

# RENEWABLE ENERGY COUNTRY PROFILES **EUROPEAN UNION**

June 2013 edition

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**IRENA Renewable Energy Country Profiles** take stock of the latest developments in the field of renewables at country level around the world. Each profile combines analysis by IRENA's specialists with the latest available country data and additional information from a wide array of sources. The resulting reports provide a brief yet comprehensive picture of the situation with regard to renewable energy, including energy supply, electrical generation and grid capacity, and access. Energy policies, targets and projects are also considered, along with each country's investment climate and endowment with renewable energy resources.

The energy statistics presented here span the period from 2010 until 2013, reflecting varying timelines in the source material. Since data availability differs from country to country, wider regional comparisons are possible only for the latest year with figures available for every country included. Despite the time lag in some cases, the evident differences and disparities between countries and regions around the world remain striking.

The current package of country profiles is just a starting point. The geographic scope will continue to expand, and existing profiles will be enhanced with new indicators, with the whole series maintained as a live product on the IRENA website (www.irena.org). Your feedback on both the format and the content of these country profiles would be greatly appreciated. Please address any comments to statistics@irena.org.



FIGURE 1: GDP PER CAPITA FOR 2011

## FIGURE 2: ELECTRICITY USE PER CAPITA FOR 2010



The European Union includes Austria, Belgium, Bulgaria, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden and the United Kingdom.

## **ENERGY NATIONAL PROFILE 2011**

- Total Primary Energy Supply: 1,385.5 PJ Of which renewables: 367.3 PJ (26.5%)
- Energy self-sufficiency: 35.0%
- Fuel imports: 21.7 billion USD (11.4% of total imports)
- Electricity generation: 62.2 TWh Of which renewables: 40.8 TWh (65.7%)
- Electricity use per capita: 8,344 kWh
- Electrical capacity: 22.8 GW Of which renewables: 15.0 GW (65.8%)
- Electricity access rate: 99.9%
- Share of population using solid fuels\*: 20%
- \* 2010

## TARGETS:

- 45% of final energy from renewables by 2020
- At least 10% of transport energy from renewables by 2020
- Adding 2 GW of wind, 1.2 GW of solar photovoltaic, 1 GW of hydro and 0.2 GW of bioenergy (solid and gaseous biomass) capacity by 2020

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Figure 3:Total Primary Energy Supply\* in 2000 and 2011

POLICIES IN PLACE TO PROMOTE RENEWABLE ENERGY SINCE THE RIO CONFERENCE OF 1992

/////	RD & D Budget Allocations	National Climate Strategy 2000-08/12 2000 Renewable Energy Targets	FEDERAL ENVIRONMENT FUND 2001 Eco-Plants FEED-IN TARIFFS	GREEN ELECTRICITY ACT (AMENDED IN 2009 AND 2010) 2002	Amendent to the Mineral Oil Tax and the Fuel Ordinance 2004 Klima:aktiv Programme	Austrian Climate Change Strategy 2007 Climate and Energy Fund	SIGNED THE IRENA STATUTE 2009 Combined Heat and Power Law	Energy Strategy of Austria 2010	GREEN ELECTRICITY ACT 2012 2012	
	Note: All Men reach their le energy Direc	mber States of the egally binding 20 tive (2009/28/EC	e European Unio 20 target for the 2)	n published Nati share of renewa	ional Renewable ble energy in the	Energy Action Pl ir total energy co	ans in 2010, whic onsumption, as r	ch detail how the equired by the re	ey expect to enewable	
	WORLD B	BANK EASE C	DF DOING BU	JSINESS IND	EX FOR 2013	3: Ranked 29	9 out of 185			
	<ul><li>RENEWAE</li><li>188 M</li></ul>	BLE ENERGY IW of wind c	PROJECTS F apacity ad	REPORTED IN dition anno	NTHE BNEF D punced (2 pi	ATABASE: rojects)				
	NUMBER RENEWAE	of registei Ble energy:	RED CLEAN Not applice	DEVELOPME able	ENT MECHAN	NISM PROJE	CTS FOCUSI	NG ON		
	RENEWA	BLE ENERGY	RESOURCES	): ●H	ligh 🛛 🖕 Med	ium 🖕 Low	Unknown	» Not applic	able	
	Wind	So So	lar 🔵	Hydro 🔵	Biomas	ss 🔵 Ge	othermal	Ocec	an 😣	

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Units: USD: United States dollar; kWh: kilowatt-hour; GWh: gigawatt-hour (1 GWh=10° kWh); TWh: terawatt-hour (1 TWh=10° GWh); PJ: petajoule; MW: megawatt; GW: gigawatt (1 GW=10° MW). Please also refer to the glossary for explanations on the terms used in the country profile.



FIGURE 1: GDP PER CAPITA FOR 2011

## FIGURE 2: ELECTRICITY USE PER CAPITA FOR 2010



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## **ENERGY NATIONAL PROFILE 2011**

- Total Primary Energy Supply: 2,444.8 PJ Of which renewables: 119.7 PJ (4.9%)
- Energy self-sufficiency: 31.6%
- Fuel imports: 76.2 billion USD (16.5% of total imports)
- Electricity generation: 88.9 TWh Of which renewables: 8.4 TWh (9.4%)
- Electricity use per capita: 8,034 kWh
- Electrical capacity: 20.1 GW Of which renewables: 3,841 MW (19.1%)
- Electricity access rate: 99.9%
- Share of population using solid fuels\*: < 5%
- \* 2010

## TARGETS:

- 13% of final energy from renewables by 2020
- 10.15% of transport energy from renewables by 2020
- 11.9% of gross final consumption in heating and cooling from renewables by 2020
- Wallonia: 30% of electricity generation from renewables by 2016, 8 TWh of renewable electricity generated in 2020

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Tax deduction For	RUE/ELECTRICITY GENERATION	Access to the Grid	NATIONAL GREEN CERTIFICATE	ROYAL DECREE ON THE INTRODUCTION	Tax deductions FOR	Green Certificate	Law of obligation for	SIGNED THE IRENA	
INVESTMENTS IN ENERGY EFFICIENCY	Fund	(Renewables and CHP)	Scheme	of Mechanisms Promoting	INVESTMENTS IN ENERGY EFFICIENCY	Scheme	THE INCORPORATION OF BIOFUELS IN	Statute	
1992	1996	2000	2001	2002	2003	2003/06	2009	2011	
& renewable energy by Enterprises				Renewable Electricity Generation	AND RENEWABLE ENERGY	Excise Tax Reduction for Biofuels	FOSSIL FUELS		

Notes: 1) All Member States of the European Union published National Renewable Energy Action Plans in 2010, which detail how they expect to reach their legally binding 2020 target for the share of renewable energy in their total energy consumption, as required by the renewable energy Directive (2009/28/EC)

2) Many support schemes and policies have been put in place at the regional level in the Brussels-Capital Region, Flanders and Wallonia.

#### WORLD BANK EASE OF DOING BUSINESS INDEX FOR 2013: Ranked 33 out of 185

#### RENEWABLE ENERGY PROJECTS REPORTED IN THE BNEF DATABASE:

- 780 to 930 MW and 24 MWth of biomass-fired capacity addition (3 projects)
- 20 MWe and 20 MWth of waste-to-energy capacity addition (1 project)
- 1.2 MW of solar photovoltaic capacity addition announced (1 project)
- 16 MW of hydro capacity addition (25 projects)
- More than 1,600 MW of offshore wind and 470 MW of onshore wind capacity addition planned

RENEWABLE ENERGY: Not applicable



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Units: USD: United States dollar; kWh: kilowatt-hour; GWh: gigawatt-hour (1 GWh=10<sup>6</sup> kWh); TWh: terawatt-hour (1 TWh=10<sup>3</sup> GWh); PJ: petajoule; MW: megawatt; GW: gigawatt (1 GW=10<sup>3</sup> MW). Please also refer to the glossary for explanations on the terms used in the country profile.



FIGURE 1: GDP PER CAPITA FOR 2011

FIGURE 2: ELECTRICITY USE PER CAPITA FOR 2010



## **ENERGY NATIONAL PROFILE 2011**

- Total Primary Energy Supply: 801.8 PJ Of which renewables: 56.6 PJ (7.1%)
- Energy self-sufficiency: 64.4%
- Fuel imports: 7.5 billion USD (23.0% of total imports)
- Electricity generation: 50.0 TWh Of which renewables: 3,935 GWh (7.9%)
- Electricity use per capita: 4,863 kWh
- Electrical capacity: 10.2 GW Of which renewables: 2,944 MW (28.8%)
- Electricity access rate: 99.9%
- Share of population using solid fuels\*: 14%
- \* 2010

## TARGETS:

- 16% of final energy from renewables by 2020
- At least 10% of transport energy from renewables by 2020
- 80 MW of solar photovoltaic capacity operational by 2014

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## WORLD BANK EASE OF DOING BUSINESS INDEX FOR 2013: Ranked 66 out of 185

## RENEWABLE ENERGY PROJECTS REPORTED IN THE BNEF DATABASE:

- 80 MW of small hydro capacity addition announced (1 project)
- 185 MW of solar photovoltaic capacity addition announced (12 projects)
- Around 2,300 MW of wind capacity addition announced (23 projects)

## RENEWABLE ENERGY: Not applicable



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FIGURE 1: GDP PER CAPITA FOR 2011

FIGURE 2: ELECTRICITY USE PER CAPITA FOR 2010



## **ENERGY NATIONAL PROFILE 2011**

- Total Primary Energy Supply: 99.3 PJ Of which renewables: 5.1 PJ (5.1%)
- Energy self-sufficiency: 4.1%
- Fuel imports: 2.2 billion USD (25.6% of total imports)
- Electricity generation: 4,929 GWh Of which renewables: 178.0 GWh (3.6%)
- Electricity use per capita: 4,271 kWh
- Electrical capacity: 1,742 MW Of which renewables: 160 MW (9.2%)
- Electricity access rate: 99.9%
- Share of population using solid fuels\*: < 5%
- \* 2010

## TARGETS:

- 13% of final energy from renewables by 2020
- At least 10% of transport energy from renewables by 2020

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## WORLD BANK EASE OF DOING BUSINESS INDEX FOR 2013: Ranked 36 out of 185

## **IIIIIII RENEWABLE ENERGY PROJECTS REPORTED IN THE BNEF DATABASE:**

- 3.4 MW of biomass-fired capacity addition announced (4 projects)
- 1.3 MW of solar photovoltaic capacity addition announced (1 project)
- 110 MW of wind capacity addition announced (3 projects)

## NUMBER OF REGISTERED CLEAN DEVELOPMENT MECHANISM PROJECTS FOCUSING ON RENEWABLE ENERGY: 5

**IIII RENEWABLE ENERGY RESOURCES:** High Unknown Not applicable Medium Low

Wind Solar Hydro • Biomass Geothermal Ocean

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Units: USD: United States dollar; kWh: kilowatt-hour; GWh: gigawatt-hour (1 GWh=10<sup>6</sup> kWh); TWh: terawatt-hour (1 TWh=10<sup>3</sup> GWh); PJ: petajoule; MW: megawatt; GW: gigawatt (1 GW=10<sup>3</sup> MW). Please also refer to the glossary for explanations on the terms used in the country profile.



