Virtual Power Plant for Interoperable and Smart isLANDS

VPP4Islands

LC-SC3-ES-4-2020

GA 957852

Deliverable Report

Deliverable ID	D 2.3.	**Version**	V2
Deliverable name	Islands energy transition policies and legislation and regulatory framework		
Lead beneficiary	TROYA		
Contributors	UEDAS, CIVI, FORM, BORN, BOZI, GRADO		
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Document approval			

Acknowledgement: VPP4ISLANDS is a Horizon 2020 project funded by the European Commission under Grant Agreement no. 957852.

REVISION AND HISTORY CHART

Version	Date	Main Author(s)	Summary of changes
V1	18.01..2021	B.A.(TROYA)	First draft
V2	30.03.2021	B.A. (TROYA)	Changes made according to the reviewers' comments

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CONTENTS

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ABBREVIATIONS AND ACRONYMS

Project Partners

ALWA	AlgoWatt
AMU	Aix-Marseille Université
BC2050	Blockchain2050
BORNHOLMSVARME	Bornholms Varme A/S
BOZI	Bozcaada Belediye Baskanligi
BUL	Brunuel University
CIVI	Civiesco Srl
CSIC	Consejo Superior de Investigaciones Científicas
CU	Cardiff University
DAFNI	Network of Sustainable Greek Islands
FORM	Consell Insular de Formentera
FTK	Forschungsinstitut fur Telekommunikation und Kooperation EV
GRADO	Comune di Grado
IDEA	Ingenieria y Diseno Estructual Avanzado
INAVITAS	Inavitas Enerji AS
LIS	Laboratoire Informatique des Systèmes
RDIUP	Rdi'Up
REGENERA	Regenera Levante
SCHN	Schneider Electric
TROYA	Troya Cevre Derneği
UEDAS	Uludag Electric Dagitim

Terms in Alphabetical Order

AAI	Authentication And Authorization Infrastructure
API	Application Program Interface
CDR	Critical Design Review
D&C	Dissemination And Communication
DER	Distributed Energy Resources
DLT	Distributed Ledger Technology
DMP	Data Management Plan
DR	Disaster Recovery
DRC	Demand Response Capability
DSO	Distribution System Operator
DSS	Decision Support Systems
ESS	Energy Storage Solutions
GDPR	General Data Protection Regulation
GHG	Greenhouse Gases
IPRs	Intellectual Property Rights
JV	Joint Venture
KPI	Key Performance Indicator
LCA	Life Cycle Assessment
M	Month
QAP	Quality Assurance Plan
RTO	Regional Transmission Organization
SC	Smart Contract
SNM	Strategic Niche Management
SSH	Secure Shell
SWOT	Strength, Weakness, Opportunity, And Threat Analysis
VESS	Virtual Energy Storage Systems
VPP	Virtual Power Plant

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1. EXECUTIVE SUMMARY

The aim of ***Deliverable 2.3***. is to present information about island energy transition, policies, legislations and regulatory framework. The task also requires community-based energy production studies, as well as reports to be prepared and made available.

In this direction, several conference meetings took place with the project leader and the partner organisations and it was decided that an ***Island Profile*** should be prepared for each participating island and the ***Energy Legal Framework*** for each related country. Subsequently, templates were prepared by TROYA as requested and shared and discussed with the project partners in further meetings. Amendments were made according to the comments and requests of the participant organisations, and information gathered accordingly.

Island Profiles include information about geographical, environmental, demographical, economical characteristic of the islands, administrative bodies, transport availabilities, maps and other special characteristics of the island.

Country energy legal frameworks contains general information such as name of the capital city, coordinates, total area (km²), population, rural population, GDP (currency: US$), GDP per capita (currency: US$), access to electricity, energy imports net (% of energy use), fossil fuel energy consumption. Frameworks also has sections about law, policies, legislation of energy production, renewable energy legal framework, details of the authorities dealing with energy issues, statistics, links to the original texts of the laws and regulations (when available).

During the preparation of the island profiles and country energy legal frameworks, open resources have been used, all of which are listed at the bottom of each document with the related links.

Furthermore, selected academic studies on community based energy production have been searched and presented with details and summaries in Section 4. That section also includes reports and guides published by several international institutes, energy agencies, groups in in the subjects of renewable and clean energy.

This deliverable serves the main purpose of information gathering, it will be updated and summarised on the M24 and finalised on the M32.

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2. ISLAND PROFILES

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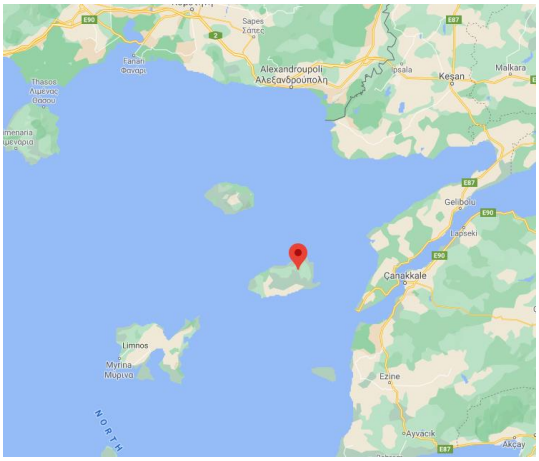
GOKCEADA

Island Profile



Source: Google Maps

GEOGRAPHICAL CHARACTERISTS

Country	Turkey
Location	Aegean Sea
Coordinates	40°09’39”N 25°50’40”ECoordinates: 40°09’39”N 25°50’40”E
Area	279 km2 (108 sq mi)
Highest elevation	673 m (2208 ft)

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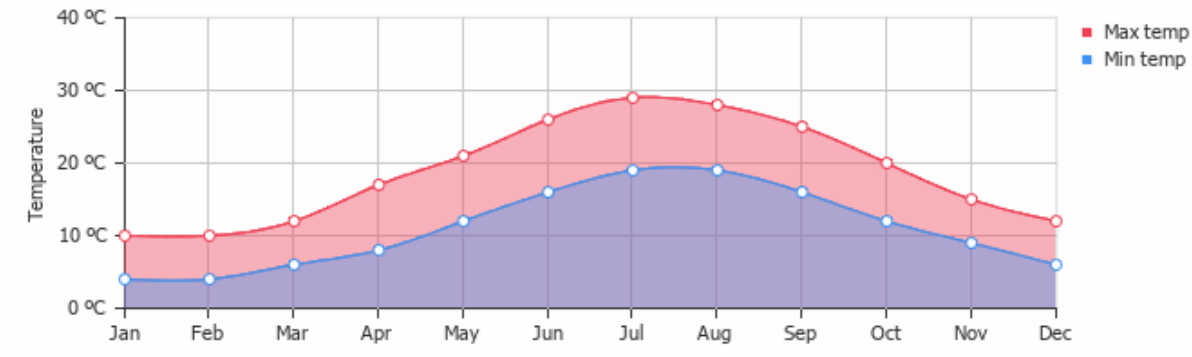
ADMINISTRATIVE BODIES

Governing Body	Municipality of Gokceada http://www.gokceada.bel.tr Gokceada District Governorship http://www.gokceada.gov.tr
Official language	Official language is Turkish but there is a community of Greek people in the island and therefore Greek is also spoken.

ENVIRONMENTAL CHARACTERISTICS

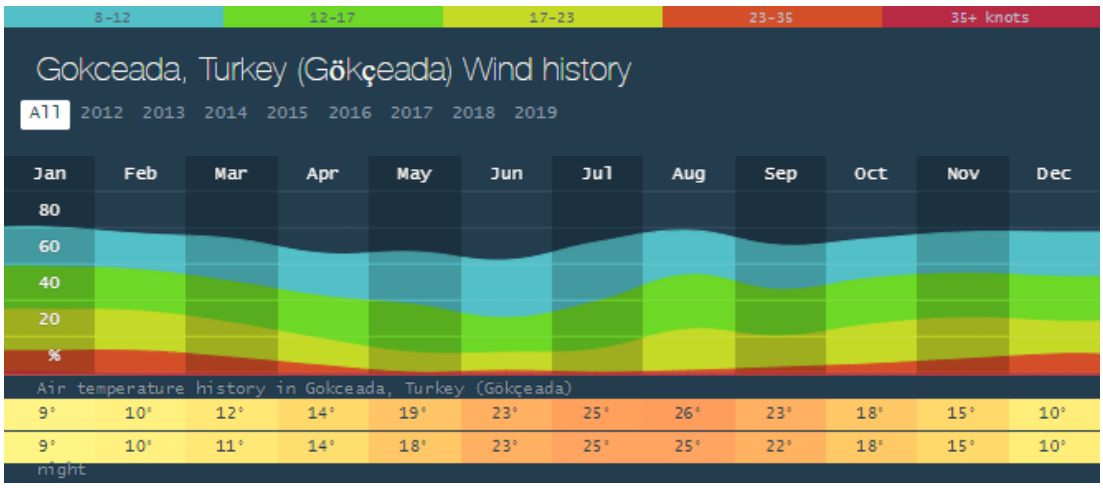
Climate

The mean minimum and maximum temperatures over the year.



Source: https://weather-and-climate.com

Wind



Source: https://windy.app

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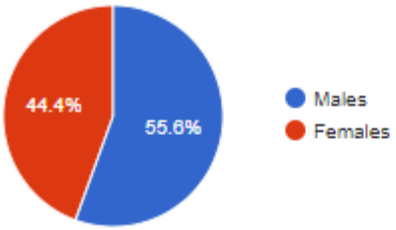
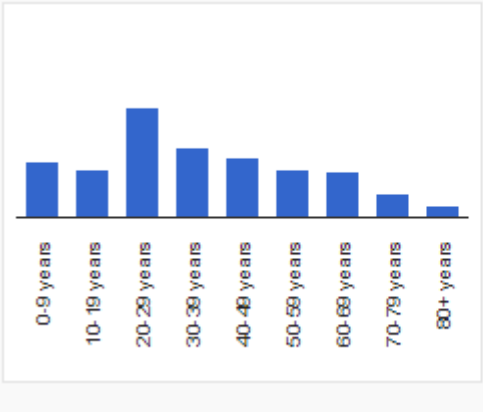
DEMOGRAPHICAL CHARACTERISTICS

Population of the island	Residents: 9440
Population density of the island	1,57 km2 (87,41 sq mi)
Gender distribution in island	 **Gender (E 2019)** Males 5,245 Females 4,195 *Resource: Thomas Brinkhoff: City Population, http://www.citypopulation.de*
Age distribution in island	 **Age Distribution (E 2019)** 0-9 years 1,107 10-19 years 946 20-29 years 2,189 30-39 years 1,391 40-49 years 1,215 50-59 years 963 60-69 years 916 70-79 years 486 80+ years 227 *Source: Thomas Brinkhoff: City Population, http://www.citypopulation.de*

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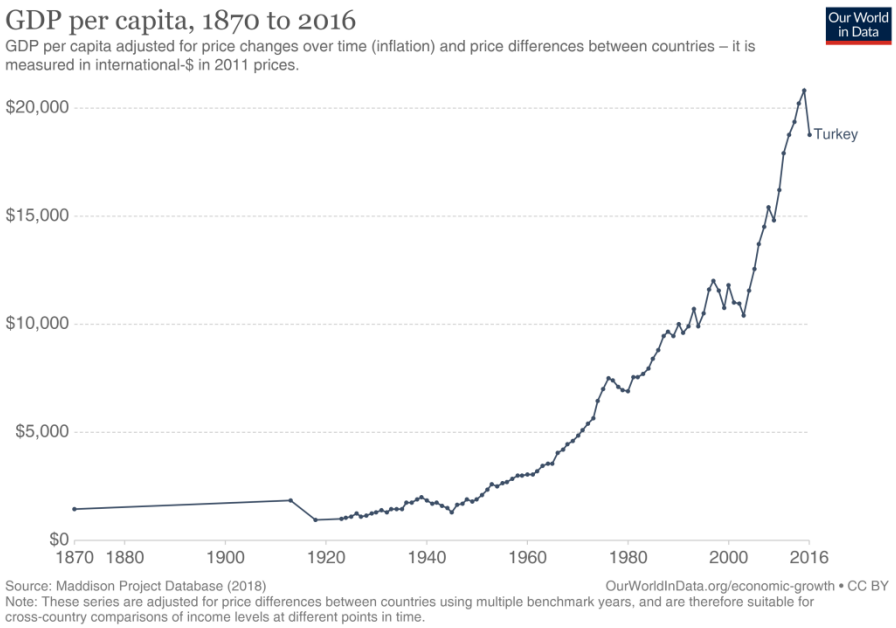
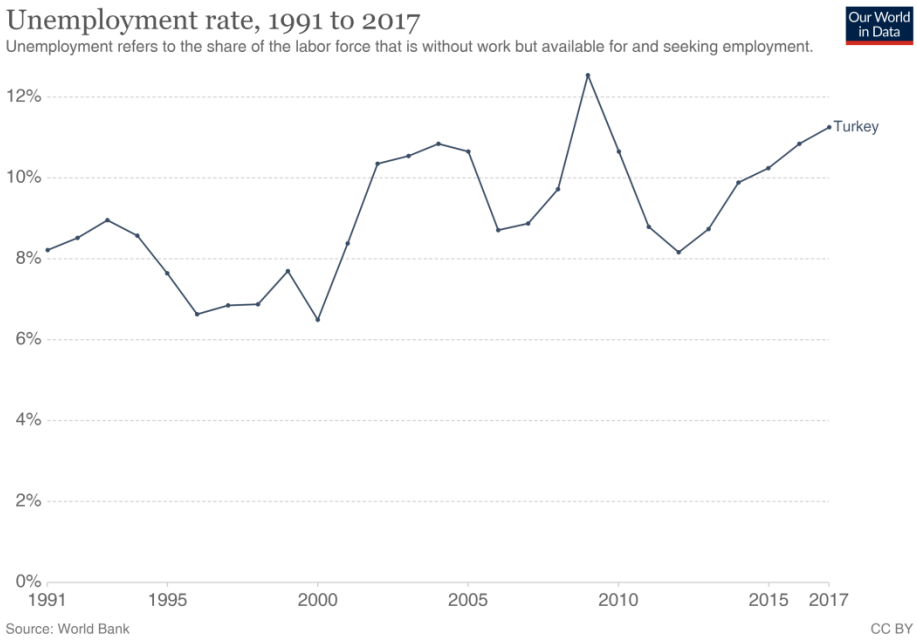
ECONOMIC FACTORS

Primary economic activities	The main industries of Gokceada are fishing and tourism.
GDP (Gross Domestic Product) per capita in Turkey	 *Source: Our Word in Data, https://ourworldindata.org*
Unemployment rate in Turkey	 *Source: Our Word in Data, https://ourworldindata.org*

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TRANSPORT

Access to the island:	There is an airport in Gökçeada however scheduled flights are not currently flying. There are ferries from two points in the mainland: Kabatepe and the harbour of Çanakkale city. The island is 11 nautical miles away from Kabatepe, while 32 nautical miles from Çanakkale. Some scheduled voyages may be cancelled, especially during winter and during the seasonal storms.
Transport in the island:	Public transport is severely limited on the island, even in summertime. There are several minibuses for different routes in the island. Taxis are limited in number.

SPECIAL CHARACTERISTICS OF THE ISLAND OR OTHER RELATED INFORMATION

Gokceada is a member of Cittaslow movement, the international network of cities where the way of life easy and pleasant; residents prefer the ordinary life-style rather than today's trends.

Gökçeada Organic Agriculture Project life on the island began to be implemented with different alternatives by directing small producers, such as viticulture, olive cultivation and beekeeping, to organic agriculture.

The Ministry of Agriculture has chosen Gökçeada as a pilot area for ecological agriculture. Gökçeada District Governorship initiated several organic production projects such as Organic Olive Oil Production, Organic Honey Production and Organic Table and Wine Grape Production, with an aim is to turn Gökçeada into an organic farming island.

Gokceada is mainly of volcanic origin and the highest mountain of the island İlyas Dağ, is an extinct cone-shaped stratovolcano.

Imbros is situated directly south of the North Anatolian Fault, which runs from north-eastern Anatolia to the northern Aegean Sea, has been responsible for several deadly earthquakes, which represent a major threat to the island. On 24 May 2014, Imbros was shaken by a strong earthquake with a magnitude of 6.9 MW.

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SOURCES

Wikipedia, the free encyclopaedia
Wikipedia is an online free-content encyclopaedia project helping to create a world in which everyone can freely share in the sum of all knowledge.
https://en.wikipedia.org/wiki/Formentera

Thomas Brinkhoff: City Population
Free to share (i.e. to copy, to distribute and to transmit) and to remix (i.e. to adapt) the presented population data for non-commercial use.
http://www.citypopulation.de

Our World in Data
Our World in Data is free and accessible for everyone. It is prepared by University of Oxford and Global Change Data Lab.
https://ourworldindata.org

Weather and Climate
It is operated by World Wide Travel Organisation and allows open access and link to the information.
https://weather-and-climate.com/

Windy App
The weather forecast is provided for personal non-commercial use**.**
https://windy.app

Municipality of Gökçeada
http://www.gokceada.bel.tr

Gökçeada District Governorship
http://www.gokceada.gov.tr

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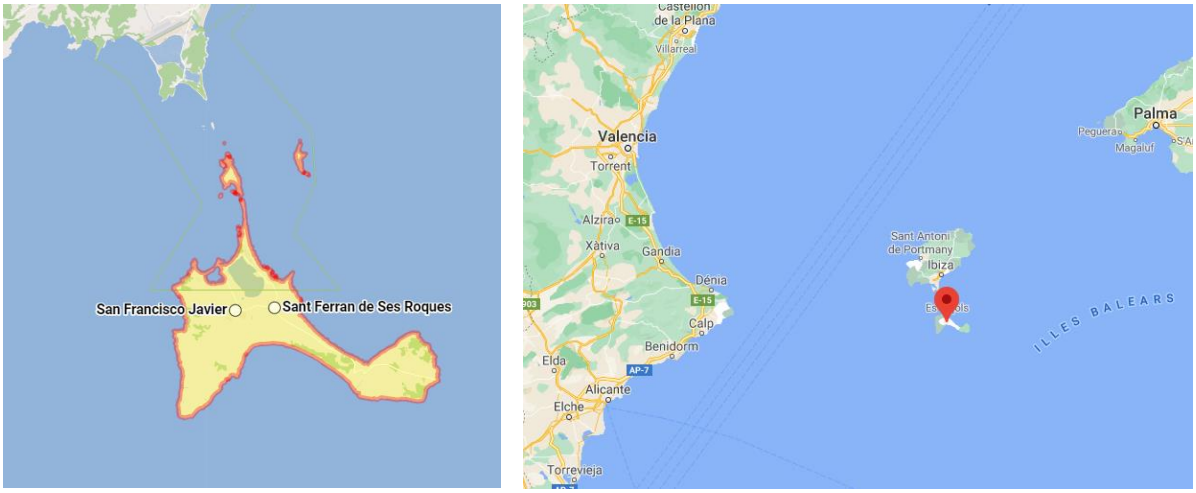
FORMENTERA

Island Profile



Resource: Google Maps

GEOGRAPHICAL CHARACTERISTS

Country	Spain
Location	Mediterranean Sea
Coordinates	38°42’N 1°27’ECoordinates: 38°42’N 1°27’E
Area	83.24 km2 (32.14 sq mi)
Highest elevation	119 m (390 ft)

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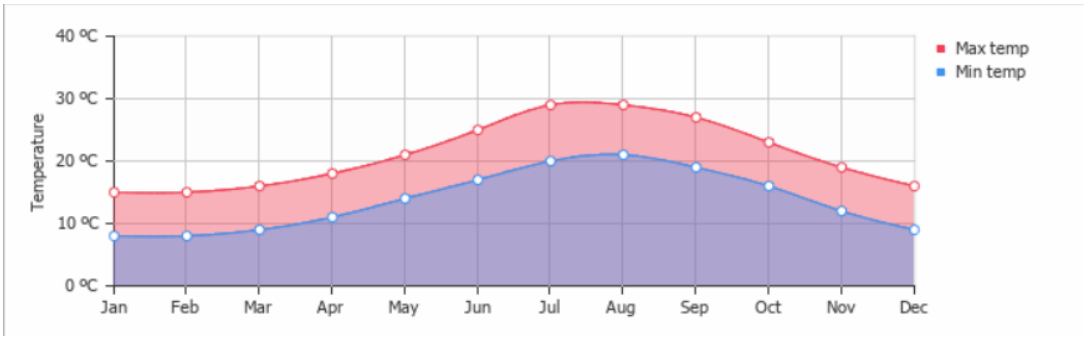
ADMINISTRATIVE BODIES

Governing Body	Formentera belongs to the Autonomous region of the Balearic Islands. There is also an insular government (Insular Advice) for each of the islands. Consell de Formentera http://www.consellinsulardeformentera.cat/ Government Of The Balearic Islands www.caib.es
Official languages	Catalan and Spanish

ENVIROMENTAL CHARACTERISTICS

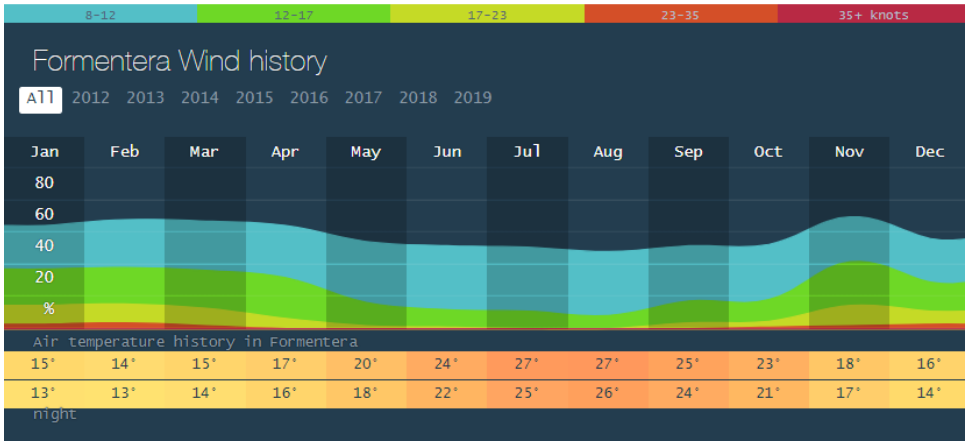
Climate

The mean minimum and maximum temperatures over the year



Source: https://weather-and-climate.com

Wind



Source: https://windy.app

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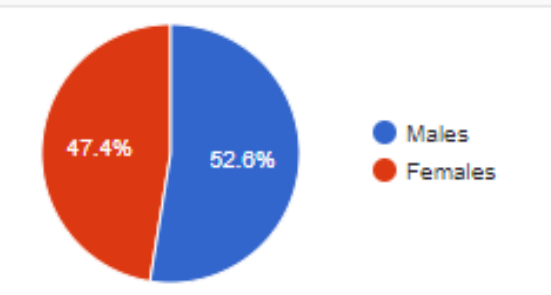
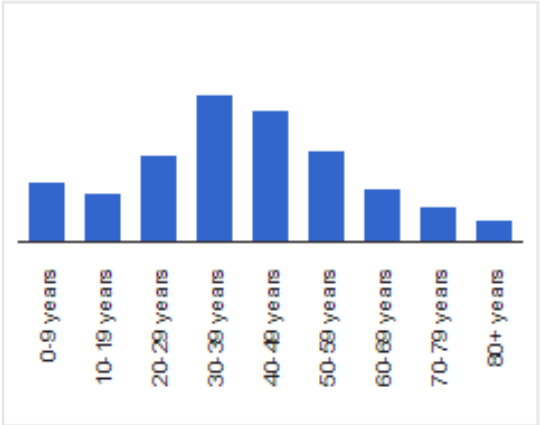
DEMOGRAPHICAL CHARACTERISTICS

Population of the island	Residents: 12,111 (1 January 2019) 37,811 (15 august 2019)
Population density of the island	Residents: 145.5/km2 (376.8/sq mi) 454.24 /km2 (1,176.3 /sq mi)
Gender distribution in island	 **Gender (E 2019)** Males 6,365 Females 5,746 *Source: Thomas Brinkhoff: City Population, http://www.citypopulation.de*
Age distribution in island	 **Age Distribution (E 2018)** 0-9 years 1,093 10-19 years 884 20-29 years 1,566 30-39 years 2,654 40-49 years 2,371 50-59 years 1,640 60-69 years 974 70-79 years 649 80+ years 385 *Source: Thomas Brinkhoff: City Population, http://www.citypopulation.de*

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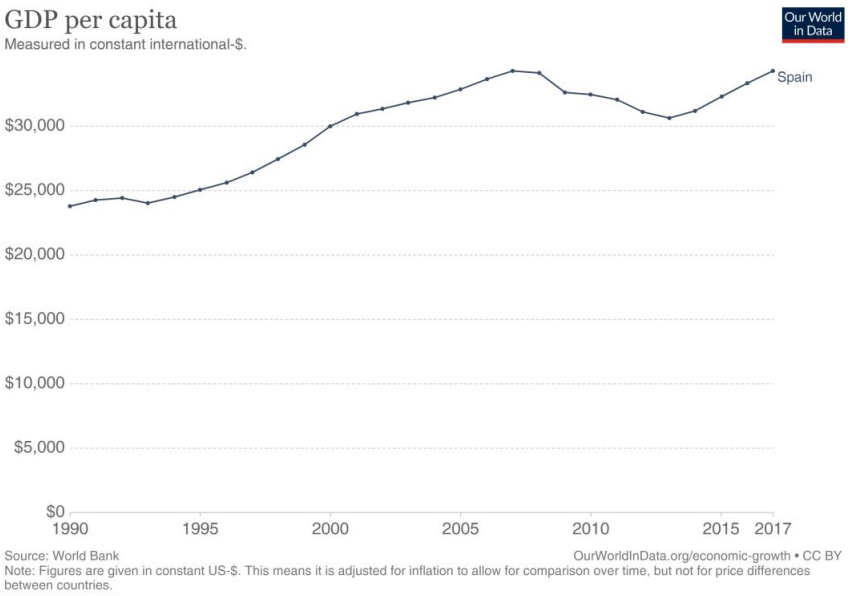
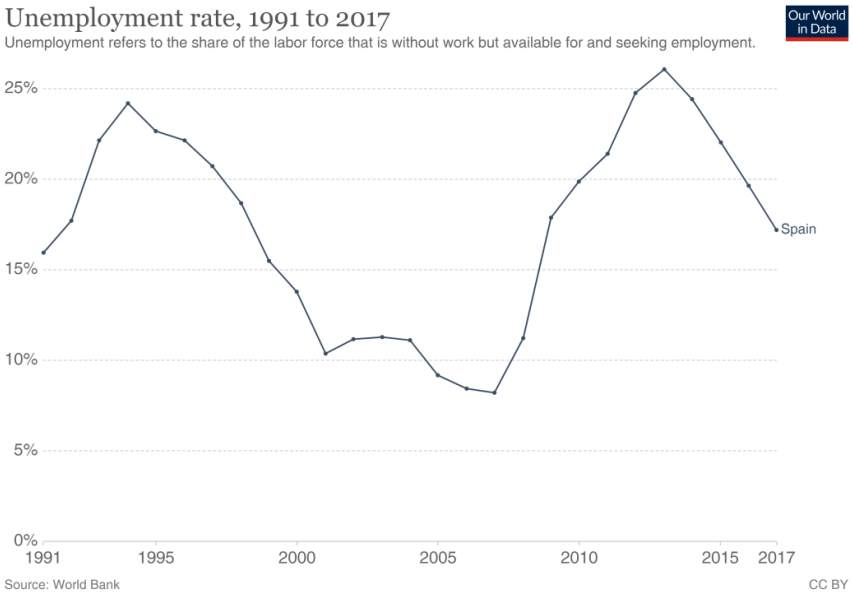
ECONOMIC FACTORS

Primary economic activities	The main industry is tourism as 75 % of the population get their income directly or indirectly from the tourism sector. Up to the 1980s salt was the main product of Formentera, however, production was stopped in 1985 due to the decline in demand. There are also farms with agriculture and livestock still functioning on a small scale.
GDP (Gross Domestic Product) per capita in Spain	
Unemployment rate in Spain	 *Source: Our Word in Data, https://ourworldindata.org*

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TRANSPORT

Access to the island:	With no airports, the island was formerly reachable only by boat from Ibiza, but in recent years a regular passenger service from the Spanish mainland was established. Ferries to Formentera operate from their own terminal in Ibiza port, with departures every half hour in high season on large (200+ passenger) fast catamarans. The journey takes approximately 30 minutes with 10 minutes each leaving Ibiza, crossing the sea, and arriving in Formentera past the isthmus to Espalmador. Some of the anchorages may not be ideal for sailboats under less than ideal weather conditions.
Transport in the island:	Formentera has a main road (PM-820) with 2 variants (towards Es Pujols and towards the Es Cap Lighthouse). In addition, hundreds of dirt roads branch out from them. Mobility on the island is mainly by car, but the aim is to move towards sustainable mobility through a bike path that connects the entire island, as well as through non-polluting public transport.

