

RENEWABLE ENERGY COUNTRY PROFILES

**Special edition on the occasion of  
the Renewables and Islands  
Global Summit**  
6-7 September 2012



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 present volume of country profiles, prepared for the Renewables and Islands Global Summit in September 2012, expands the range of coverage to include more Small Island Developing States (SIDS) and the Summit's host country, Malta.

The energy statistics presented here span the period from 2009 until 2012, 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](http://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](mailto:statistics@irena.org).





# MALTA



**413,000** Population (2010)  
**8.2 billion USD** GDP (2010)  
**19,769 USD** GDP per capita (2010)

FIGURE 1: GDP PER CAPITA FOR 2010

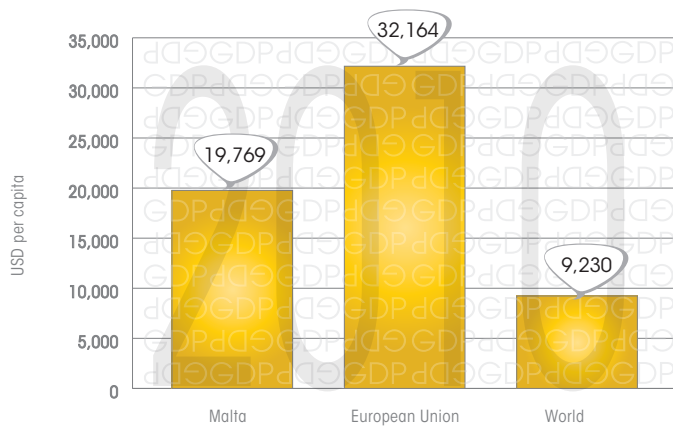
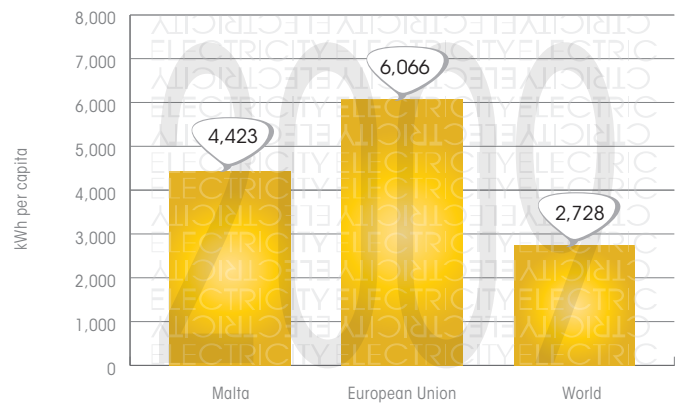


FIGURE 2: ELECTRICITY USE PER CAPITA FOR 2009



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.

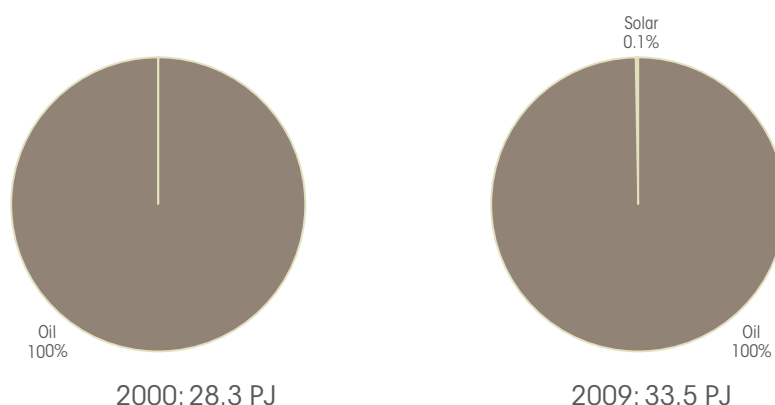
## ENERGY NATIONAL PROFILE 2009

- Total Primary Energy Supply: 33.5 PJ - Of which renewables: 0.0 PJ (0.1%)
- Energy self-sufficiency: 0.1%
- Fuel imports: 371 million USD (8.9% of total imports)
- Electricity generation: 2,167 GWh - Of which renewables: 0.0 GWh (0.0%)
- Electricity use per capita: 4,423 kWh
- Electrical capacity: 572 MW - Of which renewables: 2 MW (0.3%)
- Electricity access rate: 99.9%
- Share of population using solid fuels: < 5%

### TARGETS:

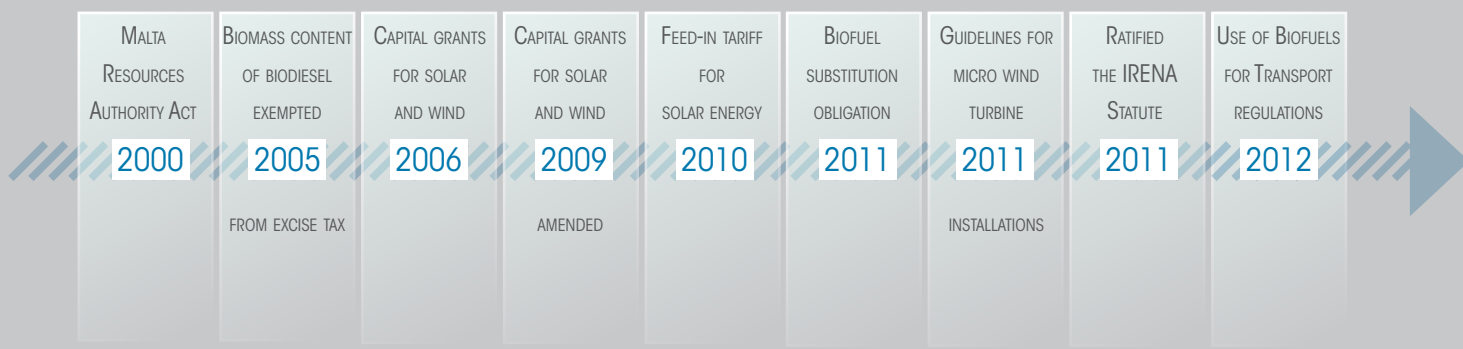
- 10% of final energy from renewables by 2020
- 10% of road transport energy from renewables by 2020

FIGURE 3: TOTAL PRIMARY ENERGY SUPPLY\* IN 2000 AND 2009



\*excluding electricity trade

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



WORLD BANK EASE OF DOING BUSINESS INDEX FOR 2012: Not ranked

RENEWABLE ENERGY PROJECTS FROM THE GOVERNMENT AND PRIVATE SECTORS:

- 270 million litres of bioethanol per year capacity addition announced (2 projects)
- About 110 MW of wind capacity addition announced (3 projects)

NUMBER OF REGISTERED CLEAN DEVELOPMENT MECHANISM PROJECTS FOCUSING ON 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 prejudice 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 UN data; Share of fuel imports in total imports: World Trade Organisation; Electrical capacity: IEA, EIA; Electricity access rate: World Energy Outlook 2011 database (IEA); Share of population using solid fuels: World Health Organisation; Targets: REN21, IRENA; Policy/legislation: IEA, Reegle, 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.

# ANTIGUA & BARBUDA



**89,000** Population (2010)  
**1.2 billion USD** GDP (2010)  
**13,006 USD** GDP per capita (2010)

FIGURE 1: GDP PER CAPITA FOR 2010

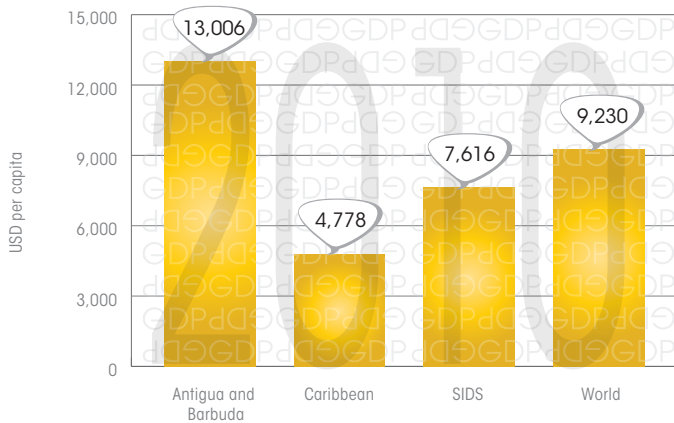
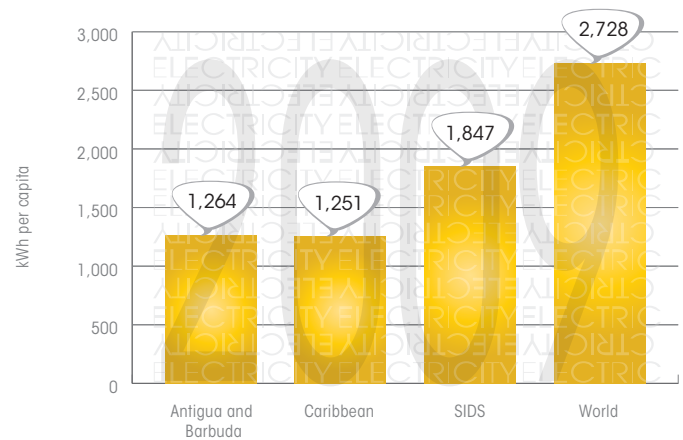


FIGURE 2: ELECTRICITY USE PER CAPITA FOR 2009



The Caribbean include Antigua and Barbuda, Bahamas, Barbados, Cuba, Dominica, the Dominican Republic, Grenada, Haiti, Jamaica, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, and Trinidad and Tobago. SIDS include Antigua and Barbuda, Bahamas, Bahrain, Barbados, Belize, Cape Verde, Comoros, the Cook Islands, Cuba, Dominica, the Dominican Republic, Fiji, Grenada, Guinea-Bissau, Guyana, Haiti, Jamaica, Kiribati, the Maldives, the Marshall Islands, the Federated States of Micronesia, Mauritius, Nauru, Niue, Palau, Papua New Guinea, Samoa, Sao Tome and Principe, Singapore, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, the Seychelles, the Solomon Islands, Suriname, Timor-Leste, Tonga, Trinidad and Tobago, Tuvalu and Vanuatu.

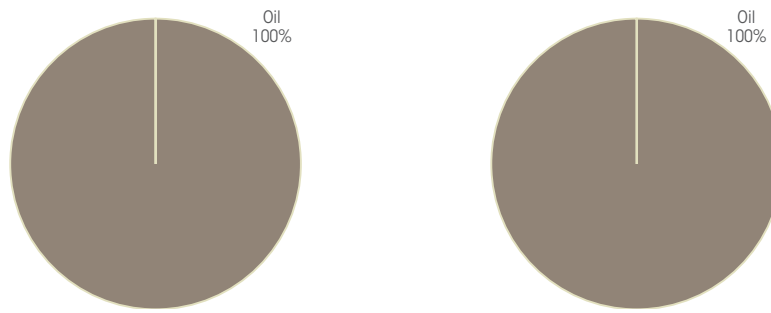
## ENERGY NATIONAL PROFILE 2009

- Total Primary Energy Supply: 6.9 PJ - Of which renewables: 0.0 PJ (0.0%)
- Energy self-sufficiency: 0.0%
- Fuel imports: 143 million USD (25.6% of total imports)
- Electricity generation: 119.0 GWh - Of which renewables: 0.0 GWh (0.0%)
- Electricity use per capita: 1,264 kWh
- Electrical capacity: 27 MW - Of which renewables: 0.0 MW (0.0%)
- Electricity access rate: 100%
- Share of population using solid fuels: < 5%

### TARGETS:

- No information available

FIGURE 3: TOTAL PRIMARY ENERGY SUPPLY\* IN 2000 AND 2009

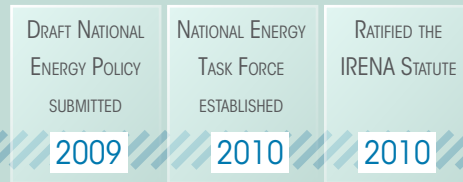


\*excluding electricity trade

2000: 5.1 PJ

2009: 6.9 PJ

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



WORLD BANK EASE OF DOING BUSINESS INDEX FOR 2012: Ranked 57 out of 183

RENEWABLE ENERGY PROJECTS FROM THE GOVERNMENT AND PRIVATE SECTORS (CAPACITY ADDITIONS):

- No information available

NUMBER OF REGISTERED CLEAN DEVELOPMENT MECHANISM PROJECTS FOCUSING ON RENEWABLE ENERGY: 0

RENEWABLE ENERGY RESOURCES:

● High ● Medium ● Low ● Unknown ✕ Not applicable

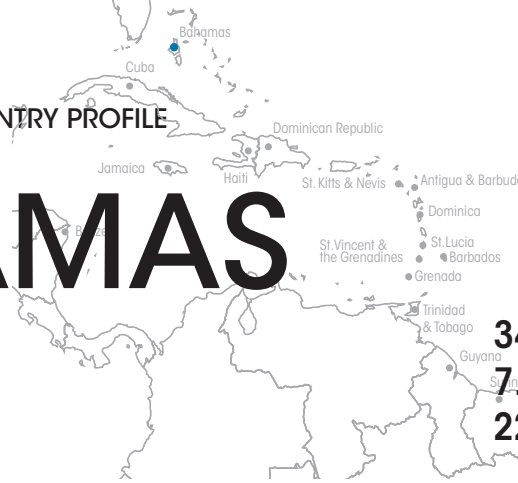
Wind ● Solar ● Hydro ● Biomass ● Geothermal ● Ocean ●

Note: The information on resources should be taken as an indication only. It refers to a general trend of available resources, and does not prejudice 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 UN data; Share of fuel imports in total imports: World Trade Organisation; Electrical capacity: IEA, EIA; Electricity access rate: World Energy Outlook 2011 database (IEA); Share of population using solid fuels: World Health Organisation; Targets: REN21, IRENA; Policy/legislation: IEA, Reegle, 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.

# BAHAMAS



**343,000** Population (2010)  
**7.8 billion USD** GDP (2010)  
**22,665 USD** GDP per capita (2010)

FIGURE 1: GDP PER CAPITA FOR 2010

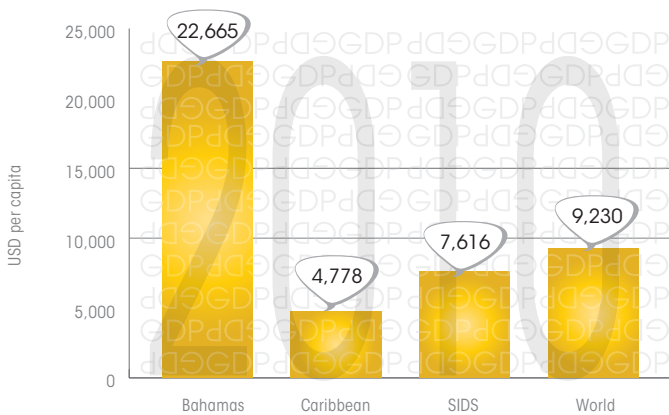
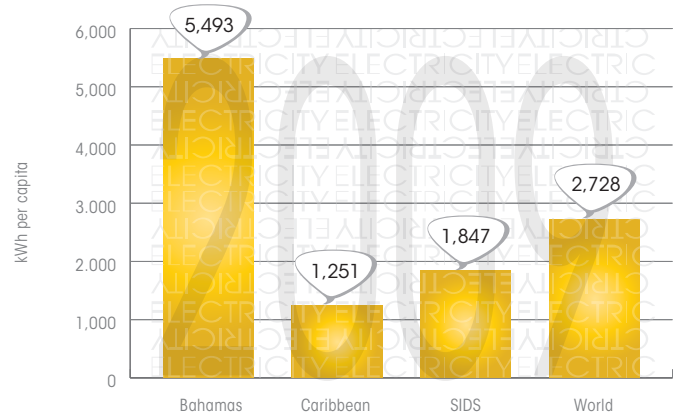


FIGURE 2: ELECTRICITY USE PER CAPITA FOR 2009



The Caribbean include Antigua and Barbuda, Bahamas, Barbados, Cuba, Dominica, the Dominican Republic, Grenada, Haiti, Jamaica, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, and Trinidad and Tobago.  
 SIDS include Antigua and Barbuda, Bahamas, Bahrain, Barbados, Belize, Cape Verde, Comoros, the Cook Islands, Cuba, Dominica, the Dominican Republic, Fiji, Grenada, Guinea-Bissau, Guyana, Haiti, Jamaica, Kiribati, the Maldives, the Marshall Islands, the Federated States of Micronesia, Mauritius, Nauru, Niue, Palau, Papua New Guinea, Samoa, Sao Tome and Principe, Singapore, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, the Seychelles, the Solomon Islands, Suriname, Timor-Leste, Tonga, Trinidad and Tobago, Tuvalu and Vanuatu.

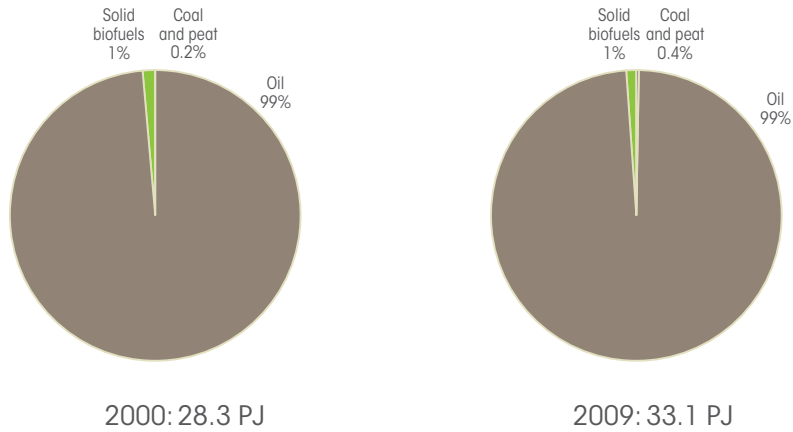
## ENERGY NATIONAL PROFILE 2009

- Total Primary Energy Supply: 33.1 PJ - Of which renewables: 0.3 PJ (1.0%)
- Energy self-sufficiency: 1.0%
- Fuel imports: 597 million USD (23.1% of total imports)
- Electricity generation: 2,139 GWh - Of which renewables: 0.0 GWh (0.0%)
- Electricity use per capita: 5,493 kWh
- Electrical capacity: 493 MW - Of which renewables: 0 MW (0.0%)
- Electricity access rate: 100.0%
- Share of population using solid fuels: < 5%

### TARGETS:

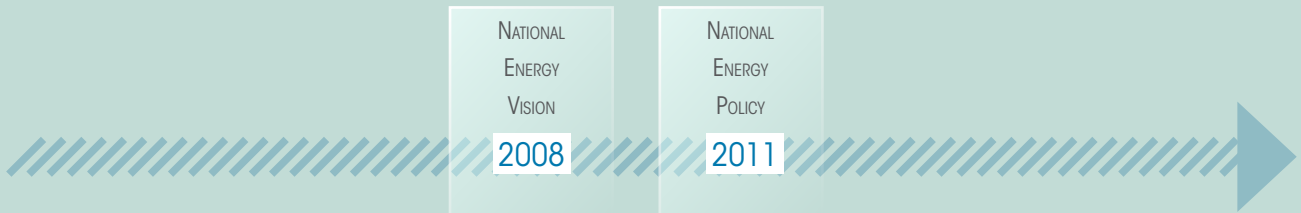
- No information available

FIGURE 3: TOTAL PRIMARY ENERGY SUPPLY\* IN 2000 AND 2009



\*excluding electricity trade

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



WORLD BANK EASE OF DOING BUSINESS INDEX FOR 2012: Ranked 85 out of 183

RENEWABLE ENERGY PROJECTS FROM THE GOVERNMENT AND PRIVATE SECTORS:

- 1 MW of wind capacity addition announced (1 project)

NUMBER OF REGISTERED CLEAN DEVELOPMENT MECHANISM PROJECTS FOCUSING ON RENEWABLE ENERGY: 0

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 prejudice 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 UN data; Share of fuel imports in total imports: World Trade Organisation; Electrical capacity: IEA, EIA; Electricity access rate: World Energy Outlook 2011 database (IEA); Share of population using solid fuels: World Health Organisation; Targets: REN21, IRENA; Policy/legislation: IEA, Reegle, 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.

