

# Summary of China's energy and power sector statistics in 2023

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Summary of China's Energy and Power Sector Statistics is one of the research products of the China Energy Transformation (CET) programme. It is published annually as the March special issue of the China Energy Policy Newsletter. The Summary summarises the annual statistical data on China's energy and electricity supply and consumption in the previous year, especially the development of wind power and solar PV. Starting from 2022, the Summary has added sections on new-type energy storage, hydrogen energy, and power market, describing the results of emerging technologies and market-based means that support the realisation of dual-carbon goals, aiming to present the progress of China's energy transition more comprehensively. The data in the Summary are all statistics based on the coal substitution method and released by government departments. The Summary (2023 version) adds new data on the development of the EV industry, as well as an outlook and analysis of the development of the wind power and solar PV industry in 2024. Please download the 2019-2022 Summary from the <u>CET website</u>.

### ${f S}$ teady increase of non-fossil energy consumption

In 2023, the GDP growth rate reached 5.2%, a year-on-year increase of 2.2 percentage points, and China's economy and society have fully resumed normal operation. The GDP growth rate of the secondary and tertiary industries increased significantly. The ratio of the three industries remained stable (7.1:38.3:54.6). The total primary energy consumption was 5.7 billion tons of standard coal equivalent (tce), a year-on-year increase of 5.7%, an increase of 2.8 percentage points from 2022, and slightly higher than the GDP growth rate. Energy consumption is growing faster than expected. **Raw coal consumption continued to increase**, with a year-on-year growth rate of 5.6%, a 1.3 percentage points increase from the previous year. The demand of coal for power generation and chemical industry was strong in 2023. Affected by insufficient hydropower output, thermal power coal consumption increased by 6% year-on-year, highlighting the role of coal in ensuring the power supply. The rising prices of coal chemical products drove chemical coal consumption, with the year-on-year growth rate reaching 4.6%. **Natural gas and crude oil consumption rebounded**, with year-on-year growth rates reaching 7.2% and 9.1% respectively.

Despite this, the proportion of non-fossil energy (+0.4 pct)<sup>1</sup> continued to increase, and energy intensity (-0.5%) maintained a downward trend. The proportion of coal in total primary energy consumption dropped by 0.9 percentage points to 55.3%, and the carbon dioxide intensity remained the same as in 2022. China's low-carbon energy transformation is progressing orderly, but it still faces challenges in continuously reducing fossil energy consumption. [1][5][10][19][20]



Non-fossil fuel accounted for about **17.9%** of total primary energy consumption, a year-on-year increase of 0.4 percentage points.

Note: Energy consumption intensity refers to energy consumption per RMB 10,000 GDP; carbon intensity refers to CO, emission per RMB 10,000 GDP.

Source: National Bureau of Statistics (NBS), accessed in March 2024

# Enhancement of energy security and stable supply capabilities

China continues to increase energy production capacity and consolidate the foundation of energy security. In 2023, China's total primary energy production reached 4.8 billion tce, a year-on-year increase of 4.2%, a drop of 5 percentage points from 2022. **Coal supply and demand were generally loose, with adequate thermal coal stocks.** The growth rate of raw coal production was 3.4%, a year-on-year decrease of 7.1 percentage points. After two consecutive years of rapid production increases in 2021 (4.7%) and 2022 (10.5%), the growth rate of raw coal production has slowed down, and new production capacity has been further concentrated in Shanxi, Shaanxi, Inner Mongolia, and Xinjiang. At the same time, coal exports from Australia and other countries to China increased significantly, and coal imports increased by 61.8% year-on-year, of which nearly 80% were thermal coal. Increased imports have driven down domestic coal prices, with the average annual price of Bohai rim steam coal (5,500K) falling by 1/4 year-on-year. The number of days available for the national dispatchable thermal coal inventory reached a historical high of 26 days.

, Calculated based on the data issued in the 2023 National Economic and Social Development Statistic Report of the People's Republic of China.

Imports of natural gas and crude oil increased significantly, and costs decreased. Natural gas production increased by 5.6% year-on-year, 0.4 percentage points lower than in 2022. Coal-bed methane became an important supplement, accounting for 5% of natural gas production; import volume turned negative to positive, with a year-on-year growth of 9.9%, of which 60% was liquefied natural gas (LNG). Crude oil production reached the highest level since 2016, with a year-on-year increase of 2.1%; imports reached a record high, with a year-on-year increase of 11%. Both natural gas and crude oil import dependence hrebounded. However, as global fossil energy prices fell, natural gas and crude oil import expenditures decreased by 3.4% and 2.6% year-on-year, respectively. [2][3][4][5][6][19]



Note: The import dependence of a specific fuel is calculated by the formula of (annual fuel consumption – annual fuel production) / annual fuel consumption.

Source: NBS, accessed in March 2024

# ${\sf T}$ otal electricity consumption rebounds significantly

In 2023, China's total electricity consumption reached 9,224 TWh, a year-on-year increase of 6.7%, an increase of 3.1 percentage points from 2022. In terms of industries, the recovery of the national economy drove the growth rate of electricity consumption in the secondary industry to increase from 1.2% to 6.5% and the tertiary industry to increase from 4.4% to 12.2%. The growth rate of electricity consumption in the primary industry remained stable at more than 10%, and the electricity consumption of urban and rural residents remained the same as in 2022. The share of electricity in end-use energy consumption reached about 27%, slightly higher than in 2022. In terms of regions, electricity consumption in all 31 provinces across the country showed positive growth, with Western (8.1%), Eastern (6.9%), Northeast (5.1%) and Central China (4.3%) having the most significant year-on-year growth rates. [8][12][14]



**Primary industry** - The main driving forces were rural power grid retrofit and rural electrification. The electricity consumption of the livestock industry increased by 18.3% year-on-year.



Secondary industry - The growth rate of electricity consumption in the high-tech and equipment manufacturing industry continued to lead, reaching 11.3%; the electricity consumption in the fuel processing industry increased by more than 10% year-on-year in each quarter; the end-use consumer goods market gradually recovered, making the electricity consumption growth in the consumer goods manufacturing industry reached 7% year-on-year.



Tertiary industry - The service industry recovered steadily, with electricity consumption in the four major industries<sup>2</sup> growing at a year-on-year rate of 14%-18%; the rapid development of EVs drove the growth rate of electricity consumption in the charging and swapping service industry to 78.1%, compared with 2022, an annual increase of 40 percentage points.



2023 The electricity consumption mix in China (left); 2022-2023 The year-on-year growth rate of electricity consumption by industry (right)

Source: China Electricity Council (CEC) and National Energy Administration (NEA), accessed in January 2024

2 Wholesale and retail, accommodation and catering, leasing and business services, transportation/warehousing and postal services.



# ${f N}$ ewly installed wind power and solar PV capacity reaches nearly 300 GW

By the end of 2023, China's total installed power generation capacity reached 2,920 GW, a year-on-year increase of 13.9%. The growth rate was 6.1 percentage points higher than in 2022, offering a solid foundation of power supply security. **Renewable energy** accounted for 52% of the installed capacity and more than 77% of the annual power investment. The total installed capacity of wind power and solar PV exceeded 1,000 GW for the first time and continued to be the mainstay of newly installed capacity. In 2023, new **wind power and solar PV** installed capacity reached 293 GW, a year-on-year increase of 133%, accounting for more than 80% of the annual newly installed capacity. Investment in wind power and solar PV increased by 33.7% and 60.5% year-on-year, respectively. The newly installed **coal power** capacity reached 38 GW, an increase of 23 GW compared with 2022, and the total installed capacity of coal power reached 1,165 GW, but its proportion fell below 40% for the first time. Since the **14th Five-Year Plan** period (2021-2025), more than 80% of coal power units have completed energy-saving retrofit, more than 90% have completed ultra-low emission retrofit, and more than 50% have achieved in-depth flexible output. The clean and efficient transition of coal-fired power is accelerating. [7][11][12][14]



Renewable energy power accounted for over 50% of the total installed capacity, historically exceeding coal power.