SPECIAL CHARACTERISTICS OF THE ISLAND OR OTHER RELATED INFORMATION

Formentera is at a crucial point in the energy transition. On one hand, the sustainable mobility plan for the island of Formentera has been approved, with the Formentera.eco project. This project regulates the number of vehicles that circulate on the island, as well as the capacity limits at the time of maximum influx of tourists. Likewise, the Special Plan for Energy Installations is being drawn up, which will define the energy future of the island, regulating the areas and capacities of energy installations that can be installed. Finally, a project to regulate moorings along the entire coastline of the island is in the process of being drafted.

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RESOURCES

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http://www.citypopulation.de

Our Word in Data

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https://ourworldindata.org

Consell de Formentera

The Insular Council of Formentera is the institution of self-government in the area of the island of Formentera which exercises the functions of city council and island council**.**
http://www.consellinsulardeformentera.cat/

Weather and Climate

It is operated by World Wide Travel Organisation and allows open access and link to the information
https://weather-and-climate.com/

Windy App

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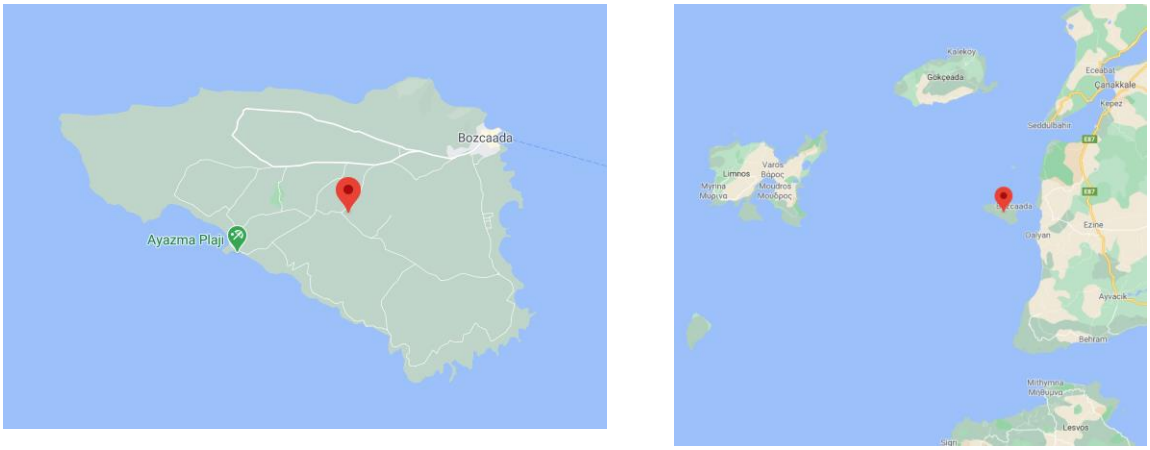
BOZCAADA

Island Profile



Source: Google Maps

GEOGRAPHICAL CHARACTERISTS

Country	Turkey
Location	Aegean Sea
Coordinates	39°49′19″N 26°01′44″E
Area	42.63 km2 (16.46 sq mi)
Highest elevation	192 m (629 ft)

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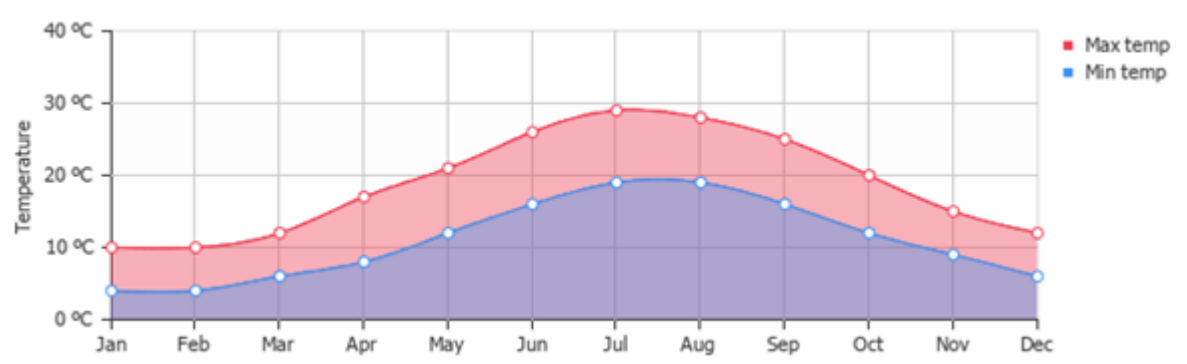
ADMINISTRATIVE BODIES

Governing Body	Municipality of Bozcaada http://www.bozcaada.bel.tr/ Bozcaada District Governorship http://www.bozcaada.gov.tr/
Official language	Turkish

ENVIROMENTAL CHARACTERISTICS

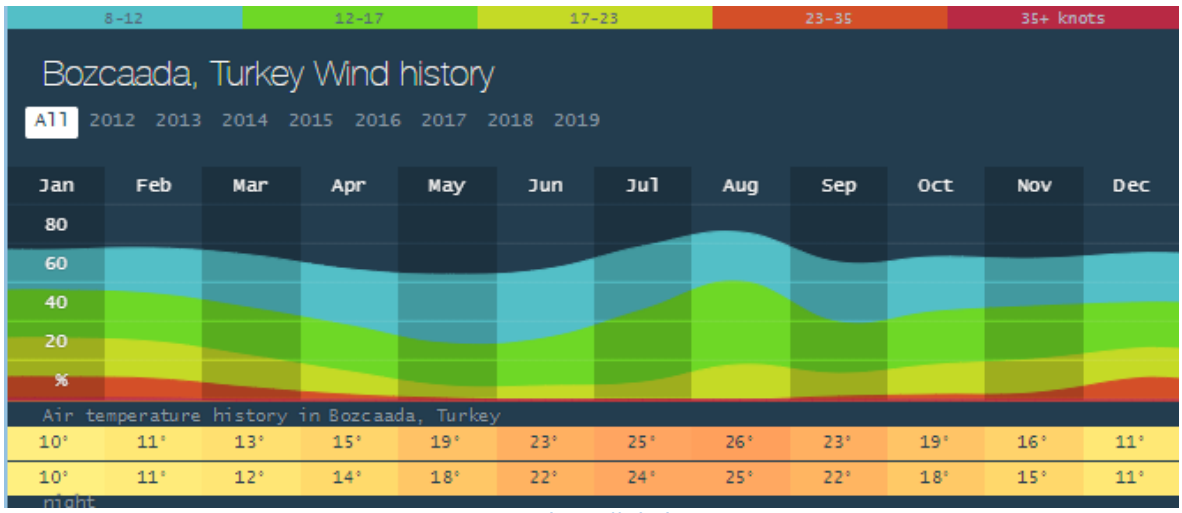
Climate

The mean minimum and maximum temperatures over the year.



Source: https://weather-and-climate.com/

Wind



Source: https://windy.app

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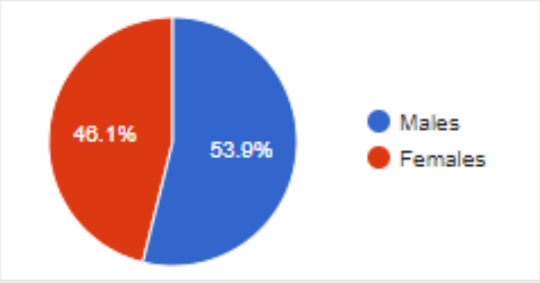
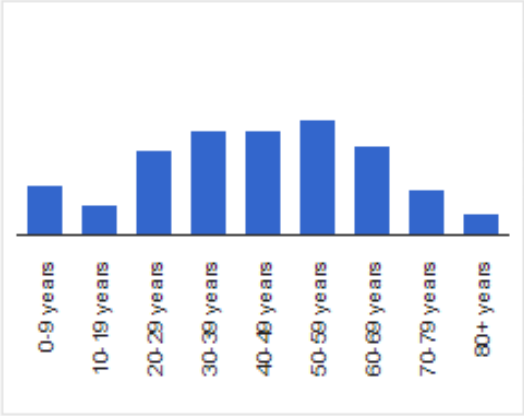
DEMOGRAPHICAL CHARACTERISTICS

Population of the island	According to the 2018 census, the population of the island is 3,023 in total. However, Bozcaada District Governorship reports that the population of the island reaches 10,000 in high season with summer residents and tourists.
Population density of the island	70,91/km2 (1,83/sq mi)
Gender distribution in island	 **Gender (E 2019)** Males: 1,610 Females: 1,378 *Source: Bozcaada District Governorship* *http://www.bozcaada.gov.tr/*
Age distribution in island	 **Age Distribution (E 2019)** 0-9 years: 227 10-19 years: 145 20-29 years: 392 30-39 years: 485 40-49 years: 484 50-59 years: 533 60-69 years: 410 70-79 years: 213 80+ years: 99 *Source:* http://www.citypopulation.de

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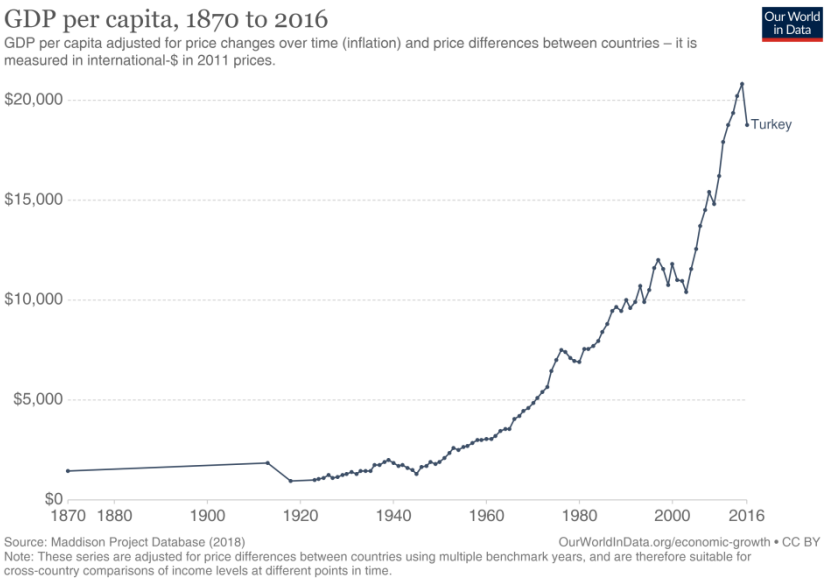
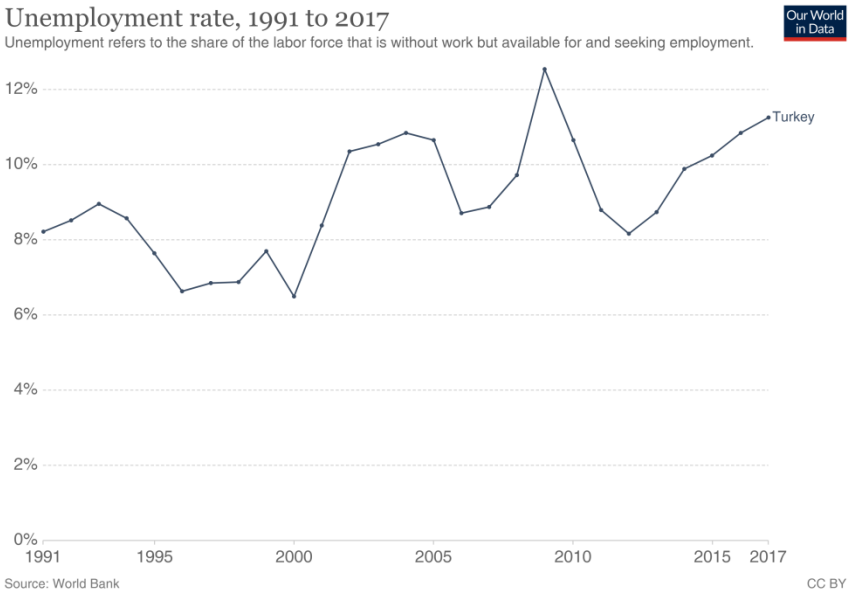
ECONOMIC FACTORS

Primary economic activities	The main industries are tourism, wine production and fishing. The island has been famous for its grapes, wines and red poppies for centuries. Sherbet and jams produced from poppy flowers grown on the island and sold to the tourist during the summer season.
GDP (Gross Domestic Product) per capita in Turkey	 *Source: Our Word in Data, https://ourworldindata.org*
Unemployment rate in Turkey	 *Source: Our Word in Data, https://ourworldindata.org*

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TRANSPORT

Access to the island	There are regular ferries from two points in the mainland: Geyikli and Canakkale center (only during summertime); both take about 30 minutes. There is a limitation on the number of cars which cross to the island during summer months. The ferry tickets need to be booked in advance.
Transport in the island	Minibuses, the only public transportation of the Island, which work only between June and September. One can also rent a motorbike or a car from two places in the island. Taxis are also available.

SPECIAL CHARACTERISTICS OF THE ISLAND OR OTHER RELATED INFORMATION

In June 2000, a 10.2 MW wind power plant consisting of 17 windmills was established around Batı Burnu. It produces 30 times more than the energy needs of the island and excess electricity is transferred to the mainland. In order not to harm tourism, the electricity produced by the power plant is transferred by underground cables.

RESOURCES

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Bozcaada District Governorship
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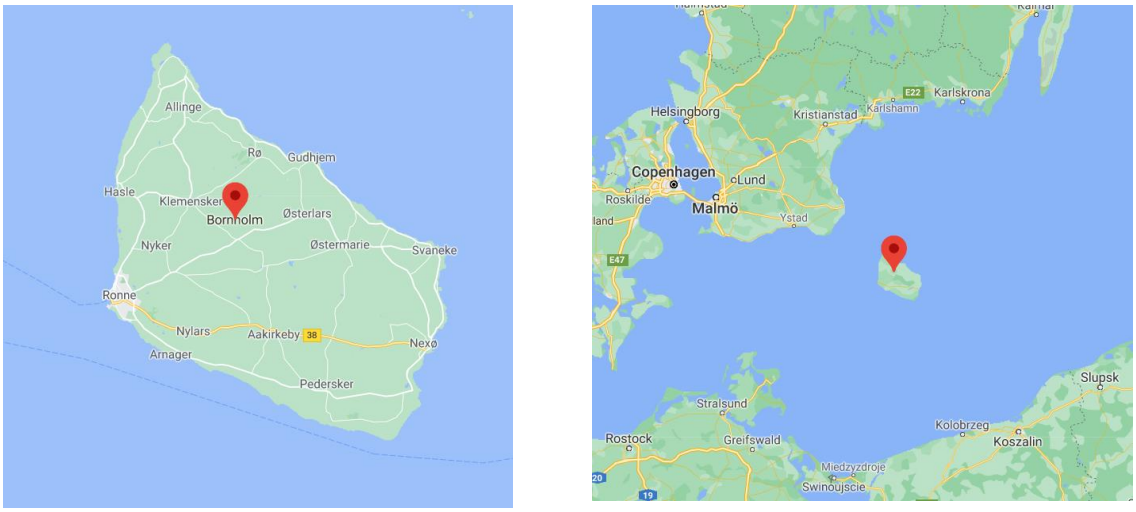
BORNHOLM

Island Profile



Source: Google Maps

GEOGRAPHICAL CHARACTERISTS

Country	Denmark
Location	Baltic Sea
Coordinates	55°8′35″N 14°55′15″ECoordinates: 55°8′35″N 14°55′15″E
Area	588.36 km2 (227.17 sq mi)
Highest elevation	162 m (531 ft)

This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement n°957852

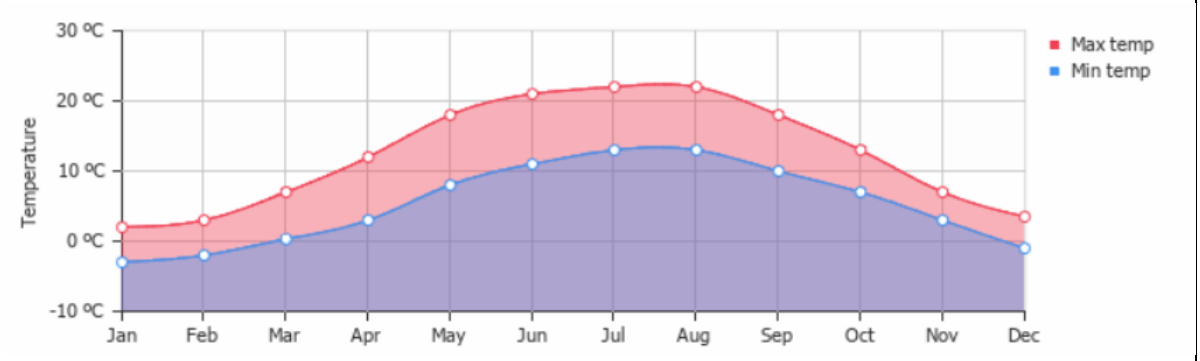
ADMINISTRATIVE BODIES

Governing Body	Regional Municipality of Bornholm https://www.brk.dk/English/sider/english.aspx
Official language	Danish is the official language. Many inhabitants speak the Bornholmsk dialect, which is officially a dialect of Danish.

ENVIROMENTAL CHARACTERISTICS

Climate

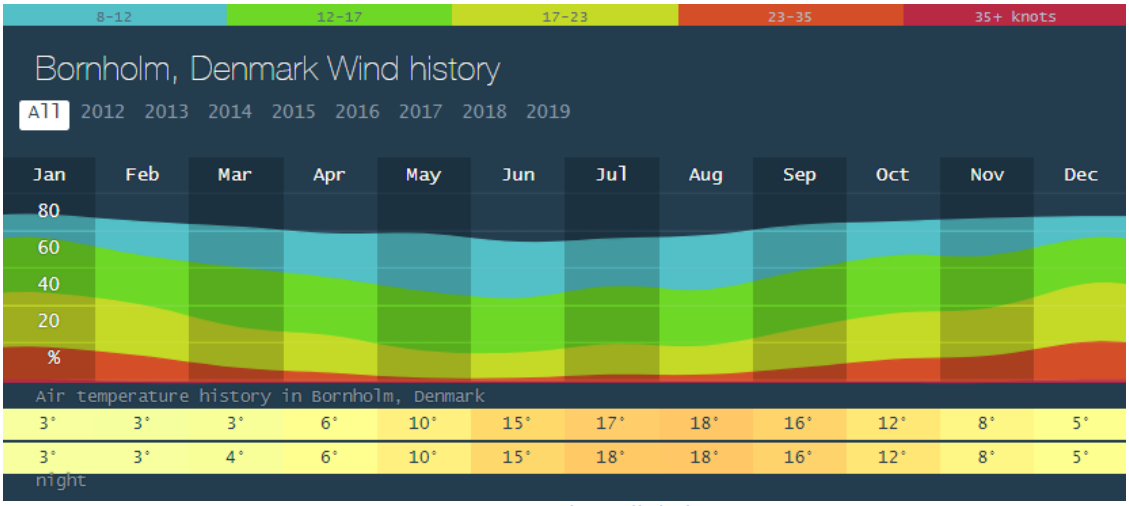
The mean minimum and maximum temperatures over the year



Source: https://weather-and-climate.com/

Wind

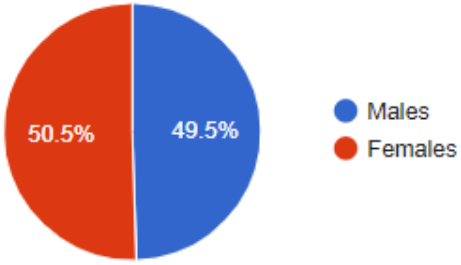
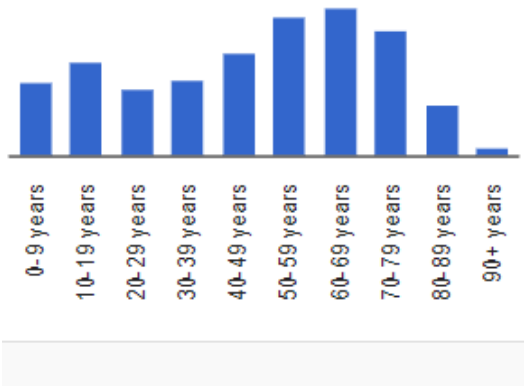
Wind and weather statistics for Bornholm, Denmark, Denmark contains detailed information about average local wind speed and air temperature. A special diagram on the map shows a dominant wind direction and includes average data for every year.



Source: https://windy.app

This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement n°957852

DEMOGRAPHICAL CHARACTERISTICS

Population of the island	39,439 (1 April 2020) The population almost doubles when the tourist season is at the highest, and the number of tourist/visitor sleepovers in 2015 was 3.04 mill. In total
Population density of the island	67.03/km2 (173.61/sq mi)
Gender distribution in island	 **Gender (E 2020)** Males: 19,560 Females: 19,939 *Resource: Thomas Brinkhoff: City Population, http://www.citypopulation.de*
Age distribution in island	 **Age Distribution (E 2020)** 0-9 years: 3,252 10-19 years: 4,157 20-29 years: 2,997 30-39 years: 3,355 40-49 years: 4,590 50-59 years: 6,215 60-69 years: 6,639 70-79 years: 5,590 80-89 years: 2,278 90+ years: 426 *Resource: Thomas Brinkhoff: City Population, http://www.citypopulation.de*

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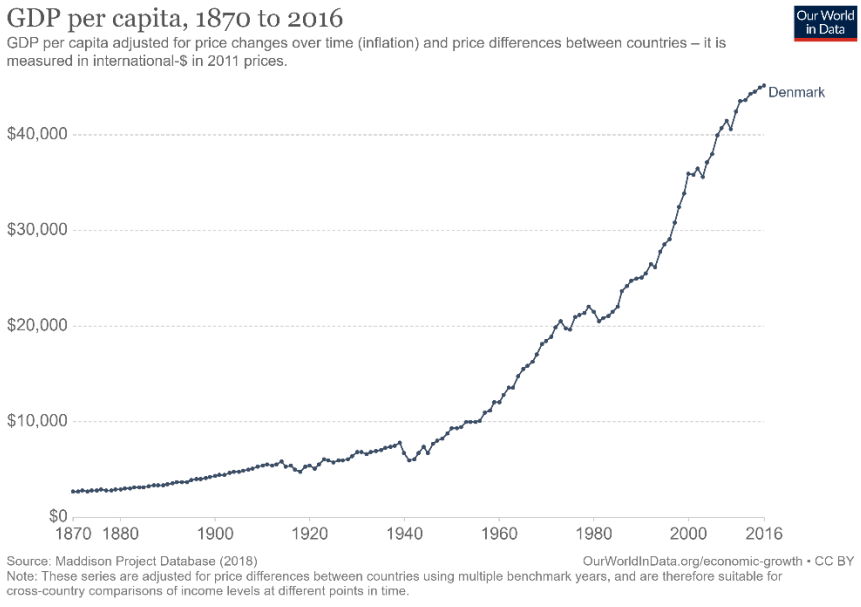
ECONOMIC FACTORS

Primary economic activities	**Bornholm 2015 – value creation in different sectors (**mill. DDK) Farming, forestry and fishery 383 Industry, raw materials and supply 998 Building and construction 596 Trade and transportation 1.683 Information and communication 164 Financing and insurance 170 Real estate trade and renting 1.479 Business service 312 Public services and health 2.791 Culture, leisure and other activities 283 **All 8.915** Despite this economic distribution, the public understanding of the island identity highlights agriculture, tourism, and craft (all very visible). Source: https://crt.dk/wp-content/uploads/2019/01/turismesatellitregnskab_bornholm2015.pdf Only a few larger industries operate on the Island: Jensen-Group, an industrial washing and folding machine company, which was founded on the island and has a factory in Rønne. The local pig slaughterhouse in Rønne is quite big, and as much as 520.000 pigs/year are produced and slaughtered om Bornholm.
GDP (Gross Domestic Product) per capita in Denmark	 *Resource: Our Word in Data, https://ourworldindata.org*

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Unemployment rate in Denmark	 *Resource: Our Word in Data, https://ourworldindata.org*

TRANSPORT

Access to the island:	Ferry services connect Rønne to Świnoujście (Poland), Sassnitz (Germany), Køge, 45 kilometres (28 miles) by road (34 kilometres or 21 miles as the crow flies) south of Copenhagen, Denmark; and catamaran services to Ystad (Sweden). There are also regular catamaran services between Nexø and the Polish ports of Kołobrzeg, in the summertime. There are direct bus connections Ystad-Copenhagen, coordinated with the catamaran. There are also several daily flights from Bornholm Airport to Copenhagen, and other locations.
Transport in the island:	Because of its remote location Bornholm Regional Municipality has its own traffic company, BAT, and is its own employment region, and also performs other tasks normally carried out by the regions in the rest of Denmark. In some respects the municipality forms a region of its own.

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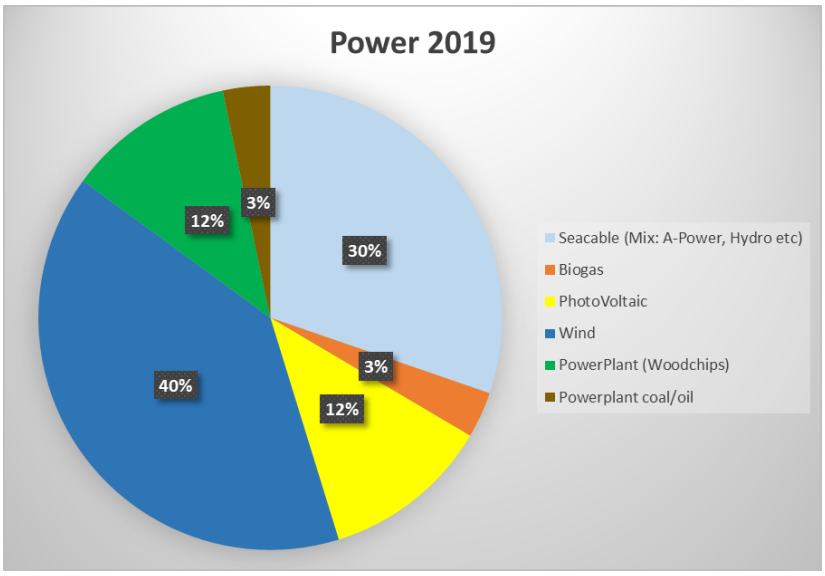
SPECIAL CHARACTERISTICS OF THE ISLAND OR OTHER RELATED INFORMATION

The island is known as solskinsøen (Sunshine Island) because of its weather and klippeøen (Rock Island) because of its geology, which consists of rock, except along the South-West coast. The heat from the summer is stored in the rock formations and the weather is quite warm until October. As a result of the climate, a local variety of the common fig can grow on the island. The island's topography consists of rock formations in the North-East (unlike the rest of Denmark, which is mostly made of gentle, rolling hills) sloping down towards pine and deciduous forests, farmland in the middle and sandy beaches in the south.