# BAHRAIN

**1.3 million** Population (2010)  
**22.9 billion USD** GDP (2010)  
**18,184 USD** GDP per capita (2010)

FIGURE 1: GDP PER CAPITA FOR 2010

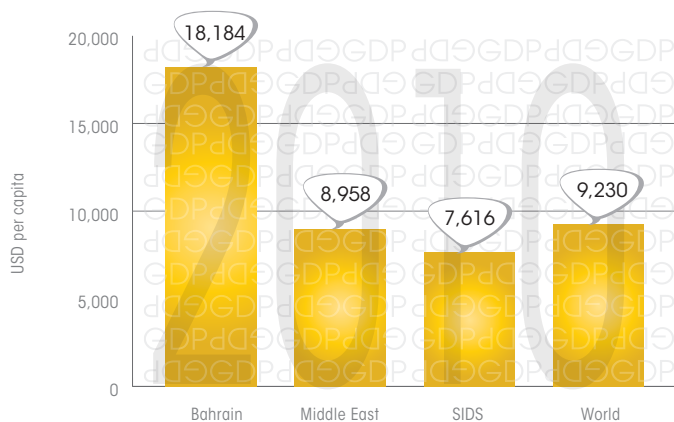
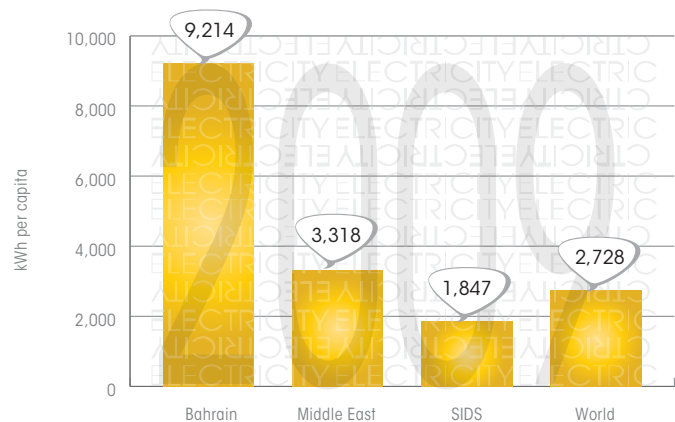


FIGURE 2: ELECTRICITY USE PER CAPITA FOR 2009



The Middle East includes Bahrain, the Islamic Republic of Iran, Iraq, Israel, Jordan, Kuwait, Lebanon, Oman, Qatar, Saudi Arabia, the Syrian Arab Republic, the United Arab Emirates and Yemen.

SIDS include Antigua and Barbuda, Bahamas, Bahrain, Barbados, Belize, Cape Verde, Comoros, the Cook Islands, Cuba, Dominica, the Dominican Republic, Fiji, Grenada, Guinea-Bissau, Guyana, Haiti, Jamaica, Kiribati, the Maldives, the Marshall Islands, the Federated States of Micronesia, Mauritius, Nauru, Niue, Palau, Papua New Guinea, Samoa, Sao Tome and Principe, Singapore, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, the Seychelles, the Solomon Islands, Suriname, Timor-Leste, Tonga, Trinidad and Tobago, Tuvalu and Vanuatu.

## ENERGY NATIONAL PROFILE 2009

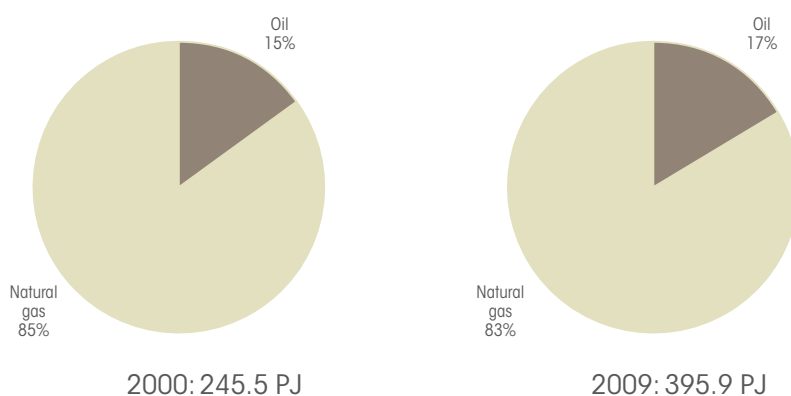
- Total Primary Energy Supply: 396.5 PJ - Of which renewables: 0.0 PJ (0.0%)
- Energy self-sufficiency: 185.3%
- Fuel imports: 224 million USD (2.2% of total imports)
- Electricity generation: 12.1 TWh - Of which renewables: 0.0 GWh (0.0%)
- Electricity use per capita: 9,214 kWh
- Electrical capacity: 3,168 MW - Of which renewables: 1 MW (0.0%)
- Electricity access rate: 99.4%
- Share of population using solid fuels: < 5%

### TARGETS:

- No information available



FIGURE 3: TOTAL PRIMARY ENERGY SUPPLY\* IN 2000 AND 2009



\*excluding electricity trade

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

RATIFIED  
THE IRENA  
STATUTE  
2012

WORLD BANK EASE OF DOING BUSINESS INDEX FOR 2012: Ranked 38 out of 183

RENEWABLE ENERGY PROJECTS FROM THE GOVERNMENT AND PRIVATE SECTORS:

- 25 MW of waste-to-energy capacity addition announced (1 project)

NUMBER OF REGISTERED CLEAN DEVELOPMENT MECHANISM PROJECTS FOCUSING ON RENEWABLE ENERGY: 0

RENEWABLE ENERGY RESOURCES: ● High ● Medium ● Low ● Unknown ✕ Not applicable

Wind ● Solar ● Hydro ● Biomass ● Geothermal ● Ocean ●

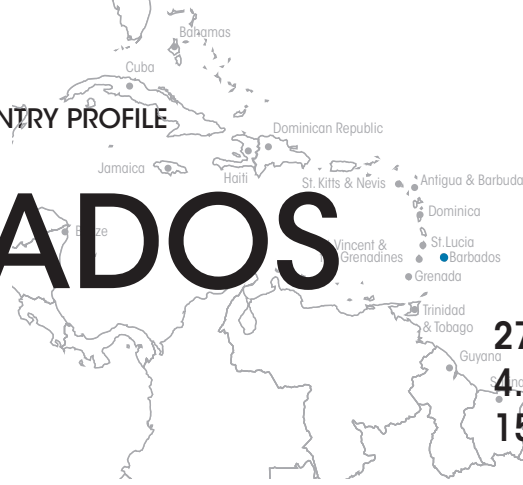
Note: The information on resources should be taken as an indication only. It refers to a general trend of available resources, and does not pre-judge the feasibility of individual projects. The thresholds are indicative, and do not refer to any technological choice. The analysis is based on the literature.

Sources: Population and GDP: World Bank; Energy data: IEA, IRENA analysis based on UN data; Share of fuel imports in total imports: World Trade Organisation; Electrical capacity: IEA, EIA; Electricity access rate: World Energy Outlook 2011 database (IEA); Share of population using solid fuels: World Health Organisation; Targets: REN21, IRENA; Policy/legislation: IEA, Reegle, 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.



# BARBADOS



**273,000** Population (2010)

**4.1 billion USD** GDP (2010)

**15,035 USD** GDP per capita (2010)

FIGURE 1: GDP PER CAPITA FOR 2010

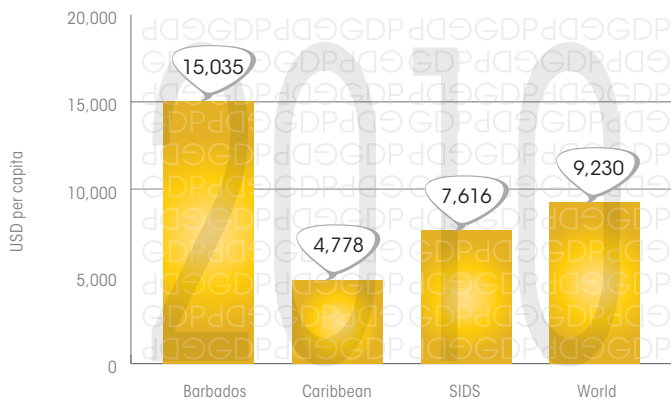
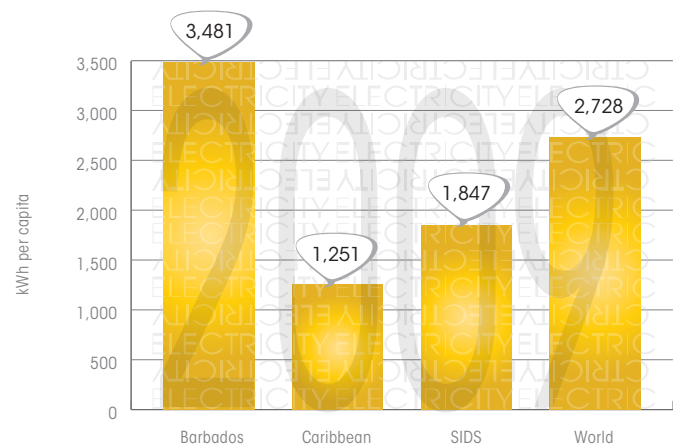


FIGURE 2: ELECTRICITY USE PER CAPITA FOR 2009



The Caribbean include Antigua and Barbuda, Bahamas, Barbados, Cuba, Dominica, the Dominican Republic, Grenada, Haiti, Jamaica, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, and Trinidad and Tobago.  
 SIDS include Antigua and Barbuda, Bahamas, Bahrain, Barbados, Belize, Cape Verde, Comoros, the Cook Islands, Cuba, Dominica, the Dominican Republic, Fiji, Grenada, Guinea-Bissau, Guyana, Haiti, Jamaica, Kiribati, the Maldives, the Marshall Islands, the Federated States of Micronesia, Mauritius, Nauru, Niue, Palau, Papua New Guinea, Samoa, Sao Tome and Principe, Singapore, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, the Seychelles, the Solomon Islands, Suriname, Timor-Leste, Tonga, Trinidad and Tobago, Tuvalu and Vanuatu.

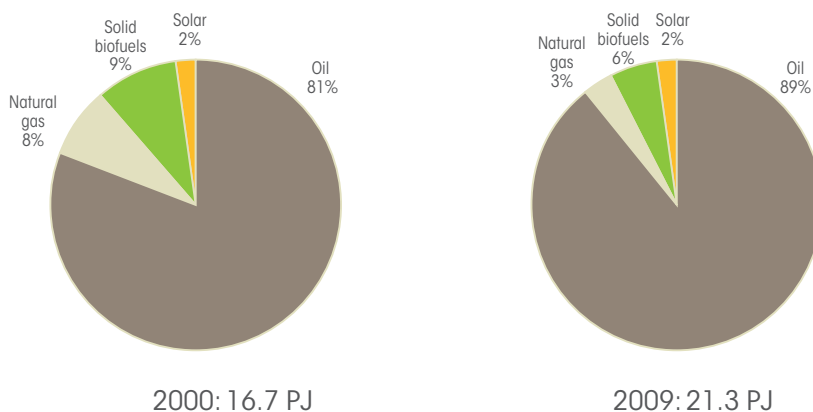
## ENERGY NATIONAL PROFILE 2009

- Total Primary Energy Supply: 21.3 PJ - Of which renewables: 1.6 PJ (7.5%)
- Energy self-sufficiency: 18.4%
- Fuel imports: 19 million USD (1.2% of total imports)
- Electricity generation: 1,068 GWh - Of which renewables: 0.0 GWh (0.0%)
- Electricity use per capita: 3,481 kWh
- Electrical capacity: 239 MW - Of which renewables: 0 MW (0.0%)
- Electricity access rate: 100.0%
- Share of population using solid fuels: < 5%

### TARGETS:

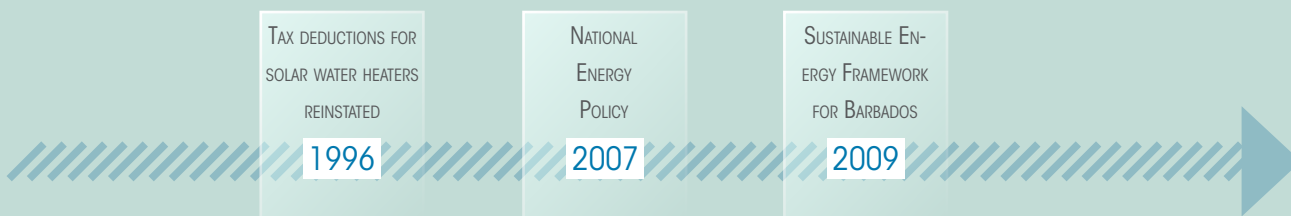
- 30% of electricity generation from renewables by 2012
- 10% of energy use from renewables by 2012
- 20% of energy use from renewables by 2026

FIGURE 3: TOTAL PRIMARY ENERGY SUPPLY\* IN 2000 AND 2009



\*excluding electricity trade

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



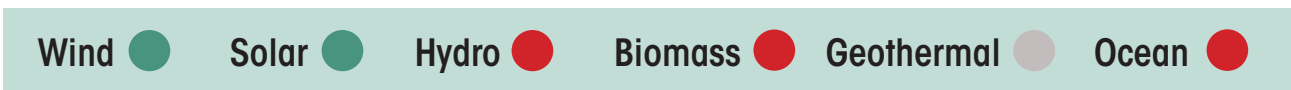
WORLD BANK EASE OF DOING BUSINESS INDEX FOR 2012: Not ranked

RENEWABLE ENERGY PROJECTS FROM THE GOVERNMENT AND PRIVATE SECTORS:

- 10 MW of wind capacity addition announced (1 project)

NUMBER OF REGISTERED CLEAN DEVELOPMENT MECHANISM PROJECTS FOCUSING ON RENEWABLE ENERGY: 0

RENEWABLE ENERGY RESOURCES: ● High ● Medium ● Low ● Unknown ✕ Not applicable

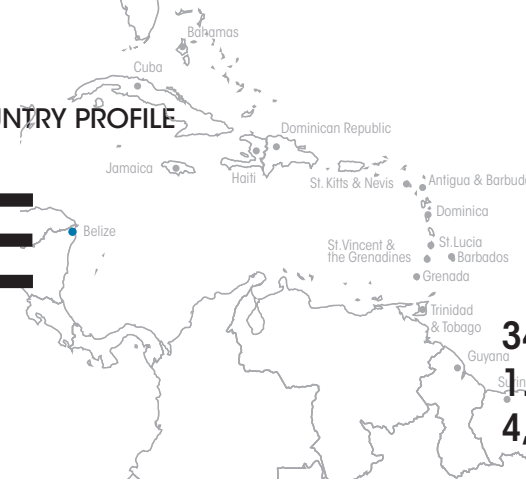


Note: The information on resources should be taken as an indication only. It refers to a general trend of available resources, and does not pre-judge the feasibility of individual projects. The thresholds are indicative, and do not refer to any technological choice. The analysis is based on the literature.

Sources: Population and GDP: World Bank; Energy data: IEA, IRENA analysis based on UN data; Share of fuel imports in total imports: World Trade Organisation; Electrical capacity: IEA, EIA; Electricity access rate: World Energy Outlook 2011 database (IEA); Share of population using solid fuels: World Health Organisation; Targets: REN21, IRENA; Policy/legislation: IEA, Reegle, 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.

# BELIZE



**345,000** Population (2010)  
**1.4 billion USD** GDP (2010)  
**4,064 USD** GDP per capita (2010)

FIGURE 1: GDP PER CAPITA FOR 2010

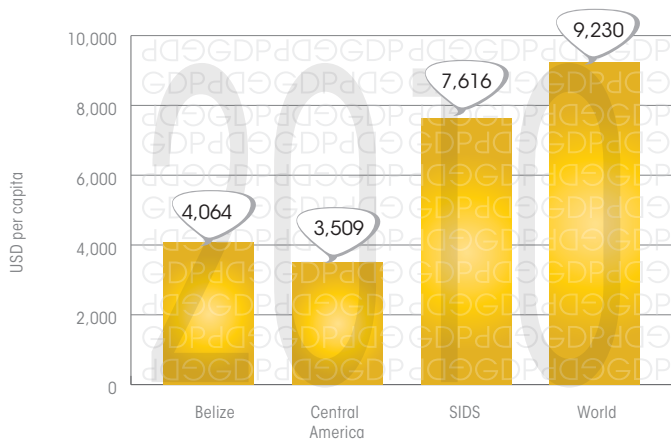
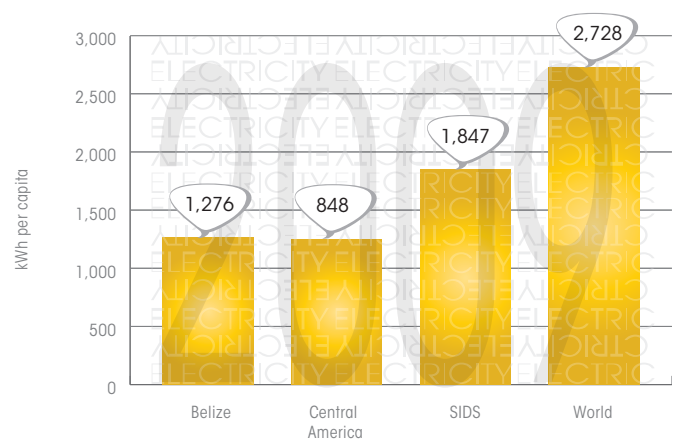


FIGURE 2: ELECTRICITY USE PER CAPITA FOR 2009



Central America includes Belize, Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua and Panama. Latin America includes Argentina, Belize, Bolivia, Brazil, Chile, Colombia, Costa Rica, Ecuador, El Salvador, Guatemala, Guyana, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, Suriname, Uruguay and Venezuela. SIDS include Antigua and Barbuda, Bahamas, Bahrain, Barbados, Belize, Cape Verde, Comoros, the Cook Islands, Cuba, Dominica, the Dominican Republic, Fiji, Grenada, Guinea-Bissau, Guyana, Haiti, Jamaica, Kiribati, the Maldives, the Marshall Islands, the Federated States of Micronesia, Mauritius, Nauru, Niue, Palau, Papua New Guinea, Samoa, Sao Tome and Principe, Singapore, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, the Seychelles, the Solomon Islands, Suriname, Timor-Leste, Tonga, Trinidad and Tobago, Tuvalu and Vanuatu.