FIGURE 1: GDP PER CAPITA FOR 2011

FIGURE 2: ELECTRICITY USE PER CAPITA FOR 2010



## **ENERGY NATIONAL PROFILE 2011**

- Total Primary Energy Supply: 1,818.3 PJ Of which renewables: 125.2 PJ (6.9%)
- Energy self-sufficiency: 73.8%
- Fuel imports: 16.0 billion USD (10.6% of total imports)
- Electricity generation: 86.8 TWh Of which renewables: 7.2 TWh (8.4%)
- Electricity use per capita: 6,289 kWh
- Electrical capacity: 20.2 GW Of which renewables: 3,703 MW (18.3%)
- Electricity access rate: 99.9%
- Share of population using solid fuels\*: < 15%
- \* 2010

## TARGETS:

- 13.5% of final energy from renewables by 2020
- 10.8% of transport energy from renewables by 2020

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	Subsidies for biodiesel production	ENERGY MANAGEMENT ACT (AMENDED IN 2006	NATIONAL PROGRAMME FOR ECONOMICAL ENERGY MANAGEMENT AND	BILL ON PROMOTION OF POWER AND HEAT	Promotion of crops for energy use	State Energy Policy	Act on the Promotion of the Use of Denieward e	BIOFUEL BLENDING REQUIREMENTS	Ratified the IRENA Statute
//////	1999	2001 New Energy	2002 Use of Renewable	2003 FROM RENEWABLE	2004 Excise tax	2004/05	2005 Energy Sources	2007/09	2011
		Аст	AND SECONDARY ENERGY RESOURCES	ENERGY SOURCES	EXEMPTIONS FOR BIOFUELS	FOR RENEWABLE ENERGY USE	(amended in 2006 and 2011)	Investment Scheme	

Note: All Member States of the European Union published National Renewable Energy Action Plans in 2010, which detail how they expect to reach their legally binding 2020 target for the share of renewable energy in their total energy consumption, as required by the renewable energy Directive (2009/28/EC)

#### WORLD BANK EASE OF DOING BUSINESS INDEX FOR 2013: Ranked 65 out of 185

#### IIIIIII RENEWABLE ENERGY PROJECTS REPORTED IN THE BNEF DATABASE:

- 30 MW of biomass-fired capacity addition announced (6 projects)
- 115 MW of solar photovoltaic capacity addition announced (12 projects)
- 190 MW of wind capacity addition announced (10 projects)

Wind Solar Hydro Biomass Geothermal Ocean

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FIGURE 1: GDP PER CAPITA FOR 2011

## FIGURE 2: ELECTRICITY USE PER CAPITA FOR 2010



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## **ENERGY NATIONAL PROFILE 2011**

- Total Primary Energy Supply: 760.8 PJ Of which renewables: 170.7 PJ (22.4%)
- Energy self-sufficiency: 116.7%
- Fuel imports: 9.0 billion USD (9.2% of total imports)
- Electricity generation: 35.2 TWh Of which renewables: 14.2 TWh (40.3%)
- Electricity use per capita: 6,122 kWh
- Electrical capacity: 13.6 GW Of which renewables: 5.3 GW (38.8%)
- Electricity access rate: 99.9%
- Share of population using solid fuels\*: < 5%
- \* 2010

## TARGETS:

- 10% of transport energy from renewables by 2020 (100% by 2050)
- 50% of electricity consumption from wind by 2020
- Individual oil boilers and coal use in Danish power plants to be phased out by 2030
- Heat and electricity supply to be based on renewables energy by 2035
- 100% of total energy consumption covered by renewables by 2050

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FIGURE 3: TOTAL PRIMARY ENERGY SUPPLY\* IN 2000 AND 2011

#### POLICIES IN PLACE TO PROMOTE RENEWABLE ENERGY SINCE THE RIO CONFERENCE OF 1992

	Biomass Agreement	NET METERING FOR SMALL-SCALE PV	Electricity Reform Agreement	NATIONAL RD&D Strategies for Renewable	Subsidies for Renewable Electricity	Green Growth Agreement	Ratified the IRENA Statute	Energy Strategy 2050	Energy Agreement
/////	1993/97	1998/99	2000/01	Energy 2003	Generation 2004/05	2009	2010	2011	2012
	WIND ENERGY CO-OPERATIVE TAX INCENTIVE	Carbon Tax/ Green Tax System	New Rules for Payment of Green Electricity	Technologies	Energy Strategy 2025	Promotion of Renewable Energy Act			

Note: All Member States of the European Union published National Renewable Energy Action Plans in 2010, which detail how they expect to reach their legally binding 2020 target for the share of renewable energy in their total energy consumption, as required by the renewable energy Directive (2009/28/EC)

#### WORLD BANK EASE OF DOING BUSINESS INDEX FOR 2013: Ranked 5 out of 185

#### IIIIIIIII RENEWABLE ENERGY PROJECTS REPORTED IN THE BNEF DATABASE:

- More than 1,050 MW and 500 MWth of biomass-fired capacity addition announced (4 projects)
- 73 million litres of biodiesel per year capacity addition announced (1 project)
- 836 MW of wind capacity addition announced (6 projects)

 Wind
 Solar
 Hydro
 Biomass
 Geothermal
 Ocean

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Units: USD: United States dollar; kWh: kilowatt-hour; GWh: gigawatt-hour (1 GWh=10<sup>6</sup> kWh); TWh: terawatt-hour (1 TWh=10<sup>3</sup> GWh); PJ: petajoule; MW: megawatt; GW: gigawatt (1 GW=10<sup>3</sup> MW). Please also refer to the glossary for explanations on the terms used in the country profile.



FIGURE 1: GDP PER CAPITA FOR 2011

FIGURE 2: ELECTRICITY USE PER CAPITA FOR 2010



## **ENERGY NATIONAL PROFILE 2011**

- Total Primary Energy Supply: 232.9 PJ Of which renewables: 34.8 PJ (15.0%)
- Energy self-sufficiency: 90.6%
- Fuel imports: 3.1 billion USD (17.7% of total imports)
- Electricity generation: 12.9 TWh Of which renewables: 1.179 GWh (9.1%)
- Electricity use per capita: 6,256 kWh
- Electrical capacity: 2,825 MW Of which renewables: 252 MW (8.9%)
- Electricity access rate: 99.9%
- Share of population using solid fuels\*:11%
- \* 2010

## TARGETS:

- 18% of electricity generation from renewables by 2015
- 25% of final energy from renewables by 2020
- At least 10% of transport energy from renewables by 2020

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FIGURE 3: TOTAL PRIMARY ENERGY SUPPLY\* IN 2000 AND 2011

POLICIES IN PLACE TO PROMOTE RENEWABLE ENERGY SINCE THE RIO CONFERENCE OF 1992



 RENEWABLE ENERGY RESOURCES:
 High
 Medium
 Low
 Unknown
 Not applicable

 Wind
 Solar
 Hydro
 Biomass
 Geothermal
 Ocean

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Sources: Population and GDP: World Bank; Energy data: IEA, IRENA analysis based on Eurostat data; Share of fuel imports in total imports: World Trade Organisation; Electrical capacity: IEA, Eurostat; Electricity access rate: World Energy Outlook 2012 database (IEA); Share of population using solid fuels: World Health Organisation; Targets: REN21, IRENA; Policy/legislation: IEA, IRENA research; Ease of doing business index: World Bank; Renewable energy projects: Bloomberg New Energy Finance, IRENA research; Clean Development Mechanism projects: UNFCCC; Renewable energy resources: IRENA analysis.

Units: USD: United States dollar; kWh: kilowatt-hour; GWh: gigawatt-hour (1 GWh=10<sup>6</sup> kWh); TWh: terawatt-hour (1 TWh=10<sup>3</sup> GWh); PJ: petajoule; MW: megawatt; GW: gigawatt (1 GW=10<sup>3</sup> MW). Please also refer to the glossary for explanations on the terms used in the country profile.



FIGURE 1: GDP PER CAPITA FOR 2011

## FIGURE 2: ELECTRICITY USE PER CAPITA FOR 2010



The European Union includes Austria, Belgium, Bulgaria, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden and the United Kingdom.

## **ENERGY NATIONAL PROFILE 2011**

- Total Primary Energy Supply: 1,469.8 PJ Of which renewables: 379.9 PJ (25.8%)
- Energy self-sufficiency: 49.2%
- Fuel imports: 18.3 billion USD (21.8% of total imports)
- Electricity generation: 73.5 TWh Of which renewables: 24.2 TWh (32.9%)
- Electricity use per capita: 15,738 kWh
- Electrical capacity: 16.7 GW Of which renewables: 5.3 GW (31.6%)
- Electricity access rate: 99.9%
- Share of population using solid fuels\*: < 5%
- \* 2010

## TARGETS:

- 38% of final energy from renewables by 2020
- At least 10% of transport energy from renewables by 2020
- Increase the use of renewable energy by at least 25% by 2015 and 40% by 2025
- 884 MW of wind capacity, 14,598 MW of hydro capacity and 13,152 MW of bioenergy capacity by 2020

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	Wind Power Programme	BIOENERGY PROMOTION	Tax subsidies for renewable	Action Plan for Renewable	Wood Energy Technology	ENERGY GRANTS FOR RESIDENTIAL	Development Programme for	FEED-IN TARIFFS FOR	Ratified the IRENA
/////	1993	PROGRAMME	ELECTRICITY (MODIFIED IN 2007)	ENERGY SOURCES	PROGRAMME	BUILDINGS	GENERATION	ELECTRICITY FROM WIND, BIOGAS	STATUTE 2011
	Bioenergy RD&D Programme		Finnish Energy Strategy	VAT REDUCTION	Energy Aid Scheme	Energy and Climate Policy Strategy	Transport Biofuels	AND WOOD CHIPS	

Note: All Member States of the European Union published National Renewable Energy Action Plans in 2010, which detail how they expect to reach their legally binding 2020 target for the share of renewable energy in their total energy consumption, as required by the renewable energy Directive (2009/28/EC)

WORLD BANK EASE OF DOING BUSINESS INDEX FOR 2013: Ranked 11 out of 185

IIIIIIIII RENEWABLE ENERGY PROJECTS REPORTED IN THE BNEF DATABASE:

- 90 MW and 158 MWth of biomass-fired capacity addition announced (2 projects)
- 108 million litres of biodiesel per year capacity addition announced (1 project)
- 9.8 million litres of bioethanol per year capacity addition announced (1 project)
- More than 4,550 MW of wind capacity addition announced (28 projects)

NUMBER OF REGISTERED CLEAN DEVELOPMENT MECHANISM PROJECTS FOCUSING ON RENEWABLE ENERGY: Not applicable

RENEWABLE ENERGY RESOURCES:

🛛 High 💦 🖕 Medium 🍵 Low 💿 Unknown 🐁 Not applicable



Note: The information on resources should be taken as an indication only. It refers to a general trend of available resources, and does not prejudge the feasibility of individual projects. The thresholds are indicative, and do not refer to any technological choice. The analysis is based on the literature.