Bornholm is connected to the Swedish electricity grid by a submarine 60 kV AC cable. This cable is capable of delivering all the electrical energy consumed on Bornholm. However, Bornholm generates all the district heating consumed and normally most of the electricity consumed:



Bornholm won the EU RESposible island Price in 2020:

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RESOURCES

Wikipedia, the free encyclopaedia

Wikipedia is an online free-content encyclopaedia project helping to create a world in which everyone can freely share in the sum of all knowledge.
https://en.wikipedia.org/wiki/Formentera

Thomas Brinkhoff: City Population

Free to share (i.e. to copy, to distribute and to transmit) and to remix (i.e. to adapt) the presented population data for non-commercial use.
http://www.citypopulation.de

Our World in Data

Our World in Data is free and accessible for everyone. It is prepared by University of Oxford and Global Change Data Lab.
https://ourworldindata.org

Weather and Climate

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https://weather-and-climate.com/

Windy App

The weather forecast is provided for personal non-commercial use**.**
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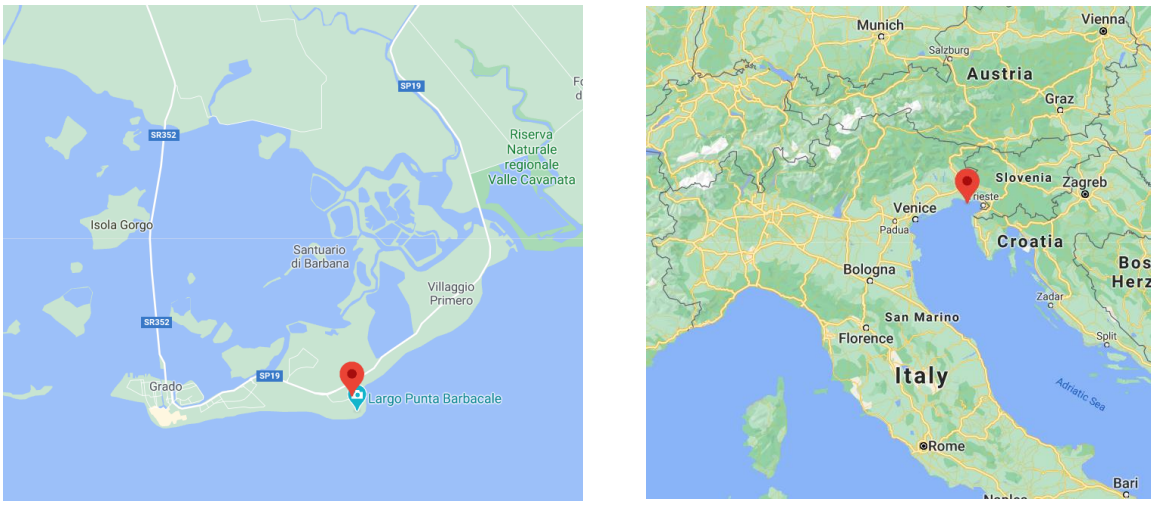
GRADO

Island Profile



Source: Google Maps

GEOGRAPHICAL CHARACTERISTS

Country	Italy
Location	Adriatic Sea
Coordinates	45°40′40″N 13°23′41″E
Area	114 km2 (44 sq mi)
Highest elevation	2 m (7 ft)

This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement n°957852

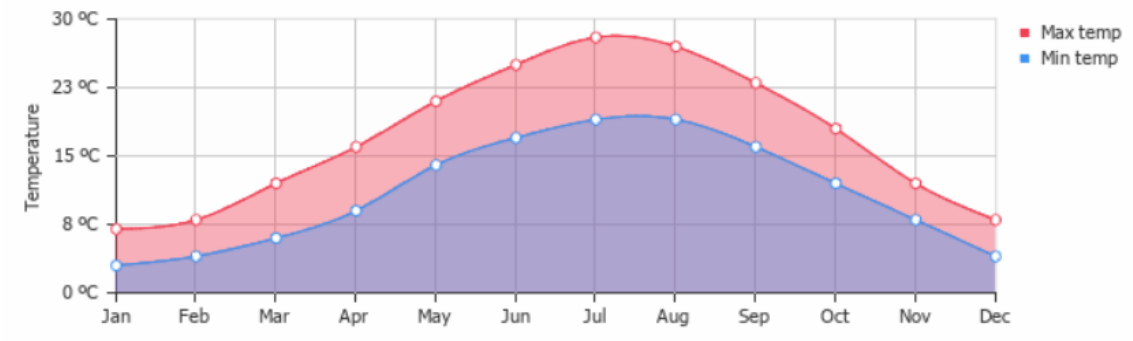
ADMINISTRATIVE BODIES

Governing Body	Città di Grado https://www.comunegrado.it/
Official languages	Italian

ENVIROMENTAL CHARACTERISTICS

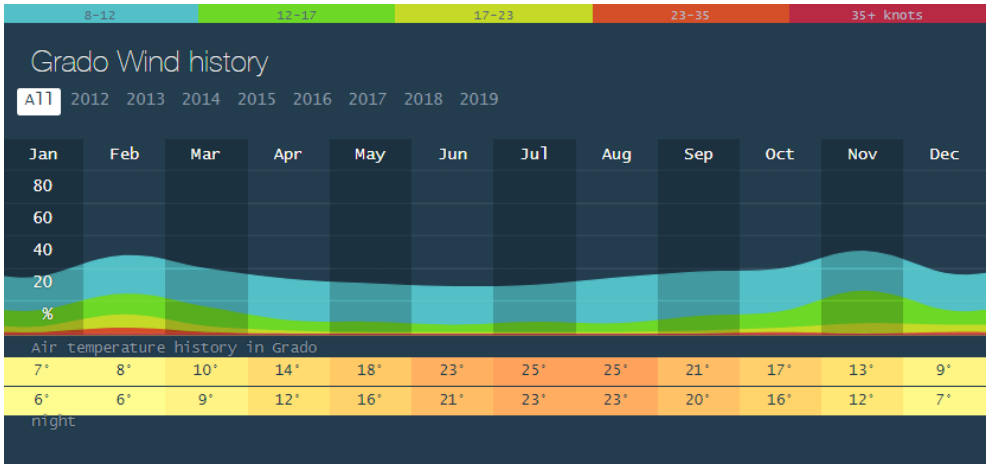
Climate

The mean minimum and maximum temperatures over the year.



Source: https://weather-and-climate.com/

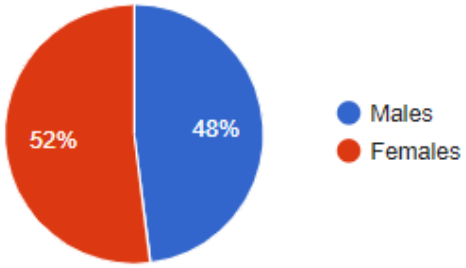
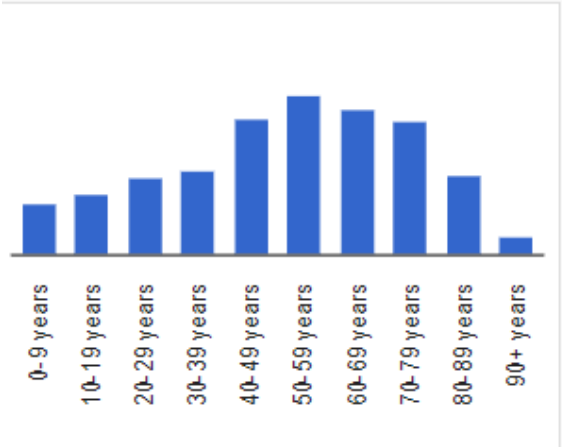
Wind



Source: https://windy.app

This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement n°957852

DEMOGRAPHICAL CHARACTERISTICS

Population of the island	• Resident population (January, 1st 2020): Total 8,054 • Peak summer population: up to 20,826 (average population of August 2019) http://www.citypopulation.de/, PromoTurismo FVG
Population density of the island	70.6/km2 (183/sq mi)
Gender distribution in island	 **Gender (E 2020)** Males 3,864 Females 4,190 *Source: Thomas Brinkhoff: City Population, http://www.citypopulation.de*
Age distribution in island	 **Age Distribution (E 2020)** 0-9 years 443 10-19 years 518 20-29 years 654 30-39 years 712 40-49 years 1,152 50-59 years 1,367 60-69 years 1,235 70-79 years 1,133 80-89 years 683 90+ years 157 *Source: Thomas Brinkhoff: City Population, http://www.citypopulation.de*

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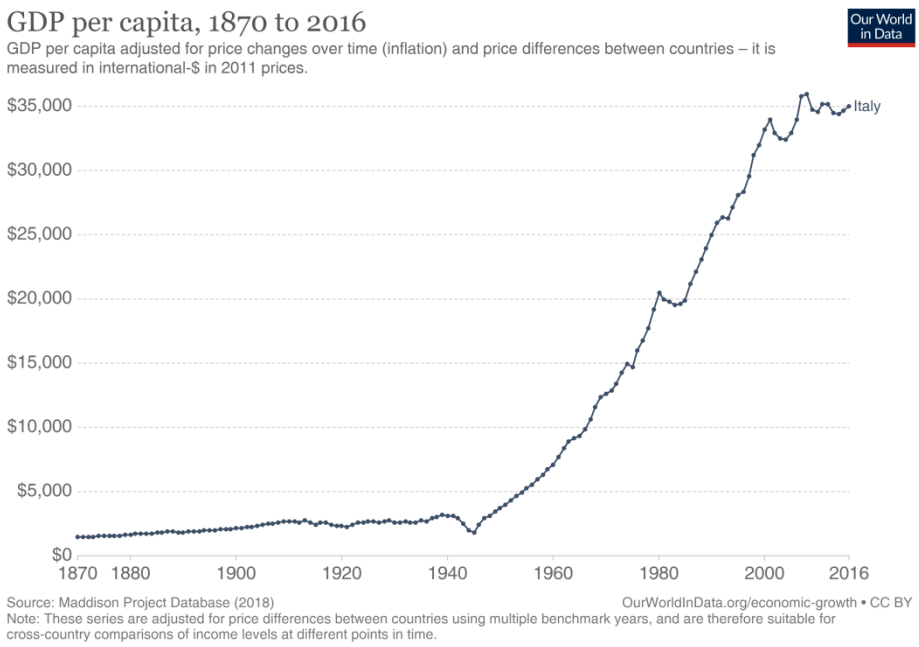
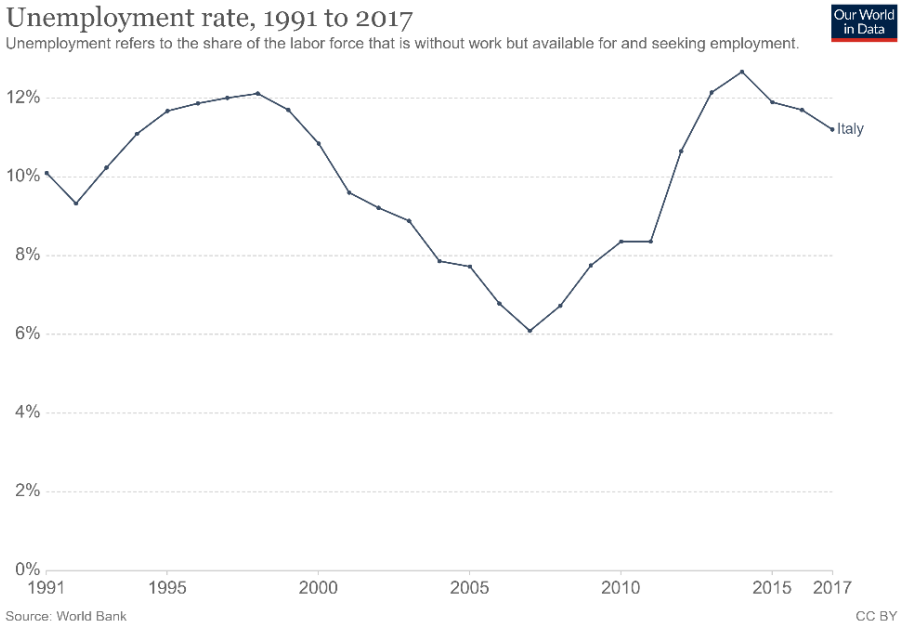
CONOMIC FACTORS

Primary economic activities	Tourism
GDP (Gross Domestic Product) per capita in Italy	 *Source: Our Word in Data, https://ourworldindata.org*
Unemployment rate in Italy	 *Source: Our Word in Data, https://ourworldindata.org*

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TRANSPORT

Access to the island:	By train The Cervignano train station is 16 km from Grado. You can get there by taxi or the APT bus, which arrives at the bus station in Grado's center. Here you can also find buses to/from Udine, Trieste, Monfalcone, Gorizia and the international Ronchi dei Legionari Airport. By plane From Trieste's Friuli-Venezia Giulia - Ronchi dei Legionari airport, 18 km away, take a taxi or the APT bus to the Grado bus station. By car From highway A4 Venezia-Trieste and highway A23 Tarvisio-Udine, at 28 km, take the Palmanova exit and continue towards Cervignano, Aquileia and Grado. You will arrive at Grado's main intersection. By sea During the summer, the APT public boat transportation connects Grado and Trieste with a motor vessel.
Transport in the island:	In the Municipality there are 141 km of paved roads, 48 km of pedestrian paths/cycleways, and additional 48 km of unpaved tracks. As of December 2018, there were around 4,800 registered light vehicles, 465 vans and track, 760 motorcycles and 11 coaches. Public transportation services grant the connections with the airport, with the closest train stations, as well as with other cities in the Region. Rent with driver services are also available the whole year. As for many beach resorts, during the Summer most tourists move around either on foot or by bike, on the many dedicated cycleways. At the time of writing, there are 4 charging stations for electric/hybrid cars, 3 more are under construction, and there are plans for a more diffuse implementation. Source: OpenStreetMap, ISTAT

SPECIAL CHARACTERISTICS OF THE ISLAND OR OTHER RELATED INFORMATION

Once mainly a fishing center, today Grado is a popular tourist destination, known commonly as L'Isola del Sole ("The Sunny Island"), and is also famous because it is a SPA town; together with Marano Lagunare, it is the center of the Marano-Grado Lagoon, which is famous for its uncontaminated nature.

Today, Grado attracts scores of tourists each year to its hotels and campgrounds. A large water park run by a municipal corporation is the main attraction, complete with indoor and outdoor swimming pools, and a health centre offering spa treatments.

The town also boasts a well-preserved pedestrian-only centre, in which many shops, bars, and restaurants are located.

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Grado also offers facilities for many sporting activities, including tennis, wind-surfing, and golf. From Grado, excursions to the Grado Lagoon can be done by boat, where it is possible to visit its many dozen islands (like Barbana).

RESOURCES

Wikipedia, the free encyclopaedia

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https://en.wikipedia.org/wiki/Formentera

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3. COUNTRY ENERGY LEGAL FRAMEWORKS

This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement n°957852

TURKEY

Energy Legal Framework

Source: Google Map

Capital	Ankara
Coordinates	39.9167° N, 32.8333° E
Total Area *(km²)*	785,350
Population	83,429,615 (2019)
Rural Population (% of total population)	24 (2019)
GDP *(current US$)*	754,411,708,202.62 (2019)
GDP Per Capita *(current US$)*	9,042.49 (2019)
Access to Electricity *(% of population)*	100.00 (2020)
Energy Imports Net *(% of energy use)*	75.21 (2015)
Fossil Fuel Energy Consumption *(% of total)*	86.84 (2015)

Source: World Bank & Energypedia

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BRIEF INFORMATION ABOUT ENERGY PRODUCTION, LAW, POLICIES, OTHER LEGISLATION

The objective of Turkey's energy policies is to ensure secure, sustainable, and affordable energy by diversifying energy supply routes and source countries, promoting indigenous energy production and energy efficiency to moderate the growth of the total final consumption. (IEA)

Turkey's economic development strategy to 2023, Vision 2023, presents these energy ambitions for the year that marks the 100th anniversary of the Republic of Turkey.

Turkey meets only a quarter of its energy demand with national resources. In 2019 the country was almost 40% fossil fuel energy dependant on Russia, 99% of natural gas and 93% of petroleum are imported. In the 2010s fossil fuel imports were probably the biggest structural vulnerability of the country's economy.(IEA)

Vision 2023 aims to promote indigenous energy resources, raise share of wind and geothermal energy, reduce energy consumption by 20% by improving energy efficiency and establish two or three nuclear power plants

The 2009 Electricity Market and Security of Supply Strategy set in motion the opening of the electricity market, phasing out cross-subsidisation and increasing competition and natural resource utilisation. Security of supply will be improved by increasing regional integration and by ensuring adequate generating capacity through well-functioning electricity wholesale markets, including the creation of the day-ahead, balancing and financial markets. (IEA)

Turkey bases policy actions in the energy sector on five-year economic development and strategic sectoral plans to guide investments and government actions across several ministries. In 2013, the government set out the key energy policy objectives in the 10th National Development Plan (2014-18) (published in the Official Gazette No. 28699) which include ambitions to:

- increase domestic supply sources
- decrease import dependence
- diversify supply sources and routes
- realise oil and natural gas pipeline projects
- increase energy efficiency and renewable energy
- decrease consumption of fossil fuels
- improve competitiveness on electricity and natural gas markets
- expand and construct natural gas storage facilities and
- start up the operation of nuclear power plants.

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RENEWABLE ENERGY LEGAL FRAMEWORK

Turkey passed the Renewable Energy Law in 2005 and the renewable energy sector has been growing since then. The Renewable Energy Law defines renewable energy resources as wind, solar, geothermal, wave, tidal, drift, biomass or biogas resources. Although there are plenty of renewable resources for energy in Turkey, only hydropower has been much developed, averaging about a fifth of national electricity supply. The country is aiming for two thirds of electricity to be from renewables by 2023. (RES LEGAL EU)

Renewable Energy Support Mechanism
Electricity generated from renewable energy resources will be sold on the electricity market and the support mechanism will provide extra payment. . The support mechanism also furthering some new features like r incentives for licence holders that use locally produced mechanical and/or electro-mechanical equipment or components in renewable energy facilities for five years. (RES LEGAL EU)

Renewable energy targets
There are currently no legally binding renewable energy targets. However, according to the Strategic Plan for 2015 to 2019 released by the MENR (Ministry of Energy and Natural Resources), it is intended to increase the share of renewables to 30% of total electricity generation by increasing the installed capacity of hydroelectric power to 32,000 MW, wind energy to 10,000 MW, solar energy to 3,000 MW and geothermal energy to 700 MW. (RES LEGAL EU)

Renewable energy zones
The General Directorate of Renewable Energy (GDRE) under the MENR declares Renewable Energy Zones (YEKA-zones) where renewable energy capacities are to be tendered. Another option is the tender of a fixed renewable energy capacity, for which the winning bidder has to search for adequate zones to develop the project. Tender participants bid for a feed-in tariff, which was granted for 15 years. (RES LEGAL EU)

AUTHORITIES

The Ministry of Energy and Natural Resources (MENR)
(Enerji ve Tabii Kaynaklar Bakanlığı -ETKB)
It has a leading role in formulating and implementing energy policies and programmes.
https://enerji.gov.tr/

The Ministry of Environment and Urban Planning (MEU)
Çevre ve Şehircilik Bakanlığı
It is the lead department for domestic and international climate change policies and the implementation of the government's National Climate Change Strategy and Climate Change Action Plan.
https://csb.gov.tr/

The Energy Market Regulatory Authority -EMRA
(Enerji Piyasası Düzenleme Kurumu – EPDK)
It is an autonomous, public legal entity to regulate and monitor energy markets. It can create and approve tariff levels, issue licences, establish quality service standards.
https://www.epdk.gov.tr

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Prime Ministry Privatisation Administration (PA)
Özelleştirme İdaresi Başkanlığı

Have a leading role in liberalising the Turkish electricity market, reducing the state involvement in the economy and attracting private investment.
https://www.oib.gov.tr/

Turkish Electricity Transmission Company (TEİAŞ)
Türkiye Elektrik İletim Anonim Şirketi

It is responsible for the transmission of the electricity from production to the distribution networks that distribute it to the consumers.
https://www.teias.gov.tr/en-US/

Turkey Electricity Distribution Company
Türkiye Elektrik Dagitim Anonim Sirket (TEDAS)

It acts as an intermediary in the payment of electriricy payments and conducts their audits.
https://www.tedas.gov.tr

Electricity Generation Corporation
Elektirk Üretim A.Ş. (EÜAŞ)

It owns some of the non-privatised generation plants.
https://www.euas.gov.tr

Energy Market Operations Company
Enerji Piyasaları İşletme A.Ş. (EPİAŞ)

It is responsible for calculating maximum and minimum Bid prices, balancing power markets, surveillance of the markets.
https://www.epias.com.tr/

LINKS TO LAWS AND REGULATIONS / FULL OFFICIAL DOCUMENTS IN ENGLISH

Laws

5346 Law on Utilization of Renewable Energy Sources
http://www.lawsturkey.com/law/law-on-utilization-of-renewable-energy-sources-for-the-purpose-of-generating-electrical-energy-5346

5627 Energy Efficiency Law
http://www.lawsturkey.com/law/energy-efficiency-law-5627

6446 Electricity Market Law
http://www.lawsturkey.com/law/electricity-market-law-6446

Regulations

24843 Electricity Market Tariffs Regulation
http://www.lawsturkey.com/regulation/24843-electricity-market-tariffs-regulation

24866 Electricity Market Eligible Consumer Regulation
http://www.lawsturkey.com/regulation/24866-electricity-market-eligible-consumer-regulation

This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement n°957852

25001 Electricity Market Grid Regulation
http://www.lawsturkey.com/regulation/25001-electricity-market-grid-regulation

25025 Electricity Market Distribution Regulation
http://www.lawsturkey.com/regulation/25025-electricity-market-distribution-regulation

26129 Regulation Concerning Electricity Demand Forecast
http://www.lawsturkey.com/regulation/26129-regulation-concerning-electricity-demand-forecast

27035 Regulation on Energy Efficiency Law
http://www.lawsturkey.com/regulation/27035-regulation-on-energy-efficiency-law

28504 Electricity Reliability and Quality Regulation
http://www.lawsturkey.com/regulation/28504-transmission-system-supply-reliability-and-quality-regulation

28504 Regulation on Service Quality in Electricity Distribution and Retail Sale
http://www.lawsturkey.com/regulation/28504-regulation-on-service-quality-in-electricity-distribution-and-retail-sale

29003 Electricity Market Import and Export Regulation
http://www.lawsturkey.com/regulation/29003-electricity-market-import-and-export-regulation

STATISTICS

Our World in Data

Hannah Ritchie - "Energy". Published online at OurWorldInData.org
By University of Oxford and Global Change Data Lab

Turkey: Energy Country Profile- Full report available at:
https://ourworldindata.org/energy/country/turkey?country=~TUR

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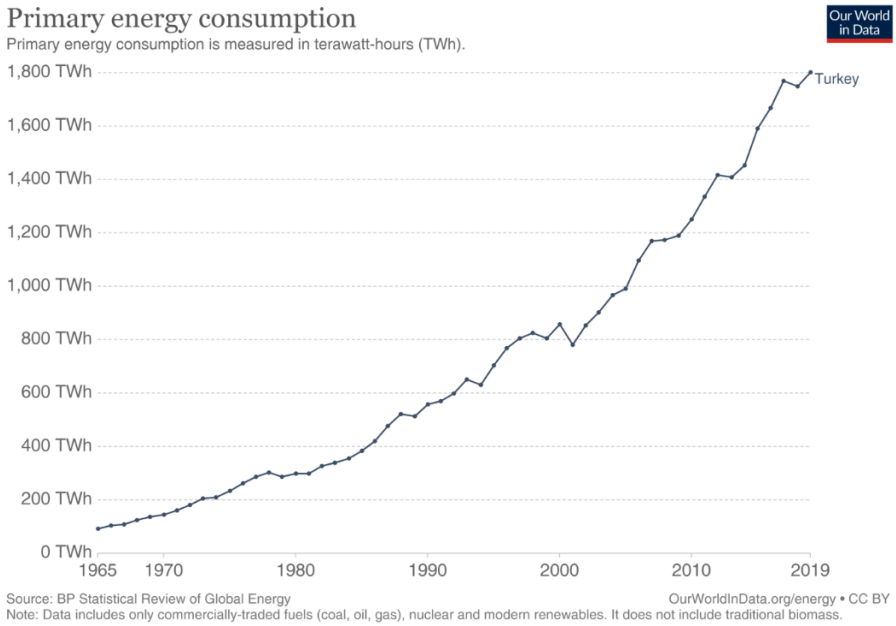
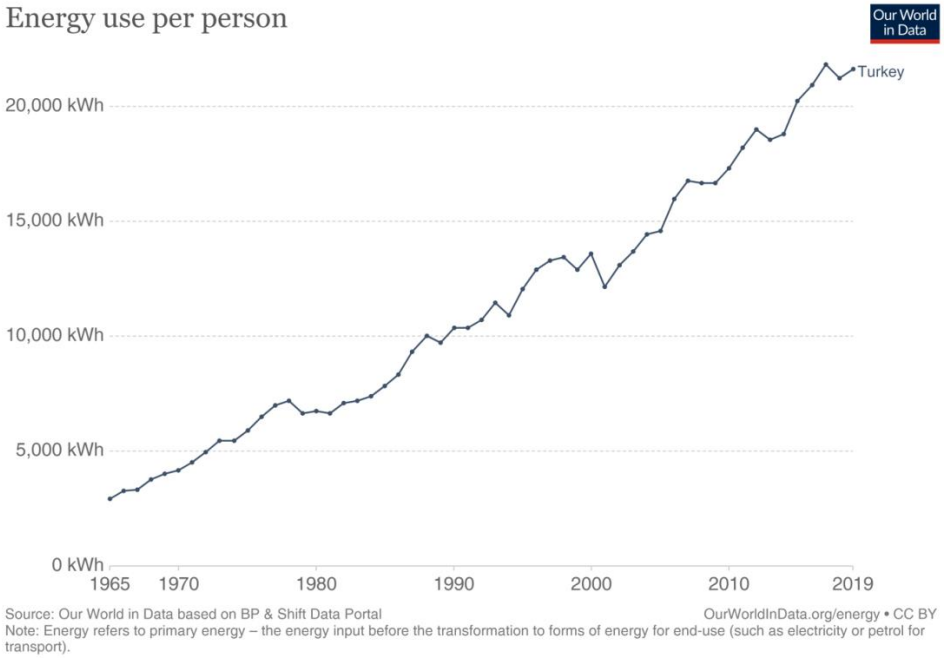
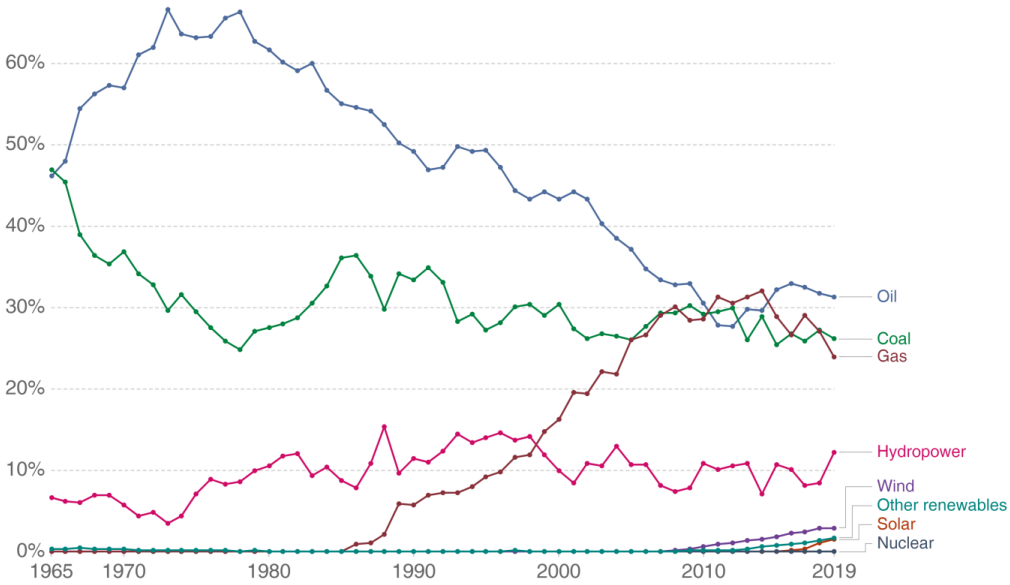




This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement n°957852

Share of energy consumption by source, Turkey

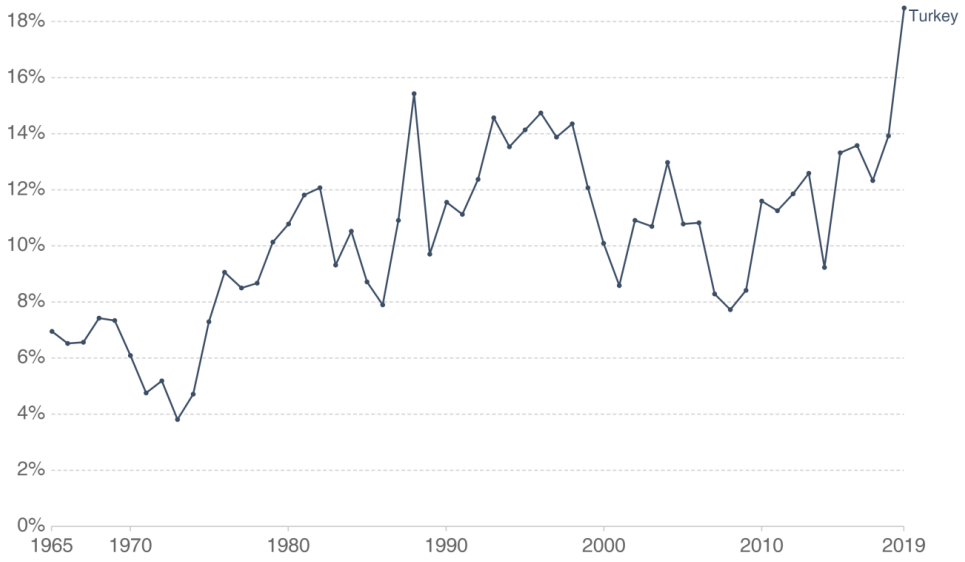
To convert from primary direct energy consumption, an inefficiency factor has been applied or fossil fuels (i.e. the 'substitution method').