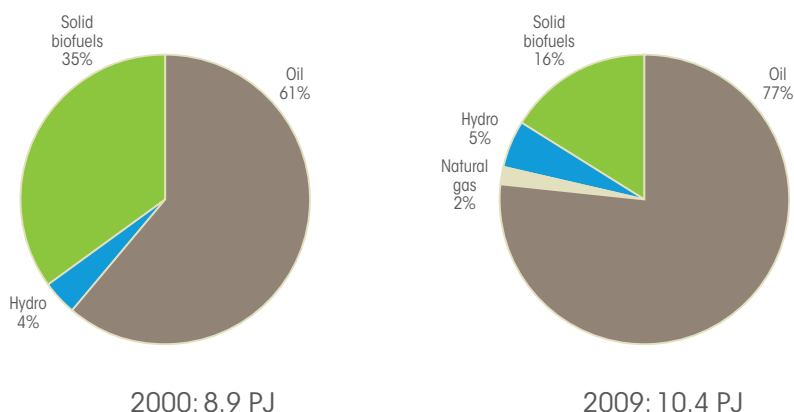
## ENERGY NATIONAL PROFILE 2009

- Total Primary Energy Supply: 11.2 PJ - Of which renewables: 2.2 PJ (19.8%)
- Energy self-sufficiency: 110.5%
- Fuel imports: 129 million USD (18.2% of total imports)
- Electricity generation: 264.5 GWh - Of which renewables: 194.9 GWh (73.7%)
- Electricity use per capita: 1,276 kWh
- Electrical capacity: 102 MW - Of which renewables: 68 MW (66.7%)
- Electricity access rate: 85.0%
- Share of population using solid fuels: 10%

### TARGETS:

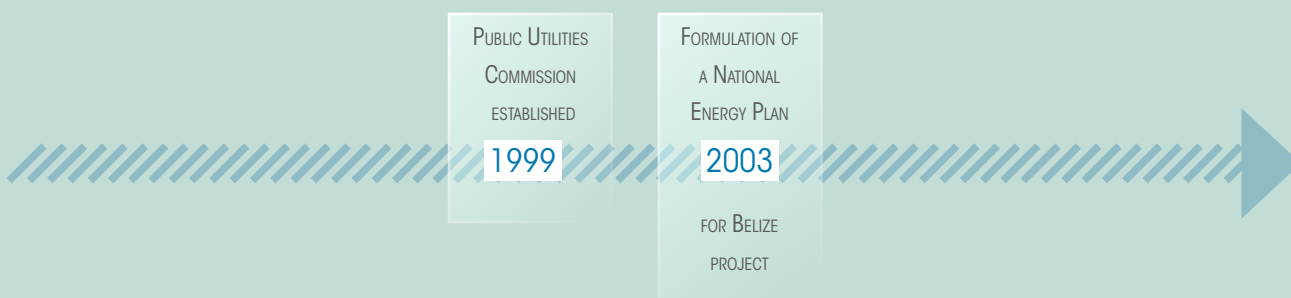
- No information available

FIGURE 3: TOTAL PRIMARY ENERGY SUPPLY\* IN 2000 AND 2009



\*excluding electricity trade

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



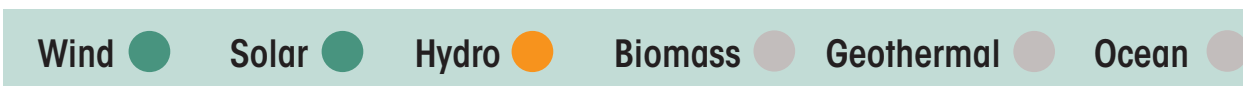
WORLD BANK EASE OF DOING BUSINESS INDEX FOR 2012: Ranked 93 out of 183

RENEWABLE ENERGY PROJECTS FROM THE GOVERNMENT AND PRIVATE SECTORS:

- 0.35 MW of solar photovoltaic capacity addition by 2012 (1 project)
- 189 million litres of biodiesel per year capacity addition announced (1 project)

NUMBER OF REGISTERED CLEAN DEVELOPMENT MECHANISM PROJECTS FOCUSING ON RENEWABLE ENERGY: 0

RENEWABLE ENERGY RESOURCES: ● High ● Medium ● Low ● Unknown ✕ Not applicable

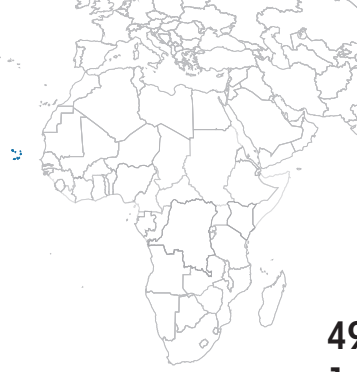


Note: The information on resources should be taken as an indication only. It refers to a general trend of available resources, and does not pre-judge the feasibility of individual projects. The thresholds are indicative, and do not refer to any technological choice. The analysis is based on the literature.

Sources: Population and GDP: World Bank; Energy data: IEA, IRENA analysis based on UN data; Share of fuel imports in total imports: World Trade Organisation; Electrical capacity: IEA, EIA; Electricity access rate: World Energy Outlook 2011 database (IEA); Share of population using solid fuels: World Health Organisation; Targets: REN21, IRENA; Policy/legislation: IEA, Reegle, 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.

# CAPE VERDE



**496,000** Population (2010)  
**1.7 billion USD** GDP (2010)  
**3,345 USD** GDP per capita (2010)

FIGURE 1: GDP PER CAPITA FOR 2010

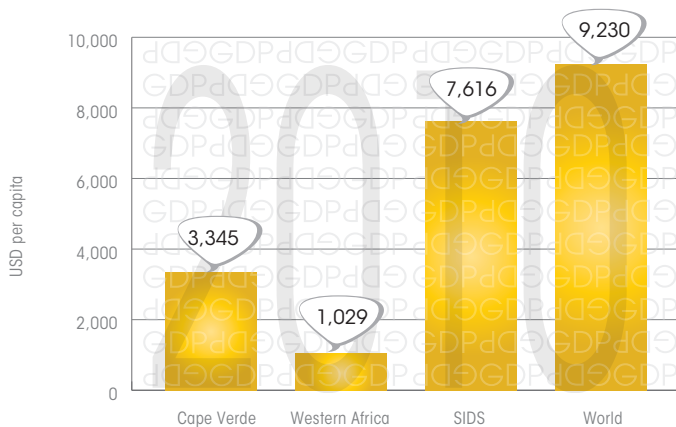
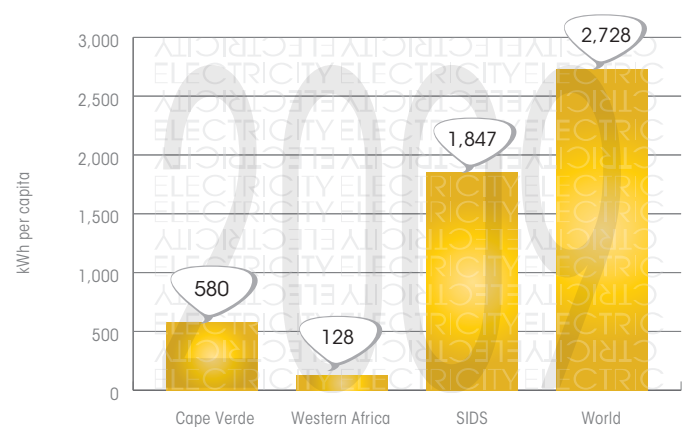


FIGURE 2: ELECTRICITY USE PER CAPITA FOR 2009



Western Africa includes Benin, Burkina Faso, Cape Verde, Côte d'Ivoire, Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Mali, Mauritania, Niger, Nigeria, Senegal, Sierra Leone and Togo.

SIDS include Antigua and Barbuda, Bahamas, Bahrain, Barbados, Belize, Cape Verde, Comoros, the Cook Islands, Cuba, Dominica, the Dominican Republic, Fiji, Grenada, Guinea-Bissau, Guyana, Haiti, Jamaica, Kiribati, the Maldives, the Marshall Islands, the Federated States of Micronesia, Mauritius, Nauru, Niue, Palau, Papua New Guinea, Samoa, Sao Tome and Principe, Singapore, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, the Seychelles, the Solomon Islands, Suriname, Timor-Leste, Tonga, Trinidad and Tobago, Tuvalu and Vanuatu.

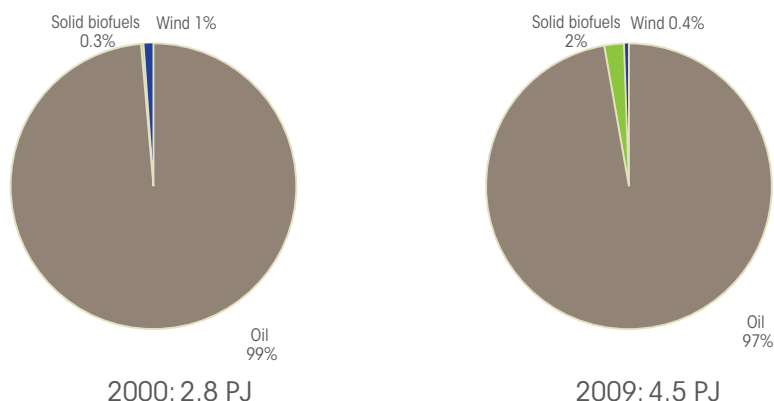
## ENERGY NATIONAL PROFILE 2009

- Total Primary Energy Supply: 4.5 PJ - Of which renewables: 0.0 PJ (0.9%)
- Energy self-sufficiency: 0.9%
- Fuel imports: 87 million USD (11.8% of total imports)
- Electricity generation: 296.0 GWh - Of which renewables: 5.0 GWh (1.7%)
- Electricity use per capita: 580 kWh
- Electrical capacity: 75 MW - Of which renewables: 3 MW (4.0%)
- Electricity access rate: 87.0%
- Share of population using solid fuels: 36%

### TARGETS:

- 50% of electricity generation from renewables by 2020

FIGURE 3: TOTAL PRIMARY ENERGY SUPPLY\* IN 2000 AND 2009



\*excluding electricity trade

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



WORLD BANK EASE OF DOING BUSINESS INDEX FOR 2012: Ranked 119 out of 183

RENEWABLE ENERGY PROJECTS FROM THE GOVERNMENT AND PRIVATE SECTORS:

- 29 MW of wind capacity addition announced (6 projects)

NUMBER OF REGISTERED CLEAN DEVELOPMENT MECHANISM PROJECTS FOCUSING ON RENEWABLE ENERGY: 0

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 pre-judge 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 UN data; Share of fuel imports in total imports: World Trade Organisation; Electrical capacity: IEA, EIA; Electricity access rate: World Energy Outlook 2011 database (IEA); Share of population using solid fuels: World Health Organisation; Targets: REN21, IRENA; Policy/legislation: IEA, Reegle, 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.

# COMOROS

**735,000** Population (2010)  
**541 million USD** GDP (2010)  
**736 USD** GDP per capita (2010)

FIGURE 1: GDP PER CAPITA FOR 2010

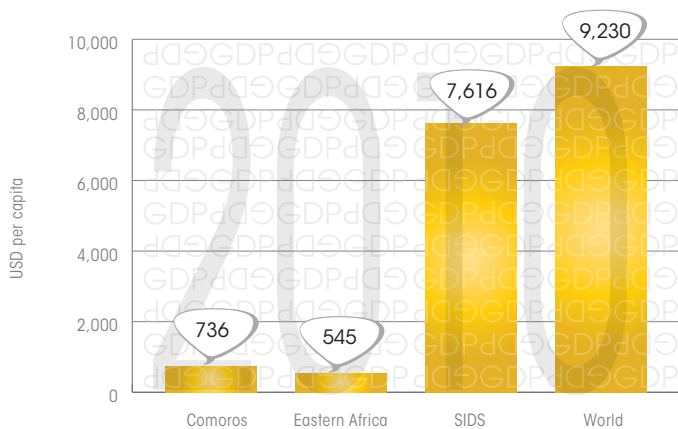
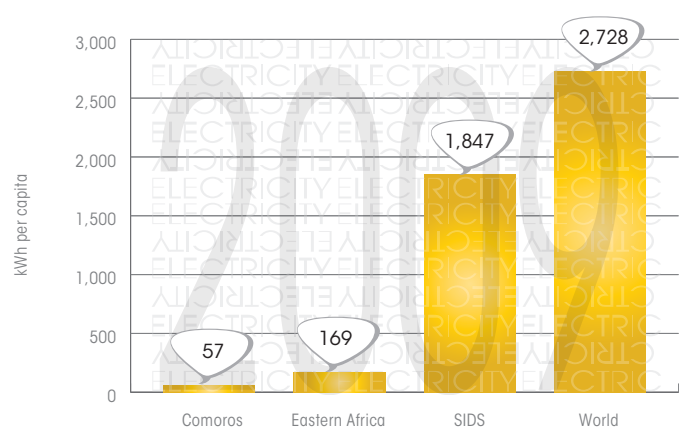


FIGURE 2: ELECTRICITY USE PER CAPITA FOR 2009



Eastern Africa includes Burundi, Comoros, Djibouti, Eritrea, Ethiopia, Kenya, Madagascar, Malawi, Mauritius, Mozambique, Rwanda, Seychelles, Somalia, the United Republic of Tanzania, Uganda, Zambia and Zimbabwe.  
 SIDS include Antigua and Barbuda, Bahamas, Bahrain, Barbados, Belize, Cape Verde, Comoros, the Cook Islands, Cuba, Dominica, the Dominican Republic, Fiji, Grenada, Guinea-Bissau, Guyana, Haiti, Jamaica, Kiribati, the Maldives, the Marshall Islands, the Federated States of Micronesia, Mauritius, Nauru, Niue, Palau, Papua New Guinea, Samoa, Sao Tome and Principe, Singapore, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, the Seychelles, the Solomon Islands, Suriname, Timor-Leste, Tonga, Trinidad and Tobago, Tuvalu and Vanuatu.

## ENERGY NATIONAL PROFILE 2009

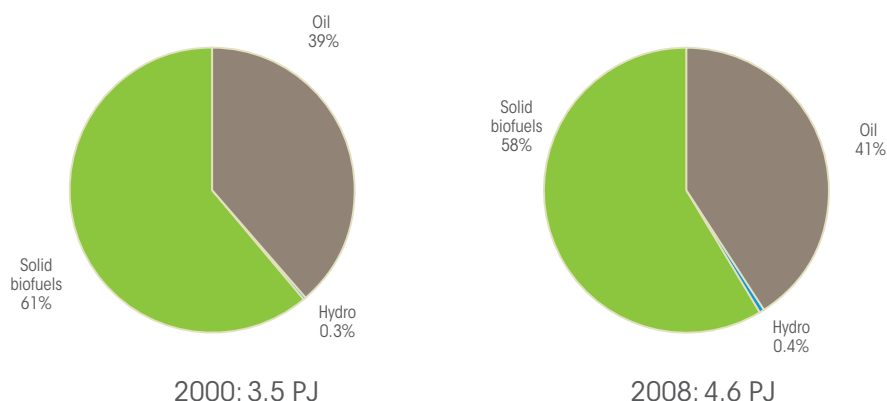
- Total Primary Energy Supply: 4.6 PJ - Of which renewables: 2.7 PJ (59.6%)
- Energy self-sufficiency: 59.6%
- Fuel imports: Not available
- Electricity generation: 43.0 GWh - Of which renewables: 5.0 GWh (11.6%)
- Electricity use per capita: 57 kWh
- Electrical capacity: 6 MW - Of which renewables: 1 MW (16.7 %)
- Electricity access rate: 46.0%
- Share of population using solid fuels: 76%

### TARGETS:

- No information available

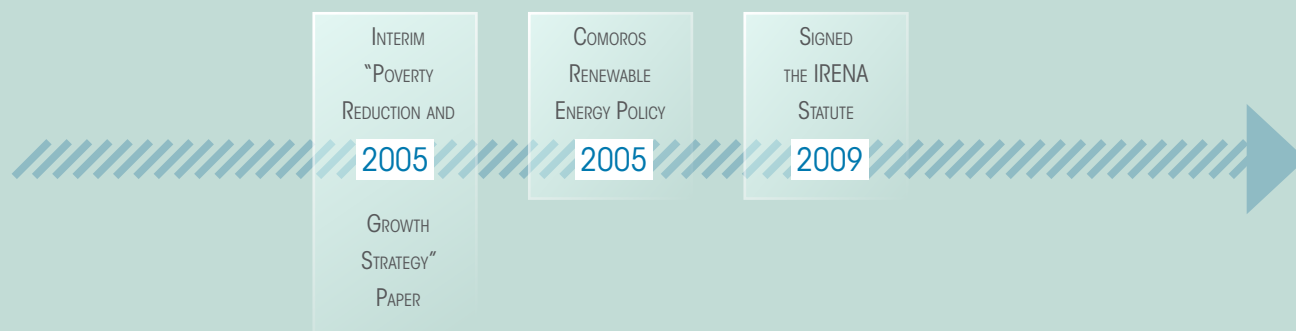


FIGURE 3: TOTAL PRIMARY ENERGY SUPPLY\* IN 2000 AND 2009



\*excluding electricity trade

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



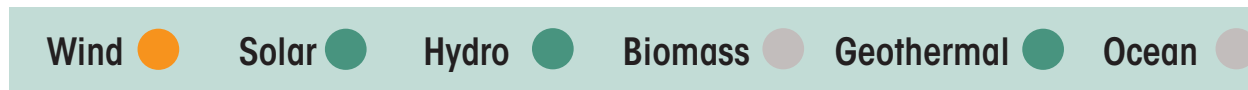
WORLD BANK EASE OF DOING BUSINESS INDEX FOR 2012: Ranked 157 out of 183

RENEWABLE ENERGY PROJECTS FROM THE GOVERNMENT AND PRIVATE SECTORS:

- Electrification of six villages with solar photovoltaic micro-power station

NUMBER OF REGISTERED CLEAN DEVELOPMENT MECHANISM PROJECTS FOCUSING ON RENEWABLE ENERGY: 0

RENEWABLE ENERGY RESOURCES: ● High ● Medium ● Low ● Unknown ✕ Not applicable

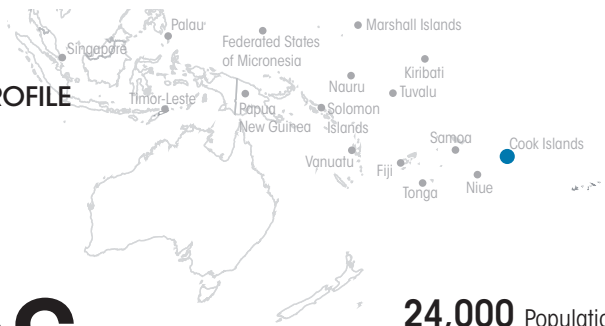


Note: The information on resources should be taken as an indication only. It refers to a general trend of available resources, and does not pre-judge the feasibility of individual projects. The thresholds are indicative, and do not refer to any technological choice. The analysis is based on the literature.