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Units: USD: United States dollar; kWh: kilowatt-hour; GWh: gigawatt-hour (1 GWh=10° kWh); TWh: terawatt-hour (1 TWh=10° GWh); PJ: petajoule; MW: megawatt; GW: gigawatt (1 GW=10° MW). Please also refer to the glossary for explanations on the terms used in the country profile.



FIGURE 1: GDP PER CAPITA FOR 2011

FIGURE 2: ELECTRICITY USE PER CAPITA FOR 2010



## **ENERGY NATIONAL PROFILE 2011**

- Total Primary Energy Supply: 10,668.8 PJ Of which renewables: 765.0 PJ (7.2%)
- Energy self-sufficiency: 53.6%
- Fuel imports: 114.4 billion USD (16.0% of total imports)
- Electricity generation: 556.9 TWh Of which renewables: 64.8 TWh (11.6%)
- Electricity use per capita: 7,283 kWh
- Electrical capacity: 131.4 GW Of which renewables: 29.5 GW (22.5%)
- Electricity access rate: 99.9%
- Share of population using solid fuels\*: < 5%
- \* 2010

## TARGETS:

- 23% of final energy from renewables by 2020
- 27% of electricity generation from renewables by 2020
- 10.5% of transport energy from renewables by 2020
- 25 GW of wind capacity, including 6 GW of offshore wind, by 2020
- 32% of energy consumption for heating and cooling from renewables by 2020

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	Wind Energy Programme	Renewable Energy	REDUCED VAT FOR RESIDENTIAL	Tax Credit for Renewable	Electricity Law 2000	Flexible depreciation	Hydropower Revival Plan	OFFSHORE WIND TENDERING	New solar plan and second
		Purchasing Conditions	Renewable Energy	Energy in New Buildings		SCHEME		MECHANISM	OFFSHORE WIND TENDER
//////	1996	1999	1999	2000	2000/01	2003/07	2009	2011	2013
		Wood Energy Programme	Equipment	Solar Water Heaters plan	Renewable Energy Feed-in	Grenelle de l'environnement	Pluriannual plan OF INVESTMENT	Ratified the IRENA Statute	Debate on energy
					TARIFFS				TRANSITION

Note: All Member States of the European Union published National Renewable Energy Action Plans in 2010, which detail how they expect to reach their legally binding 2020 target for the share of renewable energy in their total energy consumption, as required by the renewable energy Directive (2009/28/EC)

#### WORLD BANK EASE OF DOING BUSINESS INDEX FOR 2013: Ranked 34 out of 185

## IIIIIII RENEWABLE ENERGY PROJECTS REPORTED IN THE BNEF DATABASE:

- 522 MW and 159 MWth of biomass-fired capacity addition announced (51 projects)
- 24 MWth of geothermal capacity addition announced (1 project)
- 240 million litres of biodiesel per year capacity addition announced (4 projects)
- 759 MW of solar photovoltaic capacity addition announced (33 projects)
- More than 8,100 MW of wind capacity addition announced (34 projects)
- 2 MW of marine capacity addition announced (1 project)

RENEWABLE ENERGY: Not applicable



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Units: USD: United States dollar; kWh: kilowatt-hour; GWh: gigawatt-hour (1 GWh=10<sup>6</sup> kWh); TWh: terawatt-hour (1 TWh=10<sup>3</sup> GWh); PJ: petajoule; MW: megawatt; GW: gigawatt (1 GW=10<sup>3</sup> MW). Please also refer to the glossary for explanations on the terms used in the country profile.



FIGURE 1: GDP PER CAPITA FOR 2011

## FIGURE 2: ELECTRICITY USE PER CAPITA FOR 2010



The European Union includes Austria, Belgium, Bulgaria, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden and the United Kingdom.

## **ENERGY NATIONAL PROFILE 2011**

- Total Primary Energy Supply: 12,906.4 PJ Of which renewables: 1,307.1 PJ (10.1%)
- Energy self-sufficiency: 40.6%
- Fuel imports: 169.0 billion USD (13.5% of total imports)
- Electricity generation: 602.6 TWh Of which renewables: 123.1 TWh (20.4%)
- Electricity use per capita: 7,094 kWh
- Electrical capacity: 171.7 GW Of which renewables: 66.1 GW (38.5%)
- Electricity access rate: 99.9%
- Share of population using solid fuels\*: < 5%
- \* 2010

## TARGETS:

- 18% of final energy from renewables by 2020 (30% by 2030, 45% by 2040, 60% by 2050)
- 35% of electricity generation from renewables by 2020 (50% by 2030, 65% by 2040, 80% by 2050)
- At least 10% of transport energy from renewables by 2020
- 14% of total heat supply from renewables by 2020

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	INCENTIVES FOR	Federal	Eco-Tax	Renewable	Combined Heat	KFW	INTEGRATED	Ratified	Energiewende
	solar PV	Building Codes	Reform	Energy	and Power Law	Programme	CLIMATE CHANGE	THE IRENA	
	INSTALLATIONS	for Renewable		Sources	(AMENDED IN 2008,	PRODUCING SOLAR	and Energy	STATUTE	
		Energy		Аст	2011 and 2012)	Power	Programme		
//////	1993/95	1997	1999	2000	2002	2005	2007/09	2009/10	2011
	100 MILLION	Production	100,000 Roofs	(AMENDED IN 2004,		Energy Industry	KFW RENEW-	ENERGY CONCEPT	KFW Programme
	DM Programme		Solar Power	2009, 2011 AND		Аст	ABLE ENERGIES	2010	OFFSHORE WIND
			Programme	2012)		(AMENDED IN 2012)	Programme		Energy

Note: All Member States of the European Union published National Renewable Energy Action Plans in 2010, which detail how they expect to reach their legally binding 2020 target for the share of renewable energy in their total energy consumption, as required by the renewable energy Directive (2009/28/EC)

#### WORLD BANK EASE OF DOING BUSINESS INDEX FOR 2013: Ranked 20 out of 185

IIIIIII RENEWABLE ENERGY PROJECTS REPORTED IN THE BNEF DATABASE:

- 18 MW and 57 MWth of biomass-fired capacity addition announced (4 projects)
- More than 33 MW and 105 MWth of geothermal capacity addition announced (6 projects)
- 61.2 million litres of biodiesel per year capacity addition announced (1 project)
- 182 MW of solar photovoltaic capacity addition announced (10 projects)
- More than 12,500 MW of wind capacity addition announced (44 projects)

IIIIII NUMBER OF REGISTERED CLEAN DEVELOPMENT MECHANISM PROJECTS FOCUSING ON RENEWABLE ENERGY: Not applicable

RENEWABLE ENERGY RESOURCES:

🛛 High 🛛 🖕 Medium 🍵 Low 💿 Unknown 🔹 Not applicable



Note: The information on resources should be taken as an indication only. It refers to a general trend of available resources, and does not prejudge the feasibility of individual projects. The thresholds are indicative, and do not refer to any technological choice. The analysis is based on the literature.

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Units: USD: United States dollar; kWh: kilowatt-hour; GWh: gigawatt-hour (1 GWh=10<sup>6</sup> kWh); TWh: terawatt-hour (1 TWh=10<sup>3</sup> GWh); PJ: petajoule; MW: megawatt; GW: gigawatt (1 GW=10<sup>3</sup> MW). Please also refer to the glossary for explanations on the terms used in the country profile.



FIGURE 1: GDP PER CAPITA FOR 2011

FIGURE 2: ELECTRICITY USE PER CAPITA FOR 2010



## **ENERGY NATIONAL PROFILE 2011**

- Total Primary Energy Supply: 1,138.0 PJ Of which renewables: 89.3 PJ (7.8%)
- Energy self-sufficiency: 35.4%
- Fuel imports: 16.5 billion USD (27.2% of total imports)
- Electricity generation: 52.9 TWh Of which renewables: 8.1 TWh (13.8%)
- Electricity use per capita: 5,296 kWh
- Electrical capacity: 16.5 GW Of which renewables: 4,822 MW (29.2%)
- Electricity access rate: 99.9%
- Share of population using solid fuels\*: < 5%
- \* 2010

## TARGETS:

- 20% of final energy from renewables by 2020
- 40% of electricity generation from renewables by 2020
- At least 10% of transport energy from renewables by 2020
- 2.2 GW of solar photovoltaic capacity by 2030
- 20% of renewable energy in heating and cooling by 2020

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///////	FISCAL INCENTIVES FOR RENEWABLES AND ENERGY CONSERVATION 1994 LAW 2244/94	Tax exemptions for renewable equipments (Law 2364/95) 1995/99 Feed-in Tariffs (Law 2773/99)	New Law on the Exploitation of Geothermal Potential 2003 (Law 3175/2003)	Development INCENTIVES FOR RENEWABLE ENERGY SOURCES 2004 (LAW 3299/2004)	INTRODUCTION OF BIOFUELS AND OTHER RENEWABLE FUELS 2005 (LAW 3423/2005)	PROMOTION OF RENEWABLE ELECTRICITY (AMENDED IN 2009) 2006 (LAW 3468/2006)	Renewable Energy Law (Law 3851/2010) 2010	Ratified the IRENA Statute 2012	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
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roue. All member states of the European union published National Renewable Energy Action Plans in 2010, which defail how they expect to reach their legally binding 2020 target for the share of renewable energy in their total energy consumption, as required by the renewable energy Directive (2009/28/EC)

#### WORLD BANK EASE OF DOING BUSINESS INDEX FOR 2013: Ranked 78 out of 185

## RENEWABLE ENERGY PROJECTS REPORTED IN THE BNEF DATABASE:

- More than 2,050 MW of solar photovoltaic capacity addition announced (12 projects)
- 1,800 MW of wind capacity addition announced (5 projects)
- IIIIIII NUMBER OF REGISTERED CLEAN DEVELOPMENT MECHANISM PROJECTS FOCUSING ON RENEWABLE ENERGY: Not applicable



Note: The information on resources should be taken as an indication only. It refers to a general trend of available resources, and does not prejudge the feasibility of individual projects. The thresholds are indicative, and do not refer to any technological choice. The analysis is based on the literature.