Source: Our World in Data based on BP Statistical Review of World Energy (2020) OurWorldInData.org/energy • CC BY

Share of primary energy from low-carbon sources

Low-carbon energy is defined as the sum of nuclear and renewable sources. Renewable sources include hydropower, solar, wind, geothermal, wave and tidal and bioenergy. Traditional biofuels are not included.



Source: Our World in Data based on BP Statistical Review of World Energy (2020) OurWorldInData.org/energy • CC BY
Note: Primary energy is calculated using the 'substitution method' which takes account of the inefficiencies energy production from fossil fuels.

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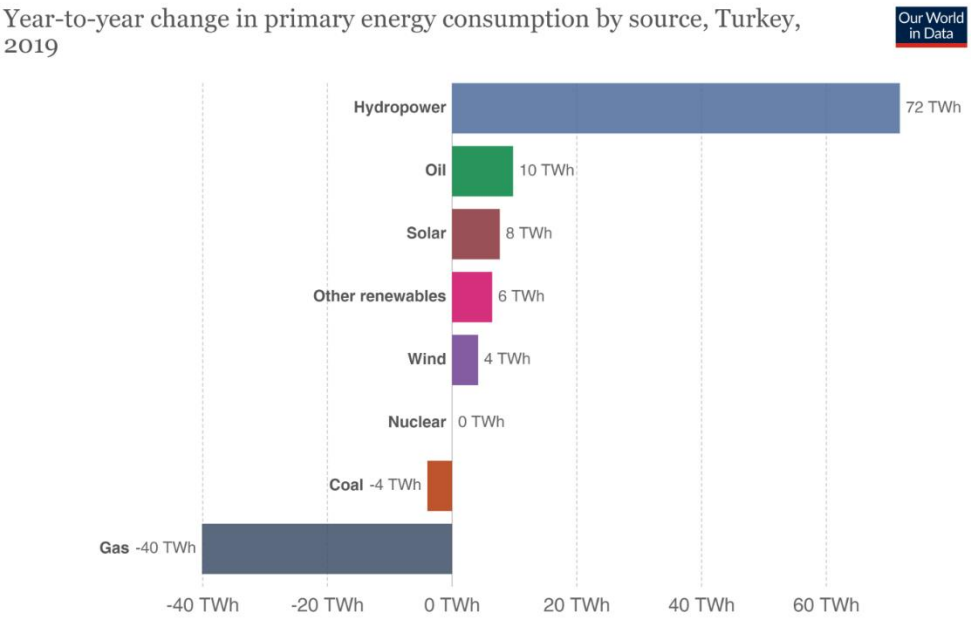
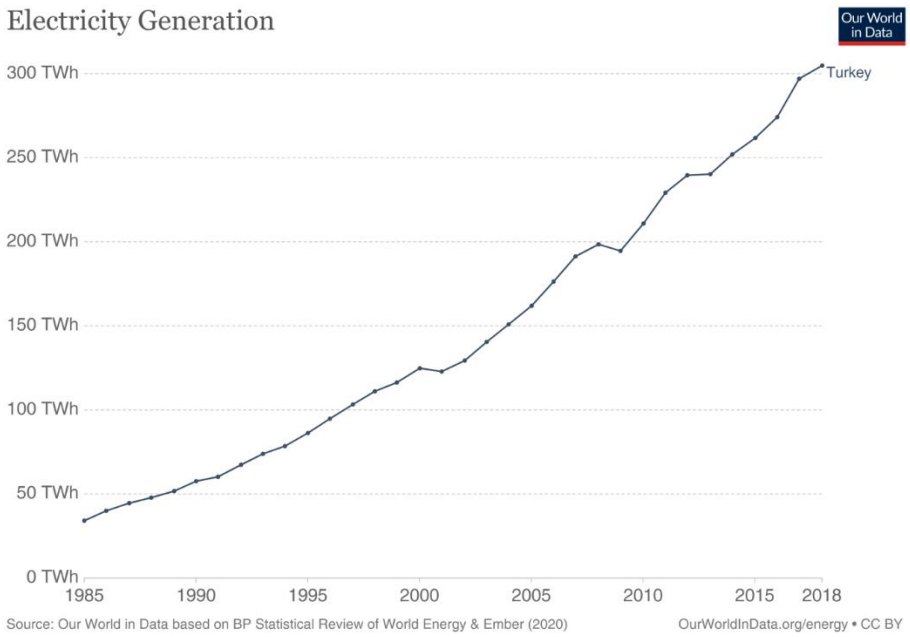
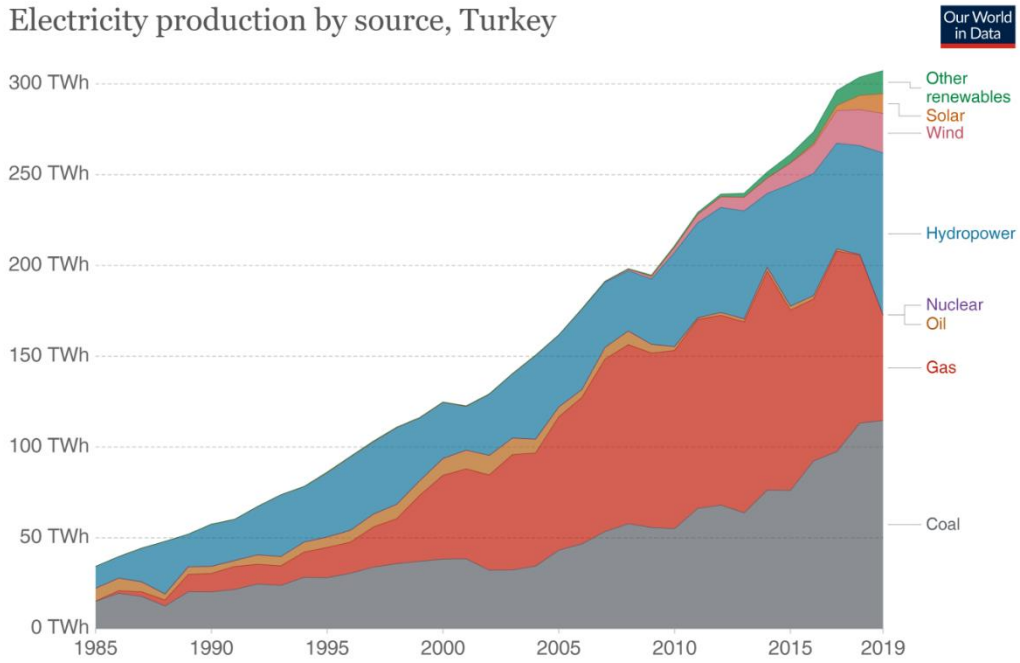
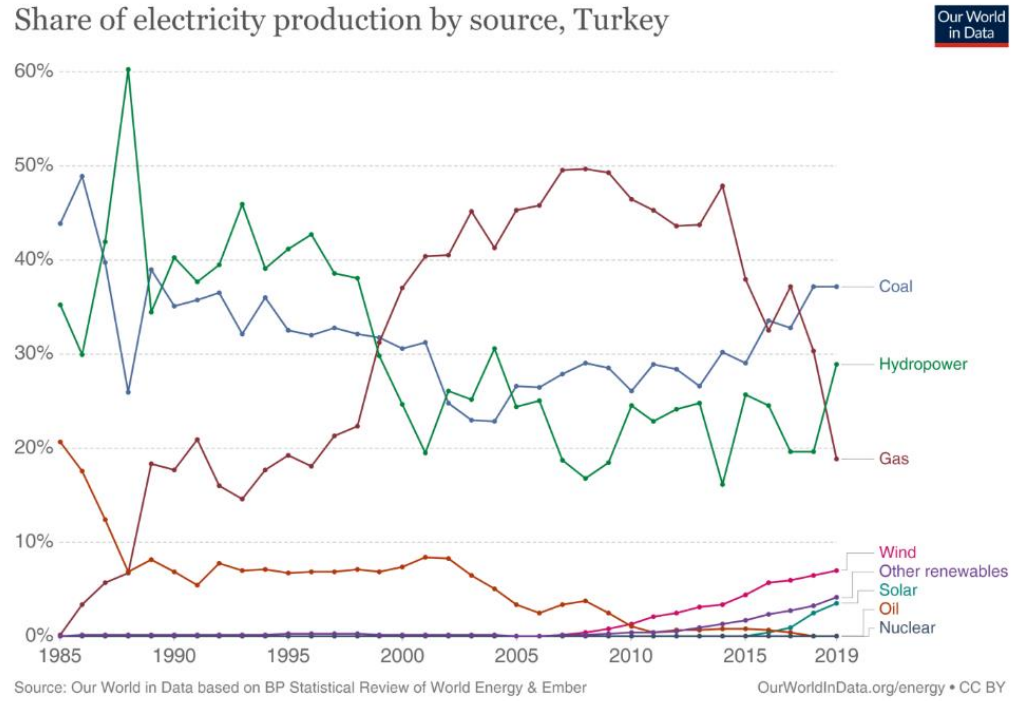




This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement n°957852





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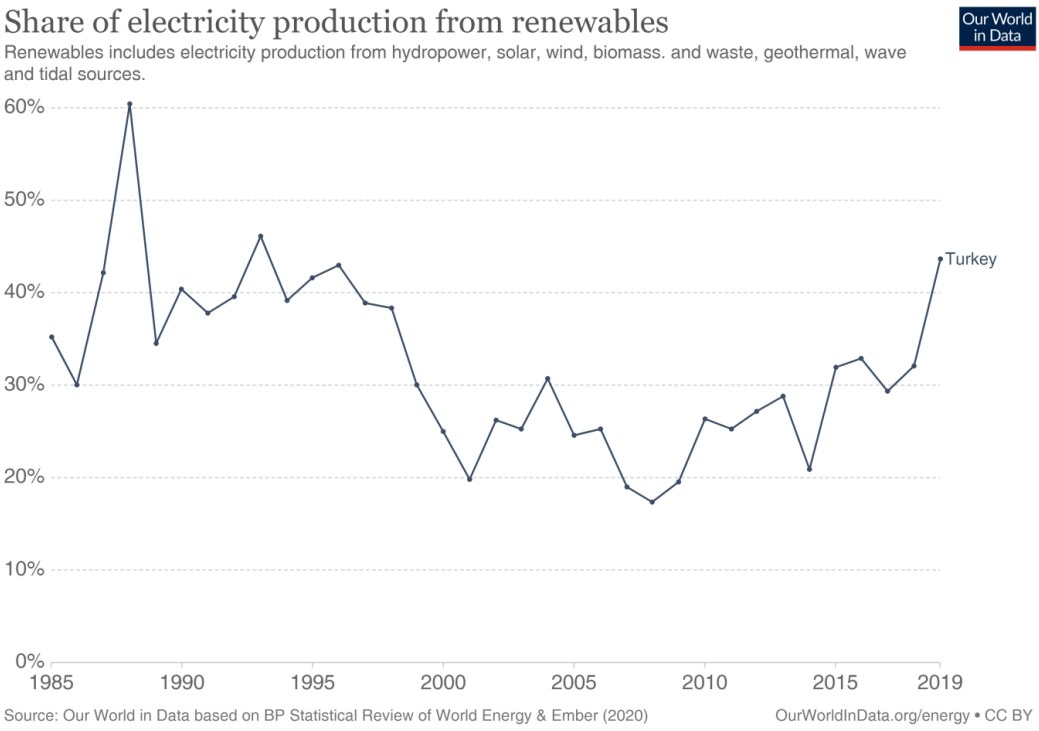

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RESOURCES USED IN THIS DOCUMENT

Wikipedia, the free encyclopaedia

Wikipedia is an online free-content encyclopaedia project helping to create a world in which everyone can freely share in the sum of all knowledge.
https://en.wikipedia.org/

RES-Legal Europe

It is a professionally edited and free of charge online database on support schemes, grid issues and policies regarding renewable energy sources.
http://www.res-legal.eu/

Our World in Data

Hannah Ritchie - "Energy". Published online at OurWorldInData.org
By University of Oxford and Global Change Data Lab
Free and accessible for everyone.
https://ourworldindata.org/

World Bank

The World Bank collects and publishes data for public access and use.
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Energypedia

Energypedia is a wiki platform for collaborative knowledge exchange on renewable energy, energy access, and energy efficiency topics in developing countries.
https://energypedia.info

International Energy Agency

The IEA is at the heart of global dialogue on energy, providing authoritative analysis, data, policy recommendations, and real-world solutions to help countries provide secure and sustainable energy for all.
https://www.iea.org/

The Ministry of Energy and Natural Resources (MENR)

It has the lead responsibility for formulating and implementing energy policies and programmes, in co-ordination with its attached, related and affiliated institutions and other public and private entities
https://www.enerji.gov.tr/

This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement n°957852

FURTHER READING

Electricity Regulation in Turkey

Published by **Thomson Reuters Practical Law**
Prepared by Zeynel Tunç and Aslı Kehale Altunyuva and Tuğba Taşçı, Paksoy
Law stated as at 01-Jun-2019
Available at:
https://uk.practicallaw.thomsonreuters.com/0-523-5654?transitionType=Default&contextData=(sc.Default)&firstPage=true

This is a very comprehensive guide including topics:

- Electricity market
- Regulatory structure
- Sources of electricity generation
- Renewable energy zones
- Renewable Energy Support Mechanism
- Authorisation and operating requirements
- Authorisation and operating requirements
- Transmission charges
- System balancing
- Authorisation and operating requirements
- Distribution charges
- Authorisation and operating requirements
- Trading between generators and suppliers
- Electricity price and conditions of sale
- Statutory powers
- Tax issues

Energy Policies of IEA Countries: Turkey 2016 Review

Available at:
https://www.iea.org/reports/energy-policies-of-iea-countries-turkey-2016-review

Energy Industry Report

Published by The Investment Office of the Presidency of the Republic of Turkey
Available at:
https://www.invest.gov.tr/en/library/publications/lists/investpublications/energy-industry.pdf

Turkey: Renewable Energy: A Quick Guide To Turkish Regulatory Framework

Published my **mondaq** on 24 May 2017
Prepared by by Hakki Gedik and Gökhan Eraksoy
Available at:
https://www.mondaq.com/turkey/renewables/597240/renewable-energy-a-quick-guide-to-turkish-regulatory-framework

This guide provide information about:

- Generation License application explained step by step
- Environmental permits
- Operational permits
- Support Scheme
- Pre-License and License Fee Incentives
- Feed-in Tariffs
- Pooling and Receiving Payment for Generation Facilities

This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement n°957852

- Selling Guarantees
- Subsidies for Using Machinery Produced in Turkey
- Table 4: Additional Price Incentive for Generation Plants using components Manufactured in Turkey
- Protection from Development and Zoning
- Further Rights and Incentives
- Operating Without a License
- Prohibition of Change in the Shareholding Structure
- Share Transfers During the License Period

Guide to Investing In Turkish Renewables Energy Sector

Published by The Investment Office of the Presidency of the Republic of Turkey
Available at:
https://www.invest.gov.tr/en/library/publications/lists/investpublications/guide-to-investing-in-turkish-renewables-energy-sector.pdf

Guide to State Incentives For Investments In Turkey

Published by The Investment Office of the Presidency of the Republic of Turkey
Available at:
https://www.invest.gov.tr/en/library/publications/lists/investpublications/guide-to-state-incentives-for-investments-in-turkey.pdf

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SPAIN

Energy Legal Framework

Capital	Madrid
Coordinates	40.4333° N, 3.7000° W
Total Area *(km²)*	505,935
Population	47,076,781 (2019)
Rural Population (% of total population)	19 (2019)
GDP *(current US$)*	1,394,116,310,768.63 (2019)
GDP Per Capita *(current US$)*	29,613.67 (2019)
Access to Electricity *(% of population)*	100.00 (2020)
Energy Imports Net *(% of energy use)*	71.43 (2015)
Fossil Fuel Energy Consumption *(% of total)*	72.96 (2015)

Source: World Bank & Energypedia

This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement n°957852

BRIEF INFORMATION ABOUT ENERGY PRODUCTION, LAW, POLICIES, OTHER LEGISLATION

The regulatory framework of Spain includes both European and national regulations.

- ***The Clean Energy for all Europeans*** package, consisting of four regulations and encourages energy efficiency through the development of a market for energy services and the delivery of energy efficiency programmes and measures to end-users. It requires member states to create national energy efficiency action plans for meeting the target. The directive also sets the framework for measures such as financing, metering, billing, promotion of energy services, and obligations for the public sector. In addition, it requires member states to oblige energy distributors or retailers to offer either competitively priced energy services, audits or other measures to improve energy efficiency. Directive also provides guidelines on trans-European energy infrastructure, where energy infrastructure projects of common interest are identified, or the Electricity network codes and guidelines adopted by the European Commission.

- ***At national level***, the economic aspects of electricity generation, distribution, supply and transmission, production market, tariffs and the basic economic relationships between different market agents are regulated by the central government. Regional authorities regulate the environmental and construction permits.

Electricity generation is an unregulated activity and prices can be determined at the free market with the all economic agents. A Special regulatory regime was carried out for renewable energy facilities such as co-generation, mini-hydro power stations etc.

Electricity sector targets set out in the Spanish 2030 Agenda:

- guaranteeing everyone's access to affordable, safe, sustainable, and modern energy
- increasing the share of renewable energy up to at least 32%
- increasing the global rate in energy efficiency up to at least 32.5% in the EU
- increasing international co-operation to facilitate access to clean energy research and technology and promote the investment in energy infrastructure and clean energy technologies.
- expanding the energy infrastructure and technology within developing countries.
- reduction of greenhouse gas emissions in the EU of at least 40%

In the early 2000s, huge investments have been made in Spain's renewable energy industry. Spain aims to be carbon-free before 2050. Spain has long been a leader in renewable energy and has recently become the first country in the world to have relied on wind as its top energy source for an entire year. The country is attempting to use wind power to supply 40 percent of its electricity consumption by 2020. (WIKIPEDIA)

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RENEWABLE ENERGY LEGAL FRAMEWORK

A new support scheme, the "Régimen Retributivo Específico" was put into force in 2014 with an aim to grant a specific remuneration regime for new renewable energy plants located in the mainland electricity system. This specific remuneration regime allocated through three competitive call for tenders.

Until October 2018, a contribution mechanism was in place which determined charges on capacity and generation levels of existing and new self-consumption RES plants. The new regulation approved in October 2018, which specified that the self-consumption of RES is free from charges, simplified the procedures for RES self-consumption. Also, a quota system for biofuels has been established.

RES-E operators are entitled to grid connection, priority dispatch against the grid operator. Furthermore, a plant operator is entitled against the grid operator to an expansion of the grid, if the expansion is required for his plant to be connected to the grid. Policies for training and certification of solar panel installers are in place. Buildings should satisfy a minimal solar contribution for warm sanitary water. There is also a financial support for large thermal plants in buildings that are supplied from RES. A new RD&D plan (2017 – 2020) aimed at directing support to RES-E, RES-H&C and RES-T has been published. (RES LEGAL EU)

Grid issues:

- Plant operators are contractually entitled against the grid operator to priority access and connection of their plants to the grid.
- Plant operators are contractually entitled to priority use of the grids export and transmit electricity until grid capacity is used up and as long as stability is maintained.
- Plant operators may be contractually entitled to the expansion of the grid. If the expansion is required for a plant to be connected to the grid, the grid operator shall bear the costs of the expansion works. Apart from that, the grid operator is obliged to expand his grid in compliance with the general legislation on energy. (RES LEGAL EU)

The generation of electricity from renewable sources was mainly promoted through a price regulation system that was phased out through Real Decreto-ley 9/2013.

The Real Decreto RD 413/2014 was approved to regulate the specific compensation regime or premium tariff ("Régimen Retributivo Específico"), aiming at supporting renewable energy plants. The Real Decretos 359/2017 and 650/2017 set each one a call for the allocation of the specific compensation regime for new renewable energy plants located in the mainland electricity system. The selected procedure to allocate the premium tariff was a call for tenders regulated through Order ETU/315/2017. The latter also approved the value of the different compensation parameters for the reference RES plants under the specific remuneration regime or premium tariff. In 2015 Real Decreto 900/2015 was approved, establishing charges on existing and new self-consumption RES plants, both on capacity and generation levels. According to RD 900/2015 these are not taxes or compensation for utility losses, but contributions to overall system costs. Self-consumption installations under 10 kW and plants located not on the Spanish mainland will be spared the generation charge, but will still be subject to a fixed charge per kW of capacity. Yet, on October 2018 Royal Decree 15/2018 eliminated these charges on existing and new self-consumption RES plants, while it additionally simplified the procedure to apply to the self-consumption scheme for RES plants until 100kW. (RES LEGAL EU)

This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement n°957852

AUTHORITIES

Ministry for the Ecological Transition
Ministerio para la Transición Ecológica y el Reto Demográfico
https://www.miteco.gob.es/en/

Energy Agency
Centro de Estudios de la Energía
+34 913 146 673
https://www.idae.es/en

National Commission on Markets and Competition
Comisión Nacional de los Mercados y la Competencia (CNMC)
https://www.cnmc.es/en

Association of Spanish producers of electricity from renewable sources
La Asociación de Empresas de Energías Renovables (APPA)
https://www.appa.es/

Consellería of energy transition and productive sectors
Govern de les Illes Balears
https://www.caib.es/seucaib/es/organigrama/6

Consell de Formentera
http://www.consellinsulardeformentera.cat/

Electric System Operator and only Transmission grid operator
Red Electrica de España
https://www.ree.es/es

LAWS AND REGULATIONS

COUNTRY LEGISLATIONS

Ley 24/2013- Law on the Electricity Sector
It is the main legal framework which establishes the rights and duties of operators and authorities, activities.
https://www.boe.es/eli/es/l/2013/12/26/24/con

Royal Decree 413/2014 of 6 June
Regulating the activity of electricity production from renewable energy, CHP and waste.
https://www.boe.es/eli/es/rd/2014/06/06/413

Royal Decree 900/2015 of 9 October,
Regulating the administrative, technical and economic conditions for the supply and production of electricity under self-consumption).
https://www.boe.es/eli/es/rd/2015/10/09/900

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Royal Decree 359/2017 of 31 March

Setting a call for the allocation of the specific compensation regime for new plants of electricity production from renewable energy sources located in the mainland electricity system).
https://www.boe.es/diario_boe/txt.php?id=BOE-A-2017-9317

Order ETU/315/2017 of 6 April,

Regulating the procedure for the allocation of the specific compensation regime under the call for new plants of electricity production from renewable energy sources, according to provisions of Royal Decree 359/2017 and approving its compensation parameters.).
https://www.boe.es/eli/es/o/2017/04/06/etu315

Resolution of 10 April 2017 of the State Secretary of Energy

Announcing the procedures and rules of the call for tenders for the allocation of the specific compensation regime to new plants of electricity production from RES, according to provisions of Royal Decree 359/2017, of 31 March, and Order ETU/315/2017, of 6 April).
https://www.boe.es/diario_boe/txt.php?id=BOE-A-2017-4095

Royal Decree 650/2017, of 16 June

Setting a quota of 3000 MW of installed capacity for new plants of electricity production from renewable energy sources located in the mainland electricity system, which can receive the specific compensation regime).
https://www.boe.es/diario_boe/txt.php?id=BOE-A-2017-7632

Resolution of 30 June 2017 of the State Secretary of Energy

Announcing the call for tenders for the allocation of the specific compensation regime according to provisions of Royal Decree 650/2017 of 16 June).
https://www.boe.es/buscar/pdf/2017/BOE-A-2017-7768-consolidado.pdf

Royal Decree 15/2018 of 5 October

Announcing urgent measures for the energy transition and the protection of self-consumers).
https://www.boe.es/buscar/doc.php?id=BOE-A-2018-13593

Royal Decree-Law 1/2019

Assigning to the Spanish National Markets and Competition Commission, the powers to approve the methodology, the remunerative parameters, the asset regulatory base and the annual remuneration of power transmission activity and system operation.
https://www.boe.es/eli/es/rdl/2019/01/11/1