Sources: Population and GDP: World Bank; Energy data: IEA, IRENA analysis based on UN data; Share of fuel imports in total imports: World Trade Organisation; Electrical capacity: IEA, EIA; Electricity access rate: World Energy Outlook 2011 database (IEA); Share of population using solid fuels: World Health Organisation; Targets: REN21, IRENA; Policy/Legislation: IEA, Reegle, 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.





# COOK ISLANDS

**24,000** Population (2010)  
**Not available** GDP (2010)  
**Not available** GDP per capita (2010)

FIGURE 1: GDP PER CAPITA FOR 2010

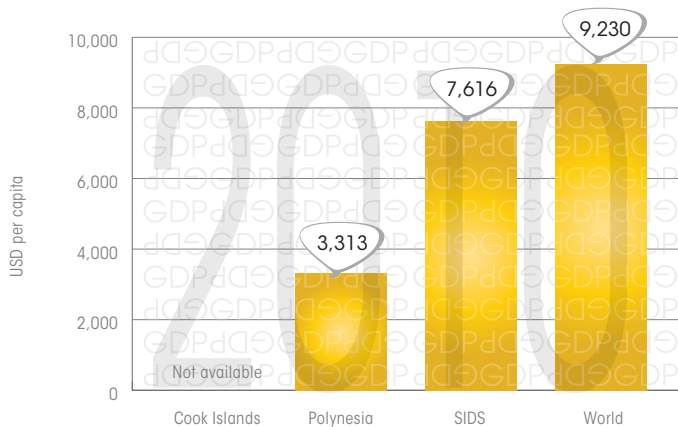
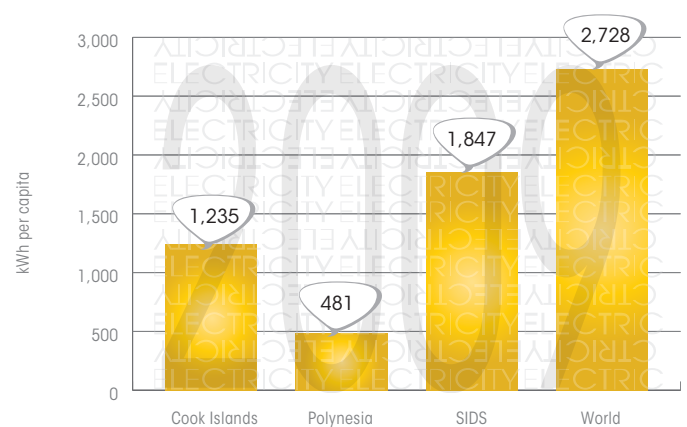


FIGURE 2: ELECTRICITY USE PER CAPITA FOR 2009



Polynesia includes the Cook Islands, Niue, Samoa, Tonga and Tuvalu. SIDS include Antigua and Barbuda, Bahamas, Bahrain, Barbados, Belize, Cape Verde, Comoros, the Cook Islands, Cuba, Dominica, the Dominican Republic, Fiji, Grenada, Guinea-Bissau, Guyana, Haiti, Jamaica, Kiribati, the Maldives, the Marshall Islands, the Federated States of Micronesia, Mauritius, Nauru, Niue, Palau, Papua New Guinea, Samoa, Sao Tome and Principe, Singapore, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, the Seychelles, the Solomon Islands, Suriname, Timor-Leste, Tonga, Trinidad and Tobago, Tuvalu and Vanuatu.

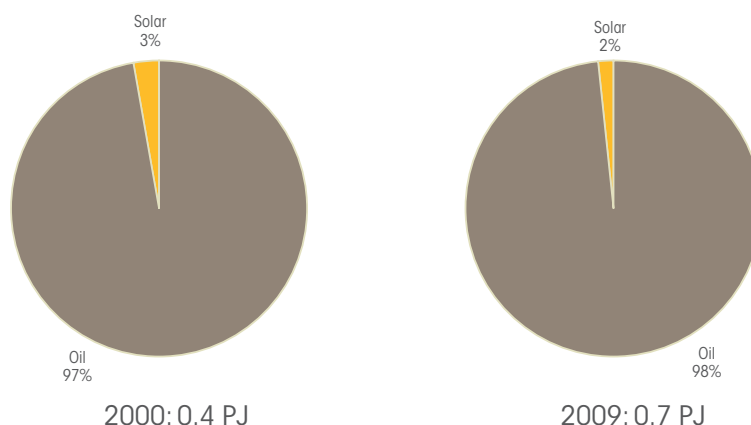
## ENERGY NATIONAL PROFILE 2009

- Total Primary Energy Supply: 0.7 PJ – Of which renewables: 0.0 PJ (1.6%)
- Energy self-sufficiency: 1.6%
- Fuel imports: Not available
- Electricity generation: 32.8 GWh – Of which renewables: 0.1 GWh (0.3%)
- Electricity use per capita: 1,235 kWh
- Electrical capacity: 8.08 MW – Of which renewables: 0.08 MW (1.0%)
- Electricity access rate: 99.0%
- Share of population using solid fuels: < 5%

### TARGETS:

- 50% of electricity generation from renewables by 2015
- 100% of electricity generation from renewables by 2020

FIGURE 3: TOTAL PRIMARY ENERGY SUPPLY\* IN 2000 AND 2009



\*excluding electricity trade

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



WORLD BANK EASE OF DOING BUSINESS INDEX FOR 2012: Not ranked

RENEWABLE ENERGY PROJECTS FROM THE GOVERNMENT AND PRIVATE SECTORS:

- No information available

NUMBER OF REGISTERED CLEAN DEVELOPMENT MECHANISM PROJECTS FOCUSING ON RENEWABLE ENERGY: 0

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 pre-judge 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 UN data; Share of fuel imports in total imports: World Trade Organisation; Electrical capacity: IEA, EIA; Electricity access rate: World Energy Outlook 2011 database (IEA); Share of population using solid fuels: World Health Organisation; Targets: REN21, IRENA; Policy/legislation: IEA, Reegle, 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.

# CUBA



**11.3 million** Population (2010)  
**64.2 billion USD** GDP (2010)  
**5,704 USD** GDP per capita (2010)

FIGURE 1: GDP PER CAPITA FOR 2010

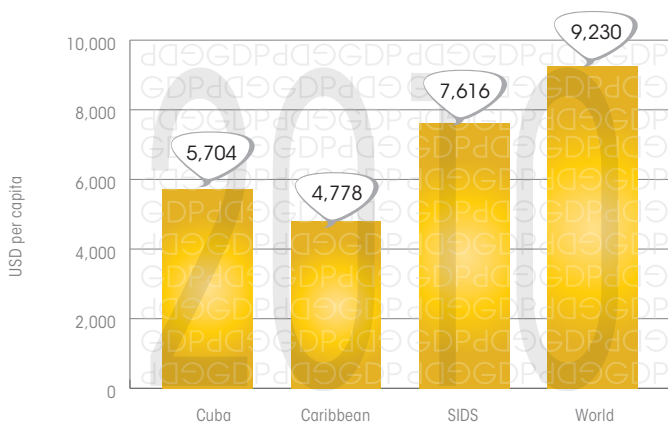
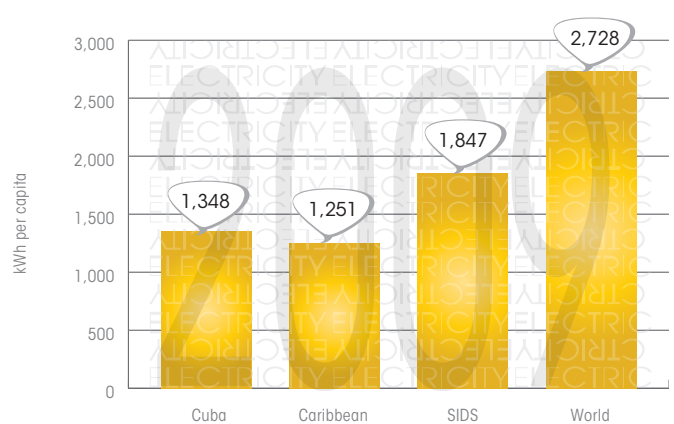


FIGURE 2: ELECTRICITY USE PER CAPITA FOR 2009



The Caribbean include Antigua and Barbuda, Bahamas, Barbados, Cuba, Dominica, the Dominican Republic, Grenada, Haiti, Jamaica, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, and Trinidad and Tobago.  
 SIDS include Antigua and Barbuda, Bahamas, Bahrain, Barbados, Belize, Cape Verde, Comoros, the Cook Islands, Cuba, Dominica, the Dominican Republic, Fiji, Grenada, Guinea-Bissau, Guyana, Haiti, Jamaica, Kiribati, the Maldives, the Marshall Islands, the Federated States of Micronesia, Mauritius, Nauru, Niue, Palau, Papua New Guinea, Samoa, Sao Tome and Principe, Singapore, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, the Seychelles, the Solomon Islands, Suriname, Timor-Leste, Tonga, Trinidad and Tobago, Tuvalu and Vanuatu.

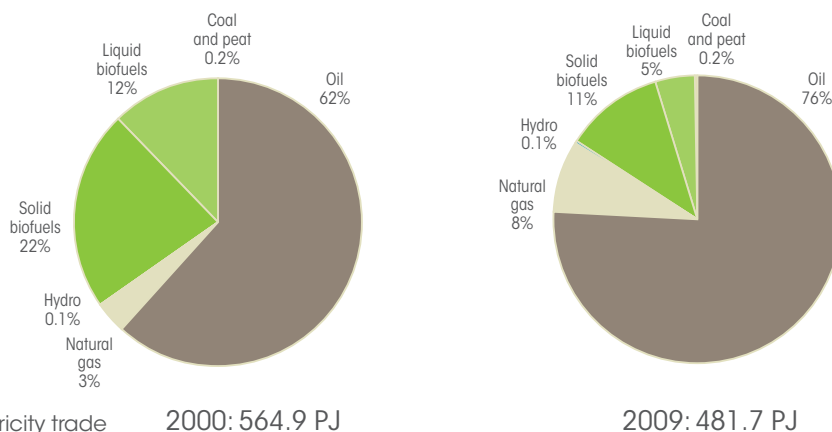
## ENERGY NATIONAL PROFILE 2009

- Total Primary Energy Supply: 481.7 PJ - Of which renewables: 76.6 PJ (15.9%)
- Energy self-sufficiency: 48.4%
- Fuel imports: Not available
- Electricity generation: 17.7 TWh - Of which renewables: 672.0 GWh (3.8%)
- Electricity use per capita: 1,348 kWh
- Electrical capacity: 5.5 GW - Of which renewables: 65 MW (1.2%)
- Electricity access rate: 97.0%
- Share of population using solid fuels: 5%

### TARGETS:

- No information available

FIGURE 3: TOTAL PRIMARY ENERGY SUPPLY\* IN 2000 AND 2009

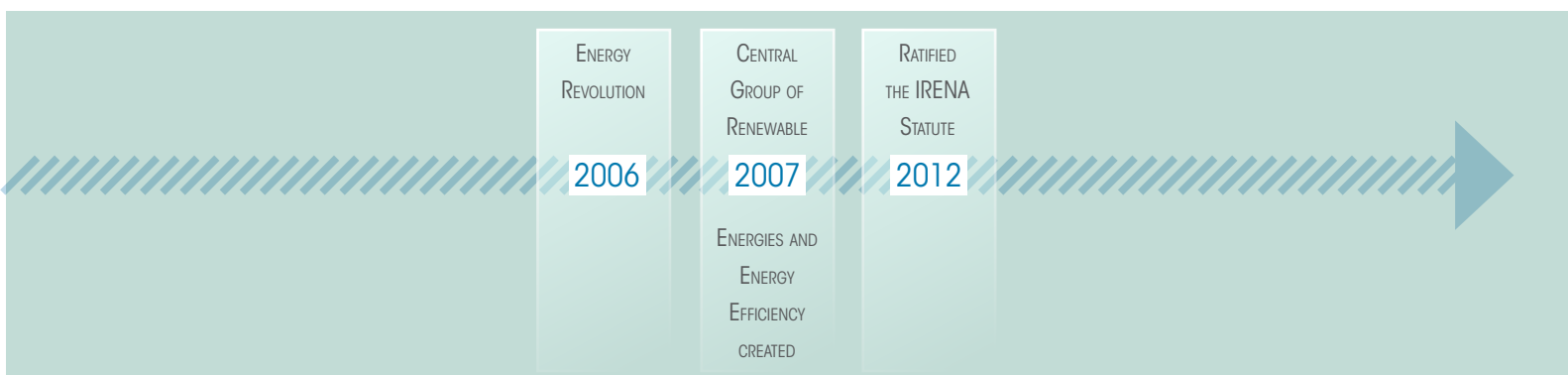


\*excluding electricity trade

2000: 564.9 PJ

2009: 481.7 PJ

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



WORLD BANK EASE OF DOING BUSINESS INDEX FOR 2012: Not ranked

RENEWABLE ENERGY PROJECTS FROM THE GOVERNMENT AND PRIVATE SECTORS:

- 10 MW of biomass-fired capacity addition announced (1 project)

NUMBER OF REGISTERED CLEAN DEVELOPMENT MECHANISM PROJECTS FOCUSING ON RENEWABLE ENERGY: 1

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 prejudice 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 UN data; Share of fuel imports in total imports: World Trade Organisation; Electrical capacity: IEA, EIA; Electricity access rate: World Energy Outlook 2011 database (IEA); Share of population using solid fuels: World Health Organisation; Targets: REN21, IRENA; Policy/legislation: IEA, Reegle, 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.

# DOMINICA



**68,000** Population (2010)  
**472 million USD** GDP (2010)  
**6,964 USD** GDP per capita (2010)

FIGURE 1: GDP PER CAPITA FOR 2010

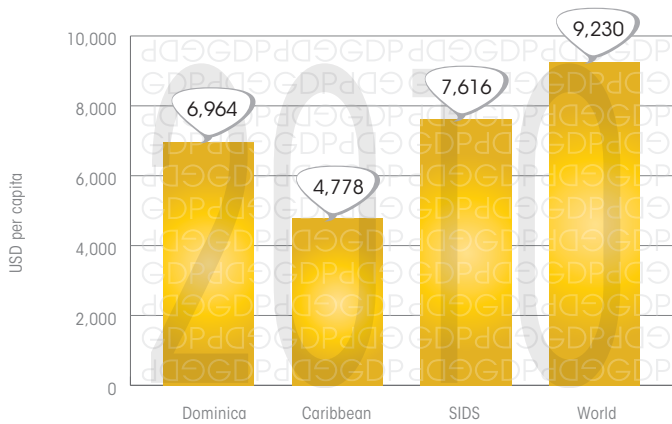
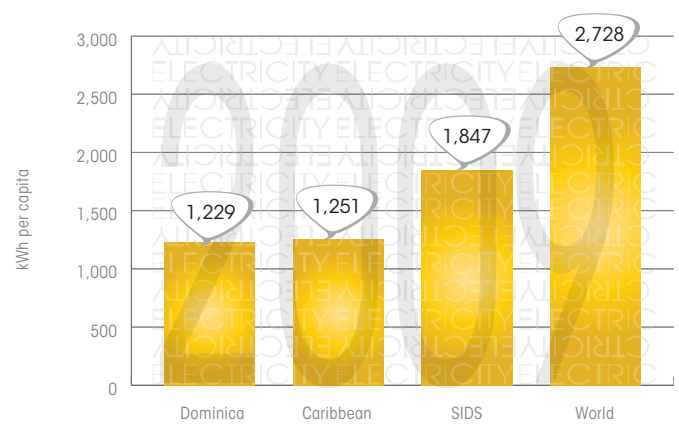


FIGURE 2: ELECTRICITY USE PER CAPITA FOR 2009



The Caribbean include Antigua and Barbuda, Bahamas, Barbados, Cuba, Dominica, the Dominican Republic, Grenada, Haiti, Jamaica, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, and Trinidad and Tobago.  
 SIDS include Antigua and Barbuda, Bahamas, Bahrain, Barbados, Belize, Cape Verde, Comoros, the Cook Islands, Cuba, Dominica, the Dominican Republic, Fiji, Grenada, Guinea-Bissau, Guyana, Haiti, Jamaica, Kiribati, the Maldives, the Marshall Islands, the Federated States of Micronesia, Mauritius, Nauru, Niue, Palau, Papua New Guinea, Samoa, Sao Tome and Principe, Singapore, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, the Seychelles, the Solomon Islands, Suriname, Timor-Leste, Tonga, Trinidad and Tobago, Tuvalu and Vanuatu.