Source: CEC and NEA, accessed in February 2024



2011-2023 The total installed capacity and proportion of coal power

2011-2023 The proportion of non-fossil energy and renewable energy in total installed power generation capacity



Source: CEC, accessed in January 2024



Solar PV - The newly installed solar PV capacity reached 217 GW, the same as the cumulative newly installed capacity in the past four years (2019-2022). Affected by the grid connection of large-scale solar PV bases, utility-scale PV accounted for more than 50%, reaching 119 GW; distributed PV also hit a record high, reaching 96 GW, with distributed industrial and commercial solar PV and household PV each accounting for about 50%. The total installed capacity of solar PV reached 609 GW, a year-on-year increase of 55.3%. Utility-scale PV and distributed PV reached 354 GW and 254 GW, respectively, including 116 GW of household PV. In 2023, China issued the Notice on Supporting the Development of the Solar PV Power Generation Industry and Standardising Land Management (CNH: 关于支持光伏发电产业发展规范用地管理有关工作的通知) and the Notice on Matters Concerning Promoting the Large-scale Development of CSP (CHN: 关于推动光热发电规模化发展有关事项的通知), aiming to standardise the land use for solar PV projects and promote the development of large-scale CSP projects. [7][11][17]



Wind power - The newly installed capacity of wind power reached 76 GW, double that of 2022 and exceeded the "rush to install" in 2020 (72 GW), reaching a historical high, with 69 GW of onshore wind power and 7 GW of offshore wind power. The total installed capacity of wind power reached 440 GW, a year-on-year increase of 20.7%. Onshore and offshore wind power were 404 GW and 37 GW respectively. In 2023, the government issued the *Management Measures for the Renovation, Upgrading, and Decommissioning of Wind Farms* (CHN: 风电场改造升级和退役管理 办法) to encourage wind farms that have been in operation for more than 15 years or have a single unit of less than 1.5 MW to carry out retrofit and upgrades. [7][11]



Pumped hydro - The newly installed capacity of pumped hydro was 6 GW, a year-on-year decrease of 2 GW, but the overall development of the industry accelerated. The government approved 50 new projects (65 GW) in 2023, reaching 1.3 times the total installed capacity in 2023 (51 GW). The Notice on Capacity Electricity Prices and Related Matters of Pumped Storage Power Stations (CHN: 关于抽水蓄能电站容量电价及有关事项的通知) issued by the government clarifies the capacity price mechanism for pumped hydro power stations, which is conducive to forming stable industry development expectations. [11]





Source: NEA, accessed in March 2024





# Renewable energy generation steadily increases

In 2023, the total power generation reached 9,456 TWh, a year-on-year increase of 6.9%, an increase of 3.1 percentage points compared with 2022. In recent years, with the continuous expansion of distributed power sources, the power generation of residents and commercial and small industrial enterprises has continued to expand. The proportion of industrial power generation below the designated scale<sup>3</sup> reached 5.8%, of which more than half was distributed PV, accounting for nearly 40% of the domestic rural residential electricity consumption in 2023. Affected by insufficient reservoir water storage and low precipitation, hydropower utilisation hours decreased by 282 in 2023. To make up for the shortage of hydropower output, the year-on-year growth rate of coal power (+11.8%), nuclear power (+4.1%), and renewable energy (+8.1%) power generation all increased. Coal power accounted for nearly 60% of total power generation and played an important role in power supply security. The combined power generation of wind power and solar PV had a year-on-year growth rate of 23.6%, significantly higher than the growth rate of the total power generation and the total electricity consumption, accounting for more than 15% of the total electricity consumption. The low-carbon transformation of the power sector is advancing steadily. [9][11][14][19][21]



Renewable energy accounted for more than 30% of total power generation and about 1/3 of total electricity consumption.

2023 The total power generation mix (left);

2022 The newly added power generation and year-on-year growth rate by technology (right)



Source: NBS, CEC, and NEA, accessed in March 2024

2011-2023 The proportion of renewable energy, and wind and solar PV in total electricity consumption



Source: Calculated based on CEC and NEA's data, accessed in January 2024

In 2023, power generation units' operational efficiency declined, and the average annual full load hours of 6 MW above power units dropped by 101. The full load hours of wind power and solar PV were basically the same as last year. The average utilisation rates of wind power and solar PV reached 97.3% and 98.0%, respectively, higher than the binding target of 95%. Among them, the wind power utilisation rates in Hebei, western Inner Mongolia, and Qinghai were lower than 95%, and the solar PV utilisation rates in Qinghai and Tibet were lower than 95%. The wind power utilisation rates in Gansu and eastern Mongolia increased significantly. Based on this results, the national wind curtailment rate in 2023 was 2.7%, and the solar curtailment rate was 2.0%. [15]



# New-type energy storage becomes new driving forces

China's new-type energy storage is developing rapidly, with the year-on-year growth rate of installed capacity in operation exceeding 260% in 2023. The cumulative installed capacity in operation has climbed from 8.7 GW to 31.39 GW, ten times that at the end of the 13th Five-Year Plan period (2020). The average energy storage time was 2.1 hours, the same as in 2022. Among them, 15.39 GW of independent energy storage and shared energy storage<sup>4</sup> were installed, mainly used for power system regulation, and the proportion is increasing; 12.26 GW were energy storage supporting facilities for renewable power generation projects. In terms of regions, it's been developing rapidly in Northwest and North China, accounting for 29% and 27%, respectively. Among them, Shandong (3.98 GW), Inner Mongolia (3.54 GW), and Xinjiang (3.09 GW) ranked among the top three in the country. Regarding technology, new-type energy storage generally shows a diversified development trend. Lithium-ion battery energy storage dominated (97.4%), and new technologies such as gravity energy storage, liquid air energy storage, and carbon dioxide energy storage have been implemented.

A Shared energy storage refers to integrating energy storage resources on the three sides of the power supply, users and the power grid, and optimal configuration with the power grid as the hub. It can provide services to the power supply and users and flexibly adjust the operating model to achieve energy storage resource sharing across the entire grid.

Since the 14th Five-Year Plan period, the newly installed capacity of new-type energy storage has driven economic investment of more than 100 billion RMB, becoming a new driving force for China's economic development. The government has issued the Guidelines for the Standard Systems Construction of New Type of Energy Storage (CHN: 新型储能标准体系建设指南) and Technical Guidelines for New-type Energy Storage Planning for Power Transmission and Configuration in New Energy Bases (CHN: 新能源基地送电配置新型储能规划技术导则), aiming to establish a standard system of commercial development of the industry and scientifically allocate supporting energy storage facilities for renewable power generation projects. [6]





By 2023, China has registered 7.43 million new energy vehicles (NEVs), and the number of NEVs exceeded 20 million, accounting for 6.1% of the national vehicle stock. Among them, pure **electric vehicles** (EVs) exceeded 15 million, accounting for 76% of NEVs. **Charging infrastructure** increased by 65% year-on-year to 8 million units, covering 95% of highway service areas nationwide. All localities are actively deploying charging facilities in rural areas to unleash the potential of NEVs. The *Implementation Opinions on Strengthening the Integration and Interaction between New Energy Vehicles and the Power Grid* (CHN: 关于加强新能源汽车与电网 融合互动的实施意见) issued by the government aims to improve the flexibility capabilities of NEV as mobile energy storage. [6][11][13]



#### 2016-2023 Pure EV sales, ownership, and proportion in NEV ownership

# Effective operation of multi-level power markets

In 2023, the power market-oriented transaction volume reached 5,670 TWh, a year-on-year increase of 7.9%, accounting for 61.4% of the total electricity consumption, a year-on-year increase of 0.6 percentage points. The market mechanism has played a decisive role in allocating power resources. New energy has gradually entered the power market, and its market-oriented transaction volume reached 684.5 TWh, accounting for nearly half of the total new energy power generation. The multi-level power market operates effectively, with medium- and long-term contract transactions accounting for 78.1%, and the market size and transaction prices remained stable. Shanxi and Guangdong power spot markets have officially started operation, and the southern regional power spot market has implemented settlement trial operations; the ancillary service market tapped flexible resources by 117 GW and expanded clean energy power consumption by 120 TWh. The *Basic Rules for Electricity Market Operations (Revised Edition)* (CHN: 电力市场运营基本规则 (修订版) and the *Basic Rules for Electricity Spot Market (Trial)* (CHN: 电力现货市场基本规则 (试行)) have been released one after another to provide further regulation and guidance for the operating power market. [6][14]



Source: CEC, accessed in January 2024

# Power sector development outlook and policy trends in 2024 with focus of wind power and solar PV

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### Power sector development outlook in 2024

Considering macroeconomy and electrification factors, the China Electricity Council (CEC) predicts that national electricity demand will increase by 6% in 2024, with total electricity consumption reaching 9,800 TWh. The peak load to increase by 100 GW, a year-on-year increase of approximately 7%. The overall supply and demand of electricity across the country will be in a tight balance, and demand-side response and other measures need to be taken during specific periods. The newly installed power generation capacity to exceed 300 GW, which is basically the same as in 2023. Among them, new coal power capacity will be around 35 GW.