Circular 2/2019 of 12 November

Establishing the methodology for calculating the rate of financial return for those activities related to the electricity transmission and distribution, regasification and natural gas transmission and distribution,
https://www.boe.es/eli/es/cir/2019/11/12/2

Circular 4/2019 of 27 November

Establishing the methodology for the remuneration of the electricity system operator, sets out the methodology for remunerating the electricity system operator from 2020 onwards.
https://www.boe.es/buscar/doc.php?id=BOE-A-2013-11332

This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement n°957852

Circular 5/2019 of 5 December

Establishing the methodology for calculating the remuneration of the electricity transmission activity
https://www.boe.es/eli/es/cir/2019/12/05/5

Circular 7/2019 of 5 December

Approving the standard facilities and the benchmark unit values for operation and maintenance per asset that are to be used in calculating the remuneration for companies that own electricity transmission facilities, establish the current regulatory remuneration framework for the electricity transmission activity in Spain.
https://www.cnmc.es/sites/default/files/2782108_23.pdf

EUROPEAN LEGISLATIONS

Directive 2009/72/EC of 13 July 2009

Stating common rules for the internal market in electricity
https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=celex%3A32009L0072

Directive 2012/27/EU of 25 October 2012

Directive about energy efficiency
https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32012L0027

Directive 2019/944/EU of 5 June 2019

It is about the common rules for the internal market in electricity and amending Directive 2012/27/EU (Electricity Directive), which repeals the Directive 2009/72/EC concerning common rules for the internal market in electricity with effect from 1 January 2021.
https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32019L0944

EU Electricity Regulation ((EU) 943/2019), 5 June 2019

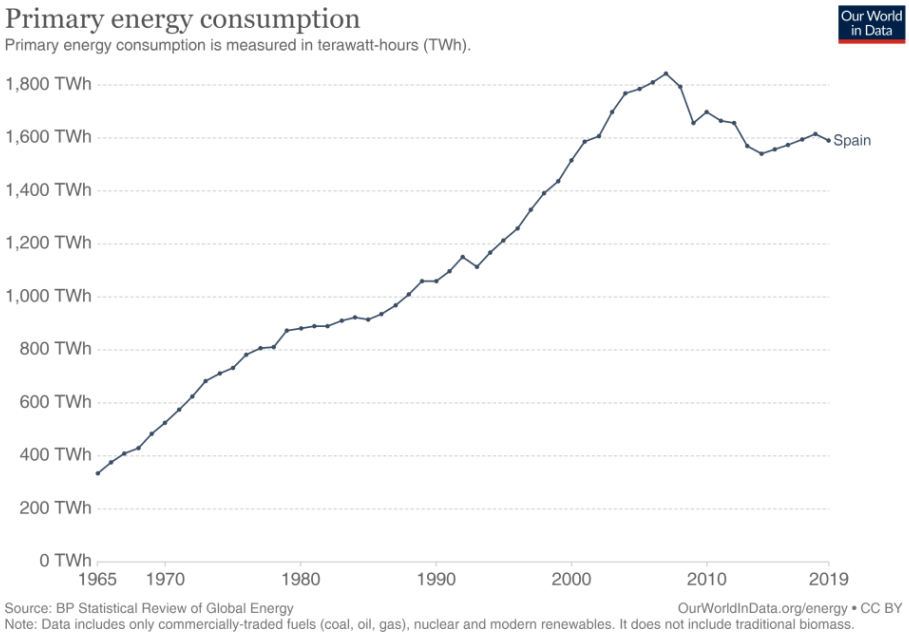
The EU Electricity Regulation introduces a new limit for power plants eligible to receive subsidies as capacity mechanisms (confirming the phasing out of subsidies to generation capacity emitting 550 g CO2/kWh or more).
https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32019R0943

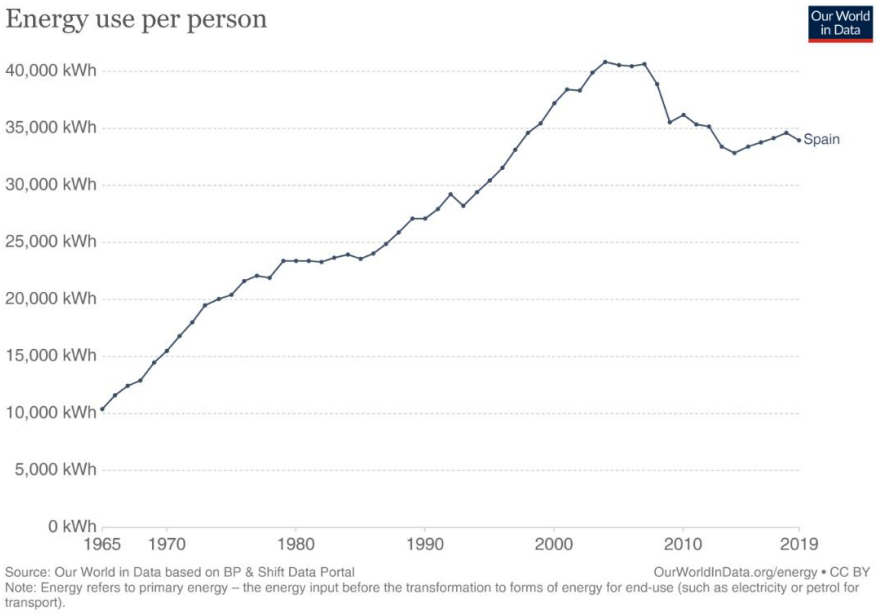
This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement n°957852

STATISTICS

Our World in Data

Hannah Ritchie - "Energy". Published online at OurWorldInData.org
By University of Oxford and Global Change Data Lab
Spain: Energy Country Profile **-** *Full report available at:*
https://ourworldindata.org/energy/country/spain?country=~ESP





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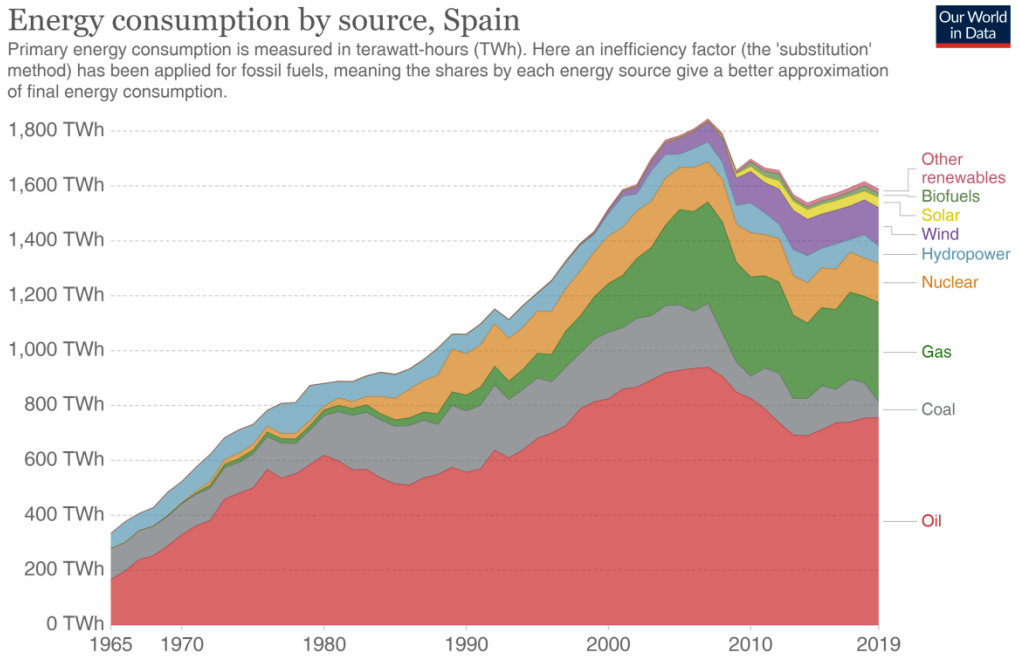

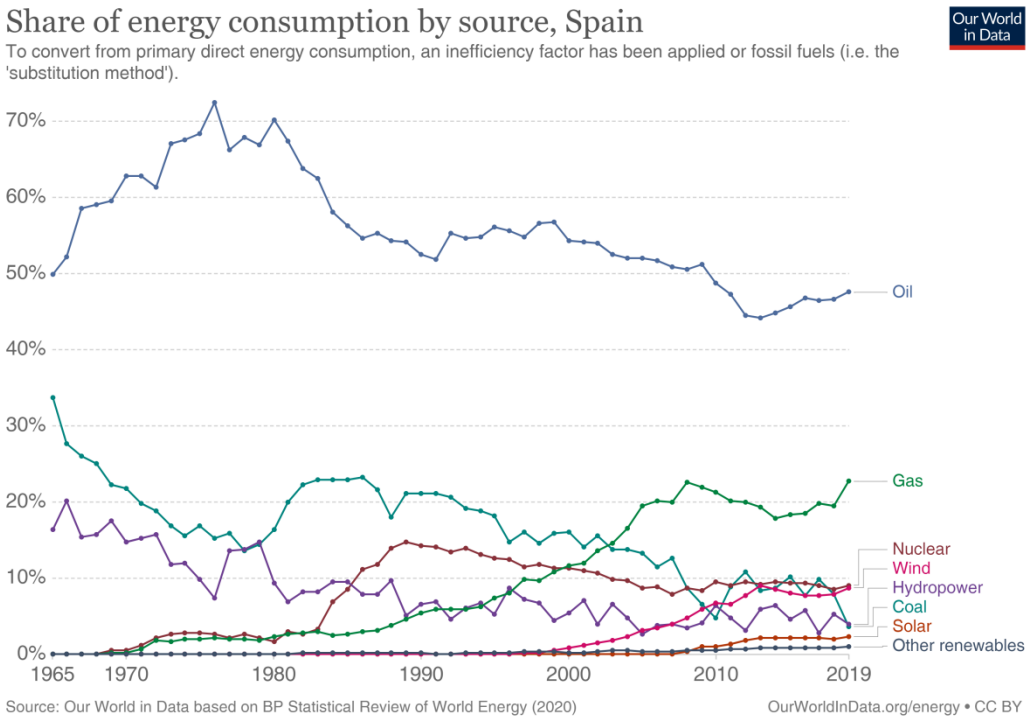

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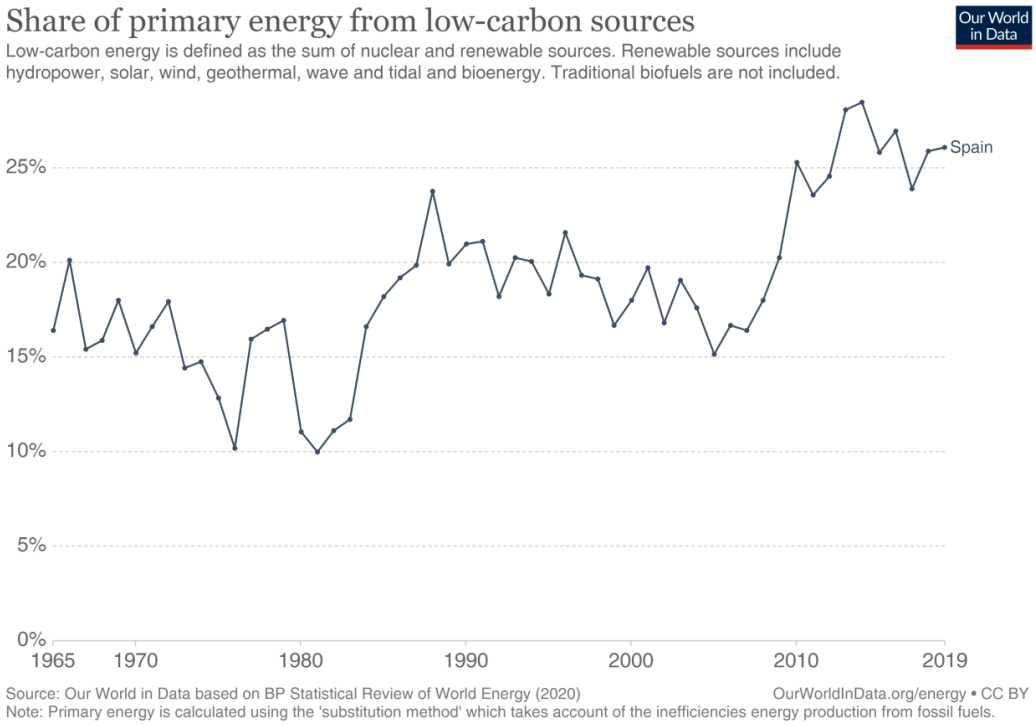

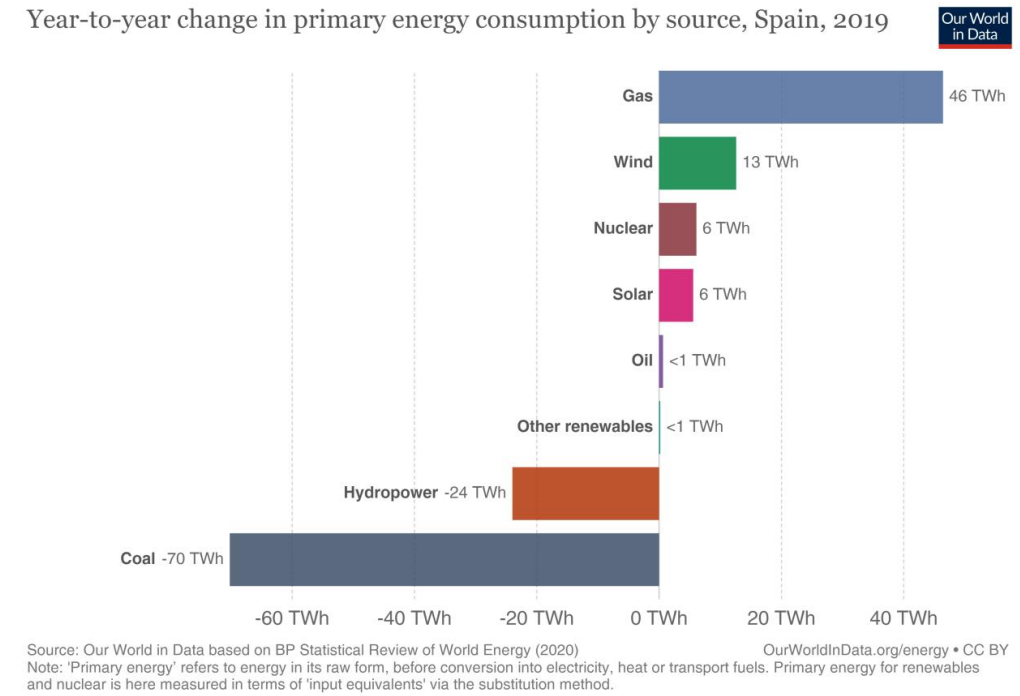

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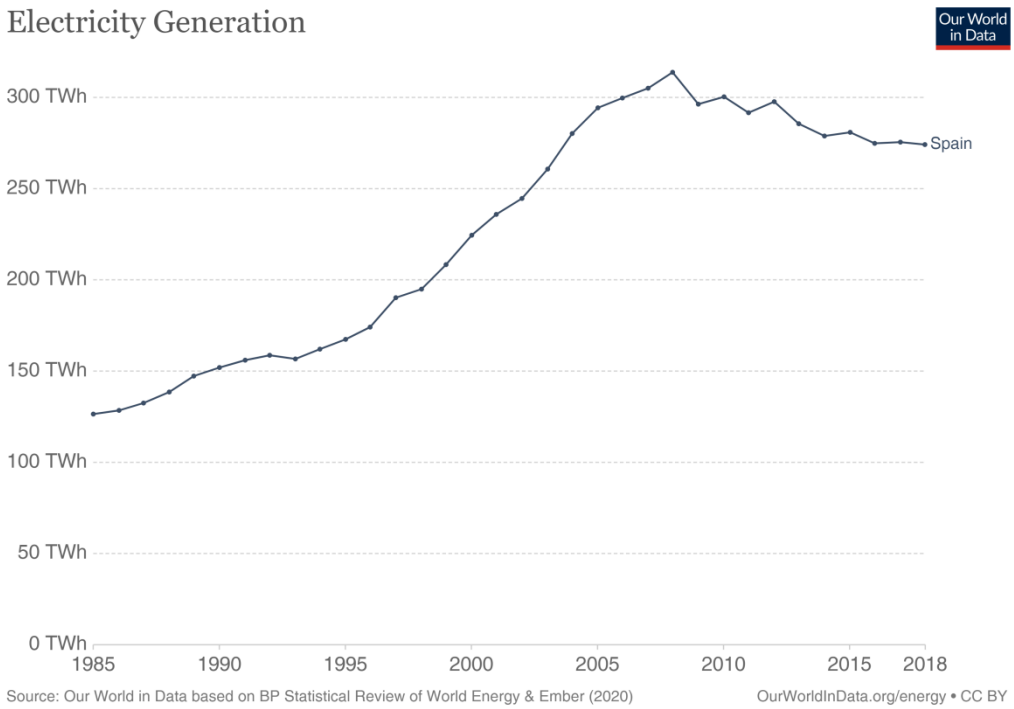

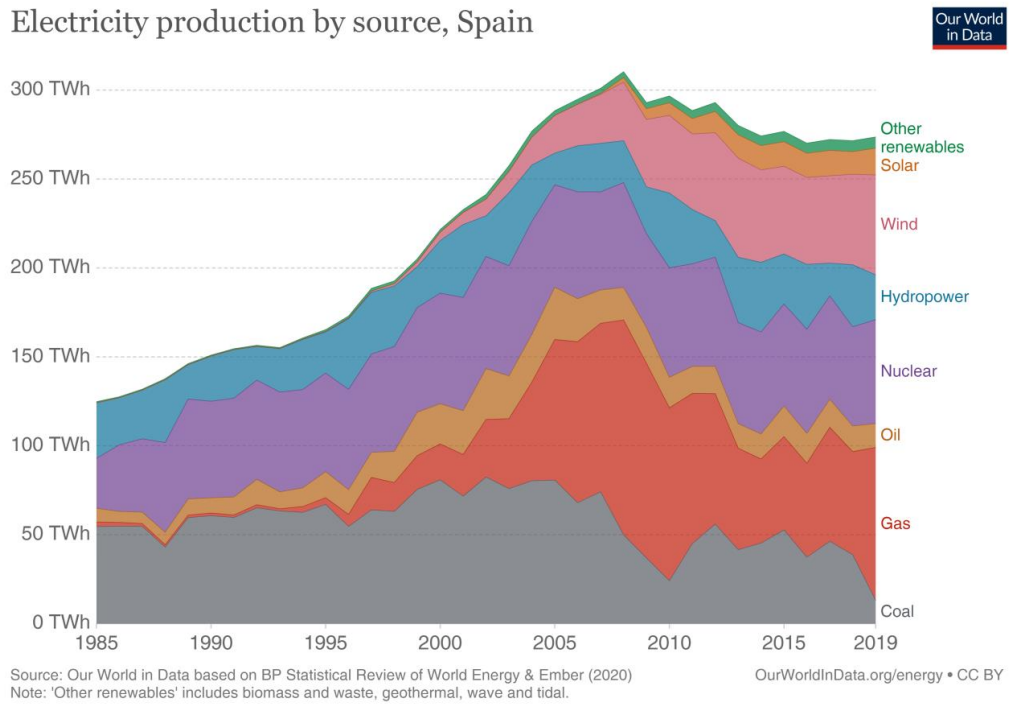

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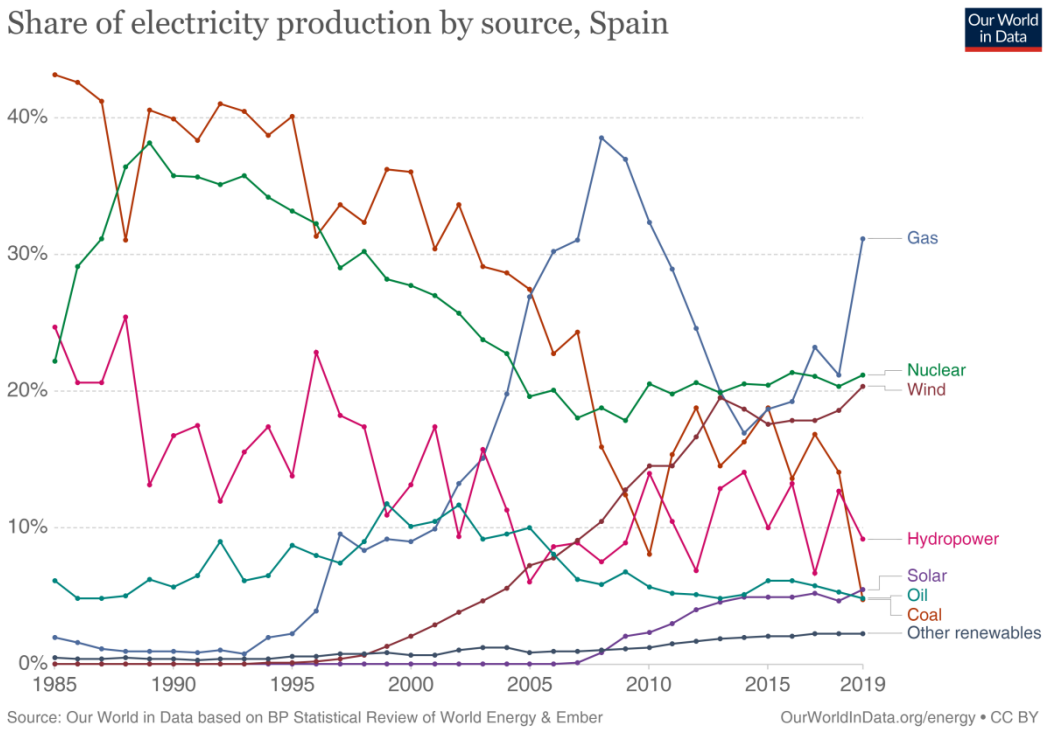

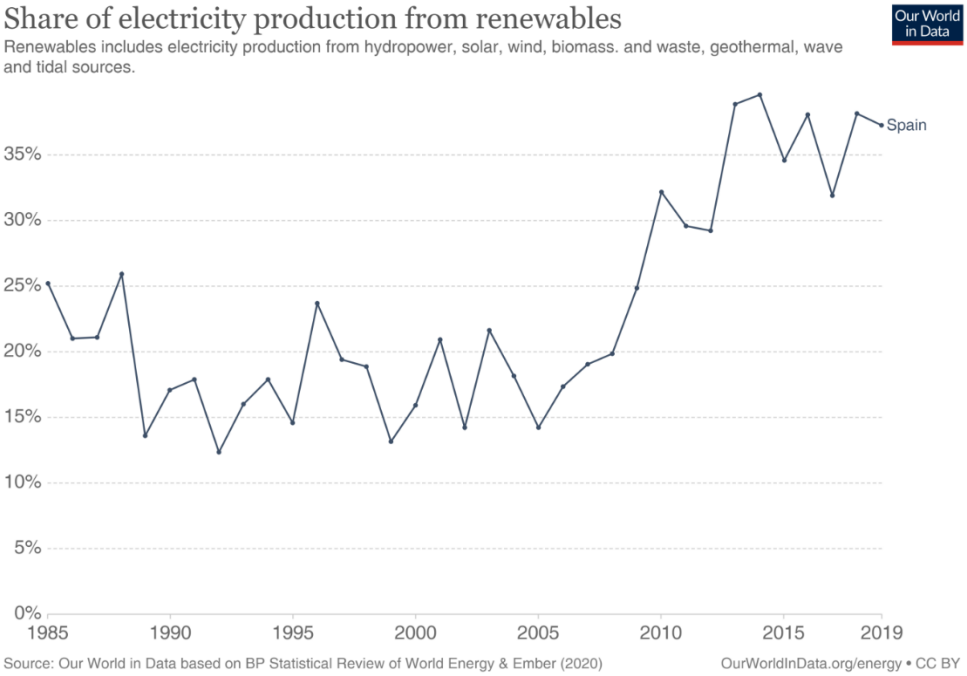

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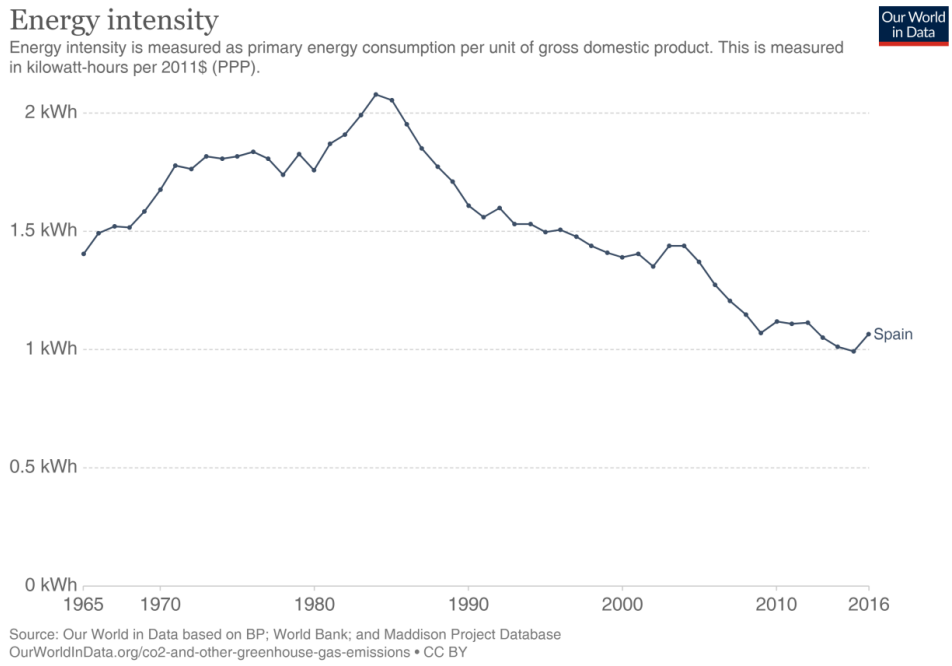

RESOURCES USED IN THIS DOCUMENT

Wikipedia, the free encyclopaedia

Wikipedia is an online free-content encyclopaedia project helping to create a world in which everyone can freely share in the sum of all knowledge.
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RES-Legal Europe

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http://www.res-legal.eu/

Our World in Data

Our World in Data is free and accessible for everyone. It is prepared by University of Oxford and Global Change Data Lab.
https://ourworldindata.org

EUR-Lex

It is online gateway to EU Law. It provides the official and most comprehensive access to EU legal documents. It is available in all of the EU's 24 official languages and is updated daily.
https://eur-lex.europa.eu/homepage.html

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World Bank

The World Bank collects and publishes data for public access and use.
https://data.worldbank.org/indicator

Energypedia

Energypedia is a wiki platform for collaborative knowledge exchange on renewable energy, energy access, and energy efficiency topics in developing countries.
https://energypedia.info

International Energy Agency

The IEA is at the heart of global dialogue on energy, providing authoritative analysis, data, policy recommendations, and real-world solutions to help countries provide secure and sustainable energy for all.
https://www.iea.org/

Official State Gazette (Boletín Oficial del Estado)

The Boletín Oficial del Estado is the official gazette of the Kingdom of Spain and contains a comprehensive list of all laws passed in parliament, the provisions adopted by the Government of Spain and the general provisions of the Autonomous Communities.
https://www.boe.es

Red Eléctrica de España

Red Eléctrica de España is the sole transmission agent and operator (TSO) of the national electricity system in Spain.
https://www.ree.es/

FURTHER READING

Electricity Regulation in Spain

This is a very comprehensive guide including regulatory structure and requirements.
Published by **Thomson Reuters Practical Law**
Prepared by Juan Ignacio González Ruiz and Maria José Descalzo Benito, Uría Menéndez
Law stated as at 01-Nov-2020
Available at: https://uk.practicallaw.thomsonreuters.com/4-529-8116

Energy Policies of IEA Countries: Spain 2015 Review"

https://www.iea.org/reports/energy-policies-of-iea-countries-spain-2015-review

Legal Framework For Renewable Energies In Spain

Published by Invest in Spain
Available at:
https://www.investinspain.org/invest/wcm/idc/groups/public/documents/documento/mda0/mju0/~edisp/4254900.pdf

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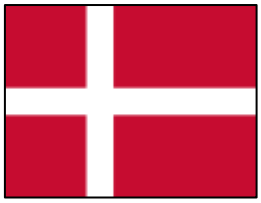
DENMARK

Energy Legal Framework



Capital	Copenhagen
Coordinates	55.7200° N, 12.5700° E
Total Area *(km²)*	42,920
Population	5,818,553 (2019)
Rural Population (% of total population)	12 (2019)
GDP *(current US$)*	348,078,018,463.91 (2019)
GDP Per Capita *(current US$)*	59,822.09 (2019)
Access to Electricity *(% of population)*	100.00 (2020)
Energy Imports Net *(% of energy use)*	1.77 (2015)
Fossil Fuel Energy Consumption *(% of total)*	64.93 (2015)

Source: World Bank & Energypedia

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BRIEF INFORMATION ABOUT ENERGY PRODUCTION, LAW, POLICIES, OTHER LEGISLATION

Denmark has considerable sources of oil and natural gas in the North Sea and ranked as number 32 in the world among net exporters of crude oil in 2008. Denmark expects to be self-sufficient with oil until 2050. However, gas resources are expected to decline, and production may decline below consumption in 2020, making imports necessary.