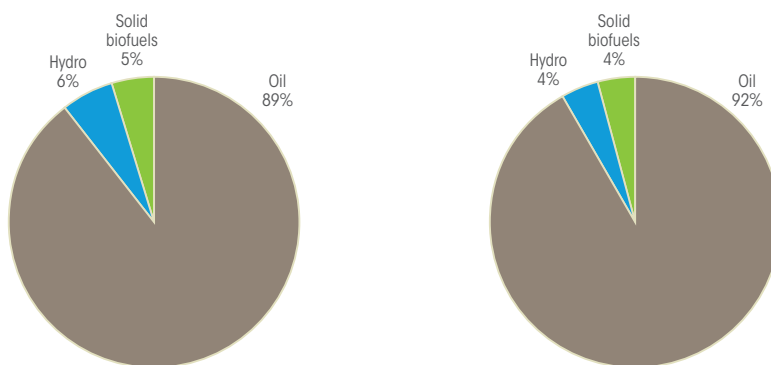
## ENERGY NATIONAL PROFILE 2009

- Total Primary Energy Supply: 2.0 PJ - Of which renewables: 0.2 PJ (8.3%)
- Energy self-sufficiency: 8.3%
- Fuel imports: 41 million USD (17.2% of total imports)
- Electricity generation: 92.7 GWh - Of which renewables: 23.2 GWh (25.0%)
- Electricity use per capita: 1,229 kWh
- Electrical capacity: 24.3 MW - Of which renewables: 4.8 MW (19.8%)
- Electricity access rate: > 90%
- Share of population using solid fuels: Not available

### TARGETS:

- No information available

FIGURE 3: TOTAL PRIMARY ENERGY SUPPLY\* IN 2000 AND 2009

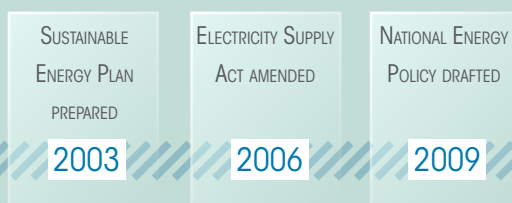


\*excluding electricity trade

2000: 1.9 PJ

2009: 2.0 PJ

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



WORLD BANK EASE OF DOING BUSINESS INDEX FOR 2012: Ranked 65 out of 183

RENEWABLE ENERGY PROJECTS FROM THE GOVERNMENT AND PRIVATE SECTORS:

- No information available

NUMBER OF REGISTERED CLEAN DEVELOPMENT MECHANISM PROJECTS FOCUSING ON RENEWABLE ENERGY: 0

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 UN data; Share of fuel imports in total imports: World Trade Organisation; Electrical capacity: IEA, EIA; Electricity access rate: World Energy Outlook 2011 database (IEA); Share of population using solid fuels: World Health Organisation; Targets: REN21, IRENA; Policy/legislation: IEA, Reegle, 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.

# DOMINICAN REPUBLIC

**9.9 million** Population (2010)

**51.6 billion USD** GDP (2010)

**5,195 USD** GDP per capita (2010)

FIGURE 1: GDP PER CAPITA FOR 2010

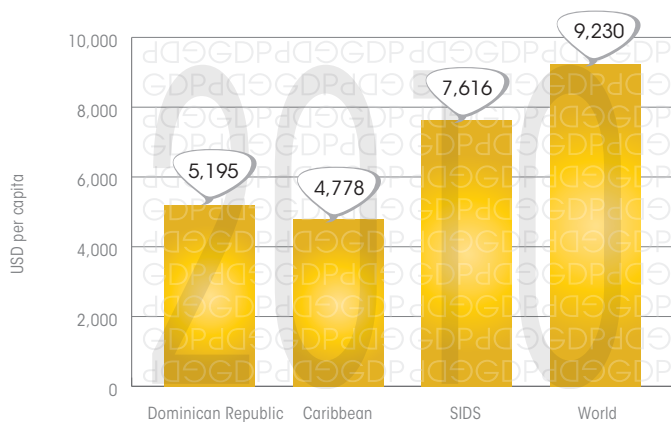
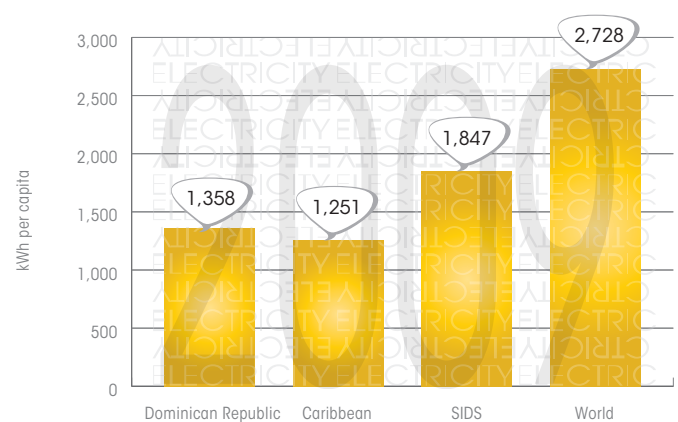


FIGURE 2: ELECTRICITY USE PER CAPITA FOR 2009



The Caribbean include Antigua and Barbuda, Bahamas, Barbados, Cuba, Dominica, the Dominican Republic, Grenada, Haiti, Jamaica, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, and Trinidad and Tobago.  
 SIDS include Antigua and Barbuda, Bahamas, Bahrain, Barbados, Belize, Cape Verde, Comoros, the Cook Islands, Cuba, Dominica, the Dominican Republic, Fiji, Grenada, Guinea-Bissau, Guyana, Haiti, Jamaica, Kiribati, the Maldives, the Marshall Islands, the Federated States of Micronesia, Mauritius, Nauru, Niue, Palau, Papua New Guinea, Samoa, Sao Tome and Principe, Singapore, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, the Seychelles, the Solomon Islands, Suriname, Timor-Leste, Tonga, Trinidad and Tobago, Tuvalu and Vanuatu.

## ENERGY NATIONAL PROFILE 2009

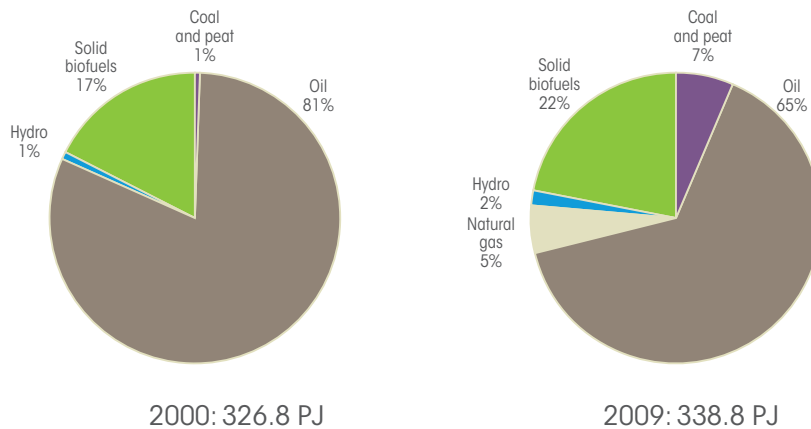
- Total Primary Energy Supply: 338.8 PJ - Of which renewables: 79.2 PJ (23.4%)
- Energy self-sufficiency: 23.4%
- Fuel imports: 3.7 billion USD (24.3% of total imports)
- Electricity generation: 15.0 TWh - Of which renewables: 1,493 GWh (10.0%)
- Electricity use per capita: 1,358 kWh
- Electrical capacity: 2,973 MW - Of which renewables: 504 MW (17.0%)
- Electricity access rate: 95.9%
- Share of population using solid fuels: 7%

### TARGETS:

- 10% of electricity generation from renewables by 2015
- 25% of electricity generation from renewables by 2020
- 500 MW of wind capacity by 2015

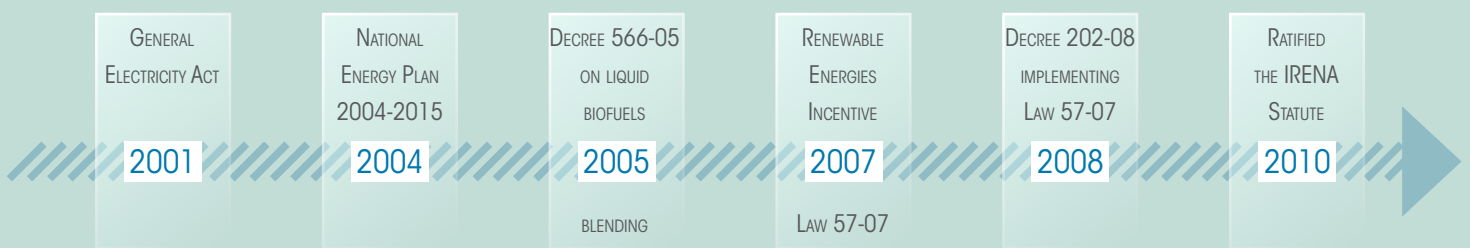


FIGURE 3: TOTAL PRIMARY ENERGY SUPPLY\* IN 2000 AND 2009



\*excluding electricity trade

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



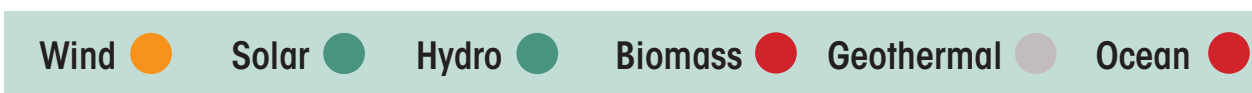
WORLD BANK EASE OF DOING BUSINESS INDEX FOR 2012: Ranked 108 out of 183

RENEWABLE ENERGY PROJECTS FROM THE GOVERNMENT AND PRIVATE SECTORS:

- 379 million litres of ethanol per year capacity addition by the end of 2012 (1 project)
- About 170 million litres of ethanol per year capacity addition announced (2 projects)
- 20 MW of solar photovoltaic capacity addition announced (1 project)
- About 400 MW of wind capacity addition announced (8 projects)

NUMBER OF REGISTERED CLEAN DEVELOPMENT MECHANISM PROJECTS FOCUSING ON RENEWABLE ENERGY: 2

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 pre-judge 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 UN data; Share of fuel imports in total imports: World Trade Organisation; Electrical capacity: IEA, EIA; Electricity access rate: World Energy Outlook 2011 database (IEA); Share of population using solid fuels: World Health Organisation; Targets: REN21, IRENA; Policy/legislation: IEA, Reegle, 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.



# FIJI



**861,000** Population (2010)  
**3.2 billion USD** GDP (2010)  
**3,687 USD** GDP per capita (2010)

FIGURE 1: GDP PER CAPITA FOR 2010

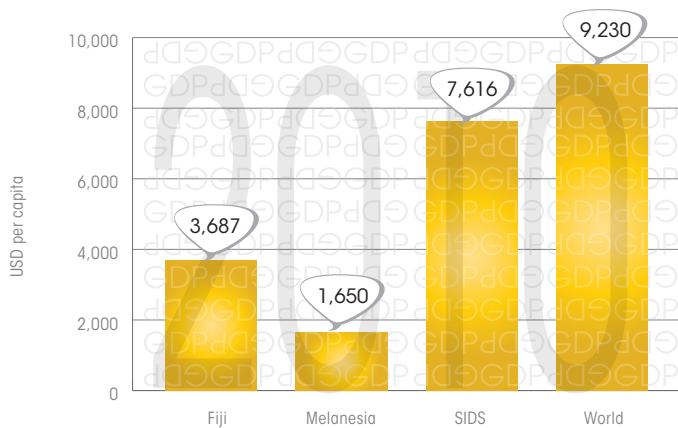
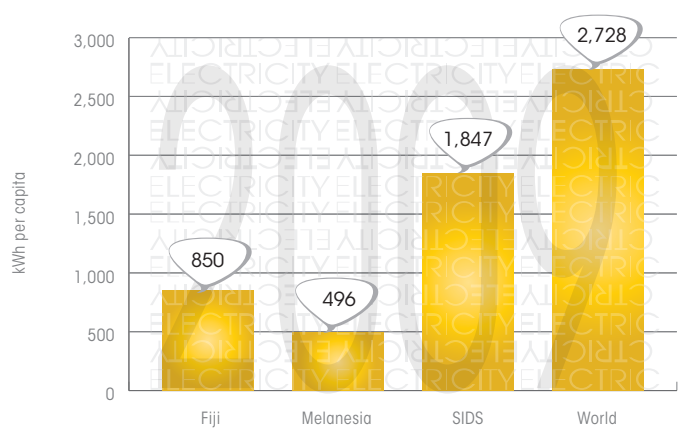


FIGURE 2: ELECTRICITY USE PER CAPITA FOR 2009



Melanesia includes Fiji, Papua New Guinea, the Solomon Islands and Vanuatu.

SIDS include Antigua and Barbuda, Bahamas, Bahrain, Barbados, Belize, Cape Verde, Comoros, the Cook Islands, Cuba, Dominica, the Dominican Republic, Fiji, Grenada, Guinea-Bissau, Guyana, Haiti, Jamaica, Kiribati, the Maldives, the Marshall Islands, the Federated States of Micronesia, Mauritius, Nauru, Niue, Palau, Papua New Guinea, Samoa, Sao Tome and Principe, Singapore, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, the Seychelles, the Solomon Islands, Suriname, Timor-Leste, Tonga, Trinidad and Tobago, Tuvalu and Vanuatu.

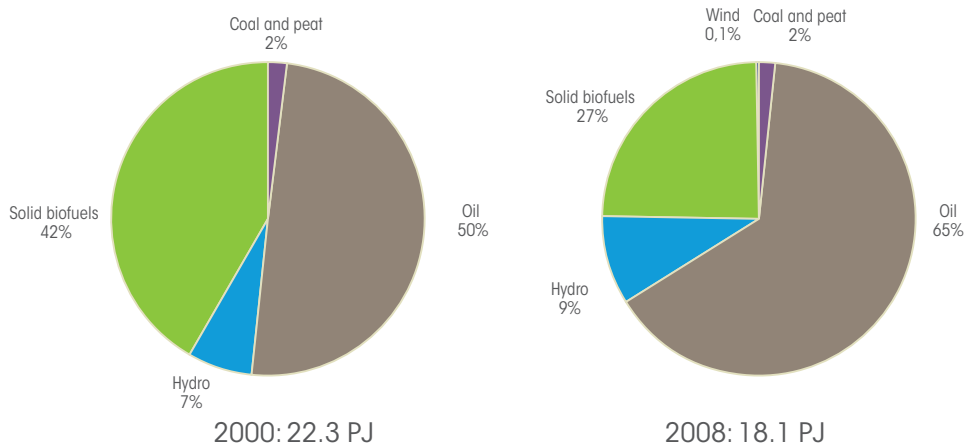
## ENERGY NATIONAL PROFILE 2009

- Total Primary Energy Supply: 18.1 PJ – Of which renewables: 6.1 PJ (33.6%)
- Energy self-sufficiency: 33.6%
- Fuel imports: 473 million USD (30.9% of total imports)
- Electricity generation: 793.5 GWh – Of which renewables: 467.4 GWh (58.9%)
- Electricity use per capita: 850 kWh
- Electrical capacity: 215 MW – Of which renewables: 121 MW (56.3%)
- Electricity access rate: 90.0%
- Share of population using solid fuels: Not available

### TARGETS:

- 100% of final energy from renewables by 2013

FIGURE 3: TOTAL PRIMARY ENERGY SUPPLY\* IN 2000 AND 2008



\*excluding electricity trade

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



WORLD BANK EASE OF DOING BUSINESS INDEX FOR 2012: Ranked 77 out of 183

RENEWABLE ENERGY PROJECTS FROM THE GOVERNMENT AND PRIVATE SECTORS:

- 10 MW of biomass-fired capacity addition by 2013 (1 project)

NUMBER OF REGISTERED CLEAN DEVELOPMENT MECHANISM PROJECTS FOCUSING ON RENEWABLE ENERGY: 1

RENEWABLE ENERGY RESOURCES: ● High ● Medium ● Low ● Unknown ✕ Not applicable

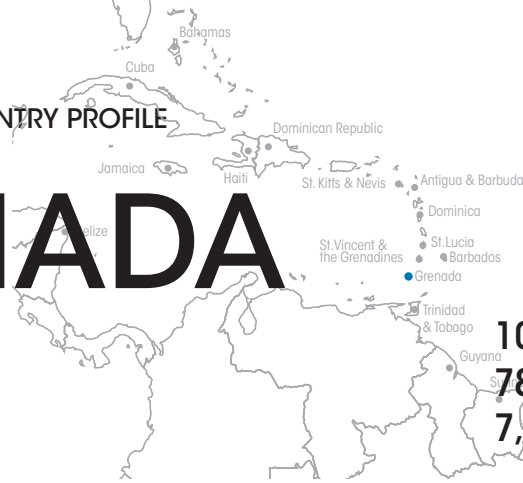
Wind ● Solar ● Hydro ● Biomass ● Geothermal ● Ocean ●

Note: The information on resources should be taken as an indication only. It refers to a general trend of available resources, and does not pre-judge 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 UN data; Share of fuel imports in total imports: World Trade Organisation; Electrical capacity: IEA, EIA; Electricity access rate: World Energy Outlook 2011 database (IEA); Share of population using solid fuels: World Health Organisation; Targets: REN21, IRENA; Policy/legislation: IEA, Reegle, 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.

# GRENADA



**104,000** Population (2010)  
**784 million USD** GDP (2010)  
**7,500 USD** GDP per capita (2010)

FIGURE 1: GDP PER CAPITA FOR 2010

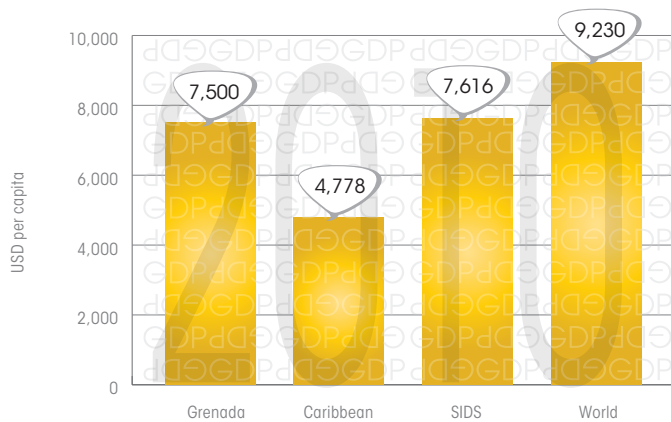
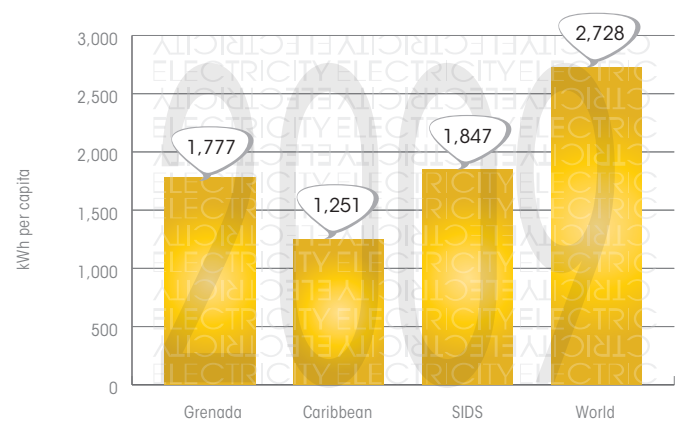


FIGURE 2: ELECTRICITY USE PER CAPITA FOR 2009



The Caribbean include Antigua and Barbuda, Bahamas, Barbados, Cuba, Dominica, the Dominican Republic, Grenada, Haiti, Jamaica, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, and Trinidad and Tobago.