Specifically for wind power and solar PV, the National Energy Administration (NEA) proposed at the 2024 National Energy Work Conference that the target of adding about 200 GW of wind power and solar PV in 2024, which would be a 25% increase from the previous year's target. While based on the current project reserves and development inertia, the actual scale of new additions may exceed this target. In 2024, the second and third batches of large-scale wind and solar bases and supporting CSP projects will be connected to the grid successively; distributed solar PV will still maintain a high installed capacity; distributed wind power and deep-sea offshore wind power will see a certain increase. Based on these, the CEC predicts that the newly installed power generation capacity of wind power and solar PV will reach 90 GW and 170 GW, respectively. By the end of 2024, China's total installed power generation capacity is expected to reach 3,250 GW, with wind power and solar PV accounting for 40%, surpassing coal power for the first time. [14][20]



#### 2020-2024E The total installed power generation capacity by technology



# ${f M}$ ultiple factors drive the installed capacity of wind power and solar PV to maintain a high level of growth

#### **O1** Energy consumption is growing faster than expected

China's energy consumption is growing faster than expected, while hydropower generation has declined recently. To achieve the goal of non-fossil energy accounting for 20% (2025) and 25% (2030) of total primary energy consumption, wind power and solar PV are the main forces to fill the "gap" in renewable energy supply.

# **03** China's contribution to the global 2030 renewable capacity target

The China-US *Sunnylands Statement* proposed the goal of tripling global renewable energy installed capacity by 2030 and received support from COP28. Wind power and solar PV will be essential starting points for China to support the implementation of this goal.

#### **02** Energy intensity and CO<sub>2</sub> intensity reduction lagged

The mid-term evaluation results of the **14th** *Five-Year Plan* show that the reduction of energy consumption per unit of GDP and the reduction of carbon dioxide emissions per unit of GDP need to catch up. Increasing renewable energy supply and taking effective substitute actions is particularly important.

# 04 To stabilise domestic new energy manufacturing industry

Fierce market competition has resulted in lower prices for domestic solar PV products and wind turbines. Promoting wind and solar development will help stabilise the domestic new energy manufacturing industry.

### ${f S}$ trengthen renewable power consumption from policy and market perspectives

In 2024, the power system will face more significant challenges in accommodating variable renewable energy (VRE), and the risk of wind and solar curtailment increases; it is necessary to promote the application of flexible resources through market-oriented means. For example, the government encourages renewable energy and flexible coal power to jointly sign medium- and long-term contracts with users and implement time-of-use electricity prices on both the grid and user sides. As the proportion of distributed power sources continues to increase, at the technical level, it's necessary to intensify distribution grid retrofit to improve its grid-connection capacity and technical control level; at the land level, to implement the rural land use regulation and business model; at the market level, to improve the proportion of household PV self-consumption, improving the time-of-use electricity price policy, and exploring participation in the power market through aggregators.

--- Shi Jingli, Professor at the Energy Research Institute of the Chinese Academy of Macroeconomic Research [20]



# New energy policy trends in 2024

Regarding policy formulation, China will launch preliminary research work on the **15th Five-Year** (2026-2030) and Medium- and long-term Power Planning ahead of schedule, according to the NEA. Regarding renewable energy, the government will continue to amend the Renewable Energy Law and promote international mutual recognition of green certificates. By formulating the 2024 Mandatory Renewable Power Consumption Targets (i.e. minimum consumption target) and the reasonable utilisation rates of wind power and solar PV (i.e. wind power and solar PV curtailment control target), the "lower limit" and "upper limit" of wind power and solar PV development will be clarified. Regarding distributed power sources, the energy authorities will issue the Management Measures of Distributed Solar PV Power Generation Projects (CHN: 分布式光伏发电项目管理办法) to further improve industry management. At the same time, to continue to promote the orderly development of flexible resources, the government will carry out specific layout research on the Medium- and Long-term Plan for CSP (CHN: 光热发电中长期规划) and complete the layout optimisation of the planned projects for 2024-2028 in the Medium- and Long-term Plan for Pumped Hydropower Storage (2021-2035) (CHN: 抽水蓄能中长期规划) (2021-2035) ). [11][12]



Note: This is ranked by the surplus amount of actual consumption in 2021 compared with the indicative target of 2024.

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# Appendix - 2023 China Energy and Power Data Summary Table