In February 2011 the Danish government announced the "Energy Strategy 2050" with the aim to be fully independent of fossil fuels by 2050, and a new government repeated the goal in 2015. The European Renewables Directive set a mandatory target at 20% share of energy from renewable sources by 2020. In 2012 the Danish government adopted a plan to increase the share of electricity production from wind to 50% by 2020, and to 84% in 2035; this was later changed to a broader 100% renewable electricity by 2030 target. (WIKIPEDIA)

Electricity generation in Denmark has changed fundamentally over the past two decades. Coal generation has been vastly eroded, and the bulk of power generation now comes from wind and bioenergy. Supported by a flexible domestic power system and a high level of interconnection, Denmark is now widely recognised as a global leader in integrating variable renewable energy while at the same time maintaining a highly reliable and secure electrical-power grid. The heating sector is also critical for Denmark's low-carbon ambitions. Denmark's large-scale use of combined heat and power plants with heat storage capacity and the increasing deployment of wind power offer great potential for efficient integration of heat and electricity systems. However, policies and regulations need to be aligned to realise that potential. Finding the right levels of energy taxation is particularly important. Denmark has successfully decoupled its economic growth from greenhouse gas emissions, thanks to a combination of energy efficiency improvements, and fuel switching to renewables. As in all countries, more needs to be done to limit emissions from transport. (IEA)

The key characteristics of the Danish energy policy include:

- **Broad and sustained political support for a low-carbon transition** of the Danish
- energy sector. Since the oil crisis in 1973, energy efficiency and renewable energy have been among Denmark's policy priorities.
- **A holistic approach to energy planning.** Denmark pays great attention to interactions and synergies between different sectors and various policies and regulatory instruments.
- **Stakeholder engagement and informed decision making.** Denmark has a long tradition of building consensus between political parties, which includes dialogue with different stakeholders. The policy-making process relies on socio-economic analysis and projections. Another Danish characteristic is the important role played by local and regional authorities, by local co-operatives and associations, in many aspects of the low-carbon ransition, e.g. in urban planning.
- **Strong international co-operation**. Danish electricity and gas markets are being increasingly integrated with the broader Nordic and European markets. Denmark actively contributes to the development of the EU energy policy and assists several developing countries in sustainable energy transition.

Danish Energy Agreement of 29 June 2018 brings competitive subsidy schemes related to private enterprises and buildings along with other energy efficiency initiatives: such as a scheme planned to replace oil burners with heat pumps in buildings located in areas without access to district heating or the gas grid, funds granted as loans dedicated to the renovation of public buildings owned by the municipalities and the administrative regions and finally, funding for information activities on energy savings and better utilization of data in promoting energy efficiency.(IEA)

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RENEWABLE ENERGY LEGAL FRAMEWORK

Denmark is a world-leading country in wind energy production and wind turbine production. The country has ambitious renewable energy goals for the future, including using renewable energy for 100% of its energy needs in all sectors by 2050. Danish electricity generation has become increasingly decentralised with a move away from production in the large central power stations to many smaller locally based and mostly CHP stations. Many of these smaller stations use locally sourced bio energy sources including straw and wood pellets.(WIKIPEDIA)

In Denmark, electricity from renewable sources is mainly promoted through a premium tariff and net-metering. The premium tariff for wind and solar PV installations is awarded through tenders, furthermore, Denmark supports the construction of pilot windmills trough a separate state fund. This support is also granted trough tenders. Renewable energy sources for heating purposes are exempt from the tax obligations on the production, supply and use of energy sources. The use of biogas for heating purposes is supported through a direct tariff. The main incentive for renewable energy use in transport is a quota system. Selling of biogas for transport purposes is supported through a direct tariff. (RES-LEGAL-EU)

Access of electricity from renewable energy sources to the grid shall be granted according to the principle of non-discrimination. With regard to the use of the grid, renewable energy shall be given priority. The connection of a heat generation plant to a district heating network in Denmark always involves grid development, since the construction of a plant must occur simultaneously with the development of the district heating grid.(RES-LEGAL-EU)

There are a number of policies aiming at promoting the development, installation and use of RES installations.

Summary of support schemes

- **Premium tariff.** In Denmark, the generation of electricity from renewable sources is promoted through a premium tariff system based on bonus payments. The operators of renewable energy plants usually receive a variable bonus, which is paid on top of the market price. The sum of the market price and the bonus shall not exceed a statutory maximum per kWh, which depends on the source of energy used and the date of connection of a given plant.
- **Tenders.** A premium tariff for wind and solar PV awarded through tenders and a tender scheme for pilot project mills
- **Net-Metering**. Electricity producers using all or part of the electricity produced for their own needs are totally or partly exempt from paying Public Service Obligation on this electricity. The Public Service Obligation is a charge levied to support renewable energy.
- **Loan guarantees**. Associations of wind and solar energy plant owners and other local initiatives may apply for guarantees for loans for feasibility studies that are conducted in the run-up to the construction of a wind-energy plant. (RES-LEGAL-EU)

Grid issues

In Denmark, access of electricity from renewable energy sources to the grid is mainly governed by the general legislation on energy and shall be granted according to the principle of non-discrimination. Electricity from renewable sources is subject to special provisions only with regard to the use of the grid, in which renewable energy shall be given priority. The grid users are not entitled to the expansion of the grid.

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- **Connection to the grid**: In return for payment, all plant operators shall be granted connection to the grid without certain plant operators being discriminated against.
- **Use of the grid**: The operators of renewable energy plants are entitled by law to priority use of the grids against the grid operator.
- **Grid development:** The grid operator is statutorily obliged to expand the grid in order to guarantee the efficient transmission of electricity. Whenever possible, the national target of increasing the competitiveness and use of renewable energy sources shall be given special attention. The plant operators are not entitled to the expansion of the grid.(RES-LEGAL-EU)

AUTHORITIES

The Danish Ministry of Climate, Energy and Utilities

It is responsible for national and international policies to mitigate climate change, as well as for energy, national geological surveys, and for meteorology.
https://en.kefm.dk/

The Danish Energy Agency (DEA)

It is responsible for the implementation of policies and measures related to the production, transmission and utilisation of energy, and their impact on climate change. It acts as a one-stop shop regarding offshore energy projects, allocates the necessary permits and co-ordinates consultation processes with other authorities.
https://ens.dk/en

Energinet.dk

It is the transmission system operator, an independent public enterprise owned by the Danish State represented by the Minister of Energy, Utilities and Climate. It is responsible for maintaining security of supply and ensuring the smooth operation of the electricity and gas markets.
https://en.energinet.dk

The Danish Energy Regulatory Authority (DERA)

It oversees the electricity, natural gas and district heating markets. DERA is a fully independent regulatory body and its responsibilities regulation of the transmission system operator (TSO) and the wholesale market; regulation of the distribution system operators (DSOs) and the retail market, including cost benchmarks;
regulation of the district heating sector; supervision of the energy efficiency obligation;
supervision of network code implementation; co-operation with the Nordic regulators on
regulation harmonisation; and commenting on relevant draft EU legislation.
https://forsyningstilsynet.dk/

The Danish Council on Climate Change

The council is an independent body of experts that advises on the transition to a low-carbon society.

Regional and municipal authorities

They also have an important role in the implementation of national energy and climate change policies through regional and municipal plans.

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LAWS AND REGULATIONS

COUNTRY LEGISLATIONS

Electricity Supply Act (No. 516 of 2010).

The purpose of the Act is to ensure that the country's electricity supply is organized and implemented in accordance with the needs for security, economics, environment and consumer protection. The Act must, within this objective, ensure consumers access to cheap electricity.
http://www.fao.org/faolex/results/details/en/c/LEX-FAOC099267

Act on the promotion of renewable energy (No. 1074 of 2011).

This Act sets regulations on the promotion of renewable energy production following climate, environmental and socio-economic considerations in order to reduce dependence on fossil fuels, and to ensure security of supply and reduction of CO2 and other greenhouse gases emissions.
https://ens.dk/sites/ens.dk/files/Vindenergi/promotion_of_renewable_energy_act_-_extract.pdf

Decree on Net-metering for the Producers of Electricity for Own Needs, 2012

Regulation on Net-metering for the Producers of Electricity for Own Needs exempts completely or partially electricity self-producers from paying tariffs, duties and VAT for the amount of electricity they export to the grid.
https://www.iea.org/policies/1827-regulation-on-net-metering-for-the-producers-of-electricity-for-own-needs

The Climate Act, 2019

The Climate Act sets a target to reduce Denmark's emissions by 70 percent in 2030 compared to 1990 and against climate neutrality by 2050.
https://climate-laws.org/geographies/denmark/laws/the-climate-act

Energy Agreement 2012-2020

Comprehensive agreement passed by a majority in the parliament that aims at reducing emissions via energy efficiency and increasing the share of renewable energies towards a green socio-economic transition. The overall objective is to shift energy supply to have a share of 35% renewable energy in final energy consumption by 2020 and 100% renewable energy by 2050 expected to reduce GHG emissions by approximately 34% by 2020 over 1990. It proposes a 7.6% reduction of gross energy consumption in 2020 in comparison to 2010.
https://climate-laws.org/geographies/denmark/laws/energy-agreement-2012-2020

EUROPEAN LEGISLATIONS

Directive 2009/72/EC of 13 July 2009

Stating common rules for the internal market in electricity
https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=celex%3A32009L0072

Directive 2012/27/EU of 25 October 2012

Directive about energy efficiency
https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32012L0027

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Directive 2019/944/EU of 5 June 2019

It is about commen rules for the internal market in electiricity and amending Directive 2012/27/EU (Electricity Directive), which repeals the Directive 2009/72/EC concerning common rules for the internal market in electricity with effect from 1 January 2021.
https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32019L0944

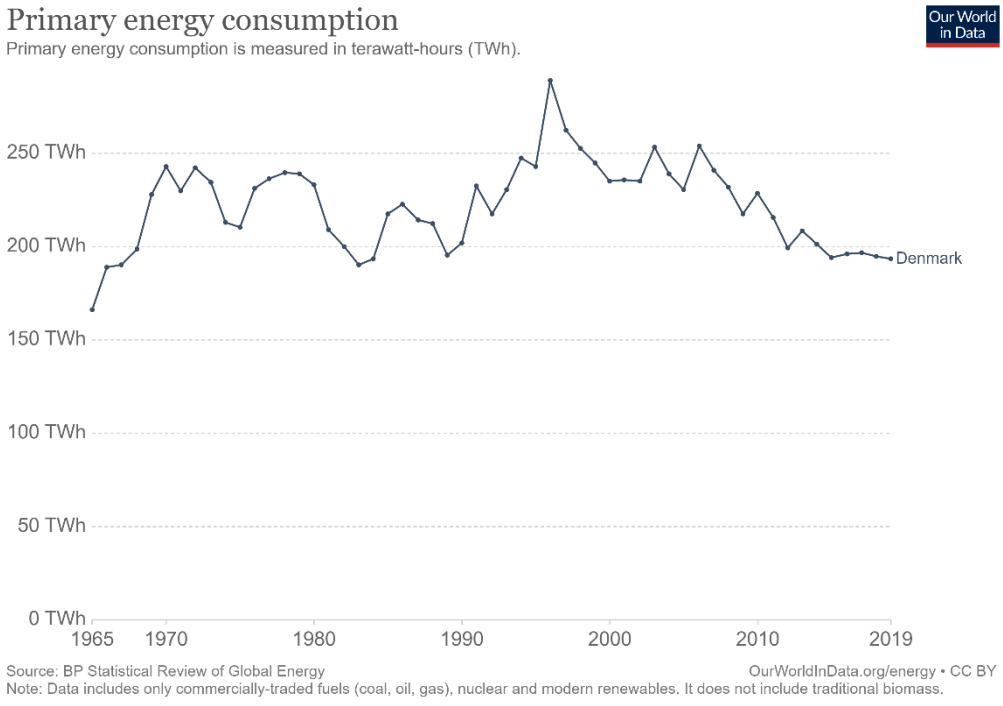
EU Electricity Regulation ((EU) 943/2019), 5 June 2019

The EU Electricity Regulation introduces a new limit for power plants eligible to receive subsidies as capacity mechanisms (confirming the phasing out of subsidies to generation capacity emitting 550 g CO2/kWh or more).
https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32019R0943

STATISTICS

Our World in Data

Hannah Ritchie - "Energy". Published online at OurWorldInData.org
By University of Oxford and Global Change Data Lab
Denmark: Energy Country Profile - Full report available at:
https://ourworldindata.org/energy/country/denmark?country=~DNK



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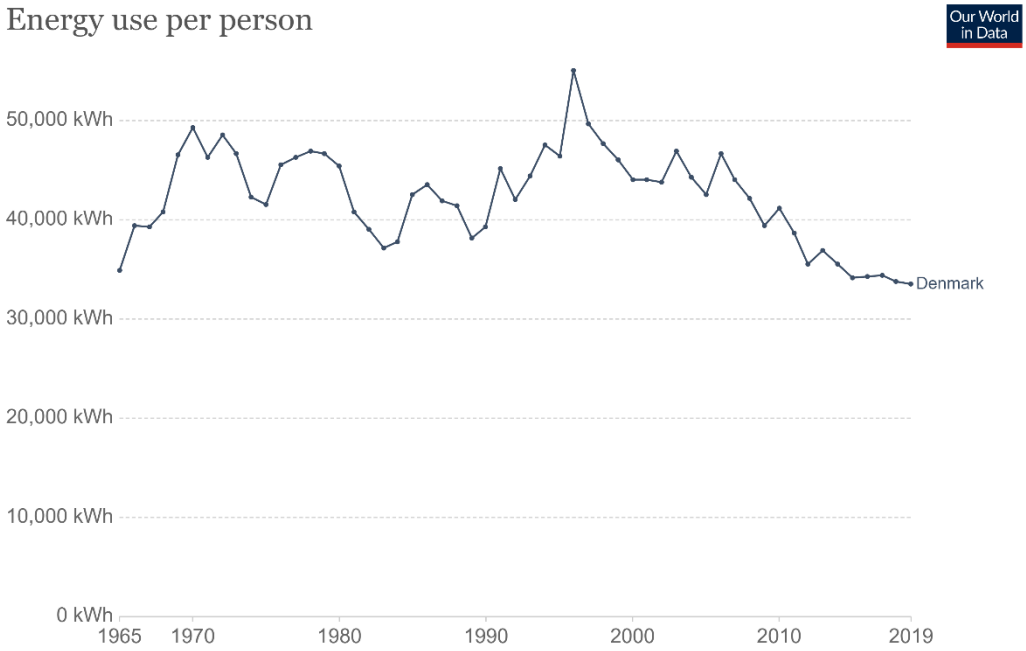

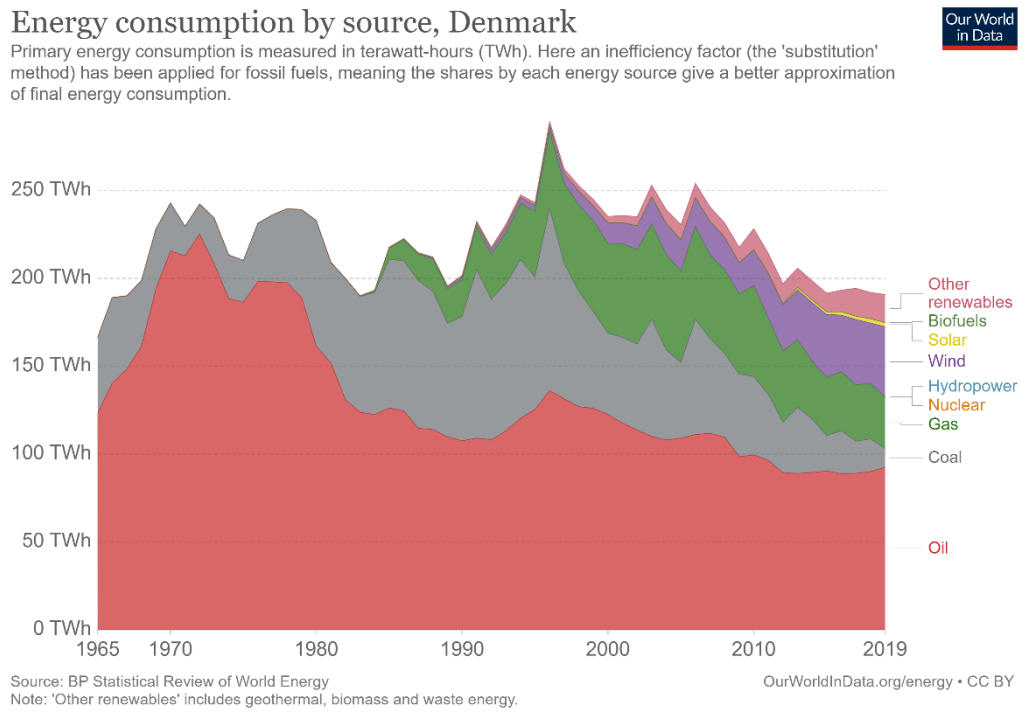

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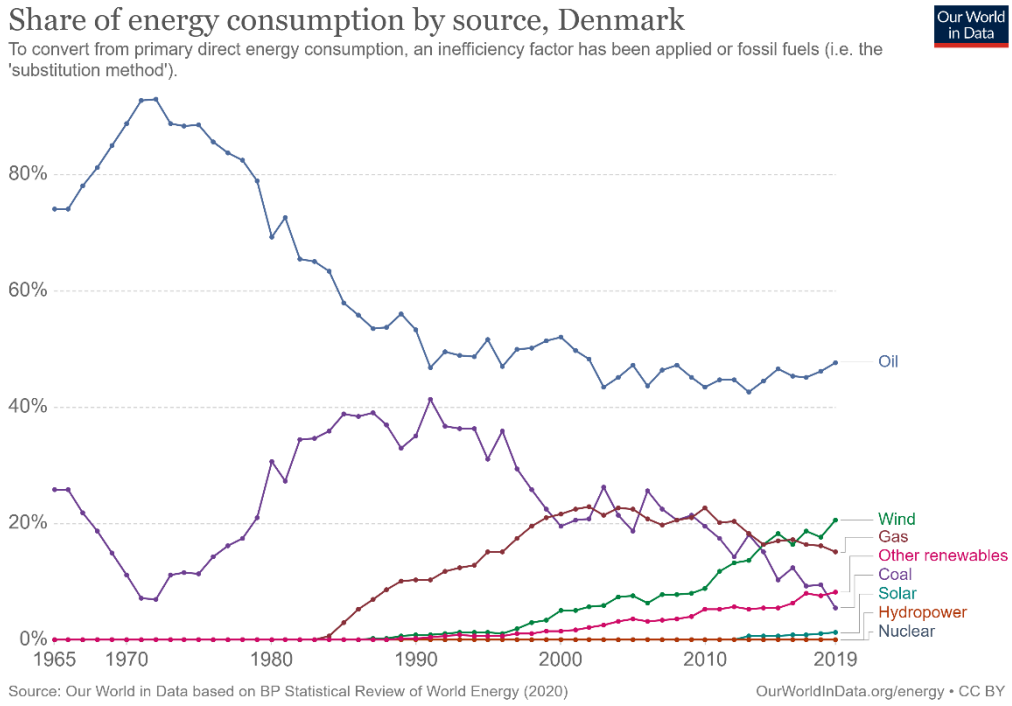

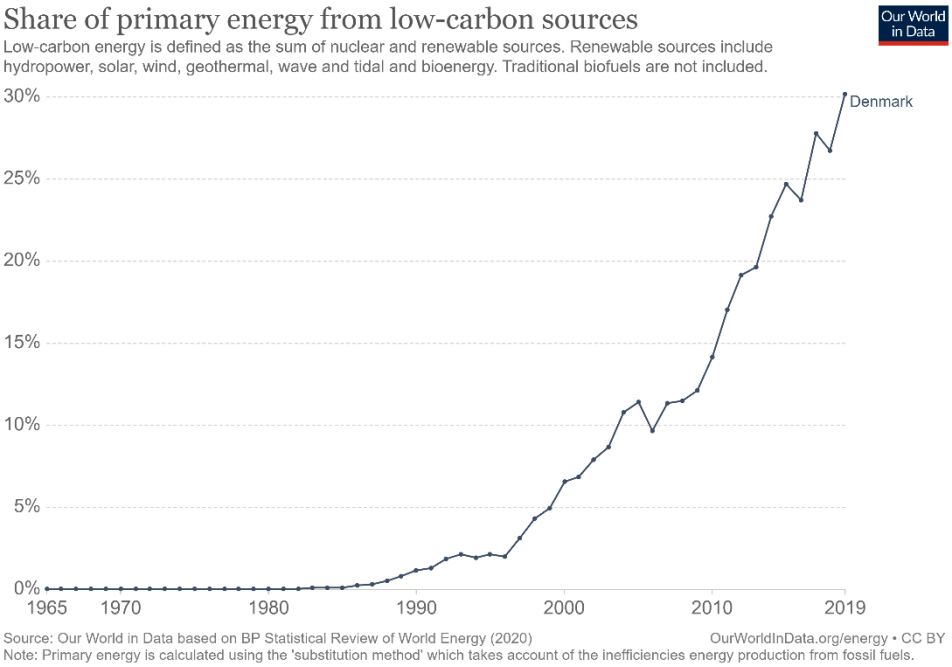

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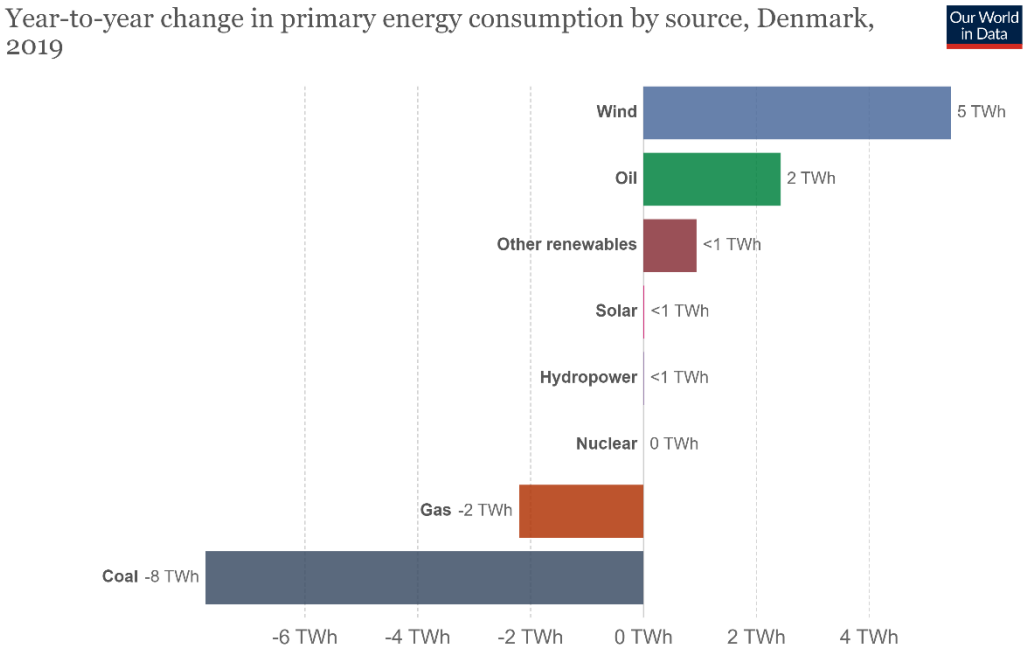

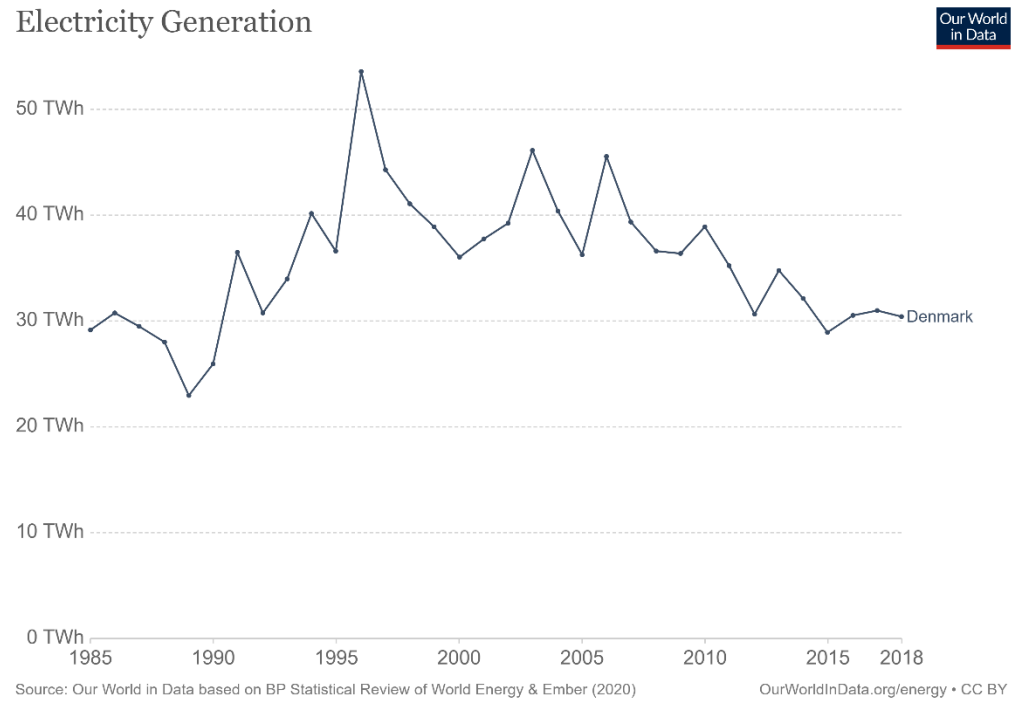

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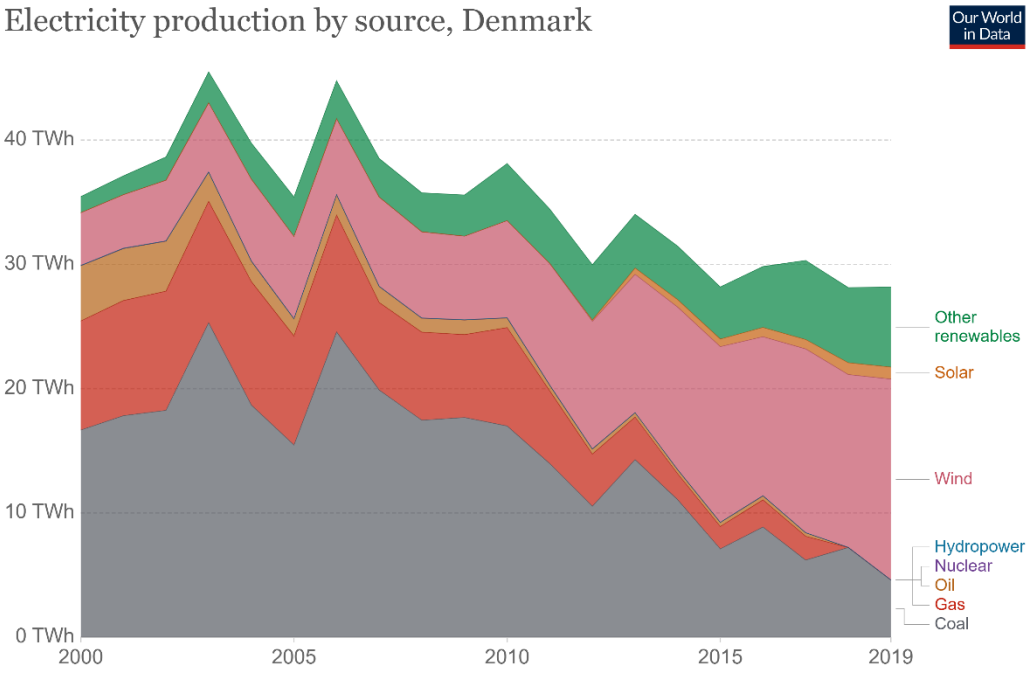