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Units: USD: United States dollar; kWh: kilowatt-hour; GWh: gigawatt-hour (1 GWh=10<sup>6</sup> kWh); TWh: terawatt-hour (1 TWh=10<sup>3</sup> GWh); PJ: petajoule; MW: megawatt; GW: gigawatt (1 GW=10<sup>3</sup> MW). Please also refer to the glossary for explanations on the terms used in the country profile.



FIGURE 1: GDP PER CAPITA FOR 2011

FIGURE 2: ELECTRICITY USE PER CAPITA FOR 2010



## **ENERGY NATIONAL PROFILE 2011**

- Total Primary Energy Supply: 1,048.5 PJ Of which renewables: 79.0 PJ (7.5%)
- Energy self-sufficiency: 43.3%
- Fuel imports: 12.5 billion USD (12.2% of total imports)
- Electricity generation: 36.0 TWh Of which renewables: 2,708 GWh (7.5%)
- Electricity use per capita: 3,895 kWh
- Electrical capacity: 9.7 GW Of which renewables: 918 MW (9.5%)
- Electricity access rate: 99.9%
- Share of population using solid fuels\*: < 5%
- \* 2010

## TARGETS:

- 13% of final energy from renewables by 2020
- At least 10% of transport energy from renewables by 2020

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	Energy Saving	Hungarian	Széchenyi	Government	New Hungary	HUNGARY STRATE-	National Energy	Green	BIOFUEL
	ACTION PLAN	ENERGY POLICY	Plan	RESOLUTION	DEVELOPMENT	gy on Renewable	CONSERVATION	INVESTMENT	QUOTA
		PRINCIPLES AND		ON THE USE OF	PLAN (NHDP)	ENERGY SOURCES	Programme	System	
		BUSINESS		BIOFUELS		2007-2020	2008		
/////	1996	1999	2000/03	2004/05	2006	2007	2008	2009	2010
		Model of the	FEED-IN TARIFF	ELECTRICITY ACT		Excise tax	ELECTRICITY ACT		
		ENERGY SECTOR				EXEMPTION FOR	and Green Cer-		
						BIOFUELS	TIFICATES SCHEME		

Note: All Member States of the European Union published National Renewable Energy Action Plans in 2010, which detail how they expect to reach their legally binding 2020 target for the share of renewable energy in their total energy consumption, as required by the renewable energy Directive (2009/28/EC)

## WORLD BANK EASE OF DOING BUSINESS INDEX FOR 2013: Ranked 54 out of 185

## IIIIIIIII RENEWABLE ENERGY PROJECTS REPORTED IN THE BNEF DATABASE:

- 91 MW and 110 MWth of biomass-fired capacity addition announced (4 projects)
- 12 MWth of geothermal capacity addition announced (1 project)
- 20 MW of wind capacity addition announced (1 project)

RENEWABLE ENERGY: Not applicable



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Units: USD: United States dollar; kWh: kilowatt-hour; GWh: gigawatt-hour (1 GWh=10° kWh); TWh: terawatt-hour (1 TWh=10° GWh); PJ: petajoule; MW: megawatt; GW: gigawatt (1 GW=10° MW). Please also refer to the glossary for explanations on the terms used in the country profile.



FIGURE 1: GDP PER CAPITA FOR 2011

## FIGURE 2: ELECTRICITY USE PER CAPITA FOR 2010



The European Union includes Austria, Belgium, Bulgaria, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden and the United Kingdom.

## **ENERGY NATIONAL PROFILE 2011**

- Total Primary Energy Supply: 551.9 PJ Of which renewables: 34.3 PJ (6.2%)
- Energy self-sufficiency: 13.7%
- Fuel imports: 9.5 billion USD (14.3% of total imports)
- Electricity generation: 27.5 TWh Of which renewables: 5.4 TWh (19.7%)
- Electricity use per capita: 5,663 kWh
- Electrical capacity: 8.8 GW Of which renewables: 1,907 MW (21.7%)
- Electricity access rate: 99.9%
- Share of population using solid fuels\*: < 5%
- \* 2010

## TARGETS:

- 16% of final energy from renewables by 2020
- 40% of electricity generation from renewables by 2020
- At least 10% of transport energy from renewables by 2020
- 15% of energy consumption for heating from renewables by 2020

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	Tax Relief for renewable energy investments	Public Sector Buildings Programme	Renewable Energy Feed-In Tariff	Pilot Programme for Mineral Oil Tax Relief on Biofuels	Renewable Heat Deployment Programme (ReHeat)	Sustainable Energy Com- ponent of the National	Best Practice Guidelines for the Irish Wind Industry	Signed the IRENA Statute	BIOFUELS Obligation Scheme
/////	1998	2001/02	2005	2005	2007	2007	2008	2009	2010/11
		Sustainable Energy Act	Greener Homes Scheme			Development Plan 2007- 2013	Microgeneration Support Programme		Statutory Instrument 147

Note: All Member States of the European Union published National Renewable Energy Action Plans in 2010, which detail how they expect to reach their legally binding 2020 target for the share of renewable energy in their total energy consumption, as required by the renewable energy Directive (2009/28/EC)

## WORLD BANK EASE OF DOING BUSINESS INDEX FOR 2013: Ranked 15 out of 185

## IIIIIIIII RENEWABLE ENERGY PROJECTS REPORTED IN THE BNEF DATABASE:

- 16 MW of biomass-fired capacity addition announced (1 project)
- 542 MW of wind capacity addition announced (15 projects)
- 250 MW of marine capacity addition announced (2 projects)

## RENEWABLE ENERGY: Not applicable



Note: The information on resources should be taken as an indication only. It refers to a general trend of available resources, and does not prejudge the feasibility of individual projects. The thresholds are indicative, and do not refer to any technological choice. The analysis is based on the literature.

Sources: Population and GDP: World Bank; Energy data: IEA, IRENA analysis based on Eurostat data; Share of fuel imports in total imports: World Trade Organisation; Electrical capacity: IEA, Eurostat; Electricity access rate: World Energy Outlook 2012 database (IEA); Share of population using solid fuels: World Health Organisation; Targets: REN21, IRENA; Policy/legislation: IEA, IRENA research; Ease of doing business index: World Bank; Renewable energy projects: Bloomberg New Energy Finance, IRENA research; Clean Development Mechanism projects: UNFCCC; Renewable energy resources: IRENA analysis.

Units: USD: United States dollar; kWh: kilowatt-hour; GWh: gigawatt-hour (1 GWh=10° kWh); TWh: terawatt-hour (1 TWh=10° GWh); PJ: petajoule; MW: megawatt; GW: gigawatt (1 GW=10° MW). Please also refer to the glossary for explanations on the terms used in the country profile.



FIGURE 1: GDP PER CAPITA FOR 2011

FIGURE 2: ELECTRICITY USE PER CAPITA FOR 2010



## **ENERGY NATIONAL PROFILE 2011**

- Total Primary Energy Supply: 7,114.1 PJ Of which renewables: 834.9 PJ (11.7%)
- Energy self-sufficiency: 19.2%
- Fuel imports: 110.5 billion USD (19.8% of total imports)
- Electricity generation: 300.6 TWh Of which renewables: 83.0 TWh (27.6%)
- Electricity use per capita: 5,393 kWh
- Electrical capacity: 118.4 GW Of which renewables: 37.3 GW (31.5%)
- Electricity access rate: 99.9%
- Share of population using solid fuels\*: < 5%
- \* 2010

## TARGETS:

- 19-20% of final energy consumption from renewables by 2020
- 10% of transport energy from renewables by 2020
- 35-38% of electricity generation from renewables by 2020, corresponding to 120-130 TWh of electricity generation from renewables (including about 30 TWh produced by 27GW of PV)
- 20% of heat consumption from renewables by 2020

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	Inter-ministerial Price Committee Provision	Introduction of the Green Certificates	National Plan for Biofuels and biomass	Introduction of the White Cer- tificates System	"Conto Energia" Feed-in premium For photovoltaic	"55%" FISCAL SUP- PORT SCHEME FOR SMALL RENEWABLE	"All inclusive" Feed-in Tariff for small renewable	5th revision of "Conto Energia" support scheme	New support scheme for renew- able heat from	
/////	(CIP 6/92) 1992	System 1999	2000	FOR RENEWABLE	SYSTEMS	HEAT INSTALLATIONS	POWER PLANTS	FOR PV	SMALL INSTALLATIONS	
		Carbon Tax (Financial Law 448/98)	10,000 PV Roofs Programme	HEAT AND ENERGY EFFICIENCY INSTAL- LATIONS	Kyoto Rotation Fund	BIODIESEL AID SCHEME: QUOTAS	Ratified the IRENA Statute	New Support Scheme for Non-PV RENEWABLE POWER	National Energy Strategy Decree (SEN)	

Notes: 1) All Member States of the European Union published National Renewable Energy Action Plans in 2010, which detail how they expect to reach their legally binding 2020 target for the share of renewable energy in their total energy consumption, as required by the renewable energy Directive (2009/28/EC)

2) With the adoption of the National Energy Strategy (SEN) in 2013 Italy has introduced new voluntary targets on renewable energy that exceed European 2020 targets.

WORLD BANK EASE OF DOING BUSINESS INDEX FOR 2013: Ranked 73 out of 185

#### RENEWABLE ENERGY PROJECTS REPORTED IN THE BNEF DATABASE:

- 78 MW and 8 MWth of biomass-fired capacity addition announced (5 projects)
- 40 MW of geothermal capacity addition announced (1 project)
- 380 million litres of biodiesel per year capacity addition announced (1 project)
- 254 million litres of bioethanol per year capacity addition announced (1 project)
- Around 900 MW of solar photovoltaic capacity addition announced (73 projects)
- 131 MW of solar thermal capacity addition announced (4 projects)
- Around 2,450 MW of wind capacity addition announced (22 projects)

IIIII NUMBER OF REGISTERED CLEAN DEVELOPMENT MECHANISM PROJECTS FOCUSING ON RENEWABLE ENERGY: Not applicable

Wind Solar Hydro Biomass Geothermal Ocean

Note: The information on resources should be taken as an indication only. It refers to a general trend of available resources, and does not prejudge the feasibility of individual projects. The thresholds are indicative, and do not refer to any technological choice. The analysis is based on the literature.