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Total Gillion too)     3.7     5.75     [19]       Attual ag Lillion too)     4.7     5.76     [19] calculated       Stans of pat and cone foal     55.36     0.7 pat     [19]       Stans of pat and cone foal     55.36     0.7 pat     [19]       Stans of pat and cone foal     177     0.2 pat     [19]       Stans of pat and cone foal     4.7     3.4%     [19]       Calculation fool     2.0     2.7%     [19]       Calculation fool     2.0     9.7%     [19]       Calculation fool     10.5     10.8%     [10]       Calculation fool     10.5     10.8%     [10]       Calculation fool     10.7% <td< td=""><td>Energy consumption</td><td>Data</td><td></td><td>Reference</td><td></td></td<>	Energy consumption	Data		Reference	
Cont Nation 10004-75-76[19] calculatedCrucke of union 10017-649.1%[19] calculatedShare of a non-hoad hal7-770.2 pct[19]Fanar y production7-649.2%[19]Fanar y production7-780.2 pct[19]Crucke of Union 10014.773.4%[19]Crucke of Union 10014.773.4%[19]Crucke of Union 10014.773.4%[19]Crucke of Union 10014.773.4%[19]Crucke of Union 10012.95.5%[19]Crucke of Union 10015.441.0%[19]Crucke of Union 10015.441.0%[19]Crucke of Union 10015.441.0%[19]Crucke of Union 10015.441.0%[10]Crucke of Union 10015.441.0%[10]Crucke of Union 10015.441.0%[10]Crucke of Union 10015.441.0%[10]Crucke of Union 10011.2%1.0%[10]Crucke of Union 10011.1%1.1%[10]Crucke of Union 10011.1%1.1%[10]Crucke of Union 10011.1%1.1%[10]Crucke of Union 10011.1%1.1%[10]Crucke	Total (billion tce)	5.7	5.7%	[19]	[19]
Attack and spin Billion mai)     400     7.26     [10] scalarded       Share of coal     553%     0.7 pct     [19] ackulated       Share of coal     553%     0.7 pct     [19] ackulated       Share of coal     553%     0.7 pct     [19] ackulated       Share of coal     4.23     [19]     100       Share of coal     4.23     [19]     100       Share of coal     4.23     [19]     100       Share of coal     4.24     [19]     100       Matural gan Dillion rah     2.22     5.6%     [19]     100       Cada     4.20     9.5%     [19]     100       Cada     4.20     9.5%     [19]     100       Stard gan     100     9.5%     [10]     100       Stard gan factor hots fall     100     9.5%     [10]     100       Stard gan factor hots fall     1032     1005     100     100       Stard gan factor hots fall     1025     101     101     101     101     1010     101     1010	Coal (billion tons)	4.7	5.6%	[19] calculated	[19]
Crude of prillin tang)     764     9.%     191 calculated       Share of par form-foot if hall     177%     0.2 pct     191 calculated       Lency paraduction	Natural gas (billion m3)	400	7.2%	[19] calculated	[19]
Share of call     153.3%     0.7 pct     193 called of the second	(rude oil (million tons)	764	9.1%	[19] calculated	[19]
Jame of an incritical (Jame)     Jame of an incritical (Jame)     Jame of an incritical (Jame)       Energy production     4.2     [19] calculated (Jame)       Energy production     4.7     3.4%     [19]       Energy production     2.22     5.6%     [19]       Energy input (Illino ton)     2.23     5.6%     [19]       Code (Illino ton)     2.24     5.6%     [19]       Code (Illino ton)     2.23     5.6%     [19]       Code (Illino ton)     2.24     6.7%     [18]       Code (Illino ton)     2.25     [17]     [17]       Code (Illino ton)     2.25     [17]     [17]       Code (Illino ton)     2.25     [17]     [17]       Code (Illino ton)     2.25     [17] <td>Share of coal</td> <td>55.2%</td> <td>-0.7 pct</td> <td>[10] calculated</td> <td>[15]</td>	Share of coal	55.2%	-0.7 pct	[10] calculated	[15]
Salar Control     Display Control     Display Control     Display Control       Test Infian real Reary production     4.8     4.25     [19]       Call Infian real Rear call (infian real)     4.27     4.85     [19]       Natural gas (billion real)     2.30     6.66     [19]       Cade of Infian trans)     2.35     [19]     1.55       Cade of Infian trans)     2.35     [19]     1.55       Cade of Infian trans)     2.35     [19]     1.55       Cade of Infian trans)     1.95     1.95     1.95       Cade of Infian trans)     1.95     1.95     1.95       Cade of Infian trans     1.35     1.95     1.95       Cade of Infian trans     1.95     2.55     1.95       Secondary Industry     6.05     6.55     1.95       Readorital Industry     1.95     2.45     1.95       Readorital Industry     1.95     2.45     1.91     1.91       Test Industry     1.95     2.45     1.91     1.91     1.91     1.91     1.91     1.91     1.91 <td>Share of coal</td> <td>17 70/</td> <td>-0.7 pct</td> <td>[10] coloulated</td> <td>[19]</td>	Share of coal	17 70/	-0.7 pct	[10] coloulated	[19]
Factor y include 200     Unit of Call fullion (Call fullion (Cal	Share of gas and non-fossil fuel	17.7%	0.2 pct	[19] calculated	[1]
Idal Biolon Re)   4.8   4.7*   193     Natual gas (billion rei)   232   5.6%   193     Conde of Miller toren)   239   2.7%   193     Conde (miller toren)   239   9.7%   193     Conde (miller toren)   230   9.7%   193     Conde (miller toren)   234   0.7%   18     Conde (miller toren)   234   0.5%   13     Secondary Industry   1059   0.22%   18     Conde (miller toren)   235   13   14     Conde (miller toren)   235   13   14     Conde (miller toren)   235   13   14   14     Secondary Industry   1059   0.22%   13   14   14   14     Conde (miller toren)   248   17   17   14   17   15   14   17   15   14   14   14   14	Energy production				
Rav cos (e)line rons)     4.7     3.4%     [19]       Crude oil (rellion rons)     232     5.6%     [19]       Crude oil (rellion rons)     232     5.6%     [19]       Crude oil (rellion rons)     232     5.6%     [19]       Crude oil     564     110%     [19]       Crude oil     564     110%     [19]       Crude oil     564     110%     [10]       Crude oil     564     110%     [10]       Crude oil     522     6.7%     [8]       Crude oil     1352     0.4%     [8]       Crude oil orbits// (obs/)     152     0.4%     [10]       Crude oil orbits// (obs/)     152     0.4%     [10]       Crude oil orbits// (obs/)     17     17%     [7]     [7]       Tertus / industry     166     4.22%     [7]     [10]     [10]     [10]       Crude oil orbits/ (obs/)     [11]     13.3%     [11]     [11]     [12]     [12]     [13]       Crude oil orbits/ (obs/)     [12]	lotal (billion tce)	4.8	4.2%	[19]	[19]
Natural aga (billion m3)     222     5.6%     [19]       Craced of (million tom)     209     2.1%     [19]       Canal     474     61.8%     [19]       Natural gas     100     9.9%     109]       Curde of     564     11.0%     [19]       Electricity consumption (WW)     20     5.5%     [8]       Total     9224     6.7%     [8]       Primary industry     0073     6.3%     [8]       Secondary industry     0073     6.3%     [8]       Total     2280     13.9%     [7]       Total     2280     13.9%     [7]       Total     2280     [7]     [7][10] calculated       of which coll cabass heat, surplus pressure     64     21.2%     [7][10] calculated       of which coll cabass heat, surplus pressure     51     13.2%     [14]     [14] calculated       of which coll cabass heat, surplus pressure     51     13.2%     [14]     [14] calculated       of which coll cabass heat, surplus pressure     51     2.3%     [17]	Raw coal (billion tons)	4.7	3.4%	[19]	[19]
Cude of million tom) 29 2.75 [19] Energy inspect (million tom) 424 6.83% [93] Energy inspect (million tom) 54 74 6.83% [93] Energy inspect (million tom) 554 710% [93] Energy inspect (million tom) 754 756 757 [93] Energy inspect (million tom) 754 757 [93] Energy inspect (million tom) 754 757 [93] Energy inspect (million tom) 755 757 [93] Energy inspect (million tom) 757 [93] Energy	Natural gas (billion m3)	232	5.6%	[19]	[19]
Internet (nullion tons)     Unit     Un	Crude oil (million tons)	209	2.1%	[19]	[19]