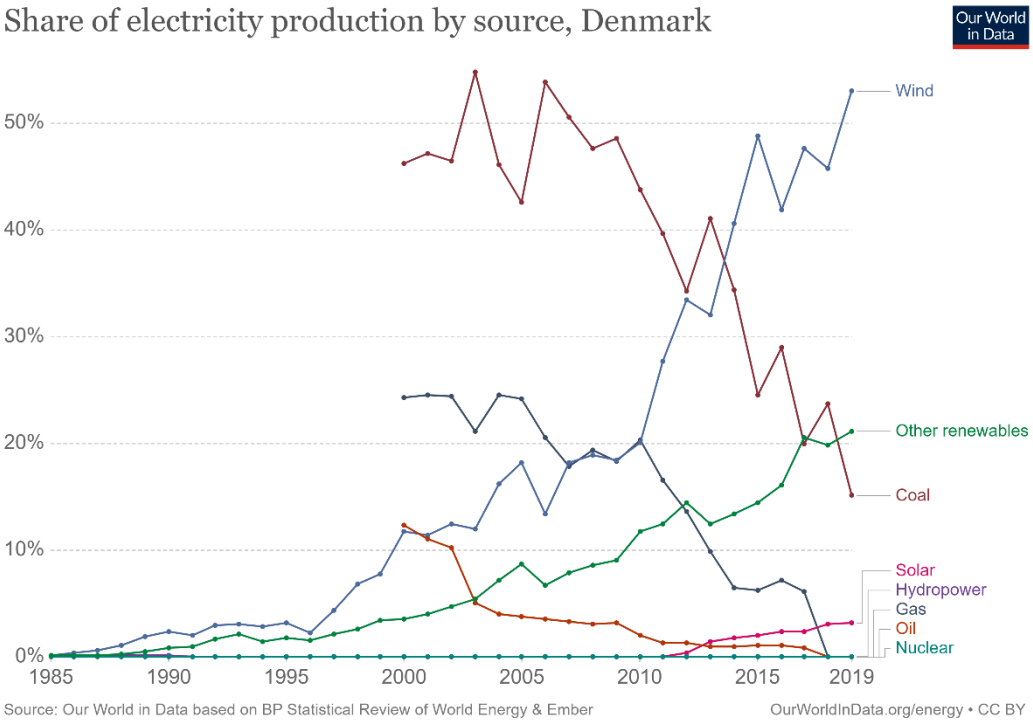

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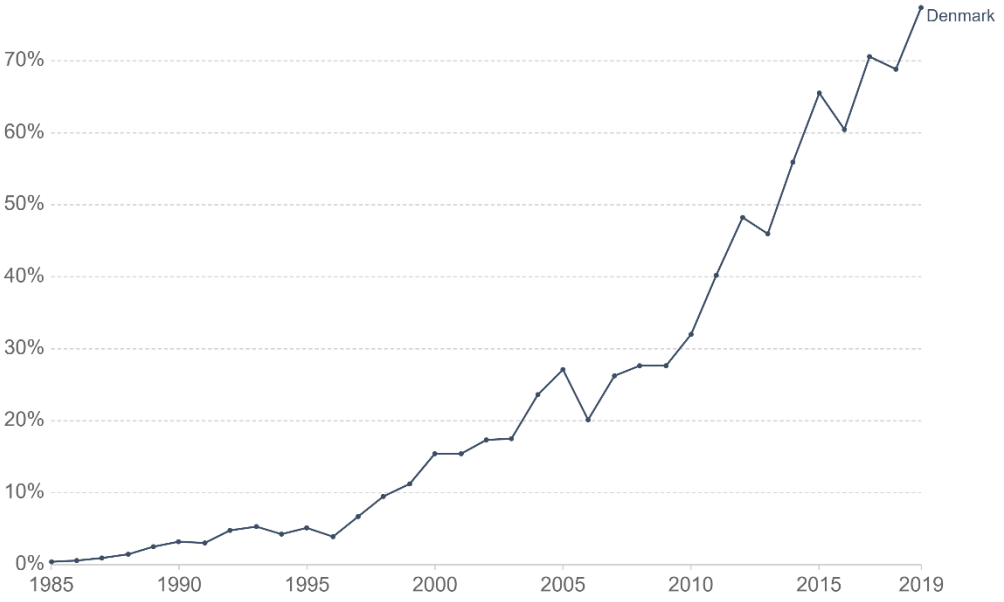
Share of electricity production from renewables

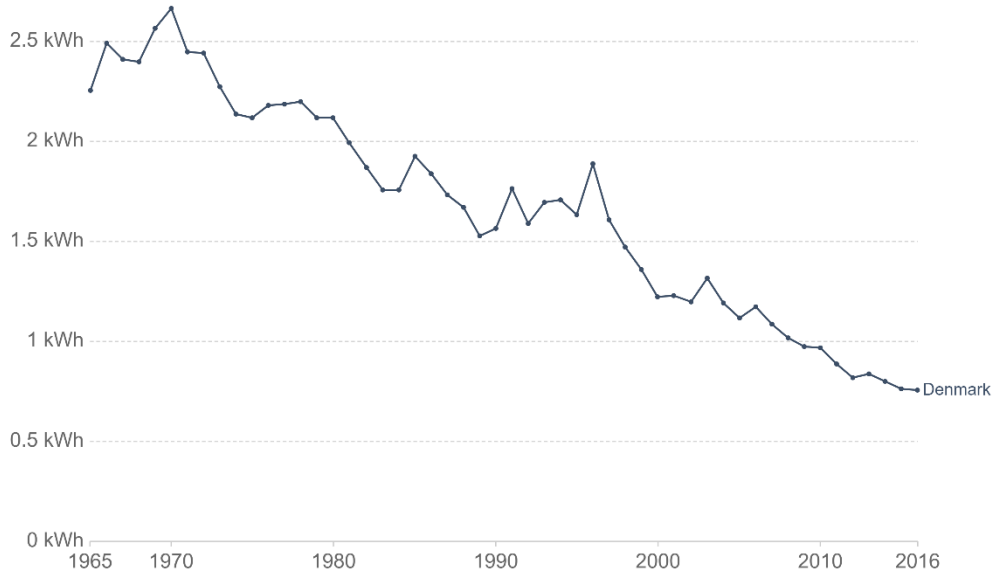
Renewables includes electricity production from hydropower, solar, wind, biomass. and waste, geothermal, wave and tidal sources.



Source: Our World in Data based on BP Statistical Review of World Energy & Ember (2020) OurWorldInData.org/energy • CC BY

Energy intensity

Energy intensity is measured as primary energy consumption per unit of gross domestic product. This is measured in kilowatt-hours per 2011$ (PPP).



Source: Our World in Data based on BP; World Bank; and Maddison Project Database
OurWorldInData.org/co2-and-other-greenhouse-gas-emissions • CC BY

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RESOURCES USED IN THIS DOCUMENT

Wikipedia, the free encyclopaedia
Wikipedia is an online free-content encyclopaedia project helping to create a world in which everyone can freely share in the sum of all knowledge.
https://en.wikipedia.org/

RES-Legal Europe
It is a professionally edited and free of charge online database on support schemes, grid issues and policies regarding renewable energy sources.
http://www.res-legal.eu/

Our World in Data
Our World in Data is free and accessible for everyone. It is prepared by University of Oxford and Global Change Data Lab.
https://ourworldindata.org

EUR-Lex
It is online gateway to EU Law. It provides the official and most comprehensive access to EU legal documents. It is available in all of the EU's 24 official languages and is updated daily.
https://eur-lex.europa.eu/homepage.html

World Bank
The World Bank collects and publishes data for public access and use.
https://data.worldbank.org/indicator

Energypedia
Energypedia is a wiki platform for collaborative knowledge exchange on renewable energy, energy access, and energy efficiency topics in developing countries.
https://energypedia.info

International Energy Agency
The IEA is at the heart of global dialogue on energy, providing authoritative analysis, data, policy recommendations, and real-world solutions to help countries provide secure and sustainable energy for all.
https://www.iea.org/

Climate Change Laws of the World
It covers national-level climate change laws, policies, and climate litigation cases globally.
http://www.lse.ac.uk

FURTHER READING

Energy Policies of IEA Countries: Denmark 2017 Review
Published by International Energy Agency
https://www.iea.org/reports/energy-policies-of-iea-countries-denmark-2017-review

The Danish Energy Model
Published by Danish Energy Agency
https://ens.dk/sites/ens.dk/files/Globalcooperation/the_danish_energy_model.pdf

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ITALY

Energy Legal Framework

Capital	Rome
Coordinates	41.9000° N, 12.4833° E
Total Area *(km²)*	301,340
Population	60,297,396 (2019)
Rural Population (% of total population)	29 (2019)
GDP *(current US$)*	2,001,244,392,041.57 (2019)
GDP Per Capita *(current US$)*	33,189.57 (2019)
Access to Electricity *(% of population)*	100.00 (2020)
Energy Imports Net *(% of energy use)*	76.42 (2015)
Fossil Fuel Energy Consumption *(% of total)*	79.95 (2015)

Source: World Bank & Energypedia

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BRIEF INFORMATION ABOUT ENERGY PRODUCTION, LAW, POLICIES, OTHER LEGISLATION

Italy has few energy resources, and most of supplies are imported. Electricity is produced mainly from natural gas, which accounts for more than half of the total final electric energy produced. Another important source is hydroelectric power, which was practically the only source of electricity until 1960. (WIKIPEDIA)

Renewable energy has developed rapidly in Italy over the past decade and provided the country a means of diversifying from its historical dependency on imported fuels. Rapid growth in the deployment of solar, wind and bio energy in recent years lead to Italy producing over 40% of its electricity from renewable sources in 2014.

The development of the National Energy Strategy sent a strong signal to the market and to stakeholders as to the government's medium- and long-term goals for the energy sector. The NES also identifies a series of priority actions needed to meet its goals: clear targets for emissions reductions, renewable energy and energy efficiency. It also prioritises the need to develop competitive energy markets, transform the hydrocarbon sector, and modernise energy governance.

Core targets of the **National Energy Strategy 2017:**

- reducing final energy consumption by a total of 10 Mtoe by 2030;
- reaching a 28% share of renewables in total energy consumption by 2030,
- 55% share of renewables in electricity consumption by 2030;
- strengthening supply security;
- narrowing the energy price gap;
- furthering sustainable public mobility and eco-friendly fuels;
- and phasing out the use of coal in electricity generation by 2025.

National Energy Efficiency Action Plans are prepared by member states of the European Union, set out estimated energy consumption, planned energy efficiency measures and the improvements individual EU member states expect to achieve. (EUROPEAN COMMISSION)

Directive 2009/28/EC on the promotion of the use of energy from renewable sources establishes the basis for the achievement of the European Union's 20% renewable energy target. Under the terms of the directive, each member state is to set an individually binding renewable energy target, which will contribute to the achievement of the overall EU goal. The development of RES is among the priorities of Italy's energy policy alongside the promotion of energy efficiency.(EUR-LEX-EUROPA.EU)

The National Reform Programme
Italy developed National Reform Programme, which was launched in 2014. The purpose of the reform programme is to guide Italy towards overcoming the deep-seated structural problems that led to productivity stagnating since the end of the 1990s. The programme identifies high energy costs among the competitive disadvantages that Italian businesses were facing. An EU review of the Italian programme identified a number of areas in which the energy sector could be improved: among them insufficient electricity grid capacity, which hampers the smooth functioning of the electricity market and contributes to higher wholesale prices, and changes to support mechanisms for renewable energy. (IEA)

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RENEWABLE ENERGY LEGAL FRAMEWORK

Renewable energy has developed rapidly in Italy over the past decade and provided the country a means of diversifying from its historical dependency on imported fuels. All Italian municipalities (“comune”) have deployed some source of renewable energy, with hydroelectric power being the leading renewable energy source in terms of production. Bio energy, wind power and geothermal power also make an important contribution to national energy demands.(WIKIPEDIA)

Italy has implemented generous incentive schemes to encourage the development of renewable energy production. Electricity generated from renewable energy sources is promoted through VAT and real estate tax deductions. The electricity from renewable energy sources fed into the grid can be sold on the free market or to the GSE on a guaranteed minimum price (“ritiro dedicato”). Alternatively, renewable energy producers can opt for net-metering (“scambio sul posto”) which provides economical compensation to PV-producers for the electricity fed into the grid. In March 2018 the Ministry for Economic Development approved a draft of the Renewable Energy Ministerial Decree (“Decreto FER 2018-2020”) governing support schemes for renewable energies.

Grid operators are obliged to give priority access to renewable energy plants. They are also obliged to give priority dispatch to electricity from renewable sources. Plant operators can request the grid operator to expand the grid if the connection of a plant requires this expansion. (RES-LEGAL-EU)

A price-based mechanism to support the development of RES-H installations is available. A tax regulation mechanism is also in place for the promotion of RES-H. District heating and cooling networks are managed at local level. (RES-LEGAl-EU)

Biofuels are currently supported through a quota system in Italy. Its compliance is controlled through a biofuel certificates system. Advanced biofuels receive special incentives through a simplified sale of biofuel to GSE or a Premium. Training programmes are being developed at regional level. Certificates of installed plants is obligatory. All new or refurbished buildings must integrate RES, with an additional 10% to the obligation level for public buildings. A guarantee fund is in place for supporting district heating network development. Currently, the investment loans to support research, development and new RES plants are not available, as the budget has been exhausted and for 2017 no re-funding has been foreseen. (RES-LEGAl-EU)

Support Schemes:

- **Premium tariff.** Ritiro Dedicato"
  Ritiro Dedicato" is a simplified purchase/resale arrangement rather than a "classical" feed-in tariff. Renewable Energy producers can decide between selling the produced energy on the free market themselves or sell it to the GSE, who then sells the energy on the free market on their behalf (“Ritiro Dedicato”). Thus, GSE can be considered a mediator between producers and the market. Producers can decide whether they want to receive a guaranteed minimum price or the market price. In case the market price is higher than the guaranteed minimum price, the producer receives an annual adjustment. (RES-LEGAL-EU)

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- **Net-metering.** Scambio sul Posto"
  The "Scambio sul Posto" is a form of delayed self-comsumption that allows prosumers to offset the electricity produced, making it available to the network, and reclaiming the same amount at a later time, for example during the night when their PV plan is not producing. Therefore, the electricity system is used as a tool for the virtual storage of electricity produced but not self-consumed in the moment in which it is produced. The "scambio sul posto" can be combined with tax deductions but cannot be combined with the "Ritiro Dedicato". (RES-LEGAL-EU)

- **Tax regulation mechanisms.**
  Photovoltaic and wind energy plants are eligible for a reduced VAT of 10% (instead of 22%). This tax benefit applies to enterprises, professionals, and private individuals. Furthermore, buildings equipped with renewable energy installation are entitled to a real estate tax reduction from the municipality.

Grid issues:

In Italy, grid operators are obliged to give priority access to renewable energy plants in the operation of their grids. They are also obliged to give priority dispatch to electricity from renewable sources. Plant operators may request their grid operator to expand the grid if the connection of a plant requires this expansion.

- **Connection to the grid:** Plant operators are contractually entitled against the grid operator to require a priority connection of a renewable energy plant. The grid operator is obliged to abide to this contract.

- **Use of the grid:** Plant operators are contractually entitled to the use of the grid. Electricity from renewable sources shall be granted priority use of the grids, provided that the electricity achieves the same price on the market and the security of the national energy grid can be guaranteed.

- **Grid development:** A plant operator applying for a connection is contractually entitled against the grid operator to a grid expansion, if the expansion is necessary for connecting the plant to the grid. As renewable energy plants must be given priority connection, a grid expansion necessary to connect such a plant must also be given priority.(RES-LEGAL-EU)

AUTHORITIES

Ministry of Economic Development
Ministero dello Sviluppo Economico (MISE)
It is responsible for formulating and implementing Italy's energy policy and has regulatory powers to implement any relevant legislation passed by the Italian Parliament.
https://www.sviluppoeconomico.gov.it/index.php/en/

Regulatory Authority for Energy, Grids and Environment
Autorità di Regolazione per Energia, Reti e Ambiente (ARERA)
This is an independent regulatory body for energy markets and integrated water services.
https://www.arera.it/it/inglese/index.htm

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The Energy Services Manager
Gestora Servizi Energetici (GSE)

This is a state-owned company, which promotes and supports renewable energy sources (RES) in Italy.
https://www.gse.it/en

National Agency for new technologies, energy and sustainable development
Agenzia nazionale per le nuove tecnologie, l'energia e lo sviluppo economico sostenibile,(ENEA)

It is a public body aimed at research, technological innovation and the provision of advanced services to enterprises, public administration and citizens in the sectors of energy, the environment and sustainable economic development
https://www.enea.it/en

The Electricity Market Operator
Gestore dei Mercati Energetici SpA (GME)

GME is responsible for: economic management of the electricity market.
https://www.mercatoelettrico.org/En/Default.aspx

LAWS AND REGULATIONS

COUNTRY LEGISLATIONS

Legislative Decree 79/99, 31 March 1999

Opening the energy market, stimulating competition, assigning generation, distribution and sale of energy to different companies.
Full text in English
http://www.mercatoelettrico.org/En/MenuBiblioteca/Documenti/20041027LegislativeDecree.pdf

Law No. 239/2004 in 2004

Provided for the overall reorganisation of the energy sector. The main objective of this law is to regulate and streamline the process of liberalisation in accordance with the principles of ensuring the protection of competition and public safety.

Legislative Decree No. 93/2011

Enhancing security of supply in the electricity market, protecting consumers and particularly those with low incomes (in terms of security of supply and stability of supply prices).

Decree No. 28 of March 3rd, 2011

Promotion of the use of energy from renewable sources. It initiates changes in the support schemes for renewable energy in Italy.

Ministerial Decree 6 July 2012

Incentives for electric renewable energy sources.

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EUROPEAN LEGISLATIONS

Directive 2009/72/EC of 13 July 2009

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Directive 2012/27/EU of 25 October 2012

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EU Electricity Regulation ((EU) 943/2019), 5 June 2019

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https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32019R0943

STATISTICS

Our World in Data

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Italy: Energy Country Profile - Full report available at*:*
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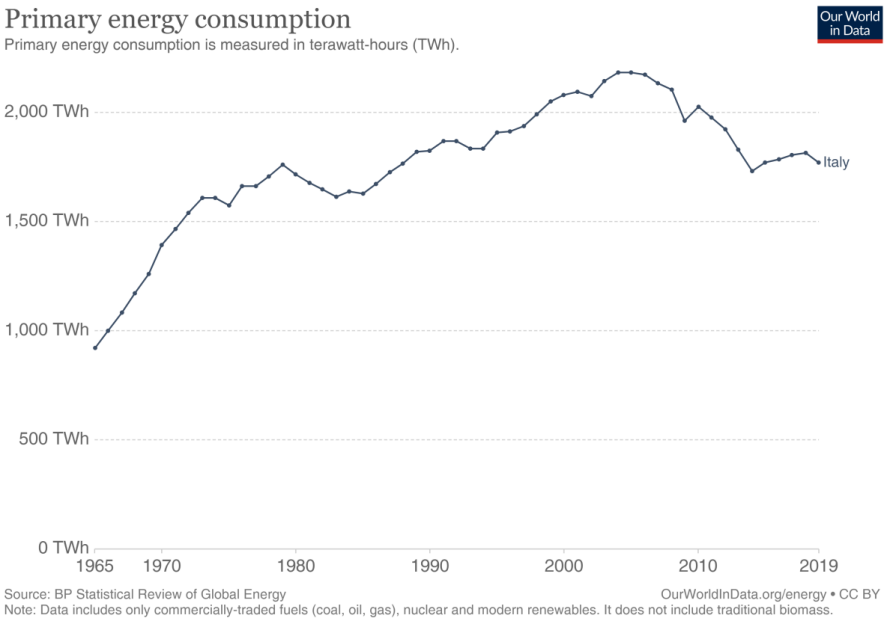

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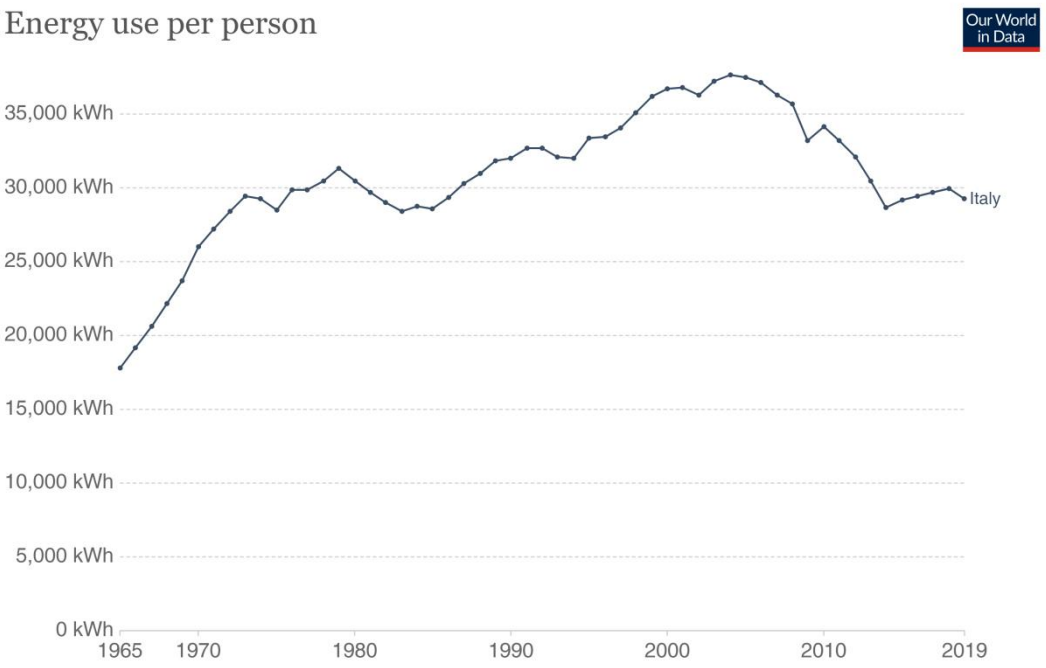

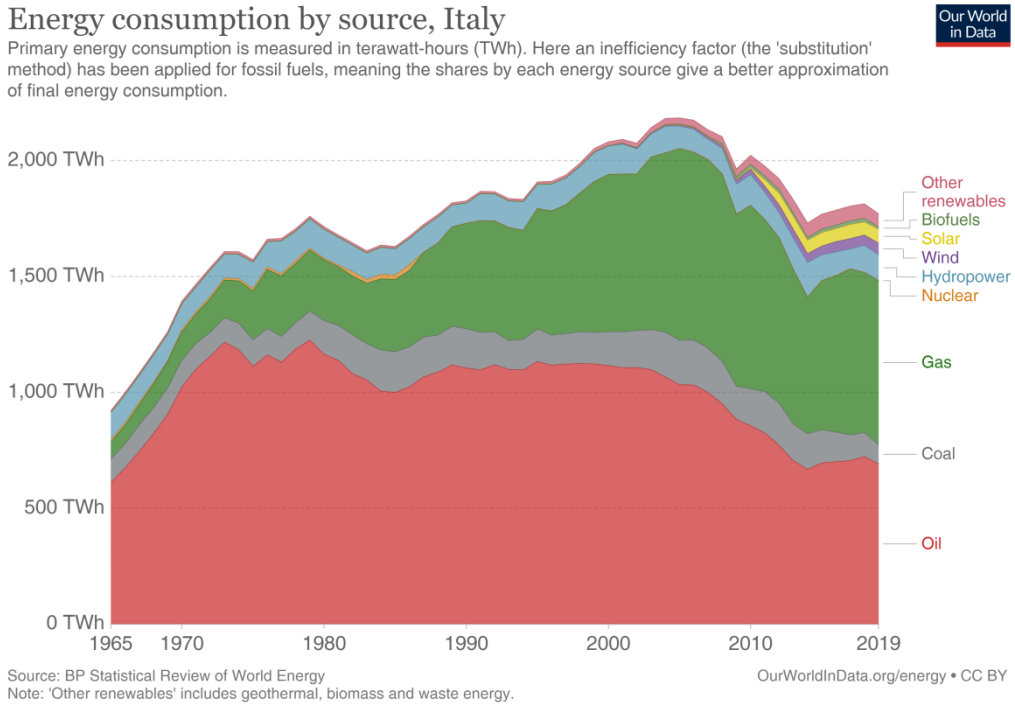

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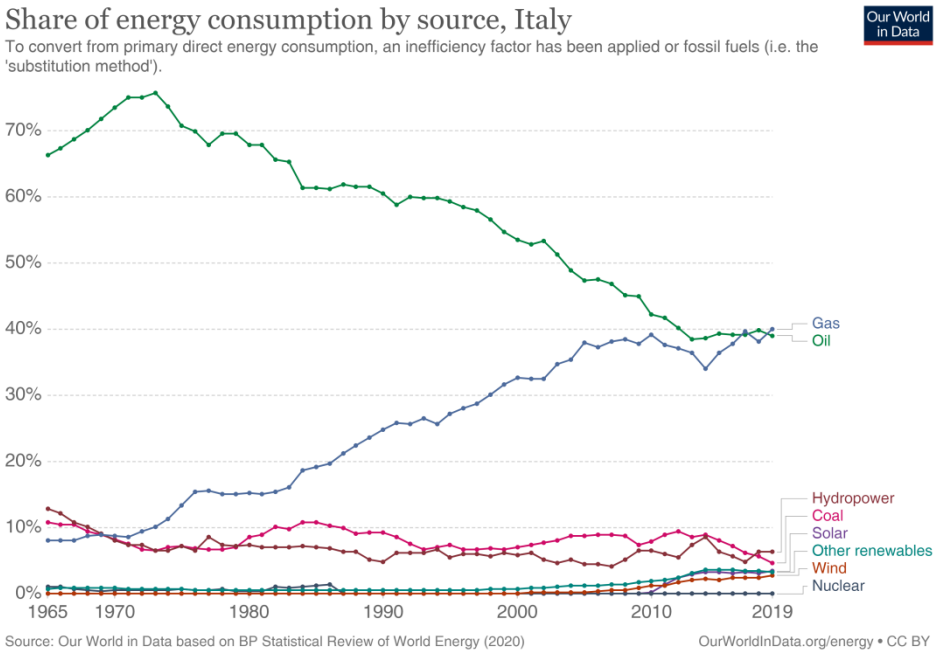