SIDS include Antigua and Barbuda, Bahamas, Bahrain, Barbados, Belize, Cape Verde, Comoros, the Cook Islands, Cuba, Dominica, the Dominican Republic, Fiji, Grenada, Guinea-Bissau, Guyana, Haiti, Jamaica, Kiribati, the Maldives, the Marshall Islands, the Federated States of Micronesia, Mauritius, Nauru, Niue, Palau, Papua New Guinea, Samoa, Sao Tome and Principe, Singapore, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, the Seychelles, the Solomon Islands, Suriname, Timor-Leste, Tonga, Trinidad and Tobago, Tuvalu and Vanuatu.

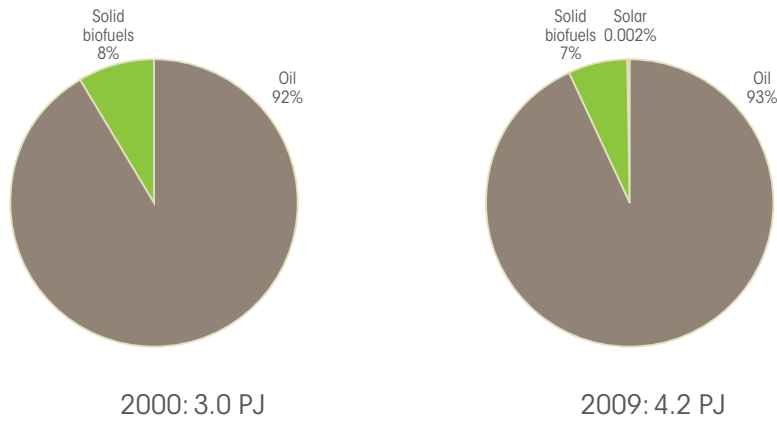
## ENERGY NATIONAL PROFILE 2009

- Total Primary Energy Supply: 4.2 PJ - Of which renewables: 0.3 PJ (6.7%)
- Energy self-sufficiency: 6.7%
- Fuel imports: 42 million USD (14.5% of total imports)
- Electricity generation: 203.0 GWh - Of which renewables: 0.0 GWh (0.0%)
- Electricity use per capita: 1,777 kWh
- Electrical capacity: 33.2 MW - Of which renewables: 0.0 MW (0.0%)
- Electricity access rate: 99.5%
- Share of population using solid fuels: Not available

### TARGETS:

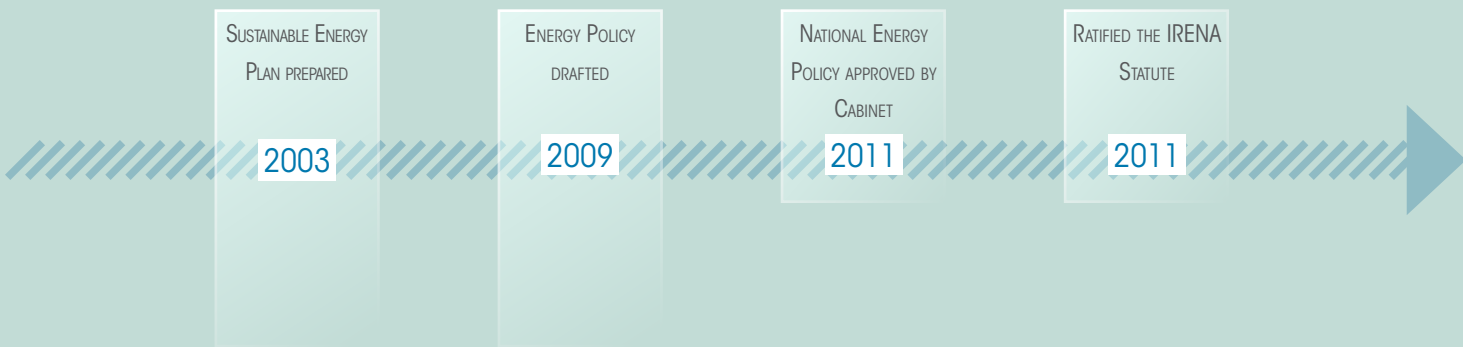
- 20% of electricity generation and transport energy from renewables by 2020

FIGURE 3: TOTAL PRIMARY ENERGY SUPPLY\* IN 2000 AND 2009



\*excluding electricity trade

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



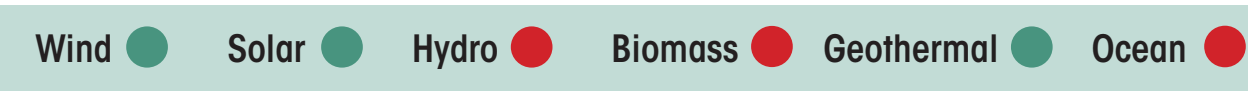
WORLD BANK EASE OF DOING BUSINESS INDEX FOR 2012: Ranked 73 out of 183

RENEWABLE ENERGY PROJECTS FROM THE GOVERNMENT AND PRIVATE SECTORS:

- No information available

NUMBER OF REGISTERED CLEAN DEVELOPMENT MECHANISM PROJECTS FOCUSING ON RENEWABLE ENERGY: 0

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 pre-judge 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 UN data; Share of fuel imports in total imports: World Trade Organisation; Electrical capacity: IEA, EIA; Electricity access rate: World Energy Outlook 2011 database (IEA); Share of population using solid fuels: World Health Organisation; Targets: REN21, IRENA; Policy/legislation: IEA, Reegle, 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.

# GUINEA-BISSAU



**1.5 million** Population (2010)  
**835 million USD** GDP (2010)  
**551 USD** GDP (2010)

FIGURE 1: GDP PER CAPITA FOR 2010

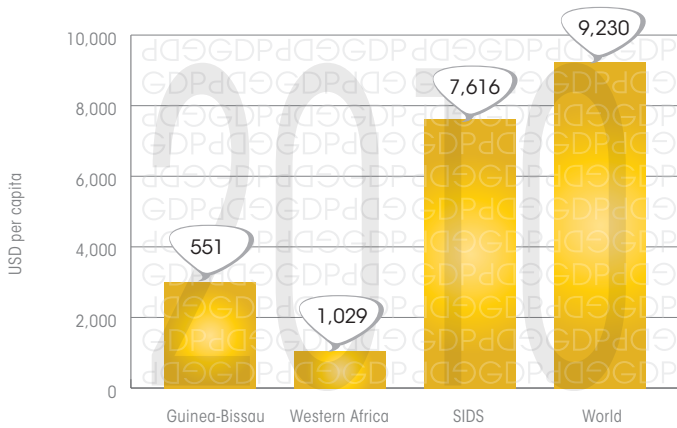
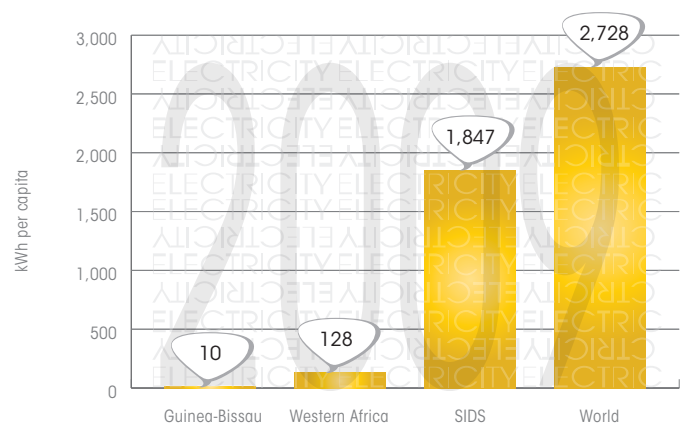


FIGURE 2: ELECTRICITY USE PER CAPITA FOR 2009



Western Africa includes Benin, Burkina Faso, Cape Verde, Côte d'Ivoire, Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Mali, Mauritania, Niger, Nigeria, Senegal, Sierra Leone and Togo.  
 SIDS include Antigua and Barbuda, Bahamas, Bahrain, Barbados, Belize, Cape Verde, Comoros, the Cook Islands, Cuba, Dominica, the Dominican Republic, Fiji, Grenada, Guinea-Bissau, Guyana, Haiti, Jamaica, Kiribati, the Maldives, the Marshall Islands, the Federated States of Micronesia, Mauritius, Nauru, Niue, Palau, Papua New Guinea, Samoa, Sao Tome and Principe, Singapore, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, the Seychelles, the Solomon Islands, Suriname, Timor-Leste, Tonga, Trinidad and Tobago, Tuvalu and Vanuatu.

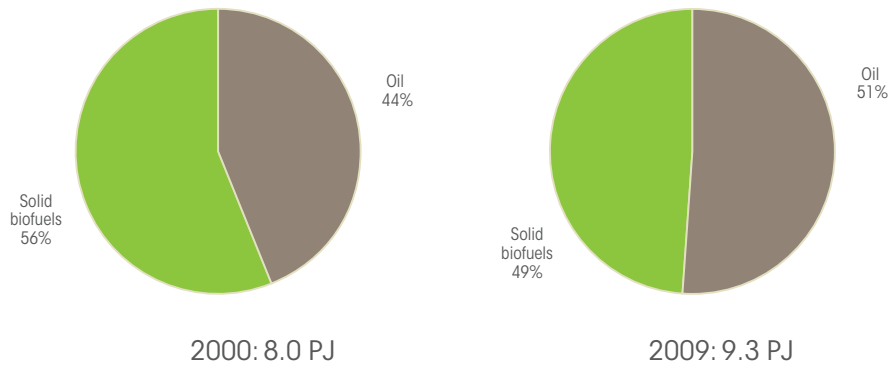
## ENERGY NATIONAL PROFILE 2009

- Total Primary Energy Supply: 9.3 PJ - Of which renewables: 4.3 PJ (47.5%)
- Energy self-sufficiency: 47.5%
- Fuel imports: Not available
- Electricity generation: 14.3 GWh - Of which renewables: 0.0 GWh (0.0%)
- Electricity use per capita: 10 kWh
- Electrical capacity: 15 MW - Of which renewables: 0.0 MW (0.0%)
- Electricity access rate: 10.0%
- Share of population using solid fuels: > 95%

### TARGETS:

- 2% of primary energy from solar photovoltaic by 2015

FIGURE 3: TOTAL PRIMARY ENERGY SUPPLY\* IN 2000 AND 2009



\*excluding electricity trade

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



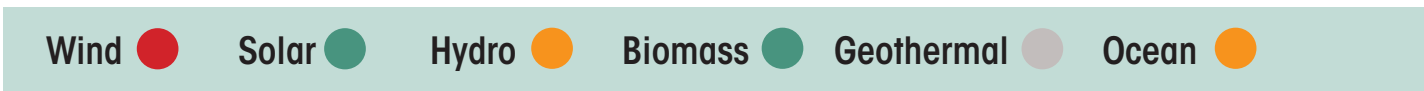
WORLD BANK EASE OF DOING BUSINESS INDEX FOR 2012: Ranked 176 out of 183

RENEWABLE ENERGY PROJECTS FROM THE GOVERNMENT AND PRIVATE SECTORS:

- Diffusion of solar home systems in rural areas

NUMBER OF REGISTERED CLEAN DEVELOPMENT MECHANISM PROJECTS FOCUSING ON RENEWABLE ENERGY: 0

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 pre-judge 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 UN data; Share of fuel imports in total imports: World Trade Organisation; Electrical capacity: IEA, EIA; Electricity access rate: World Energy Outlook 2010 database (IEA); Share of population using solid fuels: World Health Organisation; Targets: REN21, IRENA; Policy/legislation: IEA, Reegle, 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.

# GUYANA



**754,000** Population (2010)  
**2.3 billion USD** GDP (2010)  
**2,994 USD** GDP per capita (2010)

FIGURE 1: GDP PER CAPITA FOR 2010

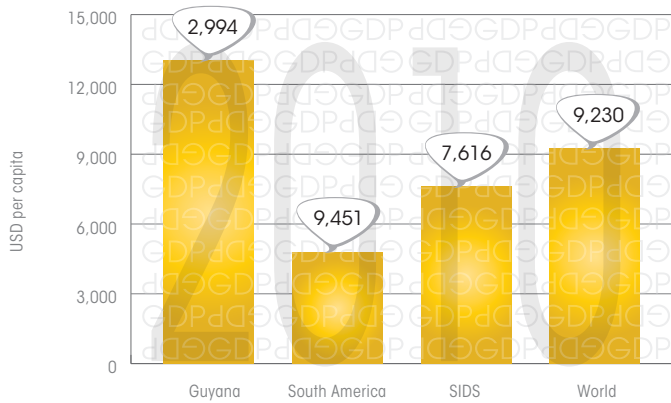
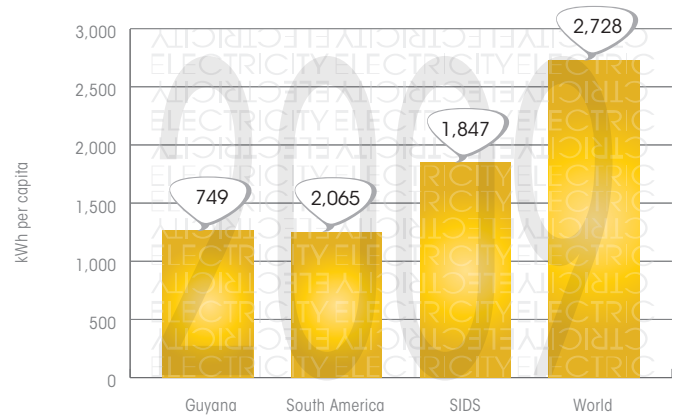


FIGURE 2: ELECTRICITY USE PER CAPITA FOR 2009



South America includes Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, Guyana, Paraguay, Peru, Suriname, Uruguay and Venezuela. Latin America includes Argentina, Belize, Bolivia, Brazil, Chile, Colombia, Costa Rica, Ecuador, El Salvador, Guatemala, Guyana, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, Suriname, Uruguay and Venezuela.  
 SIDS include Antigua and Barbuda, Bahamas, Bahrain, Barbados, Belize, Cape Verde, Comoros, the Cook Islands, Cuba, Dominica, the Dominican Republic, Fiji, Grenada, Guinea-Bissau, Guyana, Haiti, Jamaica, Kiribati, the Maldives, the Marshall Islands, the Federated States of Micronesia, Mauritius, Nauru, Niue, Palau, Papua New Guinea, Samoa, Sao Tome and Principe, Singapore, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, the Seychelles, the Solomon Islands, Suriname, Timor-Leste, Tonga, Trinidad and Tobago, Tuvalu and Vanuatu.

## ENERGY NATIONAL PROFILE 2009

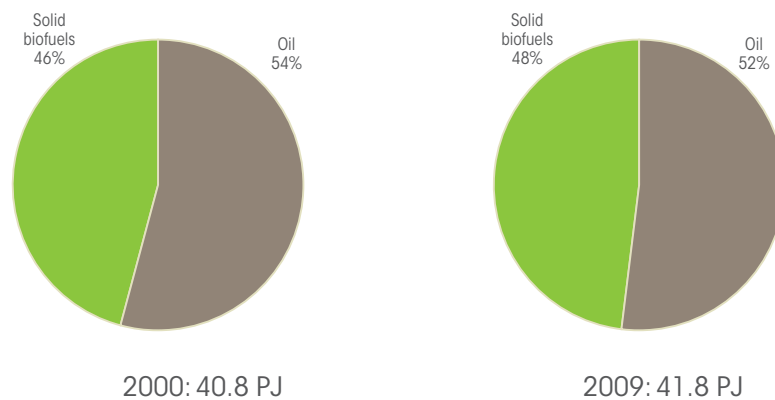
- Total Primary Energy Supply: 41.8 PJ - Of which renewables: 20.0 PJ (47.8%)
- Energy self-sufficiency: 47.8%
- Fuel imports: 422 million USD (30.2% of total imports)
- Electricity generation: 723.1 GWh - Of which renewables: 72.2 GWh (10.0%)
- Electricity use per capita: 749 kWh
- Electrical capacity: 343 MW - Of which renewables: 1 MW (0.3%)
- Electricity access rate: 60.0%
- Share of population using solid fuels: 11%

### TARGETS:

- No information available

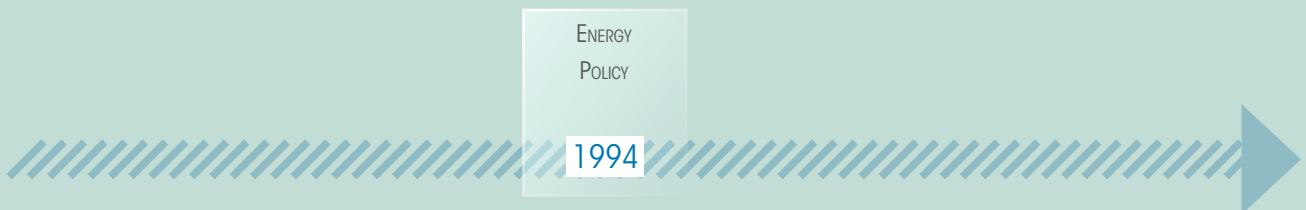


FIGURE 3: TOTAL PRIMARY ENERGY SUPPLY\* IN 2000 AND 2009



\*excluding electricity trade

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



WORLD BANK EASE OF DOING BUSINESS INDEX FOR 2012: Ranked 114 out of 183

RENEWABLE ENERGY PROJECTS FROM THE GOVERNMENT AND PRIVATE SECTORS:

- 10 MW of biomass-fired capacity addition announced (1 project)

NUMBER OF REGISTERED CLEAN DEVELOPMENT MECHANISM PROJECTS FOCUSING ON RENEWABLE ENERGY: 1

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 pre-judge 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 UN data; Share of fuel imports in total imports: World Trade Organisation; Electrical capacity: IEA, EIA; Electricity access rate: World Energy Outlook 2011 database (IEA); Share of population using solid fuels: World Health Organisation; Targets: REN21, IRENA; Policy/legislation: IEA, Reegle, 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.