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Units: USD: United States dollar; kWh: kilowatt-hour; GWh: gigawatt-hour (1 GWh=10<sup>6</sup> kWh); TWh: terawatt-hour (1 TWh=10<sup>3</sup> GWh); PJ: petajoule; MW: megawatt; GW: gigawatt (1 GW=10<sup>3</sup> MW). Please also refer to the glossary for explanations on the terms used in the country profile.



FIGURE 1: GDP PER CAPITA FOR 2011

FIGURE 2: ELECTRICITY USE PER CAPITA FOR 2010



## **ENERGY NATIONAL PROFILE 2011**

- Total Primary Energy Supply: 173.1 PJ Of which renewables: 60.1 PJ (34.7%)
- Energy self-sufficiency: 50.4%
- Fuel imports: 2.6 billion USD (15.9% of total imports)
- Electricity generation: 6.1 TWh Of which renewables: 3,078 GWh (50.5%)
- Electricity use per capita: 3,267 kWh
- Electrical capacity: 2,576 MW Of which renewables: 1,642 GW (63.7%)
- Electricity access rate: 99.9%
- Share of population using solid fuels\*: 5%
- \* 2010

## TARGETS:

- 40% of final energy from renewables by 2020
- At least 10% of transport energy from renewables by 2020

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	Law on Energy	Programme "Biofuel Production and Use in Latvia	Financial support quotas for biofuel	ENERGY DEVELOPMENT GUIDELINES FOR 2007-2016	Reduction of excise duty for biofuel	Climate change financial instrument	REGULATIONS ON THE RIGHT TO RE- CEIVE GUARANTEED PAYMENT FOR THE	REGULATIONS ON THE PRODUCTION OF RENEWABLE ELECTRICITY AND	Ratified the IRENA Statute
//////	1998	2003	2005	2006	2007	2009	2009	2010	2010
		(2003-2010)"	Electricity Market Law		Electricity tax exemption	Biofuel quota	electrical capac- ity installed in a CHP plant	The procedures to determine the price	

Note: All Member States of the European Union published National Renewable Energy Action Plans in 2010, which detail how they expect to reach their legally binding 2020 target for the share of renewable energy in their total energy consumption, as required by the renewable energy Directive (2009/28/EC)

## WORLD BANK EASE OF DOING BUSINESS INDEX FOR 2013: Ranked 25 out of 185

## RENEWABLE ENERGY PROJECTS REPORTED IN THE BNEF DATABASE:

- 52 MW of biogas capacity addition announced (50 projects)
- 1.1 MW of hydro capacity addition announced (2 projects)
- 102 MW of biomass capacity addition announced (50 projects)

## IIIIIIIIIIIIIIIIINUMBER OF REGISTERED CLEAN DEVELOPMENT MECHANISM PROJECTS FOCUSING ON RENEWABLE ENERGY: Not applicable



Note: The information on resources should be taken as an indication only. It refers to a general trend of available resources, and does not prejudge the feasibility of individual projects. The thresholds are indicative, and do not refer to any technological choice. The analysis is based on the literature.

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FIGURE 1: GDP PER CAPITA FOR 2011

FIGURE 2: ELECTRICITY USE PER CAPITA FOR 2010



## **ENERGY NATIONAL PROFILE 2011**

- Total Primary Energy Supply: 293.7 PJ Of which renewables: 44.2 PJ (15.1%)
- Energy self-sufficiency: 18.6%
- Fuel imports: 10.6 billion USD (33.7% of total imports)
- Electricity generation: 4,246 GWh Of which renewables: 1,113 GWh (26.2%)
- Electricity use per capita: 3,527 kWh
- Electrical capacity: 3,691 MW Of which renewables: 351 MW (9.5%)
- Electricity access rate: 99.9%
- Share of population using solid fuels\*: 21%
- \* 2010

## TARGETS:

- 23% of final energy from renewables by 2020
- At least 10% of transport energy from renewables by 2020

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///////	Law on Biofuel, Biofuels For Transport and Bio-oils 2000 (amended in 2009)	Tax exemptions for biofuels	National Energy Strategy 2002	Law on Energy	Pollution Tax	Law on the heat sector 2003	Law ON ENERGY FROM RENEWABLE SOURCES 2011	Ratified the IRENA Statute 2011			
	<ul> <li>Note: All Member States of the European Union published National Renewable Energy Action Plans in 2010, which detail how they expect to reach their legally binding 2020 target for the share of renewable energy in their total energy consumption, as required by the renewable energy Directive (2009/28/EC)</li> <li>WORLD BANK EASE OF DOING BUSINESS INDEX FOR 2013: Ranked 27 out of 185</li> <li>RENEWABLE ENERGY PROJECTS REPORTED IN THE BNEF DATABASE: <ul> <li>60 MW and 50 MWth of biomass-fired capacity addition announced (3 projects)</li> </ul> </li> <li>NUMBER OF REGISTERED CLEAN DEVELOPMENT MECHANISM PROJECTS FOCUSING ON RENEWABLE ENERGY: Not applicable</li> </ul>										
	Wind	Solar 🧧	Hydro	🥑 Bio	omass 🔵	Geothern	nal 🔵 Oc	cean 🔵			

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FIGURE 1: GDP PER CAPITA FOR 2011

## FIGURE 2: ELECTRICITY USE PER CAPITA FOR 2010



The European Union includes Austria, Belgium, Bulgaria, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden and the United Kingdom.

## **ENERGY NATIONAL PROFILE 2011**

- Total Primary Energy Supply: 175.0 PJ Of which renewables: 5.1 PJ (2.9%)
- Energy self-sufficiency: 2.8%
- Fuel imports: 3.3 billion USD (11.6% of total imports)
- Electricity generation: 2,645 GWh Of which renewables: 242.0 GWh (9.1%)
- Electricity use per capita: 15,532 kWh
- Electrical capacity: 1,740 MW Of which renewables: 149 MW (8.6%)
- Electricity access rate: 99.9%
- Share of population using solid fuels\*: < 5%
- \* 2010

## TARGETS:

- 11% of final energy from renewables by 2020
- At least 10% of transport energy from renewables by 2020

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FIGURE 1: GDP PER CAPITA FOR 2011

FIGURE 2: ELECTRICITY USE PER CAPITA FOR 2010



## **ENERGY NATIONAL PROFILE 2011**

- Total Primary Energy Supply: 43.2 PJ Of which renewables: 0.1 PJ (0.1%)
- Energy self-sufficiency: 0.1%
- Fuel imports: 1.6 billion USD (26.1% of total imports)
- Electricity generation: 2,189 GWh Of which renewables: 0.0 GWh (0.0%)
- Electricity use per capita: 4,684 kWh
- Electrical capacity: 571 MW Of which renewables: 17 MW (3.0%)
- Electricity access rate: 99.9%
- Share of population using solid fuels\*: < 5%
- \* 2010

## TARGETS:

- 10% of final energy from renewables by 2020
- At least 10% of transport energy from renewables by 2020

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2006

Note: All Member States of the European Union published National Renewable Energy Action Plans in 2010, which detail how they expect to reach their legally binding 2020 target for the share of renewable energy in their total energy consumption, as required by the renewable

2010

2011

BIOFUEL SUBSTITUTION OBLIGATION 2011

2012

WORLD BANK EASE OF DOING BUSINESS INDEX FOR 2013: Ranked 102 out of 185

2005

RENEWABLE ENERGY PROJECTS REPORTED IN THE BNEF DATABASE:

2004

2004

energy Directive (2009/28/EC)

2000

- 78 MW of biomass-fired capacity addition announced (1 project)
- 270 million litres of bioethanol per year capacity addition announced (2 projects)
- 110 MW of wind capacity addition announced (3 projects)



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## FIGURE 1: GDP PER CAPITA FOR 2011

## FIGURE 2: ELECTRICITY USE PER CAPITA FOR 2010



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## **ENERGY NATIONAL PROFILE 2011**

- Total Primary Energy Supply: 3,253.2 PJ Of which renewables: 138.1 PJ (4.2%)
- Energy self-sufficiency: 83.3%
- Fuel imports: 132.6 billion USD (22.2% of total imports)
- Electricity generation: 113.0 TWh Of which renewables: 12.3 TWh (10.9%)
- Electricity use per capita: 7,036 kWh
- Electrical capacity: 28.0 GW Of which renewables: 4,094 MW (14.6%)
- Electricity access rate: 99.9%
- Share of population using solid fuels\*: < 5%
- \* 2010

#### TARGETS:

- 14% of final energy from renewables by 2020
- 5% of transport energy from renewables by 2013 (10% by 2020)

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	Green Funds	Renewables for Government Buildings	Energy Premium (EPR) and Energy	FEED-IN TARIFF (amended in 2008 and 2011)	Energy Tax Regime	Transport Biofuels Act	GUARANTEE SCHEME FOR GEOTHERMAL	SUPPORT SCHEME FOR SOLAR PANELS	Ratified the IRENA Statute
//////	1995/96	2001	Performance	2003	2005	2007	ENERGY	2011	2011
	Regulatory Energy Tax	Green Certificate Trading	Advice (EPA)					Offshore wind energy Green Deal	

Note: All Member States of the European Union published National Renewable Energy Action Plans in 2010, which detail how they expect to reach their legally binding 2020 target for the share of renewable energy in their total energy consumption, as required by the renewable energy Directive (2009/28/EC)

## WORLD BANK EASE OF DOING BUSINESS INDEX FOR 2013: Ranked 31 out of 185

## IIIIIIIII RENEWABLE ENERGY PROJECTS REPORTED IN THE BNEF DATABASE:

- 500 million litres of biodiesel per year capacity addition announced (1 project)
- 1.5 MW of solar photovoltaic capacity addition announced (1 project)
- Around 1,150 MW of wind capacity addition announced (5 projects)

## RENEWABLE ENERGY: Not applicable



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FIGURE 1: GDP PER CAPITA FOR 2011

