | 0 | 2 242 | 0 | | 0 | | | | | | |
| | | | | | | | | | | | | | - | | | - | 10 873 | | | 0 | - | - | | - | | 0 | | | | | 21 098 | 21 098 |
| 1.b Jeep | | | | | | | | | | | | | 0 | | | 0 | 1 594 | 1 417 | | 0 | | 0 | 1 694 | 0 | | 0 | | | | | 4 705 | 4 705 |
| 1.c Microbús familiar | | | | | | | | | | | | | 0 | | | 0 | 494 | 337 | | 0 | - | 0 | 537 | 0 | | 0 | | | | | 1 368 | 1 368 |
| 1.d Motos | | | | | | | | | | | | | 0 | | | 0 | 2 814 | 177 | | 0 | | 0 | 0 | 0 | | 0 | | | | | 2 991 | 2 991 |
| 2. Público | | | | | | | | | | | | | 0 | | | 333 | 1 092 | 363 | | 0 | | 0 | 5 588 | 0 | | 0 | | | | | 7 376 | 7 376 |
| 2.a Microbús | | | | | | | | | | | | | 0 | | | 0 | 0 | 0 | | 0 | | 0 | 1 408 | | | 0 | | | | | 1 408 | 1 408 |
| 2.b Autobus | | | | | | | | | | | | | 0 | | | 0 | 0 | 0 | | | - | 0 | 4 070 | | | 0 | | | | | 4 070 | 4 070 |
| 2.c Taxis | | | | | | | | | | | | | 0 | | | 333 | 1 092 | 363 | | 0 | - | 0 | 111 | 0 | | 0 | | | | | 1 899 | 1 899 |
| 3. Carga | | | | | | | | | | | | | 0 | | | 0 | 1 317 | 442 | | 0 | 0 | 0 | 20 503 | 0 | | 0 | | | | | 22 262 | 22 262 |
| 3.a Liviana | | | | | | | | | | | | | 0 | | | 0 | 1 317 | 442 | | 0 | 0 | 0 | 10 655 | 0 | | 0 | | | | | 12 4 14 | 12 414 |
| 3.b Pesada | | | | | | | | | | | | | 0 | | | 0 | 0 | 0 | | 0 | 0 | 0 | 9 848 | 0 | | 0 | | | | | 9 848 | 9 848 |
| 4. Equipo especial | | | | | | | | | | | | | 0 | | | 0 | 192 | 20 | | 0 | 0 | 0 | 3 7 2 7 | 0 | | 0 | | | | | 3 940 | 3 940 |
| 5. Otros | | | | | | | | | | | | | 0 | | | 0 | 427 | 214 | | 0 | 0 | 0 | 0 | 0 | | 0 | | | | | 641 | 641 |
| 6. Ferrocarril | | | | | | | | | | | | | 0 | | | 0 | 0 | 0 | | 0 | 0 | 0 | 51 | 0 | | 0 | | | | | 51 | 51 |
| Maritimo | | | | | | | | | | | | | 0 | | | 0 | 0 | 0 | | 0 | 0 | 0 | 84 | 0 | | 0 | | | | | 84 | 84 |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |



Net energy import dependency

| | <u>ECO15:</u> N | et energy i | mport dep | pendency | | | | |
|---|--|---------------|-------------------------------|---|---|--|--|--|
| | Brief Defin | ition | | supply " | TPES) in h as oil ar | a given y | | ry energy l and by fuel cts, gas, coal |
| | | | F azil rajoules | | | | | |
| Energy sources and products → Production and utilisation ↓ | Hard coal, brown coal and peat Houille, lignit et tourbe | charbon et de | Primary oil Pétrole brut, | Light cíl products Produits petroliers légers | Heavy bil products Produits pétroliers lourds | Other oil products Autres produits pétroliers | LPG, refinery gas, ethane GPL, gaz de raffinerie, éthane | on patterns |
| | 2010 | | | legers | lourus | | Cthane | |
| Production of primary energy Imports Exports | 1007 4858(| | 4512075 726799 -1354784 | 327018 -42354 | 342742 -208925 | | | |
| 4 Marine / aviation bunkers 5 Stock changes 6 Total energy supply | 71: 5937 | | | 82202 -7761 794700 | -167660 -60 -33904 |) -614 | 80930 | |
| 7 Transformation | -43204 | 10 280632 | -3907942 | 1125644 | 1977920 | 360984 | 462389 | |
| | | | | | | Brésil Térajoules | | |

| | | | | | JIES | | | | | | |
|-------------|-----------------------|-------------|----------------------------------|--------------------|------|------|---|----------------|----|------------------|-----------------|
| Natural gas | Manufactured gases | Electricity | Primary biomass/ waste | Charcoal | ŀ | leat | | Total energy | Ļ | Sources et pro | duits d'énergie |
| Gaz naturel | Gaz manufacturés | Electricité | Biomasse primaire/ déchets | Charbon de bois | Ch | aleu | r | Energie totale | | Production et ut | tilisation |
| | | | | | | | | | 20 | 10 | |
| 580681 | | 1511960 | 3322134 | | | | | 10027570 | 1 | Production d'é | nergie primaire |
| 489800 | | 129262 | 1608 | 3 | D | | | 2821076 | 2 | Importations | Ŭ, |
| | | -4525 | -40897 | | D | | | -1663202 | 3 | Exportations | |
| | | | | | | | | -249863 | | Soutes | |
| | | | -33661 | | | | | | 5 | Variations des | |
| 1070481 | | 1636697 | 3249185 | 3 | | | | 10943191 | 6 | Approv. totau | ix en éneraie |
| -307963 | 62774 | 344912 | -728802 | 21656 | 0 | | | -544932 | 7 | Transformation | on |



>Thank you for your attention!

¡Gracias por su atención!