Coal     474     6.8.3%     [93]       Inturing as     120     9.99%     [193]       Cructe al     564     11.0%     [193]       Internation (Wh)     128     11.5%     [18]       Primary Industry     126     6.5%     [18]       Testian (Justry)     1669     12.2%     8.18       Residential     1352     0.9%     [19]       Testian (Justry)     1669     12.2%     181       Power Installed capacity (CW)     100     110     12.3%     [194]     calculated       Testian (Justry)     1260     12.3%     [194]     calculated     [7][14] calculated	Energy import (million tons)				
Natural gas   170   9.9%   [19]     Crucke oil   554   110%   [19]     Eletricity consumption (IWh)   7   7   7     Total   9.224   6.7%   [8]   7     Total prinary industy   105   6.5%   [8]   7     Tertinary industy   105   6.5%   [8]   7     Tertinary industy   166   2.2%   [8]   7     Total   2.2%   13.9%   [7]   14.6     Owner installed capacity (KW)   7   7   2.4%   [7]   [7	Coal	474	61.8%	[19]	[19]
Crude oil   564   110%   [19]     Identicity consumption (TWh)   128   11.5%   [8]     Primary Industry   1055   6.5%   [8]     Tentiary Industry   1669   12.2%   [8]     Residential   1332   0.9%   [8]   100     Power Installed capacity (CW)   100   100   100   100     Internal *   1846   4.2%   [7][14] calculated   [7][14] calcul	Natural gas	120	9.9%	[19]	[19]
Heriticity consumption (1Wh)     Image     Image <thimage< th="">     Image     <thi< td=""><td>Crude oil</td><td>564</td><td>11.0%</td><td>[19]</td><td>[19]</td></thi<></thimage<>	Crude oil	564	11.0%	[19]	[19]
Intary industry     128     115%     (B)       Primary industry     1699     12.2%     (B)       Tertiany industry     1669     12.2%     (B)       Residential     1352     0.9%     (B)       Promer installed capacity (CW)     T     T     T       Total     2.920     13.9%     (T)       Thermal *     1346     4.2%     (T)[14] calculated     (T)[14] calculated       of which coal     1165     3.4%     (T4)     (T)[14] calculated     (T)[14] calculated       of which coal ages     77     2.4%     (T)[14] (b) calculated     (T)[14] (calculated     (T)	Electricity consumption (TWh)				
Primary Industry     128     11.5%     18       Secondary Industry     669     625     63     63       Tetraly Industry     1669     12.2%     68       Residential     1352     0.9%     88       Tetraly Industry     1346     4.2%     [7][14] calculated     [7][14] calculated       Internal*     1346     4.2%     [7][14] calculated     [7][14] calculated       of which out, shows the ta, surplus pressure     64     2.2%     [7][14] (calculated	Total	9224	6.7%	[8]	[8]
Investory     Doc     Non- transponder     Non- transpon     No- tr	Primary Industry	128	11 5%	[8]	[8]
Securitary industry     669     12.25     [8]       Residential     1352     0.9%     [8]       Power installed capacity (GW)	Socondany Industry	6075	6.5%	[0]	[0]
Interval mutanty   10003   0.2.1%   (b)     Residential   1352   0.9%   [B]     Power Installed capacity (GW)	Testiens ladustes	1660	12.29/	[0]	[0]
NetBerlind     1532     0.9%     [b]       Power installed capacity (GW)     1     1       Total     2920     13.9%     [7]       Thermal*     1346     4.2%     [7][14] calculated     [7][14] calculated       of which cal     1165     3.4%     [14]     [16]       of which cal     117     1.2%     [7][14] calculated     [7][14][16] calculated       Vaclear     57     2.4%     [7]     [7]       of which on use haust hest, surplus pressure     64     21.2%     [7][14][16] calculated     [7][14][16] calculated       Vaclear     57     2.4%     [7]     [7]     [7]       of which onshore wind     404     20.6%     [14]     [14] calculated       of which onshore wind     361     51.2%     [17]     [17] calculated       of which onshore wind     37     22.2%     [14]     [14] calculated       of which onshore wind     37     22.2%     [14]     [14] calculated       of which outlify-scale PV     65     0.0%     [18]     [18]     <	Tertiary Industry	1009	12.2%	[8]	[8]
Dower installed capacity (GW)     (7)       Internal *     1346     4.2%     (7)[14] calculated     (7)[14] calculated       of which ratural gas     117     1.2%     (7)[16] calculated     (7)[14] [16] calculated       of which ratural gas     117     1.2%     (7)[14] [16] calculated     (7)[14] [16] calculated     (7)[14] [16] calculated       Nuclear     57     2.4%     (7)     (7)       Hydro     4422     1.8%     (7)       Of which purped storage     51     13.2%     [14]     [14] calculated       Of which ourshore wind     444     20.7%     (7)     [14] calculated       of which offshore wind     37     2.2.2%     [14]     [14] calculated       of which distributed PV     2.54     61.4%     [17]     [17] calculated       of which distributed PV     2.54     61.4%     [17]     [17] calculated       Oxoregeneration (Whith)     1.57     2.51%     [14] calculated     [14] calculated       Non-fossil fuel     1571     2.51%     [14] calculated     [14] calculated       Renewexbie	Residential	1352	0.9%	[8]	[8]
Total     2920     13.9%     (7)       Thermal*     1346     4.2%     [7][14] calculated     [7][14] calculated       of which coal     1165     3.4%     [14]     [7][16] calculated     [7][16] calculated       of which oil, shouth beat, surplus pressure     64     21.2%     [7][14](16] calculated     [7][14](16] calculated     [7][14](16] calculated       Nuclear     57     2.4%     [7]     calculated     [7][14](16] calculated     [7][14](16] calculated       Wind     422     1.8%     [7]     calculated     [7][14](16] calculated     [7][14](16] calculated       of which onshore wind     444     20.7%     [7]     [14]     [14] calculate       of which onshore wind     444     8.3%     [17]     [17] calculated     [7][14] calculated     [7][14] calculated       of which distributed PV     254     6.4%     [17]     [17] calculated     [7][14] calculated	Power installed capacity (GW)				
Thermal *   1346   4.2%   [7][14] calculated   [7][14] calculated     of which cal   115   3.4%   [74]   1     of which natural gas   117   1.2%   [7][16] calculated   [7][16] calculated     of which oil, exhaust heat, surplus pressure   64   21.2%   [7][14][16] calculated   [7][14][16] calculated     Nuclear   57   2.4%   [7]   [7]   [7]     Hydro   422   1.0%   [7]   [7]     of which orshore wind   444   20.7%   [7]   [7]     of which offshore wind   37   22.2%   [14]   [14] calculated     of which offshore wind   37   22.2%   [14]   [14] calculated     of which offshore wind   37   22.2%   [14]   [14] calculated     of which offshore wind   37   22.2%   [14]   [14] calculated     of which offshore wind   37   22.2%   [14]   [14] calculated     of which offshore wind   37   22.3%   [17]   [17] calculated     Cylear   6.0   0.5%   [17]   [17] calculated   [1	Total	2920	13.9%	[7]	[7]
of which coal     1165     3.4%     [14]       of which natural gas     117     1.2%     [7][16] calculated	Thermal *	1346	4.2%	[7][14] calculated	[7][14] calculated
of which natural gas   117   1.2%   [7][16] calculated   [7][16] calculated     of which noil, exhaust heat, surplus pressure   64   21.2%   [7][14][16] calculated   [7][14][16] calculated     Nuclear   57   2.4%   [7]     Hydro   422   1.8%   [7]     of which pumped storage   51   13.2%   [14]   [14] calculated     Of which orshore wind   444   20.7%   [7]   [7] calculated     of which orshore wind   37   2.2%   [14]   [14] calculated     Solar PV   609   55.3%   [17]   [17] calculated     of which distributed PV   254   61.4%   [17]   [17] calculated     of which distributed PV   254   61.4%   [17]   [17] calculated     of which distributed PV   254   61.4%   [17]   [17] calculated     Solar PV   254   61.4%   [17]   [17] calculated     Gradit   53.9%   43.9ct   [14] calculated   [14] calculated     Rewetable energy   157   2.5.1%   [14] calculated   [14] calculated     Share of	of which coal	1165	3.4%	[14]	[14]