FIGURE 2: ELECTRICITY USE PER CAPITA FOR 2010



## **ENERGY NATIONAL PROFILE 2011**

- Total Primary Energy Supply: 4,257.9 PJ Of which renewables: 332.9 PJ (7.8%)
- Energy self-sufficiency: 67.7%
- Fuel imports: 26.5 billion USD (12.7% of total imports)
- Electricity generation: 163.1 TWh Of which renewables: 13.1 TWh (8.1%)
- Electricity use per capita: 3,832 kWh
- Electrical capacity: 34.6 GW Of which renewables: 3,021 MW (8.7%)
- Electricity access rate: 99.9%
- Share of population using solid fuels\*: < 5%
- \* 2010

## TARGETS:

- 15% of final energy from renewables by 2020
- At least 10% of transport energy from renewables by 2020

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	Energy Law	Tax exemptions	Obligation for	BIO-COMPONENTS	Long-term	Programme	Polish	DIRECTIONS OF	Ratified
	(AMENDED IN 2002,	FOR RENEWABLE	Power Purchase	and Liquid	Programme for	FOR RENEWABLE	ENERGY POLICY	DEVELOPMENT	THE IRENA
	2005, 2007 AND	ELECTRICITY	FROM KENEWABLE	BIOFUELS ACT	PROMOTION OF	ENERGY AND HIGH	UNTIL 2030	FOR AGRICULTURAL	STATUTE
	2010)	0000	SOURCES	0004		EFFICIENCY	0000	BIOGAS PLANI	0010/10
//////	1997	2002	2005	2006	2008	2009	2009	2010	2010/12
			(AMENDED IN 2008		Other	COGENERATION	Green	in Poland in	Order on the
			and 2012)		Renewable Fuels	PROJECTS	INVESTMENT	2010-2020	QUOTA OBLIGATION
							Scheme		

Note: All Member States of the European Union published National Renewable Energy Action Plans in 2010, which detail how they expect to reach their legally binding 2020 target for the share of renewable energy in their total energy consumption, as required by the renewable energy Directive (2009/28/EC)

## WORLD BANK EASE OF DOING BUSINESS INDEX FOR 2013: Ranked 55 out of 185

## RENEWABLE ENERGY PROJECTS REPORTED IN THE BNEF DATABASE:

- 175 MW and 119 MWth of biomass-fired capacity addition announced (11 projects)
- More than 12 MW of geothermal capacity addition announced (2 projects)
- 20 MW of small hydro capacity addition announced (3 projects)
- Around 6,350 MW of wind capacity addition announced (56 projects)

## RENEWABLE ENERGY: Not applicable

## RENEWABLE ENERGY RESOURCES:

🛛 High 💦 🖕 Medium 🍵 Low 🐁 Unknown 🐁 Not applicable

Wind 🔵 Solar 😑 Hydro 🥜 Biomass 🔵 Geothermal 🛑 Ocean

Note: The information on resources should be taken as an indication only. It refers to a general trend of available resources, and does not prejudge the feasibility of individual projects. The thresholds are indicative, and do not refer to any technological choice. The analysis is based on the literature.

Sources: Population and GDP: World Bank; Energy data: IEA, IRENA analysis based on Eurostat data; Share of fuel imports in total imports: World Trade Organisation; Electrical capacity: IEA, Eurostat; Electricity access rate: World Energy Outlook 2012 database (IEA); Share of population using solid fuels: World Health Organisation; Targets: REN21, IRENA; Policy/legislation: IEA, IRENA research; Ease of doing business index: World Bank; Renewable energy projects: Bloomberg New Energy Finance, IRENA research; Clean Development Mechanism projects: UNFCCC; Renewable energy resources: IRENA analysis.

Units: USD: United States dollar; kWh: kilowatt-hour; GWh: gigawatt-hour (1 GWh=10° kWh); TWh: terawatt-hour (1 TWh=10° GWh); PJ: petajoule; MW: megawatt; GW: gigawatt (1 GW=10° MW). Please also refer to the glossary for explanations on the terms used in the country profile.



FIGURE 1: GDP PER CAPITA FOR 2011

FIGURE 2: ELECTRICITY USE PER CAPITA FOR 2010



## **ENERGY NATIONAL PROFILE 2011**

- Total Primary Energy Supply: 962.6 PJ Of which renewables: 215.3 PJ (22.4%)
- Energy self-sufficiency: 23.3%
- Fuel imports: 14.3 billion USD (17.8% of total imports)
- Electricity generation: 51.9 TWh Of which renewables: 24.1 TWh (46.5%)
- Electricity use per capita: 4,848 kWh
- Electrical capacity: 19.9 GW Of which renewables: 9.6 GW (48.1%)
- Electricity access rate: 99.9%
- Share of population using solid fuels\*: < 5%
- \* 2010

## TARGETS:

- 31% of final energy from renewables by 2020
- 55 to 60% of electricity generation from renewables by 2020
- At least 10% of transport energy from renewables by 2020

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	ENERGIA Programme	Tax Reduction for Renewable	Promotion of hydro and	Energy Efficiency and	New feed-in tariffs for	National Energy	Solar thermal INCENTIVE	MICROGENERATION Law	Ratified the IRENA
		Energy	WIND PROJECTS	Endogenous	RENEWABLES	Strategy	SCHEME	(AMENDED IN 2011)	Statute
		Equipment	(Decree-Law	Energies (E4)	(AMENDED IN 2005,				
/////	1994	1999	2000	2001	2001	2005/06	2009	2010	2011
			NO.69/2000)	Programme	2007 and 2013)	BIOFUELS LAW	BIODIESEL		
						(AMENDED IN 2008)	BLENDING		
							REQUIREMENT		

Note: All Member States of the European Union published National Renewable Energy Action Plans in 2010, which detail how they expect to reach their legally binding 2020 target for the share of renewable energy in their total energy consumption, as required by the renewable energy Directive (2009/28/EC)

#### WORLD BANK EASE OF DOING BUSINESS INDEX FOR 2013: Ranked 30 out of 185

## RENEWABLE ENERGY PROJECTS REPORTED IN THE BNEF DATABASE:

- 18 MW of biomass-fired capacity addition announced (2 projects)
- 310 million litres of biodiesel per year capacity addition announced (1 project)
- 5 MW of small hydro capacity addition announced (1 project)
- 13.5 MW of solar photovoltaic capacity addition announced (3 projects)
- 4 MW of solar thermal capacity addition announced (1 project)
- 115 MW of wind capacity addition announced (4 projects)
- 27 MW of marine capacity addition announced (3 projects)

## RENEWABLE ENERGY: Not applicable

RENEWABLE ENERGY RESOURCES: 

High
Medium
Low
Unknown
Not applicable

Wind 🔵	Solar 🔵	Hydro 🔵	Biomass 🔴	Geothermal 🔵	Ocean 🔵

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Units: USD: United States dollar; kWh: kilowatt-hour; GWh: gigawatt-hour (1 GWh=10° kWh); TWh: terawatt-hour (1 TWh=10° GWh); PJ: petajoule; MW: megawatt; GW: gigawatt (1 GW=10° MW). Please also refer to the glossary for explanations on the terms used in the country profile.



FIGURE 1: GDP PER CAPITA FOR 2011

## FIGURE 2: ELECTRICITY USE PER CAPITA FOR 2010



The European Union includes Austria, Belgium, Bulgaria, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden and the United Kingdom.

## **ENERGY NATIONAL PROFILE 2011**

- Total Primary Energy Supply: 1,519.2 PJ Of which renewables: 212.2 PJ (14.0%)
- Energy self-sufficiency: 76.9%
- Fuel imports: 8.6 billion USD (11.3% of total imports)
- Electricity generation: 62.0 TWh Of which renewables: 16.3 TWh (26.3%)
- Electricity use per capita: 2,486 kWh
- Electrical capacity: 20.5 GW Of which renewables: 7.4 GW (36.1%)
- Electricity access rate: 99.9%
- Share of population using solid fuels\*: 17%
- \* 2010

## TARGETS:

- 24% of final energy from renewables by 2020
- 43% of electricity generation from renewables by 2020
- 10% of transport energy from renewables by 2020
- 22% of energy consumption for heating and cooling from renewables by 2020

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	Law on the	Electricity Law	Energy	National	Law establishing	Decree	Ratified	BIOFUEL	
	Environmental	(AMENDED IN 2007	PERFORMANCE OF	STRATEGY FOR	A SYSTEM FOR THE	22/2008	THE IRENA	QUOTA	
	Fund	and 2012)	BUILDINGS	Sustainable	PROMOTION OF	PROMOTING THE	Statute		
			Law	Development -	RENEWABLE	FINAL			
////////	2000	2003	2007	2008	2008	2008	2010	2011	
						CONCUMPTION			
						CONSUMPTION			
				2020-2030	(AMENDED IN ZUT I	OF RENEWABLE			
					AND 2012)	ENERGY SOURCES			

Note: All Member States of the European Union published National Renewable Energy Action Plans in 2010, which detail how they expect to reach their legally binding 2020 target for the share of renewable energy in their total energy consumption, as required by the renewable energy Directive (2009/28/EC)

WORLD BANK EASE OF DOING BUSINESS INDEX FOR 2013: Ranked 72 out of 185

RENEWABLE ENERGY PROJECTS REPORTED IN THE BNEF DATABASE:

- 119 MW of biomass-fired capacity addition announced (6 projects)
- 293 MW of solar photovoltaic capacity addition announced (23 projects)
- Around 3,500 MW of wind capacity addition announced (30 projects)

RENEWABLE ENERGY: Not applicable



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Units: USD: United States dollar; kWh: kilowatt-hour; GWh: gigawatt-hour (1 GWh=10° kWh); TWh: terawatt-hour (1 TWh=10° GWh); PJ: petajoule; MW: megawatt; GW: gigawatt (1 GW=10° MW). Please also refer to the glossary for explanations on the terms used in the country profile.