# HAITI



**10.0 million** Population (2010)  
**6.6 billion USD** GDP (2010)  
**664 USD** GDP per capita (2010)

FIGURE 1: GDP PER CAPITA FOR 2010

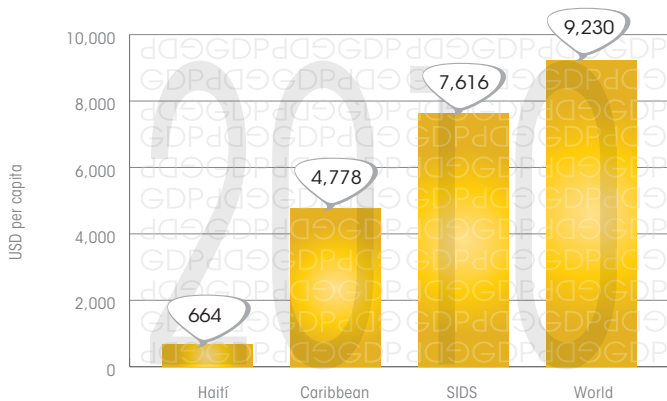
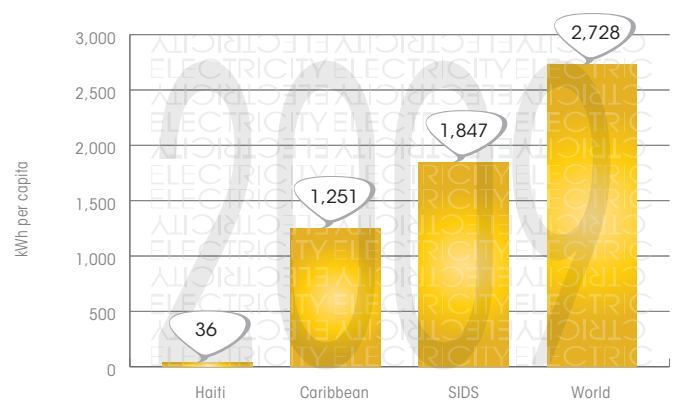


FIGURE 2: ELECTRICITY USE PER CAPITA FOR 2009



The Caribbean include Antigua and Barbuda, Bahamas, Barbados, Cuba, Dominica, the Dominican Republic, Grenada, Haiti, Jamaica, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, and Trinidad and Tobago.  
 SIDS include Antigua and Barbuda, Bahamas, Bahrain, Barbados, Belize, Cape Verde, Comoros, the Cook Islands, Cuba, Dominica, the Dominican Republic, Fiji, Grenada, Guinea-Bissau, Guyana, Haiti, Jamaica, Kiribati, the Maldives, the Marshall Islands, the Federated States of Micronesia, Mauritius, Nauru, Niue, Palau, Papua New Guinea, Samoa, Sao Tome and Principe, Singapore, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, the Seychelles, the Solomon Islands, Suriname, Timor-Leste, Tonga, Trinidad and Tobago, Tuvalu and Vanuatu.

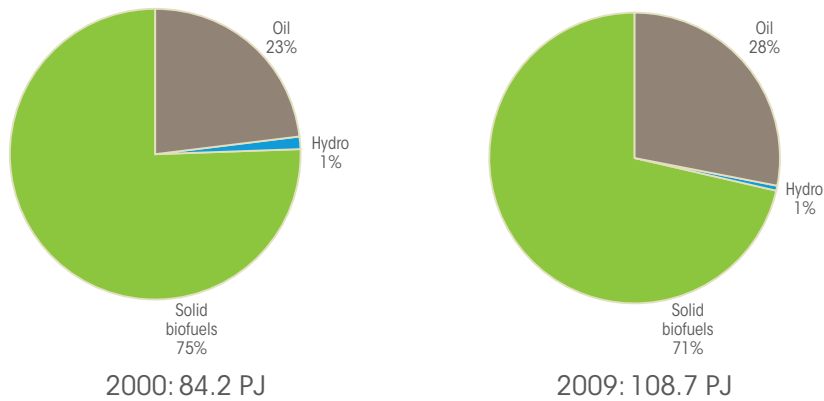
## ENERGY NATIONAL PROFILE 2009

- Total Primary Energy Supply: 108.7 PJ - Of which renewables: 78.2 PJ (71.9%)
- Energy self-sufficiency: 71.9%
- Fuel imports: 450 million USD (14.3% of total imports)
- Electricity generation: 721.0 GWh - Of which renewables: 207.0 GWh (28.7%)
- Electricity use per capita: 36 kWh
- Electrical capacity: 240 MW - Of which renewables: 62 MW (25.8%)
- Electricity access rate: 38.5%
- Share of population using solid fuels: 93%

### TARGETS:

- No information available

FIGURE 3: TOTAL PRIMARY ENERGY SUPPLY\* IN 2000 AND 2009



\*excluding electricity trade

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



WORLD BANK EASE OF DOING BUSINESS INDEX FOR 2012: Ranked 174 out of 183

RENEWABLE ENERGY PROJECTS FROM THE GOVERNMENT AND PRIVATE SECTORS:

- 32 MW of small hydro capacity addition announced (1 project)
- 20 MW of wind capacity addition announced (1 project)

NUMBER OF REGISTERED CLEAN DEVELOPMENT MECHANISM PROJECTS FOCUSING ON RENEWABLE ENERGY: 0

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 UN data; Share of fuel imports in total imports: World Trade Organisation; Electrical capacity: IEA, EIA; Electricity access rate: World Energy Outlook 2011 database (IEA); Share of population using solid fuels: World Health Organisation; Targets: REN21, IRENA; Policy/legislation: IEA, Reegle, 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.

# JAMAICA

**2.7 million** Population (2010)  
**13.9 billion USD** GDP (2010)  
**5,133 USD** GDP per capita (2010)

FIGURE 1: GDP PER CAPITA FOR 2010

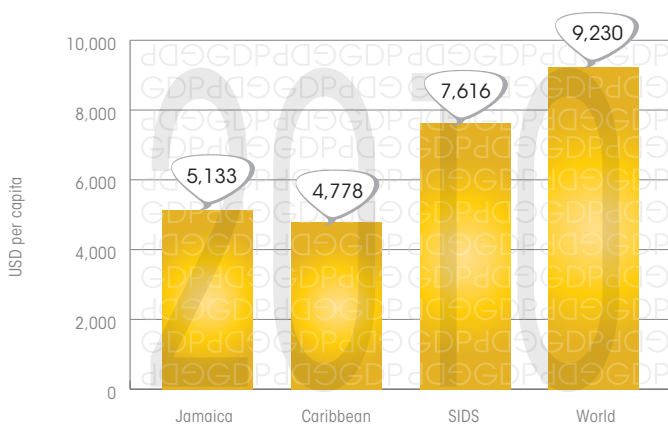
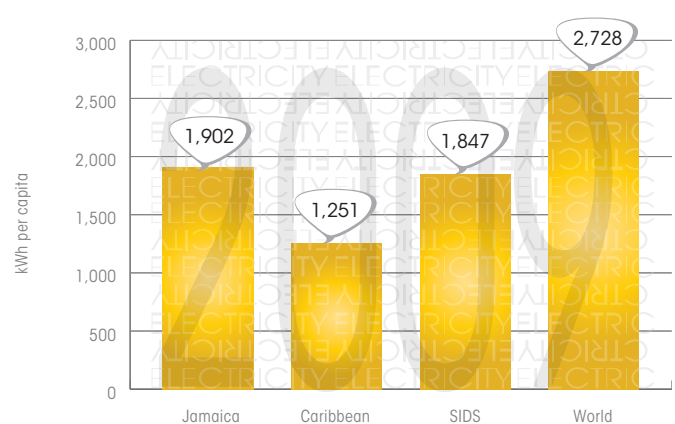


FIGURE 2: ELECTRICITY USE PER CAPITA FOR 2009



The Caribbean include Antigua and Barbuda, Bahamas, Barbados, Cuba, Dominica, the Dominican Republic, Grenada, Haiti, Jamaica, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, and Trinidad and Tobago.

SIDS include Antigua and Barbuda, Bahamas, Bahrain, Barbados, Belize, Cape Verde, Comoros, the Cook Islands, Cuba, Dominica, the Dominican Republic, Fiji, Grenada, Guinea-Bissau, Guyana, Haiti, Jamaica, Kiribati, the Maldives, the Marshall Islands, the Federated States of Micronesia, Mauritius, Nauru, Niue, Palau, Papua New Guinea, Samoa, Sao Tome and Principe, Singapore, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, the Seychelles, the Solomon Islands, Suriname, Timor-Leste, Tonga, Trinidad and Tobago, Tuvalu and Vanuatu.

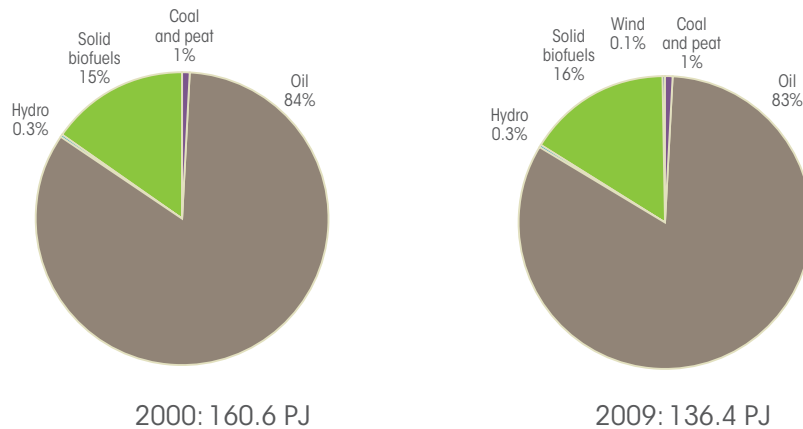
## ENERGY NATIONAL PROFILE 2009

- Total Primary Energy Supply: 136.4 PJ - Of which renewables: 22.2 PJ (16.3%)
- Energy self-sufficiency: 16.3%
- Fuel imports: 1.6 billion USD (30.5% of total imports)
- Electricity generation: 5.5 TWh - Of which renewables: 201.0 GWh (3.6%)
- Electricity use per capita: 1,902 kWh
- Electrical capacity: 1,198 MW - Of which renewables: 78 MW (6.5%)
- Electricity access rate: 92.0%
- Share of population using solid fuels: 16%

### TARGETS:

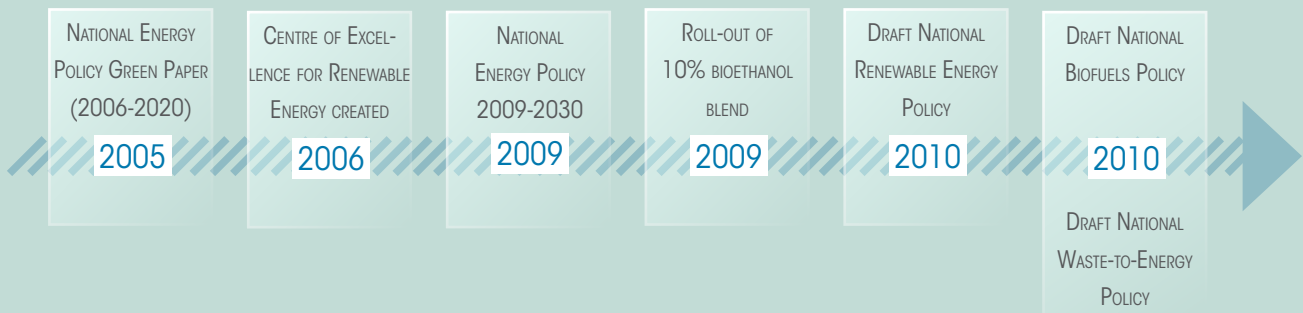
- 20% of primary energy from renewables by 2030
- 15% of electricity generation from renewables by 2020

FIGURE 3: TOTAL PRIMARY ENERGY SUPPLY\* IN 2000 AND 2009



\*excluding electricity trade

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



WORLD BANK EASE OF DOING BUSINESS INDEX FOR 2012: Ranked 88 out of 183

RENEWABLE ENERGY PROJECTS FROM THE GOVERNMENT AND PRIVATE SECTORS:

- 65 MW of biomass-fired capacity addition announced (2 projects)
- 3 MW of wind capacity addition announced (1 project)

NUMBER OF REGISTERED CLEAN DEVELOPMENT MECHANISM PROJECTS FOCUSING ON RENEWABLE ENERGY: 1

RENEWABLE ENERGY RESOURCES:

● High ● Medium ● Low ● Unknown ✕ Not applicable

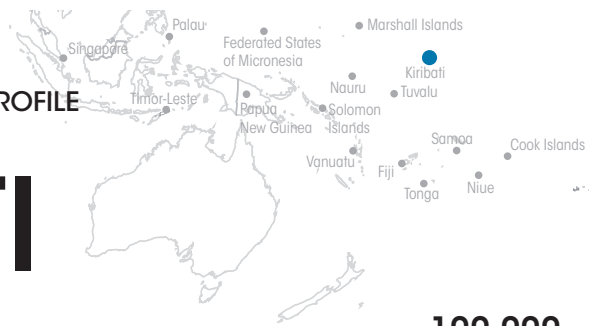
**Wind** ● **Solar** ● **Hydro** ● **Biomass** ● **Geothermal** ● **Ocean** ●

Note: The information on resources should be taken as an indication only. It refers to a general trend of available resources, and does not prejudice 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 UN data; Share of fuel imports in total imports: World Trade Organisation; Electrical capacity: IEA, EIA; Electricity access rate: World Energy Outlook 2011 database (IEA); Share of population using solid fuels: World Health Organisation; Targets: REN21, IRENA; Policy/legislation: IEA, Reegle, 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.

# KIRIBATI



**100,000** Population (2010)  
**151 million USD** GDP (2010)  
**1,519 USD** GDP per capita (2010)

FIGURE 1: GDP PER CAPITA FOR 2010

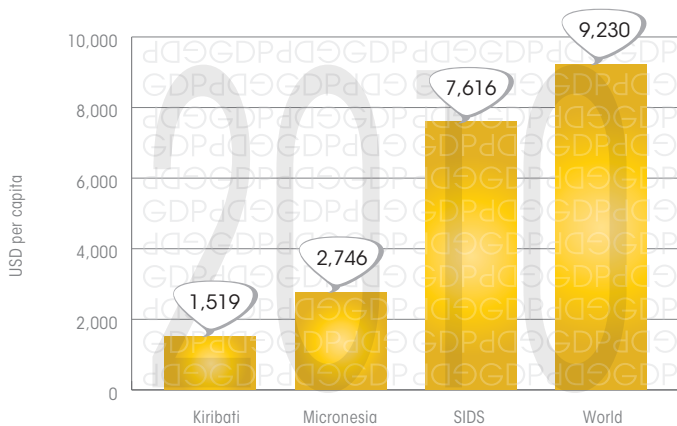
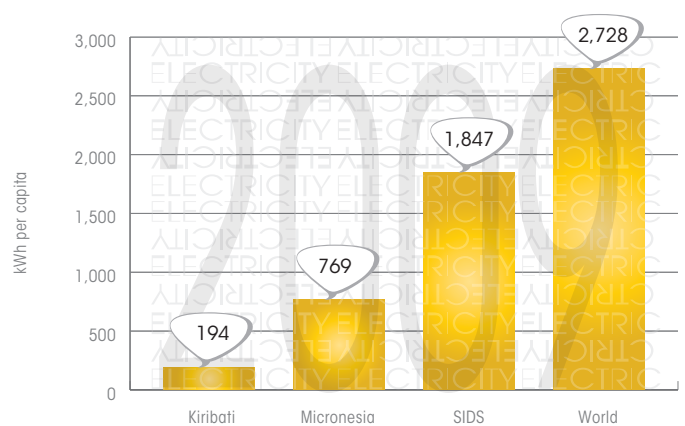


FIGURE 2: ELECTRICITY USE PER CAPITA FOR 2009



Micronesia includes Kiribati, the Marshall Islands, the Federated States of Micronesia, Nauru and Palau  
 SIDS include Antigua and Barbuda, Bahamas, Bahrain, Barbados, Belize, Cape Verde, Comoros, the Cook Islands, Cuba, Dominica, the Dominican Republic, Fiji, Grenada, Guinea-Bissau, Guyana, Haiti, Jamaica, Kiribati, the Maldives, the Marshall Islands, the Federated States of Micronesia, Mauritius, Nauru, Niue, Palau, Papua New Guinea, Samoa, Sao Tome and Principe, Singapore, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, the Seychelles, the Solomon Islands, Suriname, Timor-Leste, Tonga, Trinidad and Tobago, Tuvalu and Vanuatu.

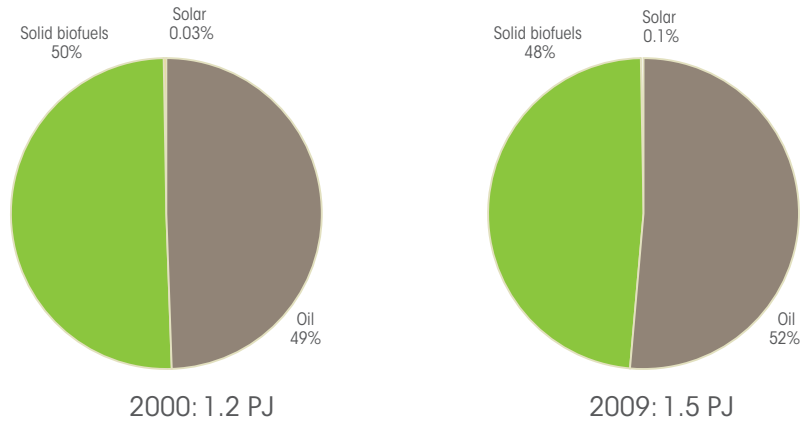
## ENERGY NATIONAL PROFILE 2009

- Total Primary Energy Supply: 1.5 PJ – Of which renewables: 0.7 PJ (48.3%)
- Energy self-sufficiency: 48.3%
- Fuel imports: 16 million USD (16.2% of total imports)
- Electricity generation: 22.8 GWh – Of which renewables: 0.6 GWh (2.6%)
- Electricity use per capita: 194 kWh
- Electrical capacity: 5.8 MW – Of which renewables: 0.3 MW (5.2%)
- Electricity access rate: 90.0%
- Share of population using solid fuels: Not available

### TARGETS:

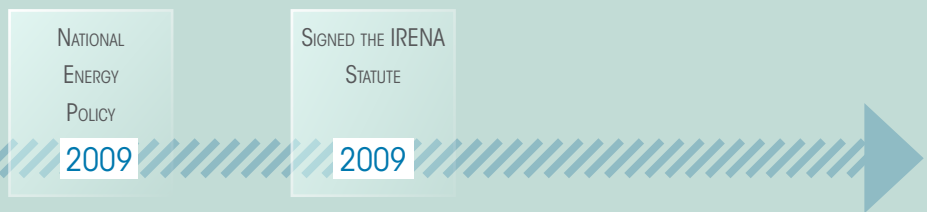
- 10% of electricity generation from renewables

FIGURE 3: TOTAL PRIMARY ENERGY SUPPLY\* IN 2000 AND 2009



\*excluding electricity trade

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



WORLD BANK EASE OF DOING BUSINESS INDEX FOR 2012: Ranked 115 out of 183

RENEWABLE ENERGY PROJECTS FROM THE GOVERNMENT AND PRIVATE SECTORS:

- No information available

NUMBER OF REGISTERED CLEAN DEVELOPMENT MECHANISM PROJECTS FOCUSING ON RENEWABLE ENERGY: 0

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 pre-judge 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 UN data; Share of fuel imports in total imports: World Trade Organisation; Electrical capacity: IEA, EIA; Electricity access rate: World Energy Outlook 2011 database (IEA); Share of population using solid fuels: World Health Organisation; Targets: REN21, IRENA; Policy/legislation: IEA, Reegle, 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.