of which all, exhaust heat, surplus pressure   64   21.2%   [7][14][16] calculat   [7][14][16] calculat     and gases   57   2.4%   [7]     Hydro   422   13.8%   [7]     of which pumped storage   51   13.2%   [14]   [14] calculat     of which onshore wind   404   20.6%   [14]   [14] calculat     Solar PV   609   55.3%   [17]   [17] calculat     of which offshore wind   374   22.2%   [14]   [14] calculat     Solar PV   609   55.3%   [17]   [17] calculat     of which distributed PV   234   51.2%   [17]   [17] calculat     CSP   0.6   0.0%   [18]   [18] calculat     Biomass   44   8.3%   [7][14] calculated   [7][14] calculat     New-type energy storage   31   200.0%   [6]     Nan-fossil fuel   157   2.37%   [14] calculat   [7][14] calculat     Share of non-fossil fuel   5574   1.38%   [19]   [10] calculat     of which natural gas, oil, exhaust heat, surplus   386   -13.1	of which natural gas	117	1.2%	[7][16] calculated	[7][16] calculated
and gases     64     21.2%     [7][14][16] calculated     [7][14][16] calculated     [7][14][16] calculated       Nuclear     57     2.4%     [7]       of which pumped storage     51     13.2%     [14]     [14] calculated       Wind     441     20.0%     [14]     [14] calculated       of which onshore wind     444     20.6%     [14]     [14] calculated       of which offshore wind     37     22.2%     [14]     [14] calculated       of which offshore wind     37     22.2%     [17]     [17] calculated       of which distributed PV     254     61.4%     [17]     [17] calculated       of which distributed PV     254     61.4%     [17]     [17] calculated       Solar PV     66     0.0%     [18]     [18] calculated       Biomass     144     8.3%     [7][14] calculated     [14] calculated       Renewable energy     1517     25.1%     [14] calculated     [14] calculated       Share of non-fossil fuel     5674     11.8%     [19]     [111] calculated     [21] [11] calcu	of which oil, exhaust heat, surplus pressure	<i></i>	24.22/		
Nuclear     57     2.4%     [7]       Hydro     422     1.8%     [7]       of which pumped storage     51     13.2%     [14]     [14] calcular       of which onshore wind     441     20.7%     [7]     calcular       of which onshore wind     37     22.2%     [14]     [14] calcular       Solar PV     669     55.3%     [17]     [17] calcular       of which distributed PV     254     61.4%     [17]     [17] calcular       CSP     0.6     0.0%     [18]     [18] calcular       Biomass     44     8.3%     [7][14] calculard     [7][14] calculard       New-type energy storage     31     260.0%     [18]     [18] calcular       Share of non-fossil fuel     53.9%     4.3pt     [7][14] calculard     [7][14] calculard       Share of non-fossil fuel     53.9%     4.3pt     [7][19] calculard     [7][14] calculard       Of which cal     5674     1.8%     [19]     [11][19] calcular       of which cals     574     1.8%     [10][19] calcular	and gases	64	21.2%	[/][14][16] calculated	[/][14][16] calculated
Hydro   422   1.8%   [7]     of which pumped storage   51   13.2%   [14] <td< td=""><td>Nuclear</td><td>57</td><td>2.4%</td><td>[7]</td><td>[7]</td></td<>	Nuclear	57	2.4%	[7]	[7]
Number     Numer     Numer     Numer <td>Hydro</td> <td>422</td> <td>1.8%</td> <td>[7]</td> <td>[7]</td>	Hydro	422	1.8%	[7]	[7]
Or Mind     1     1.2.5     (H)	of which numbed storage		13.2%	[1/]	[1/] calculated
Wind     441     20.7.5     [1]       of which onshore wind     444     20.65%     [14]     [14] calcula       of which onshore wind     37     22.2%     [14]     [14] calcula       of which offshore wind     37     22.2%     [14]     [14] calcula       of which distributed PV     354     51.2%     [17]     [17] calcula       of which distributed PV     254     61.4%     [17]     [17] calcula       Biomass     44     8.3%     [7][14] calculated     [7][14] calculated       Biomass     44     8.3%     [7][14] calculated     [7][14] calculated       Non-fossil fuel     1574     23.7%     [14] calculated     [14] calculated       Share of non-fossil fuel     53.3%     4.3pct     [14] calculated     [7][14] calculated       Share of non-fossil fuel     53.9%     4.3pct     [7][14] calculated     [7][14] calculated       Fhermal*     6070     9.4%     [8][11][19] calculated     [7][14] calculated     [7][14] calculated       of which call     5674     11.8%     [14][19] calculated	Wind	J	13.270	[14]	[14] Calculated
of winch offshore wind     444     2.0.8%     [14]     [14] (alcula)       Solar PV     609     55.3%     [17]     [17] calcula       of which diffshore wind     37     2.2.2%     [14]     [14] calcula       of which diffshore wind     37     2.2.2%     [14]     [14] calcula       of which diffshore wind     37     2.2.2%     [14]     [11] calcula       of which diffshore wind     37     2.2.2%     [17]     [17] calcula       of which diffshore wind     37     2.2.3%     [17]     [17] calcula       of which diffshore wind     57     6.0.0%     [18]     [18] calculat       Biomass     44     8.3%     [7][14] calculated     [7][14] calculated     [7][14] calculated       Non-fossil fuel     53.9%     4.3pct     [7][14] calculated     [7][14] calculated     [7][14] calculated       Share of non-fossil fuel     53.9%     4.3pct     [7][14] calculated     [7][14] calculated     [7][14] calculated       Or which coal     6070     9.4%     [8][11][19] calculated     [8][11][19] calculated     [8][11][19] calc	wind .	441	20.7%	[7]	[/]
of which offshore wind   37   22.2%   [14]   [14] calcula     Solar PV   609   55.3%   [17]   [17] calcula     of which distributed PV   254   61.4%   [17]   [17] calcula     CSP   0.6   0.0%   [18]   [18] calcula     Biomass   44   8.3%   [7][14] calculated   [7][14] calculated     New-type energy storage   31   260.0%   [6]   [14] calculated     New-type energy storage   31   260.0%   [6]   [14] calculated     Renewable energy   1517   25.3%   [14] calculated   [14] calculated     Share of non-fossil fuel   53.9%   4.3pct   [14] calculated   [7][14] calculated     Power generation (TWh)   Total   9455   6.7%   [19]   [11][19] calculated     of which natural gas, oil, exhaust heat, surplus   36   -13.1%   [8][11][19] calculated   [14][11] calculated     Nuclear   435   4.1%   [19]   [11][19] calculated   [11][11] calculated   [11][11]   [11][11] calculated     Nuclear   584   36.7%   [19]   [11][11][12] calculate	of which onshore wind	404	20.6%	[14]	[14] calculated
Solar PV   609   55.3%   [17]   [17]   [17] calcula     of which utility-scale PV   354   51.2%   [17]   [17] calcula     CSP   0.6   0.0%   [18]   [18] calcula     Biomass   44   8.3%   [7][14] calculated   [7][14] calculated     New-type energy storage   31   260.0%   [6]     Non-fossil fuel   1574   23.7%   [14] calculated   [14] calculated     Renewable energy   1517   25.1%   [14] calculated   [14] calculated     Share of non-fossil fuel   53.9%   4.3pct   [7][14] calculated   [7][14] calculated     Share of non-fossil fuel   53.9%   4.3pct   [7][14] calculated   [7][14] calculated     Of which coal   65674   11.8%   [14][19] calculated   [8][11][19] calculated     of which natural gas, oil, exhaust heat, surplus   396   -13.1%   [8][11][19] calculated   [14][19] calculated     of which natural gas, oil, exhaust heat, surplus   396   -13.1%   [8][11][19] calculated   [8][11][19] calculated     Nuclear   4355   4.1%   [19]   [8][11][19] calculated <t< td=""><td>of which offshore wind</td><td>37</td><td>22.2%</td><td>[14]</td><td>[14] calculated</td></t<>	of which offshore wind	37	22.2%	[14]	[14] calculated
of which utility-scale PV 354 51.2% [17] [17] calcula of which utility-scale PV 254 61.4% [17] [17] calcula CSP 0.6 0.0% [18] [18] calcula Biomass 44 8.3% [7][14] calculated 48.3% [7][14] calculated 17][14] calculated 17][14] calculated 7] [7][14] calculated 17][14] calculated 7] [7][14] calculate 7] [7][16] calculate 7] [7][16] calculate 7] [7][16] calculate 7] [7][17] ca	Solar PV	609	55.3%	[17]	[17] calculated