FIGURE 1: GDP PER CAPITA FOR 2011

FIGURE 2: ELECTRICITY USE PER CAPITA FOR 2010



## **ENERGY NATIONAL PROFILE 2011**

- Total Primary Energy Supply: 729.4 PJ Of which renewables: 57.2 PJ (7.8%)
- Energy self-sufficiency: 37.8%
- Fuel imports: 11.3 billion USD (14.6% of total imports)
- Electricity generation: 28.3 TWh Of which renewables: 4,999 GWh (17.7%)
- Electricity use per capita: 5,350 kWh
- Electrical capacity: 8.1 GW Of which renewables: 1,998 MW (24.8%)
- Electricity access rate: 99.9%
- Share of population using solid fuels\*: < 5%
- \* 2010

## TARGETS:

- 14% of final energy from renewables by 2020
- At least 10% of transport energy from renewables by 2020

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	Act on Regula-	Excise tax	Feed-in tariffs	STRATEGY FOR	Excise tax	PROGRAMME FOR	Act 309/2009	Ratified	Аст 136/2011
	TION IN NETWORK	EXEMPTION FOR	FOR RENEWABLE	GREATER USE OF	EXEMPTION FOR	HIGHER BIOMASS	ON SUPPORT OF	THE IRENA	ON THE
	INDUSTRIES	BIOFUELS	ENERGY	RENEWABLE	RENEWABLE	and Solar	Renewable Energy	STATUTE	PROMOTION OF
	(AMENDED IN 2007)	(AMENDED IN 2007)	(UPDATED YEARLY)	ENERGY SOURCES	ELECTRICITY	ENERGY USE	SOURCES AND		RENEWABLE
//////	2001	2004/05	2005/06	2007	2008	2009	2009	2010	2011
		Аст 656/2005	Slovak Republic	MINIMUM BIOFUEL	BIOMASS		HIGH EFFICIENCY		ENERGY AND
		on Energy and	New Energy	REQUIREMENT	Action Plan		CHP (AMENDED IN		HIGHLY EFFICIENT
		AMENDMENTS	POLICY		2008-2013		2010 AND 2011)		COGENERATION

Note: All Member States of the European Union published National Renewable Energy Action Plans in 2010, which detail how they expect to reach their legally binding 2020 target for the share of renewable energy in their total energy consumption, as required by the renewable energy Directive (2009/28/EC)

#### WORLD BANK EASE OF DOING BUSINESS INDEX FOR 2013: Ranked 46 out of 185

#### IIIIIII RENEWABLE ENERGY PROJECTS REPORTED IN THE BNEF DATABASE:

- 1.5 MW of biomass-fired capacity addition announced (1 project)
- 6 MW of geothermal capacity addition announced (1 project)
- 50 MW of solar photovoltaic capacity addition announced (5 projects)
- 173 MW of wind capacity addition announced (4 projects)

## RENEWABLE ENERGY: Not applicable

High

#### RENEWABLE ENERGY RESOURCES:

● Medium ● Low ● Unknown ⊗ Not applicable



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FIGURE 1: GDP PER CAPITA FOR 2011

FIGURE 2: ELECTRICITY USE PER CAPITA FOR 2010



## **ENERGY NATIONAL PROFILE 2011**

- Total Primary Energy Supply: 303.9 PJ Of which renewables: 39.7 PJ (13.1%)
- Energy self-sufficiency: 51.8%
- Fuel imports: 5.0 billion USD (14.0% of total imports)
- Electricity generation: 15.9 TWh Of which renewables: 3,876 GWh (24.4%)
- Electricity use per capita: 6,805 kWh
- Electrical capacity: 3,268 MW Of which renewables: 1,188 MW (36.4%)
- Electricity access rate: 99.9%
- Share of population using solid fuels\*: < 5%
- \* 2010

## TARGETS:

- 25% of final energy from renewables by 2020
- At least 10% of transport energy from renewables by 2020

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///////	Energy Act	Eco-Fund 2000/02 Feed-in Tariffs and Premiums	Resolution on the National En- ergy Programme (RS 57/2004) 2004 Tax exemptions for liquid biofuels	Promotion of the Use of Biofuels and Other Renewable Fuels 2007 for the Propulsion of Motor Vehicles (RS 103/2007)	Decree on the Support for Electricity Generated from 2009 Renewable Energy Sources (RS 37/2009)	Energy Act	Ratified the IRENA Statute 2010	DECREE ON GREEN PUBLIC PROCUREMENT (RS 102/2011) 2011	
	Note: All Member S each their legally B energy Directive (20	tates of the Europ binding 2020 targ 009/28/EC)	ean Union publis et for the share o	hed National Ren f renewable energ	ewable Energy Ac gy in their total ene	ction Plans in 2010 ergy consumption	, which detail ho , as required by t	w they expect to the renewable	
	WORLD BANK			SS INDEX FOR	R 2013: Ranke	ed 35 out of	185		
	• 72 MW of s	small hydro o	capacity ad	dition annou	unced (2 pro	jects)			
	NUMBER OF R RENEWABLE E	REGISTERED C	CLEAN DEVEL	OPMENT ME	CHANISM PR	OJECTS FOC	CUSING ON		
	Renewable e	NERGY RESC	URCES:	<ul> <li>High</li> </ul>	• Medium •	Low 🛛 Unknc	wn <sub>⊗</sub> Notap	pplicable	
	Wind 🥏	Solar	Hydro	o 🔵 🛛 Bi	omass 🔵	Geotherm	nal 😑 🛛 O	cean 🔵	

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Units: USD: United States dollar; kWh: kilowatt-hour; GWh: gigawatt-hour (1 GWh=10<sup>6</sup> kWh); TWh: terawatt-hour (1 TWh=10<sup>3</sup> GWh); PJ: petajoule; MW: megawatt; GW: gigawatt (1 GW=10<sup>3</sup> MW). Please also refer to the glossary for explanations on the terms used in the country profile.



FIGURE 1: GDP PER CAPITA FOR 2011

FIGURE 2: ELECTRICITY USE PER CAPITA FOR 2010



## **ENERGY NATIONAL PROFILE 2011**

- Total Primary Energy Supply: 5,246.8 PJ Of which renewables: 612.9 PJ (11.7%)
- Energy self-sufficiency: 25.6%
- Fuel imports: 77.9 billion USD (20.8% of total imports)
- Electricity generation: 289.4 TWh Of which renewables: 86.2 TWh (29.8%)
- Electricity use per capita: 5,606 kWh
- Electrical capacity: 102.8 GW Of which renewables: 41.4 GW (40.2%)
- Electricity access rate: 99.9%
- Share of population using solid fuels\*: < 5%

## TARGETS:

- 20.8% of final energy from renewables by 2020: 6.3% from wind, 5.8% from biomass and wastes, 3% from solar, 2.9% from hydro, 2.7% from liquid biofuels and 0.1% from other renewables
- 38.1% of electricity generation from renewables by 2020
- 11.3% of transport energy from renewables by 2020 18.9% of energy consumption for heating and cooling from renewables by 2020
- 72.5 GW of renewable capacity, of which 35 GW of onshore wind, 13.9 GW of hydro and 7.3 GW of solar photovoltaic, by 2020

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<sup>\* 2010</sup> 



	ROYAL DECREE 2366/1994 ON	Law 54/1997 ON THE	Renewable Energy	Royal Decree 436/2004	ROYAL DECREE 314/2006 ON	Law 12/2007 AND MANDATORY	ROYAL DECREE 1578/2008 ON	New regulatory framework for	Ratified the IRENA
	FEED-IN TARIFFS (AMENDED IN 1998,	ELECTRICITY SECTOR	2000-2010		IECHNICAL BUILDING CODE	BIOFUEL	PV ELECTRICITY PRICE	ADMINISTRATIVE PROCEDURES FOR	STATUTE
/////	1994	1997/98	1999	2004/06	2006/07	2007/08	2008	2009	2011
	2000, 2004, 2007, 2009, 2010 and 2012)	Royal Decree 2818/1998	(MODIFIED IN 2005)	CONTROL CENTRE OF RENEWABLE EN- ERGIES ESTABLISHED	Royal Decree 661/2007	(revised in 2011)		RE facilities (Royal Decree Law 6/2009)	Renewable Energy Plan 2011-2020

Note: All Member States of the European Union published National Renewable Energy Action Plans in 2010, which detail how they expect to reach their legally binding 2020 target for the share of renewable energy in their total energy consumption, as required by the renewable energy Directive (2009/28/EC)

## WORLD BANK EASE OF DOING BUSINESS INDEX FOR 2013: Ranked 44 out of 185

## RENEWABLE ENERGY PROJECTS REPORTED IN THE BNEF DATABASE:

- 310 MW of biomass-fired capacity addition announced (14 projects)
- 10 MW and 8 MWth of geothermal capacity addition announced (2 projects)
- Around 1,400 MW of solar photovoltaic capacity addition announced (67 projects)
- 840 MW of solar thermal capacity addition announced (21 projects)
- 2,650 MW of wind capacity addition announced (33 projects)
- 6.5 MW of marine capacity addition announced (2 projects)

RENEWABLE ENERGY: Not applicable



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Units: USD: United States dollar; kWh: kilowatt-hour; GWh: gigawatt-hour (1 GWh=10° kWh); TWh: terawatt-hour (1 TWh=10° GWh); PJ: petajoule; MW: megawatt; GW: gigawatt (1 GW=10° MW). Please also refer to the glossary for explanations on the terms used in the country profile.



FIGURE 1: GDP PER CAPITA FOR 2011

FIGURE 2: ELECTRICITY USE PER CAPITA FOR 2010



## **ENERGY NATIONAL PROFILE 2011**

- Total Primary Energy Supply: 2,051.7 PJ Of which renewables: 659.4 PJ (32.1%)
- Energy self-sufficiency: 66.0%
- Fuel imports: 25.2 billion USD (14.3% of total imports)
- Electricity generation: 150.3 TWh Of which renewables: 84.1 TWh (55.9%)
- Electricity use per capita: 14,030 kWh
- Electrical capacity: 35.1 GW Of which renewables: 23.3 GW (66.4%)
- Electricity access rate: 99.9%
- Share of population using solid fuels\*: < 5%
- \* 2010

## TARGETS:

- At least 50% of final energy from renewables by 2020
- At least 10% of transport energy from renewables by 2020
- 25 TWh more renewable electricity than in 2002 by 2020
- A vehicle stock that is independent of fossil fuels by 2030

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FIGURE 3: TOTAL PRIMARY ENERGY SUPPLY\* IN 2000 AND 2011

POLICIES IN PLACE TO PROMOTE RENEWABLE ENERGY SINCE THE RIO CONFERENCE OF 1992

	Tax exemptions		Renewari e	SUPPORT FOR	GRANTS FOR	Ratified	SUPPORT FOR THE	Act on	FLECTRICITY
	FOR RENEWABLE	BONUS FOR WIND	Energy Invest-	SMALL SCALE	RESIDENTIAL	THE IRENA	DEVELOPMENT AND	SUSTAINABILITY	Certificates
	ELECTRICITY	POWER (REGULAR	MENT SUPPORT	ELECTRICITY	Heating	Statute	IMPLEMENTATION	CRITERIA FOR	Аст
	(Act 1776)	MODIFICATIONS)	Programme	Production	CONVERSION		OF BIOGAS	BIOFUELS AND	
//////	1994	1994/97	1997	2000/03	2006	2009	2009	2010	2011/12
		Guaranteed	ENERGY POLICY	Green		SUPPORT FOR THE	TECHNOLOGIES	BIOLIQUIDS	Sweden-Norway
		Power Purchase	PROGRAMME	Certificate		INSTALLATION OF			GREEN CERTIFI-
		CONTRACTS		SCHEME		SOLAR PANELS			CATES SCHEME

Note: All Member States of the European Union published National Renewable Energy Action Plans in 2010, which detail how they expect to reach their legally binding 2020 target for the share of renewable energy in their total energy consumption, as required by the renewable energy Directive (2009/28/EC)

WORLD BANK EASE OF DOING BUSINESS INDEX FOR 2013: Ranked 13 out of 185

IIIIIIIII RENEWABLE ENERGY PROJECTS REPORTED IN THE BNEF DATABASE:

- 429 MW and 107 MWth of biomass-fired capacity addition announced (7 projects)
- 126 million litres of bioethanol per year capacity addition announced (1 project)
- Around 4,500 MW of wind capacity addition announced (42 projects)



Note: The information on resources should be taken as an indication only. It refers to a general trend of available resources, and does not prejudge the feasibility of individual projects. The thresholds are indicative, and do not refer to any technological choice. The analysis is based on the literature.