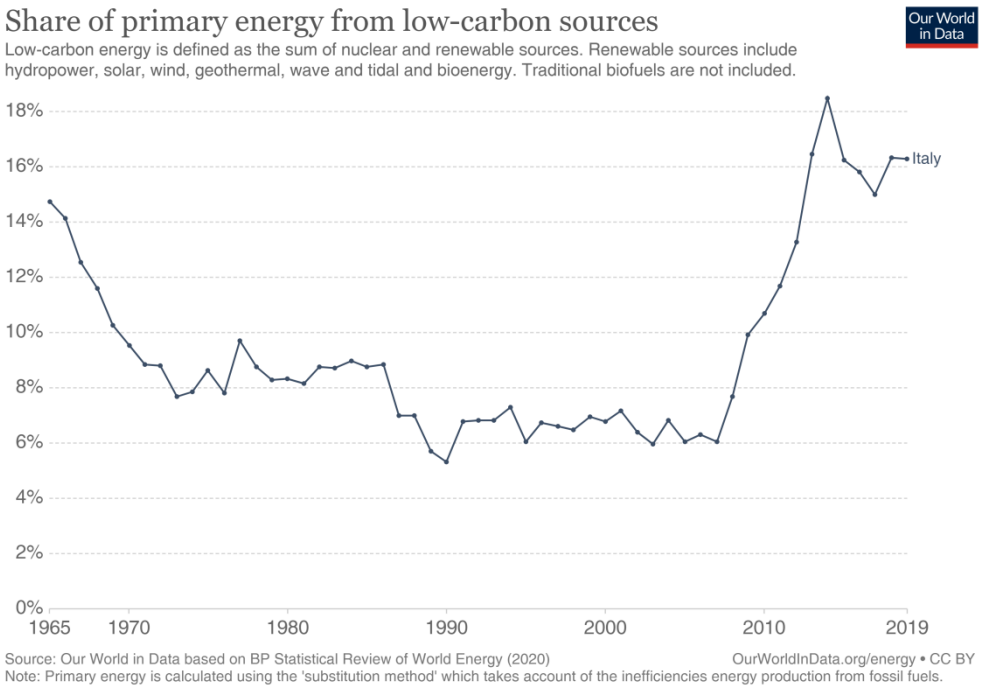

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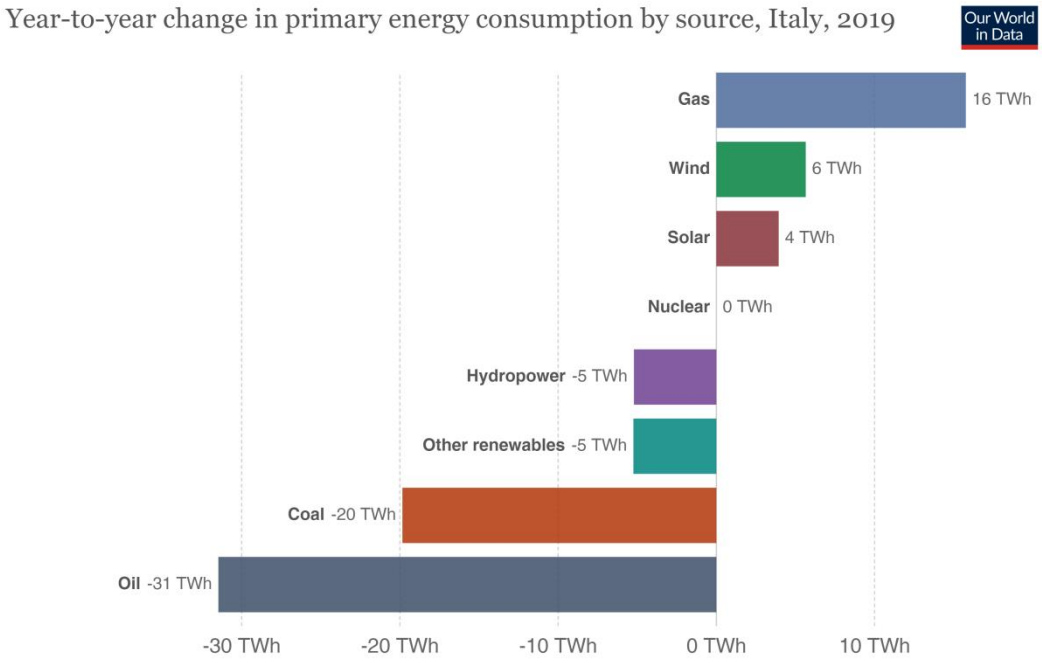

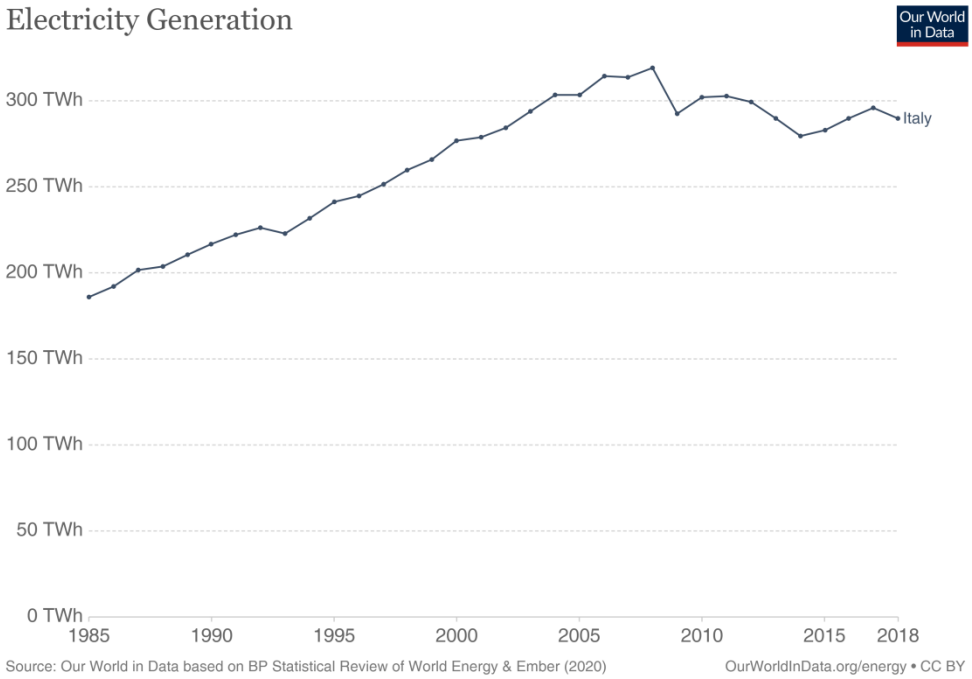

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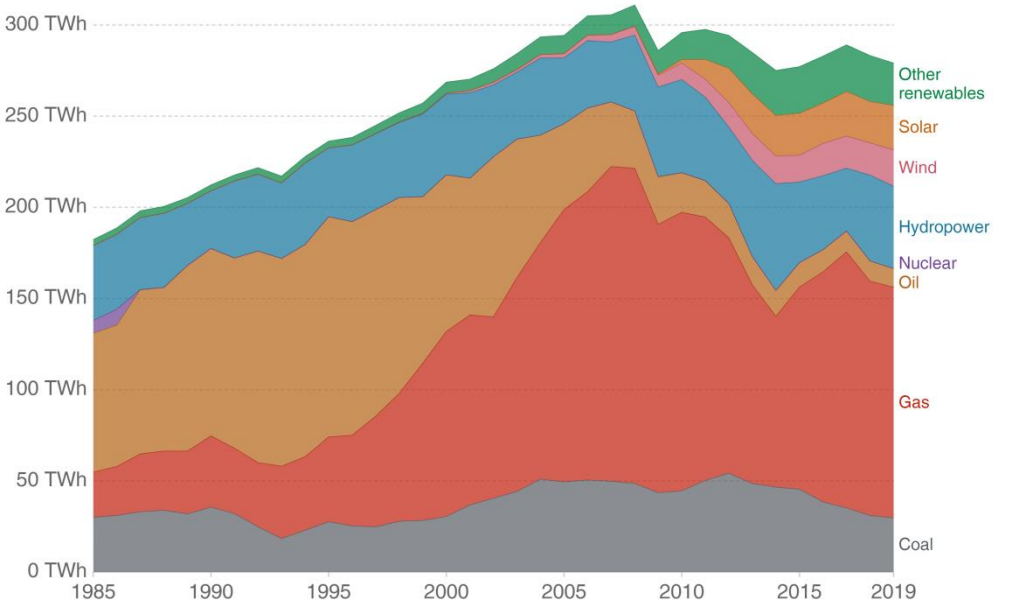

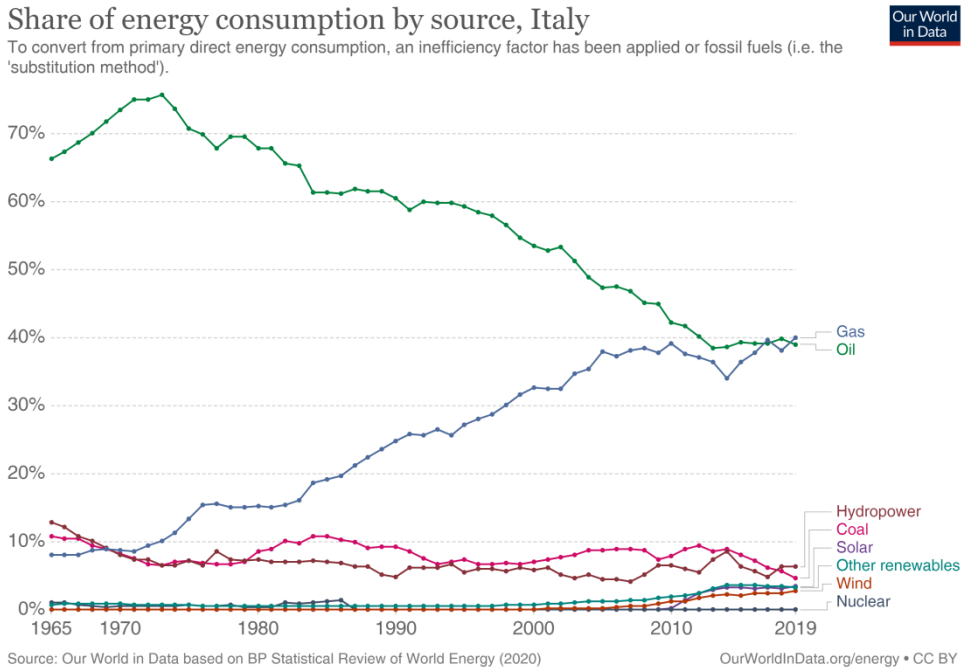

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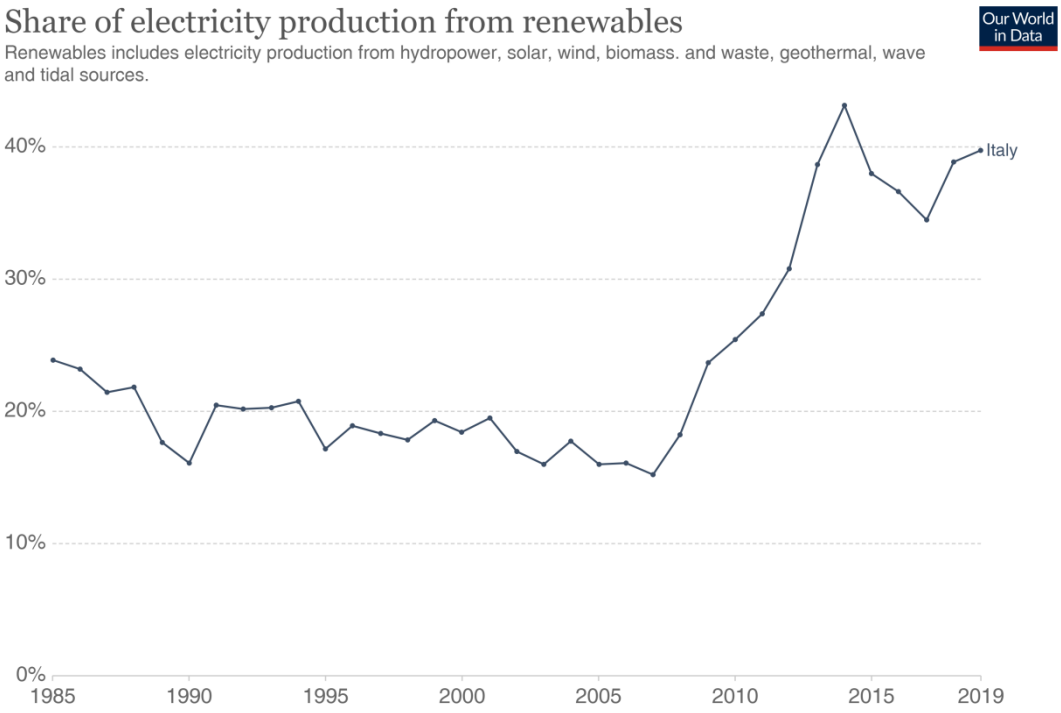

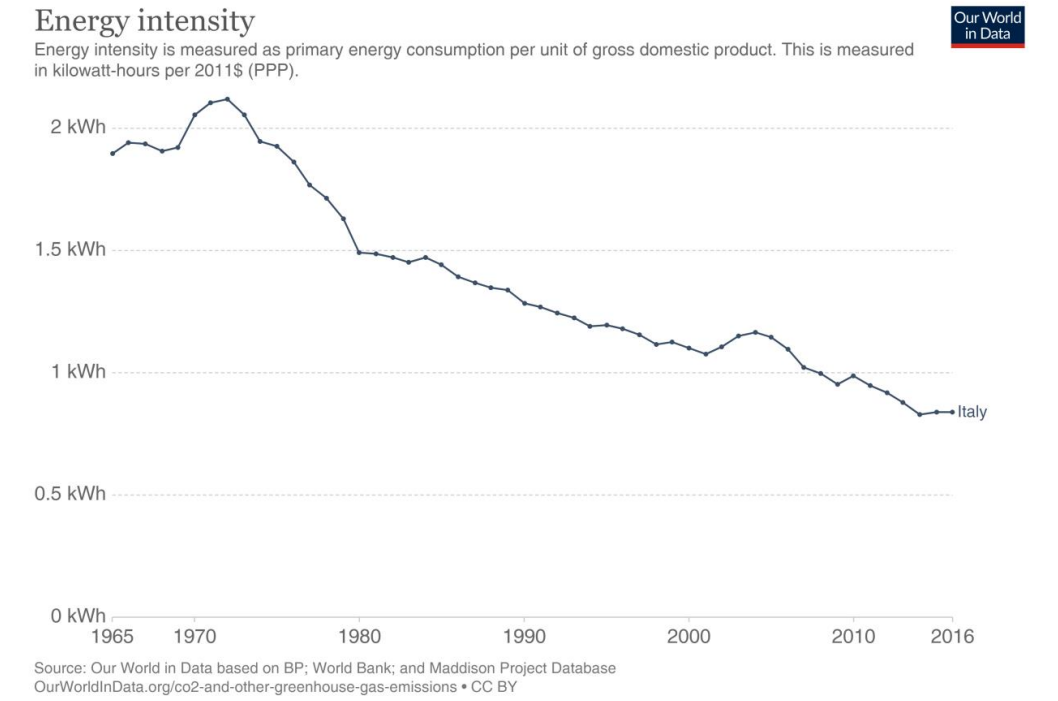

This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement n°957852

RESOURCES USED IN THIS DOCUMENT

Wikipedia, the free encyclopaedia

Wikipedia is an online free-content encyclopaedia project helping to create a world in which everyone can freely share in the sum of all knowledge.
https://en.wikipedia.org/

RES-Legal Europe

It is a professionally edited and free of charge online database on support schemes, grid issues and policies regarding renewable energy sources.
http://www.res-legal.eu/

Our World in Data

Our World in Data is free and accessible for everyone. It is prepared by University of Oxford and Global Change Data Lab.
https://ourworldindata.org

EUR-Lex

It is online gateway to EU Law. It provides the official and most comprehensive access to EU legal documents. It is available in all of the EU's 24 official languages and is updated daily.
https://eur-lex.europa.eu/homepage.html

World Bank

The World Bank collects and publishes data for public access and use.
https://data.worldbank.org/indicator

Energypedia

Energypedia is a wiki platform for collaborative knowledge exchange on renewable energy, energy access, and energy efficiency topics in developing countries.
https://energypedia.info

International Energy Agency

The IEA is at the heart of global dialogue on energy, providing authoritative analysis, data, policy recommendations, and real-world solutions to help countries provide secure and sustainable energy for all.
https://www.iea.org/

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FURTHER READING

Energy Policies of IEA Countries: Italy 2016 Review
Published by International Energy Agency
https://www.iea.org/reports/energy-policies-of-iea-countries-italy-2016-review

Electricity regulation in Italy: overview
Published by **Thomson Reuters Practical Law**
by Carlo Montella, Cristina Martorana and Alberto Tedeschi, Orrick, Herrington & Sutcliffe (Europe) LLP
Law stated as at 01-Jun-2018
Available at:
https://uk.practicallaw.thomsonreuters.com/4-525-4301

This is a very comprehensive guide including topics:

- Electricity market
- Regulatory structure
- Sources of electricity generation
- Renewable energy zones
- Renewable Energy Support Mechanism
- Authorisation and operating requirements
- Authorisation and operating requirements
- Transmission charges
- System balancing
- Authorisation and operating requirements
- Distribution charges
- Authorisation and operating requirements
- Trading between generators and suppliers
- Electricity price and conditions of sale
- Statutory powers
- Tax issues

Italy's National Energy Strategy 2017
Published by Ministry of Economic Development
https://www.mise.gov.it/images/stories/documenti/BROCHURE_ENG_SEN.PDF

Energy Efficiency trends and policies in Italy
Published by National Agency for Energy Efficiency
https://www.odyssee-mure.eu/publications/national-reports/energy-efficiency-italy.pdf

This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement n°957852

4. COMMUNITY BASED ENERGY PRODUCTION

4.1. Selected Academic Studies

Socio-economic impacts of community wind power projects in Northern Scotland

Lasse Okkonena, Karelia University of Applied Sciences, Finland
Olli Lehtonenb, Natural Resources Institute Finland, Finland
Published on 23 July 2015.

In this study, a regional input–output modelling is applied to the analysis of the socio-economic impacts of 11 wind farms of community-based social enterprises located in the Outer Hebrides, Shetland, and Orkney.

Full article is available at:
https://doi.org/10.1016/j.renene.2015.07.047

Generic model of a community-based microgrid integrating wind turbines, photovoltaics and CHP generations

Xiandong Maa Yife, Wanga Jianrong Qinb
Department of Engineering, Lancaster University, UK
Published on 8 January 2013

The paper addresses several issues of generic importance to a residential microgrid system such as network modelling, advanced control, and integration of intelligent monitoring techniques.

Full article is available at:
https://doi.org/10.1016/j.apenergy.2012.12.035

Harvesting energy: Place and local entrepreneurship in community-based renewable energy transition

DianaSüsserab, Institute of Coastal Research, Germany
MartinDöringab, University of Hamburg, Germany
Beate M.W.Ratterab
Published on 28 October 2016.

The paper theoretically and empirically analyses the multifaceted interplay between place, local entrepreneurship and community renewable energy.

Full article is available at:
https://doi.org/10.1016/j.enpol.2016.10.018

This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement n°957852

Explaining the diversity of motivations behind community renewable energy

Thomas Bauwens, University of Liege, Belgium
Published on 23 March 2016.

This paper aims to study the heterogeneity of motivations that drive individuals to participate in community renewable energy projects and the underlying explanatory factors behind this, as well as the implications for their level of engagement in initiatives.

Full article is available at:
https://doi.org/10.1016/j.enpol.2016.03.017

Design and implementation of hybrid renewable energy systems on micro-communities: A review on case studies

Diana Neves, Universidade de Lisboa, Portugal
Carlos A. Silva, Universidade de Lisboa, Portugal
Stephen Connors, Massachusetts Institute of Technology, USA
Published on 25 January 2014

This paper aims to review several types of projects developed in different micro-communities, namely small islands and remote villages, both in cases of real implementation and only evaluation studies.

Full article is available at:
https://doi.org/10.1016/j.rser.2013.12.047

Community energy and social entrepreneurship: Addressing purpose, organisation and embeddedness of renewable energy projects

Sören Becker, Leibniz Institute for Research on Society and Space, Germany
Conrad Kunze, Helmholtz Centre for Environmental Research, Germany
Mihaela Vancea, Universidad de la Frontera, Chile
Published on 12 January 2017

In many European countries, renewable energy has evolved through decentralised and small-scale forms of organisation. By examining community energy initiatives through a social entrepreneurship lens, an integrated approach was developed for the analysis of small-scale and bottom up energy initiatives

Full article is available at:
https://doi.org/10.1016/j.jclepro.2017.01.048

This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement n°957852

Power to the people: Local community initiatives and the transition to sustainable energy

Tinekevan der Schoor, Hanze University of Applied Sciences, The Netherlands
Copernicus Institute of Innovation and Sustainability, The Netherlands
Bert Scholtens, University of Groningen, The Netherlands,
University of Saint Andrews, Scotland, UK
Published on 3 December 2014.

The case study approach to answer the following question: how do local community energy initiatives contribute to a decentralized sustainable energy system?

Full article is available at:
https://doi.org/10.1016/j.rser.2014.10.089

Analyzing Sustainability of Community-based Energy Technologies

M. I. Khan,A. B. Chhetri &M. R. Islam Dalhousie University, Canada
Published on 29 Oct 2007

This paper evaluates the sustainability status of community-based energy technologies. Sustainability assessments usually focus on the immediate impacts of technology. This paper introduces a new methodology to posit a broader definition of true sustainability by examining a time-tested criterion, as well as environmental, economic, and social variants, to assess the sustainability of participatory energy development techniques.

Full article is available at:
https://doi.org/10.1080/15567240600814896

Community-based energy policy: A practical approach to carbon reduction

Dr Jon Kellett School of Natural & Built Environments, University of South Australia
Published on 27 Apr 2007

Whilst the existence of global climate change is no longer seriously contested and most governments are seeking to adopt appropriate responses, the rate of engagement with these measures is slow. This paper outlines an example of a research programme that seeks to deliver more rapid change. It focuses on the potential for carbon emission reduction in a deprived community in South Yorkshire, UK, and reports on an approach that could be replicated elsewhere.

Full article is available at:
https://doi.org/10.1080/09640560701261679

This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement n°957852

Harnessing Community Energies: Explaining and Evaluating Community-Based Localism in Renewable Energy Policy in the UK

Gordon Walker, Lancaster University, UK.
Sue Hunter, consultant environmental psychologist
Patrick Devine-Wright, University of Manchester Architecture Research Centre, UK
Bob Evans Northumbria University, UK
Helen Fay Lancaster University,UK
Published on April 18, 2007

In the UK a new theme has emerged in policy discourse and the investment of public resources around the concept of community renewable energy. This study argue that this new theme of government policy does not represent a broader paradigmatic shift in the underlying norms and goals of policy.

Full article is available at:
https://doi.org/10.1162/glep.2007.7.2.64

Psychological factors influencing sustainable energy technology acceptance: A review-based comprehensive framework

N.M.A. Huijts, E.J.E. Molina, L. Steg
Delft University Published on of Technology, The Netherlands
Available online 22 September 2011

This paper puts forward a comprehensive framework of energy technology acceptance, based on a review of psychological theories and on empirical technology acceptance studies. The framework aims to explain the intention to act in favour or against new sustainable energy technologies, which is assumed to be influenced by attitude, social norms, perceived behavioural control, and personal norm.

https://do.org/10.1016/j.rser.2011.08.018

Utilization of renewable energies in Turkey's agriculture

Asiye Gül Bayrakcı, Günnur Koc¸
Ege University, Turkey
Published on 5 October 2011

The aim of this study is to investigate the utility of renewable energies for agricultural activities. In this concept, solar energy, biomass energy, wind energy, geothermal energy and hydropower are discussed by application examples performed in Turkey. In conclusion, proposals and recommendations are given as alternative energy instead of fossil energy sources.

Full article is available at:
https://do.org/10.1016/j.rser.2011.08.027

This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement n°957852

4.2. Reports, Guides

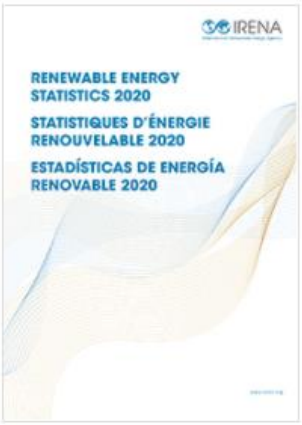
Renewables 2020 Global Status Report

Published by REN21

https://www.ren21.net/reports/global-status-report/

REN21 is the only global renewable energy community of actors from science, governments, NGOs and industry. They provide up-to-date and peer-reviewed facts, figures and analysis of global developments in technology, policies and markets.

The report brings together all the latest information about renewable energy market and industry developments, policy and investment trends.



Renewable Energy Statistics 2020

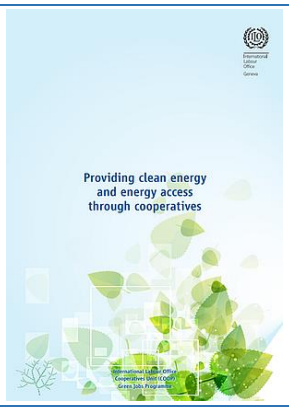
Published by The International Renewable Energy Agency (IRENA)
On July 2020

https://www.irena.org/publications/2020/Jul/Renewable-energy-statistics-2020

Renewable Energy Statistics 2020 provides data sets on power-generation capacity for 2010-2019, actual power generation for 2010-2018 and renewable energy balances for over 130 countries and areas for 2017-2018.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement n°957852

	**Renewables 2020** *Published by International Energy Agency (IEA)* https://www.iea.org/reports/renewables-2020
Renewables 2020 provides detailed analysis and forecasts through 2025 of the impact of Covid-19 on renewables in the electricity heat and transport sectors.	

	***Providing clean energy and energy Access through cooperatives*** UN Climate Change Learning Partnership, UN CC:Learn, https://www.uncclearn.org/wp-content/uploads/library/ilo55.pdf Published by International Labour Office Cooperatives Unit (COOP)

5. CONCLUSION

The task discussed at the team meetings, and as suggested, Island Profile and Energy Legal Framework have been prepared for each island and related countries, and presented above. Community based energy studies also has been prepared and discussed in section 4. Open resources have been used and referenced to at the bottom of each section with the related links.

This deliverable serves the main purpose of information gathering, it will be updated and summarised on the M24 and finalised on the M32.

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