of which distributed PV   254   61.4%   [17]   [17] calcula     CSP   0.6   0.0%   [18]   [18] calcula     Biomass   44   8.3%   [7][14] calculated   [7][14] calculated     New-type energy storage   31   260.0%   [6]     Nen-fossil fuel   1574   23.7%   [14] calculated   [14] calculated     Renewable energy   1517   25.1%   [14] calculated   [14] calculated     Share of non-fossil fuel   53.9%   4.3pct   [14] calculated   [7][14] calculated     Share of non-fossil fuel   9456   6.9%   [19]   [11]   [11]   [11]   [11]   [11]   [11]   [14] calculated     of which coal   5674   11.8%   [14][19] calculated   [14][19] calculate   [14][11][19] calculate   [14][11][19] calculate   [14][10] calculate   [14][10] calculate   [111	of which utility-scale PV	354	51.2%	[17]	[17] calculated
CSP   0.6   0.0%   [18]   [18]   [18]   [18]   [18]   [18]   [18]   [18]   [18]   [18]   [18]   [18]   [18]   [18]   [19]   [14]   [11]	of which distributed PV	254	61.4%	[17]	[17] calculated
Biomass   44   8.3%   [7][14] calculated   [7][14] calculated     New-type energy storage   31   260.0%   [6]     Non-fossil fuel   1574   23.7%   [14] calculated   [14] calculated     Renewable energy   1517   25.1%   [14] calculated   [14] calculated     Share of non-fossil fuel   53.9%   4.3pct   [7][14] calculated   [7][14] calculated     Power generation (TWh)   (Total   6070   9.4%   [8][11][19] calculated   [8][11][19] calculated     Thermal *   6070   9.4%   [8][11][19] calculated   [14][19] calculated   [14][19] calculated     of which coal   5674   11.8%   [14][19] calculated   [8][11][19] calculated   [8][11][19] calculated     pressure and gases   396   -13.1%   [8][11][19] calculated   [8][11][14]     Nuclear   435   4.1%   [19]   [8][11][14]     Wind   886   16.2%   [19]   [8][11][14]     Solar   584   36.7%   [19]   [8][11][19] calculated     Biomass   196   6.3%   [8][11][19] calculated   [8][11][19] calculated <td>CSP</td> <td>0.6</td> <td>0.0%</td> <td>[18]</td> <td>[18] calculated</td>	CSP	0.6	0.0%	[18]	[18] calculated
New-type energy storage     31     260.0%     [6]       Non-fossil fuel     1574     23.7%     [14] calculated     [14] calculated       Renewable energy     1517     25.1%     [14] calculated     [14] calculated       Share of non-fossil fuel     53.3%     4.3pct     [7][14] calculated     [7][14] calculated       Share of non-fossil fuel     53.3%     4.3pct     [7][14] calculated     [7][14] calculated       Power generation (TWh)     Total     94556     6.9%     [19]       Thermal *     6070     9.4%     [8][11][19] calculated     [14][19] calculated       of which coal     5674     11.8%     [14][19] calculated     [14][19] calculated       of which natural gas, oil, exhaust heat, surplus     396     -13.1%     [28][111][14]     [8][111][19] calculated     [8][111][19] calculated       Nuclear     435     4.1%     [19]     50ar     [19]     50ar       Solar     584     36.7%     [19]     50ar     [8][11][19] calculated     [8][11][19] calculated       Non-fossil fuel     3386     7.6%     [19] <td< td=""><td>Biomass</td><td>44</td><td>8.3%</td><td>[7][14] calculated</td><td>[7][14] calculated</td></td<>	Biomass	44	8.3%	[7][14] calculated	[7][14] calculated
Non-fossil fuel     1574     23.7%     [14] calculated     [14] calculated       Renewable energy     1517     25.1%     [14] calculated     [14] calculated       Share of non-fossil fuel     53.9%     4.3pct     [14]     [14] calculated       Share of newable energy     52.0%     4.7pct     [7][14] calculated     [7][14] calculated       Power generation (IWh)     T     T     Total     9456     6.9%     [19]       Thermal *     6070     9.4%     [8][11][19] calculated     [8][11][19] calculated     [14][19] calculated       of which coal     5674     11.8%     [14][19] calculated     [14][19] calculated     [14][19] calculated       of which natural gas, oil, exhaust heat, surplus     396     -13.1%     [3][11][11][14]     [3][11][14]       pressure and gases     1286     -4.9%     [19]     14       Hydro     1286     -4.9%     [19]     14       Wind     886     16.2%     [19]     15       Solar     584     36.7%     [19]     16       Solar     3386	New-type energy storage	31	260.0%	[6]	[6]
Renewable energy     1517     25.1%     [14] calculated     [14] calculated       Share of non-fossil fuel     53.9%     4.3pct     [14]     [14] calculated       Share of nenewable energy     52.0%     4.7pct     [7][14] calculated     [7][14] calculated       Power generation (TWh)       (14]     [14] calculated     [7][14] calculated     [8][11][19] calculated     [8][11][19] calculated     [8][11][19] calculated     [8][11][19] calculated     [8][11][19] calculated     [8][11][19] calculated     [14] [19] calculated     [14] [11] calculated     [11] [	Non-fossil fuel	1574	23.7%	[14] calculated	[14] calculated
Share of non-fossil fuel     53.9%     4.3pct     [14]     [14]     calculat       Share of renewable energy     52.0%     4.7pct     [7][14] calculated     [8][11][19] calculated     [8][11][19] calculated     [8][11][19] calculated     [8][11][19] calculated     [8][11][19] calculated     [14][19] calculated     [19]     [11] <td< td=""><td>Renewable energy</td><td>1517</td><td>25.1%</td><td>[14] calculated</td><td>[14] calculated</td></td<>	Renewable energy	1517	25.1%	[14] calculated	[14] calculated
Share of renewable energy   52.0%   4.7pct   [7][14] calculated   [7][14] calculated     Power generation (IWh)   Total   9456   6.9%   [19]     Total   9456   6.9%   [19]   [8][11][19] calculated	Share of non-fossil fuel	53.9%	4 3pct	[14]	[14] calculated
Description of the function of the functin of the function of the functin of the function of th	Share of renewable energy	52.0%	4.7pct	[7][1/] calculated	[7][1/] calculated
Total     9456     6.9%     [[9]       Total     9456     6.9%     [[9]       Thermal *     6070     9.4%     [[8][11][19] calculated     [8][11][19] calculated     [8][11][19] calculated     [8][11][19] calculated     [8][11][19] calculated     [8][11][19] calcul	Power generation (TW/b)	52.070	4.7 pet	[/][I+] calculated	
Thermal *   6070   9.4%   [8][11][19] calculated   [8][11][19] calculated     of which coal   5674   11.8%   [14][19] calculated   [14][19] calculated     of which natural gas, oil, exhaust heat, surplus   396   -13.1%   [8][111][14][19]   [8][111][14][19]     pressure and gases   396   -13.1%   [8][111][19] calculated   calculated   calculated     Nuclear   435   4.1%   [19]       Hydro   1286   -4.9%   [19]      Solar   584   36.7%   [19]      Biomass   196   6.3%   [8][111][19] calculated   [8][111][19] calculated <t< td=""><td>Total</td><td>0456</td><td>6.0%</td><td>[10]</td><td>[10]</td></t<>	Total	0456	6.0%	[10]	[10]
Inergal   60/0   94%   [8][11][19] calculated   [8][11][19] calculated     of which coal   5674   11.8%   [14][19] calculated   [14][19] calculated     of which natural gas, oil, exhaust heat, surplus   396   -13.1%   [8][11][14]   [8][11][14]     pressure and gases   396   -13.1%   [8][11][19] calculated   calculated     Nuclear   435   4.1%   [19]     Hydro   1286   -4.9%   [19]     Wind   886   16.2%   [19]     Solar   584   36.7%   [19]     Biomass   196   6.3%   [8][11][19] calculated   [8][11][19] calculated     Non-fossil fuel   3386   7.6%   [8][11][19] calculated   [8][11][19] calculated     Share of non-fossil fuel   35.8%   0.3pct   [8][11][19] calculated   [8][11][19] calculated     Share of non-fossil fuel   35.8%   0.3pct   [8][11][19] calculated   [8][11][19] calculated     Share of non-fossil fuel   3592   -101   [14]   1     Otilization hours (hours)   Itilization hours (hours)   Itilization hours (hours)   Itiliiiiiiiiiiiiiiiiiiii	Theread *	9430	0.9%	[17]	[81]