Sources: Population and GDP: World Bank; Energy data: IEA, IRENA analysis based on Eurostat data; Share of fuel imports in total imports: World Trade Organisation; Electrical capacity: IEA, Eurostat; Electricity access rate: World Energy Outlook 2012 database (IEA); Share of population using solid fuels: World Health Organisation; Targets: REN21, IRENA; Policy/legislation: IEA, IRENA research; Ease of doing business index: World Bank; Renewable energy projects: Bloomberg New Energy Finance, IRENA research; Clean Development Mechanism projects: UNFCCC; Renewable energy resources: IRENA analysis.

Units: USD: United States dollar; kWh: kilowatt-hour; GWh: gigawatt-hour (1 GWh=10° kWh); TWh: terawatt-hour (1 TWh=10° GWh); PJ: petajoule; MW: megawatt; GW: gigawatt (1 GW=10° MW). Please also refer to the glossary for explanations on the terms used in the country profile.



## FIGURE 1: GDP PER CAPITA FOR 2011

## FIGURE 2: ELECTRICITY USE PER CAPITA FOR 2010



The European Union includes Austria, Belgium, Bulgaria, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden and the United Kingdom.

## **ENERGY NATIONAL PROFILE 2011**

- Total Primary Energy Supply: 7,852.1 PJ Of which renewables: 326.6 PJ (4.2%)
- Energy self-sufficiency: 69.0%
- Fuel imports: 91.0 billion USD (14.3% of total imports)
- Electricity generation: 364.9 TWh Of which renewables: 34.4 TWh (9.4%)
- Electricity use per capita: 5,517 kWh
- Electrical capacity: 93.8 GW Of which renewables: 12.4 GW (13.2%)
- Electricity access rate: 99.9%
- Share of population using solid fuels\*: < 5%
- \* 2010

## TARGETS:

- 15% of final energy from renewables by 2020
- 5% of transport energy from renewables by 2014 (at least 10% by 2020)
- 12% of renewable heat by 2020
- Scotland: 15% of electricity generation from renewables by 2020 (80% by 2020)

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Note: All Member States of the European Union published National Renewable Energy Action Plans in 2010, which detail how they expect to reach their legally binding 2020 target for the share of renewable energy in their total energy consumption, as required by the renewable energy Directive (2009/28/EC)

#### WORLD BANK EASE OF DOING BUSINESS INDEX FOR 2013: Ranked 7 out of 185

#### **IIIIIII RENEWABLE ENERGY PROJECTS REPORTED IN THE BNEF DATABASE (CAPACITY ADDITIONS):**

- Around 2,230 MW and 700 MWth of biomass-fired capacity addition announced (56 projects)
- 10 MW and 65 MWth of geothermal capacity addition announced (2 projects)
- 231 million litres of biodiesel per year capacity addition announced (3 projects)
- 623 million litres of bioethanol per year capacity addition announced (4 projects)
- 37 MW of small hydro capacity addition announced (7 projects)
- 135 MW of solar photovoltaic capacity addition announced (19 projects)
- Around 40,000 MW of wind capacity addition announced (172 projects)
- Around 2,800 MW of marine capacity addition announced (26 projects)

IIIII NUMBER OF REGISTERED CLEAN DEVELOPMENT MECHANISM PROJECTS FOCUSING ON RENEWABLE ENERGY: Not applicable



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Units: USD: United States dollar; kWh: kilowatt-hour; GWh: gigawatt-hour (1 GWh=10<sup>6</sup> kWh); TWh: terawatt-hour (1 TWh=10<sup>3</sup> GWh); PJ: petajoule; MW: megawatt; GW: gigawatt (1 GW=10<sup>3</sup> MW). Please also refer to the glossary for explanations on the terms used in the country profile.

# GLOSSARY



## ] - PRODUCTS

**Coal** comprises the solid fossil fuels consisting of carbonised vegetal matter (hard coal and brown coal) and the products derived from them (e.g. patent fuel, coke, blast furnace gas, coke oven gas).

**Peat** is a solid formed from the partial decomposition of dead vegetation under conditions of high humidity and limited air access. Peat is not considered a renewable resource as its regeneration period is long.

**Oil** covers the liquid fossil hydrocarbons comprising crude oil, liquids extracted from natural gas (NGL), fully or partly processed products from the refining of crude oil (e.g. gasoline, diesel) and functionally similar liquid hydrocarbons and organic chemicals from vegetal or animal origins.

**Natural gas** includes natural gas but excludes natural gas liquids, which are included in oil and oil products.

**Nuclear** shows the primary energy equivalent of the electricity produced by a nuclear power plant assuming an average thermal efficiency of 33%.

**Wastes** are materials no longer required by their holders and which are used as fuels. They comprise municipal waste and industrial waste.

**Hydro** shows the energy content of the electricity produced from devices driven by fresh, flowing or falling water. Hydro output excludes output from pumped storage plants.

**Biofuels** are the solid, liquid or gaseous material obtained from living or recently living organisms (e.g. wood, charcoal, biogasoline, biodiesels, vegetal or animal waste).

**Solar** is the energy that is captured from solar radiation to produce a useful energy output (electricity from solar photovoltaic, heat or electricity from solar thermal).

**Geothermal** is the energy of the heat that is extracted from the earth, usually in the form of heated water or steam.

**Ocean** shows the energy content of the electricity produced by tidal movement, wave motion, ocean current and other sources of marine energy. **Wind** shows the energy content of the electricity produced by wind turbines.

**Renewables** are sources of energy which are naturally replenished as they are used. They include hydro, biofuels, solar, geothermal, ocean and wind. For the purposes of energy statistics, the renewable portion of municipal waste is also included.

## 2 - ENERGY NATIONAL PROFILE BOX

**Total Primary Energy Supply** is the net flow of fuel or energy into the national territory from production, external trade, international bunkers and changes in stocks. Note that this value includes electricity trade unlike the pie charts presented later, which can result in small differences in values and the share of renewables.

**Self-sufficiency** is the ratio of domestic production divided by Total Primary Energy Supply. A value below 100% means that the country is a net energy importer, i.e. that it has to import or draw from its stocks the energy needed to meet the part of demand that is not met by domestic production. Conversely, a value above 100% indicates that the country is a net energy exporter.

**Fuel imports** show the amount spent on importing coal and peat, oil, natural gas and electricity in the country. For most countries, this amount includes cost, insurance and freight (CIF) (source http://www.wto.org).

**Electricity generation** is the total amount of electricity produced in power plants (i.e. the gross electricity production).

**Electricity use** is the electricity available for consumption, defined as the sum of domestic production and external trade minus the transmission losses.

**Electrical capacity** is the net maximum installed capacity of all power plants at the end of the year concerned, i.e. the maximum power that can be supplied, continuously, with all of the plant running, at the point of outlet to the network.

**Electricity access rate** is the share of the population with access to electricity

Share of population using solid fuels is the percentage of the population that relies on solid biofuels, coal and peat as the primary source of domestic energy for cooking and heating (source http://www.who.int).

## 3 - OTHER INDICATORS

**World Bank ease of doing business index** ranks economies from 1 to 183 in 10 areas of business regulation: starting a business, dealing with construction permits, registering property, getting credit, protecting investors, paying taxes, trading across borders, enforcing contracts, resolving insolvency and getting electricity (source: http://www.doingbusiness.org).

**Registered Clean Development Mechanism (CDM) project:** the CDM allows emission-reduction projects in developing countries to earn certified emission reduction credits which can be traded and sold, and used by industrialised countries to a meet a part of their emission reduction targets under the Kyoto Protocol. A project is registered when the Executive Board of the CDM gives its final approval (source: http://cdm.unfccc.int).

## 4 – RESOURCES

Note: Data on the assessment of the resources of tidal power and ocean current is not available. Therefore, and for the purposes of the resource assessment only, ocean energy is limited to wave energy.

For each renewable energy source, the rating is explained in the table below.

	Wind	Solar	Hydro	Biomass	Geothermal	Ocean
High	Several areas with average wind speed above 7 m/s at 50 m high	Several areas with global horizon- tal irra- diation above 1800 kWh/m <sup>2</sup> per year	One or more sites can be equipped with a large hydro- power facility (>10 MW)	Maximum identified theoretical potential above 100 PJ incl. agricul- ture, wood and residues	One or more sites can be equipped with a large scale facility (>10 MW)	Wave power above 30 kW/m
Medium	Several areas with average wind speed between 5 and 7 m/s at 50 m high	Several areas with global horizontal irradiation between 1200 and 1800 kWh/m <sup>2</sup> per year	One or more sites can be equipped with a medium scale hydro- power facility (1-10 MW)	Maximum identified theoretical potential be- tween 10 and 100 PJ incl. agriculture, wood and residues	One or more sites can be equipped with a medium scale facility (1-10 MW)	Wave power between 10 and 30 kW/m
Low	No area identified with average wind speed above 5 m/s	No identified area with global hori- zontal irra- diation above 1200 kWh/m <sup>2</sup> per year	One or more sites can be equipped with a small scale hydro- power facility (<1 MW)	Maximum identified theoretical potential below 10 PJ incl. agricul- ture, wood and residues	One or more sites can be equipped with a small scale facility (<1 MW)	Wave power below 10 kW/m
Unknown			No data identified	d by IRENA as yet		



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