of which coal   56/4   11.8%   [14][19] calculated   [14][19] calculated     of which natural gas, oil, exhaust heat, surplus   396   -13.1%   [8][111][14]   [8][111][14]     pressure and gases   396   -13.1%   [8][111][14]   calculated   calculated     Nuclear   435   4.1%   [19]       Hydro   1286   -4.9%   [19]       Solar   584   36.7%   [19]       Biomass   196   6.3%   [8][111][19] calculated   [8][111][19] calculated   [8][111][19] calculated     Non-fossil fuel   3386   7.6%   [8][111][19] calculated   [8][111][19] calculated   [8][111] calculated     Share of non-fossil fuel   35.8%   0.3pct   [8][111][19] calculated   [8][111] calculated   [8][111] calculated     Share of renewable energy   31.2%   0.4pct   [8][111][19] calculated   [8][111] calculated	I hermal ^	6070	9.4%	[8][11][19] calculated	[8][11][19] calculated
of which natural gas, oil, exhaust heat, surplus   396   -13.1%   [B][11][14][19]   [B][11][14]     pressure and gases   435   4.1%   [19]     Nuclear   435   4.1%   [19]     Hydro   1286   -4.9%   [19]     Wind   886   16.2%   [19]     Solar   584   36.7%   [19]     Biomass   196   6.3%   [8][11][19] calculated   [8][11][19] calculated     Non-fossil fuel   3386   7.6%   [8][11][19] calculated   [8][11][19] calculated     Share of non-fossil fuel   35.8%   0.3pct   [8][11][19] calculated   [8][11][19] calculated     Jutilization hours (hours)   3592   -101   [14]   1     Nuclear   7670   54   [14]   1     Nuclear   7670   54   [14]   1     Muclear   7670   54   [14]   1     Of which coal   4685   92   [14]   1     Nuclear   7670   54   [14]   1     Mydo   2225   7   [14]   1 </td <td>of which coal</td> <td>5674</td> <td>11.8%</td> <td>[14][19] calculated</td> <td>[14][19] calculated</td>	of which coal	5674	11.8%	[14][19] calculated	[14][19] calculated
pressure and gases     and     calculated     calculated <thcalculated< th="">     calculated     calcula</thcalculated<>	of which natural gas, oil, exhaust heat, surplus	396	-13.1%	[8][11][14][19]	[8][11][14][19]
Nuclear     435     4.1%     [19]       Hydro     1286     -4.9%     [19]       Wind     886     16.2%     [19]       Solar     584     36.7%     [19]       Biomass     196     6.3%     [8][11][19] calculated     [8][11][19] calculated       Non-fossil fuel     3386     7.6%     [8][11][19] calculated     [8][11][19] calculated       Renewable energy     2952     8.1%     [8][11][19] calculated     [8][11][19] calculated       Share of non-fossil fuel     35.8%     0.3pct     [8][11][19] calculated     [8][11][19] calculated       Share of renewable energy     31.2%     0.4pct     [8][11][19] calculated     [8][11][19] calculated       Share of renewable energy     31.2%     0.4pct     [8][11][19] calculated     [8][11][19] calculated       Vitilization hours (hours)            National     3592     -101     [14]         of which coal     4685     92     [14]         Nuclear     7670     54	pressure and gases	000	101170	calculated	calculated
Hydro   1286   -4.9%   [19]     Wind   886   16.2%   [19]     Solar   584   36.7%   [19]     Biomass   196   6.3%   [8][11][19] calculated   [8][11][19] calculated   [8][11][19] calculated     Non-fossil fuel   3386   7.6%   [8][11][19] calculated   [8][11][19] calculated   [8][11][19] calculated     Renewable energy   2952   8.1%   [8][11][19] calculated   [8][11][19] calculated   [8][11][19] calculated     Share of non-fossil fuel   35.8%   0.3pct   [8][11][19] calculated   [8][11][19] calculated   [8][11][19] calculated     Share of renewable energy   31.2%   0.4pct   [8][11][19] calculated   [8][11][19] calculated     Utilization hours (hours)   114   114   114     Mational   3592   -101   [14]   114     of which coal   4685   92   [14]   114     Nuclear   7670   54   [14]   114     of which pumped storage   1175   -6   [14]   114     Wind   2225   7   [14]   114   11	Nuclear	435	4.1%	[19]	[19]
Wind     886     16.2%     [19]       Solar     584     36.7%     [19]       Biomass     196     6.3%     [8][11][19] calculated     [8][11][19] calculat	Hydro	1286	-4.9%	[19]	[19]
Solar     584     36.7%     [19]       Biomass     196     6.3%     [8][11][19] calculated     [8][11]	Wind	886	16.2%	[19]	[19]
Biomass     196     6.3%     [8][11][19] calculated	Solar	584	36.7%	[19]	[19]
Non-fossil fuel     3386     7.6%     [8][11][19] calculated     [8][11][19] calculated       Renewable energy     2952     8.1%     [8][11][19] calculated     [8][11][1	Biomass	196	6.3%	[8][11][19] calculated	[8][11][19] calculated
Renewable energy   2952   8.1%   [8][11] calculated   [8][11] calculated     Share of non-fossil fuel   35.8%   0.3pct   [8][11] calculated   [8][11] calculated     Share of renewable energy   31.2%   0.4pct   [8][11][19] calculated   [8][11][19] calculated     Vitilization hours (hours)   3592   -101   [14]   1     National   3592   -101   [14]   1     of which coal   4685   92   [14]   1     Nuclear   7670   54   [14]   1     Hydro   3133   -285   [14]   1     of which pumped storage   1175   -6   [14]   1     Vind   2225   7   [14]   1   1     Vind   2225   7   [14]   1   1     Solar   1286   -54   [14]   1   1	Non-fossil fuel	3386	7.6%	[8][11][19] calculated	[8][11][19] calculated
Nervewable energy     2552     6.1%     [6][11] calculated     [6][11] [19] calculated     [6][11] [19] calculated     [6][11] calculated	Papawahla aparav	2052	0.10/	[0][11] calculated	[0][11] calculated
Share of non-rossilituei     35.8%     0.3pct     [8][11][19] calculated     [8][11][19] ca		2932	0.176		
Share of renewable energy     31.2%     0.4pct     [8][11][19] calculated     [14]		35.8%	0.3pct		[8][11][19] calculated
Utilization hours (hours)       National     3592     -101     [14]       Thermal     4466     76     [14]       of which coal     4685     92     [14]       Nuclear     7670     54     [14]       Hydro     3133     -285     [14]       of which pumped storage     1175     -6     [14]       Wind     2225     7     [14]       Solar     1286     -54     [14]	Share of renewable energy	31.2%	0.4pct	[8][11][19] calculated	[8][11][19] calculated
National     3592     -101     [14]       Thermal     4466     76     [14]       of which coal     4685     92     [14]       Nuclear     7670     54     [14]       Hydro     3133     -285     [14]       of which pumped storage     1175     -6     [14]       Wind     2225     7     [14]       Solar     1286     -54     [14]	Utilization hours (hours)				
Thermal   4466   76   [14]     of which coal   4685   92   [14]     Nuclear   7670   54   [14]     Hydro   3133   -285   [14]     of which pumped storage   1175   -6   [14]     Wind   2225   7   [14]     Solar   1286   -54   [14]	National	3592	-101	[14]	[14]
of which coal     4685     92     [14]       Nuclear     7670     54     [14]       Hydro     3133     -285     [14]       of which pumped storage     1175     -6     [14]       Wind     2225     7     [14]       Solar     1286     -54     [14]	Thermal	4466	76	[14]	[14]
Nuclear     7670     54     [14]       Hydro     3133     -285     [14]       of which pumped storage     1175     -6     [14]       Wind     2225     7     [14]       Solar     1286     -54     [14]	of which coal	4685	92	[14]	[14]
Hydro     3133     -285     [14]       of which pumped storage     1175     -6     [14]       Wind     2225     7     [14]       Solar     1286     -54     [14]	Nuclear	7670	54	[14]	[14]
of which pumped storage     1175     -6     [14]       Wind     2225     7     [14]       Solar     1286     -54     [14]	Hydro	3133	-285	[14]	[14]
Wind     2225     7     [14]       Solar     1286     -54     [14]       Curtailment     Control of the second seco	of which pumped storage	1175	-6	[14]	[14]
Solar     1286     -54     [14]       Curtailment     Control of the second sec	Wind	2225	7	[14]	[14]
Curtailment	Solar	1286	-5/	[12]	[1/1
	Curtailment	1200	-54	[14]	[14]
Mind http://www.aller.com	Wind	2 70/	0 E and	F1E3	MEL colorilate d
Solar D// 2.0% 0.2 wet [12] [13] Calcula	Solar DV	2.170	-0.5 pct	[15]	[15] calculated
(11/0 LID) Calcula	JOIGI FV	(1170	U.5 DCT	101	

\* The figure of thermal power is revised as CEC's thermal power - biomass power because CEC's thermal power data includes biomass.