# MALDIVES



**316,000** Population (2010)  
**2.1 billion USD** GDP (2010)  
**6,570 USD** GDP per capita (2010)

FIGURE 1: GDP PER CAPITA FOR 2010

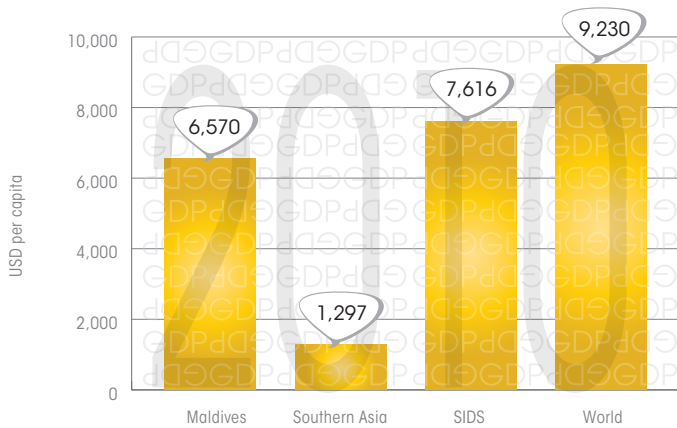
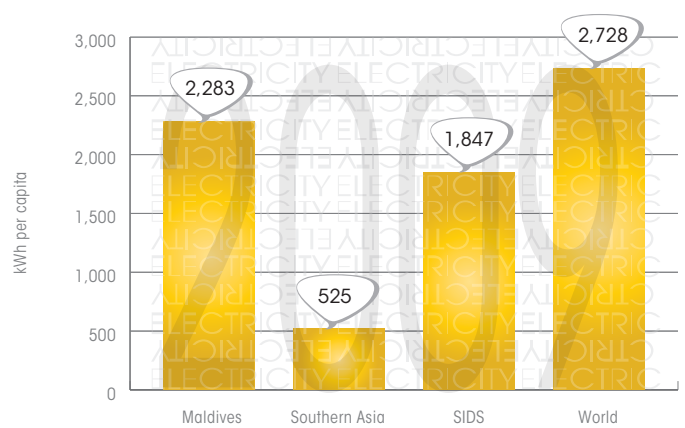


FIGURE 2: ELECTRICITY USE PER CAPITA FOR 2009



Southern Asia includes Afghanistan, Bangladesh, Bhutan, India, the Maldives, Nepal, Pakistan and Sri Lanka. SIDS include Antigua and Barbuda, Bahamas, Bahrain, Barbados, Belize, Cape Verde, Comoros, the Cook Islands, Cuba, Dominica, the Dominican Republic, Fiji, Grenada, Guinea-Bissau, Guyana, Haiti, Jamaica, Kiribati, the Maldives, the Marshall Islands, the Federated States of Micronesia, Mauritius, Nauru, Niue, Palau, Papua New Guinea, Samoa, Sao Tome and Principe, Singapore, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, the Seychelles, the Solomon Islands, Suriname, Timor-Leste, Tonga, Trinidad and Tobago, Tuvalu and Vanuatu.

## ENERGY NATIONAL PROFILE 2009

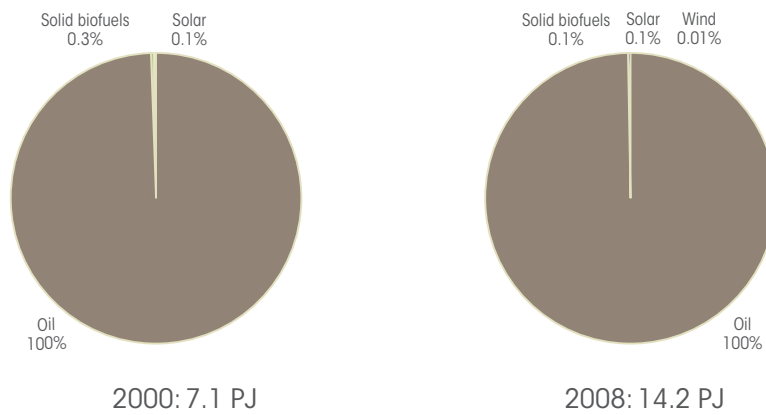
- Total Primary Energy Supply: 14.2 PJ – Of which renewables: 0.0 PJ (0.2%)
- Energy self-sufficiency: 0.2%
- Fuel imports: 156 million USD (14.2% of total imports)
- Electricity generation: 796.1 GWh – Of which renewables: 0.3 GWh (0.0%)
- Electricity use per capita: 2,283 kWh
- Electrical capacity: 62.12 MW – Of which renewables: 0.12 MW (0.2%)
- Electricity access rate: 100.0%
- Share of population using solid fuels: 10%

### TARGETS:

- Carbon neutrality in the energy sector by 2020
- 50% of electricity generation from renewables by 2015
- 60% of electricity generation from solar by 2020

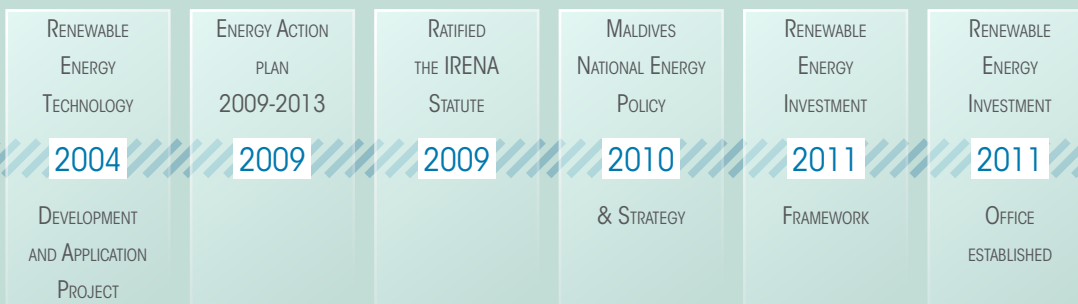


FIGURE 3: TOTAL PRIMARY ENERGY SUPPLY\* IN 2000 AND 2009



\*excluding electricity trade

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



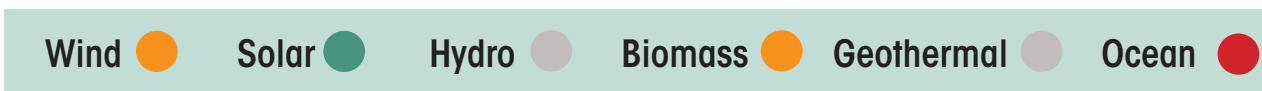
WORLD BANK EASE OF DOING BUSINESS INDEX FOR 2012: Ranked 79 out of 183

RENEWABLE ENERGY PROJECTS FROM THE GOVERNMENT AND PRIVATE SECTORS:

- No information available

NUMBER OF REGISTERED CLEAN DEVELOPMENT MECHANISM PROJECTS FOCUSING ON RENEWABLE ENERGY: 0

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 pre-judge 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 UN data; Share of fuel imports in total imports: World Trade Organisation; Electrical capacity: IEA, EIA; Electricity access rate: World Energy Outlook 2011 database (IEA); Share of population using solid fuels: World Health Organisation; Targets: REN21, IRENA; Policy/legislation: IEA, Reegle, 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.



# MARSHALL ISLANDS

**54,000** Population (2010)  
**163 million USD** GDP (2010)  
**3,015 USD** GDP per capita (2010)

FIGURE 1: GDP PER CAPITA FOR 2010

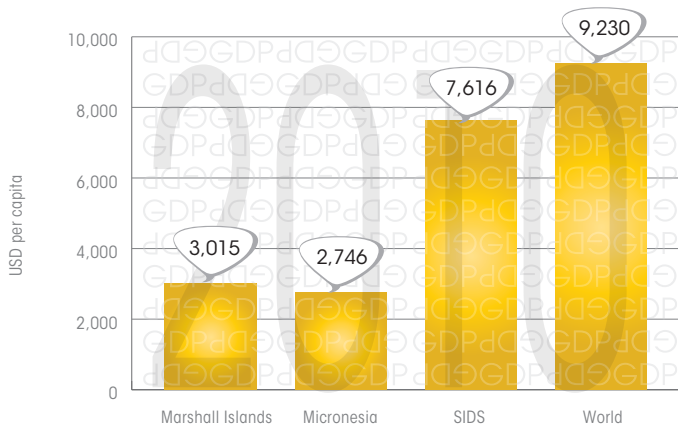
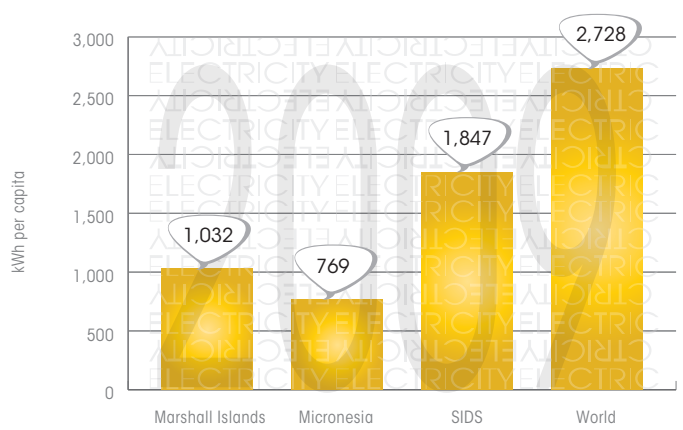


FIGURE 2: ELECTRICITY USE PER CAPITA FOR 2009



Micronesia includes Kiribati, the Marshall Islands, the Federated States of Micronesia, Nauru and Palau.  
 SIDS include Antigua and Barbuda, Bahamas, Bahrain, Barbados, Belize, Cape Verde, Comoros, the Cook Islands, Cuba, Dominica, the Dominican Republic, Fiji, Grenada, Guinea-Bissau, Guyana, Haiti, Jamaica, Kiribati, the Maldives, the Marshall Islands, the Federated States of Micronesia, Mauritius, Nauru, Niue, Palau, Papua New Guinea, Samoa, Sao Tome and Principe, Singapore, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, the Seychelles, the Solomon Islands, Suriname, Timor-Leste, Tonga, Trinidad and Tobago, Tuvalu and Vanuatu.

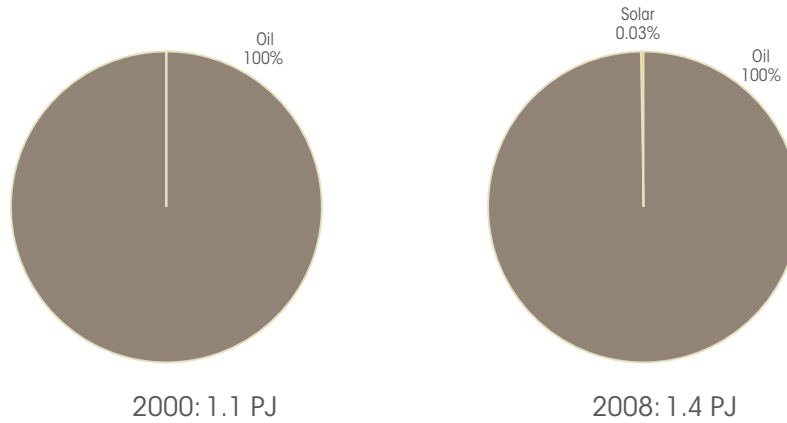
## ENERGY NATIONAL PROFILE 2009

- Total Primary Energy Supply: 1.4 PJ – Of which renewables: 0.0 PJ (0.0%)
- Energy self-sufficiency: 0.0%
- Fuel imports: Not available
- Electricity generation: 66.8 GWh – Of which renewables: 0.1 GWh (0.1 %)
- Electricity use per capita: 1,032 kWh
- Electrical capacity: 17.21 MW – Of which renewables: 0.01 MW (0.1 %)
- Electricity access rate: 90.0%
- Share of population using solid fuels: 31%

### TARGETS:

- No information available

FIGURE 3: TOTAL PRIMARY ENERGY SUPPLY\* IN 2000 AND 2009



\*excluding electricity trade

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



WORLD BANK EASE OF DOING BUSINESS INDEX FOR 2012: Ranked 106 out of 183

RENEWABLE ENERGY PROJECTS FROM THE GOVERNMENT AND PRIVATE SECTORS:

- No information available

NUMBER OF REGISTERED CLEAN DEVELOPMENT MECHANISM PROJECTS FOCUSING ON RENEWABLE ENERGY: 0

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 pre-judge 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 UN data; Share of fuel imports in total imports: World Trade Organisation; Electrical capacity: IEA, EIA; Electricity access rate: World Energy Outlook 2011 database (IEA); Share of population using solid fuels: World Health Organisation; Targets: REN21, IRENA; Policy/legislation: IEA, Reegle, 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.

# MAURITIUS



**1.3 million** Population (2010)  
**9.7 billion USD** GDP (2010)  
**7,582 USD** GDP per capita (2010)

FIGURE 1: GDP PER CAPITA FOR 2010

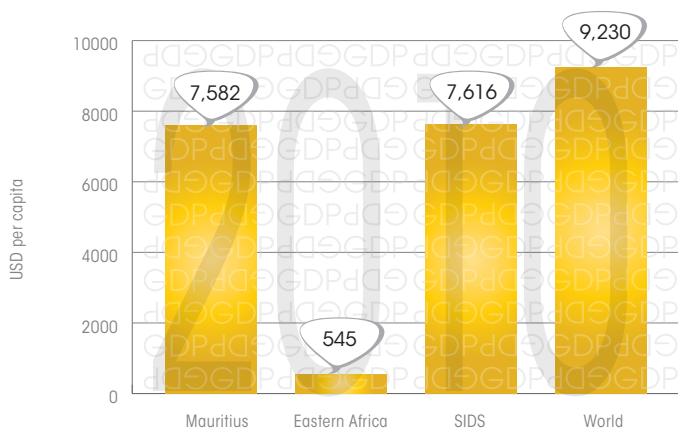
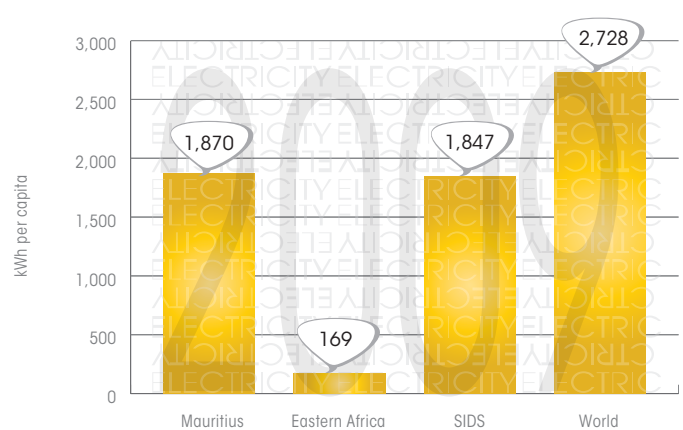


FIGURE 2: ELECTRICITY USE PER CAPITA FOR 2009



Eastern Africa includes Burundi, Comoros, Djibouti, Eritrea, Ethiopia, Kenya, Madagascar, Malawi, Mauritius, Mozambique, Rwanda, Seychelles, Somalia, the United Republic of Tanzania, Uganda, Zambia and Zimbabwe.  
 SIDS include Antigua and Barbuda, Bahamas, Bahrain, Barbados, Belize, Cape Verde, Comoros, the Cook Islands, Cuba, Dominica, the Dominican Republic, Fiji, Grenada, Guinea-Bissau, Guyana, Haiti, Jamaica, Kiribati, the Maldives, the Marshall Islands, the Federated States of Micronesia, Mauritius, Nauru, Niue, Palau, Papua New Guinea, Samoa, Sao Tome and Principe, Singapore, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, the Seychelles, the Solomon Islands, Suriname, Timor-Leste, Tonga, Trinidad and Tobago, Tuvalu and Vanuatu.

## ENERGY NATIONAL PROFILE 2010

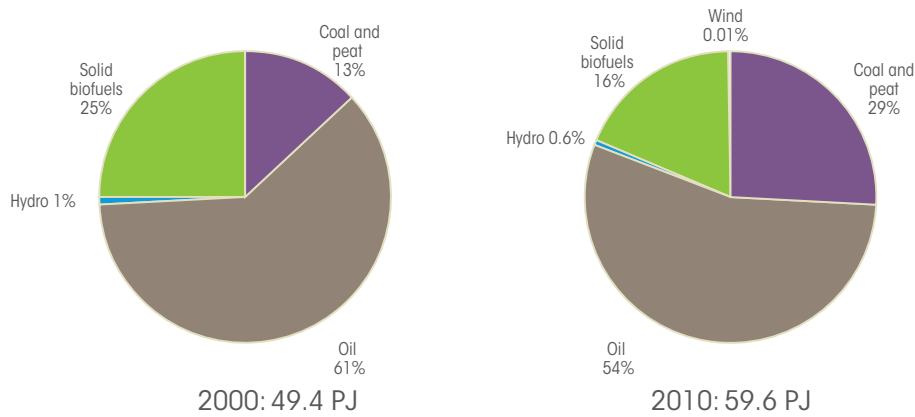
- Total Primary Energy Supply: 59.6 PJ - Of which renewables: 10.1 PJ (16.9%)
- Energy self-sufficiency: 16.9%
- Fuel imports\*: 843 million USD (19.2% of total imports)
- Electricity generation: 2,689 GWh - Of which renewables: 653.6 GWh (23.3%)
- Electricity use per capita: 1,941 kWh
- Electrical capacity: 740.2 MW - Of which renewables: 100.3 MW (13.6%)
- Electricity access rate: 99.4%
- Share of population using solid fuels: < 2%

\* 2009

### TARGETS:

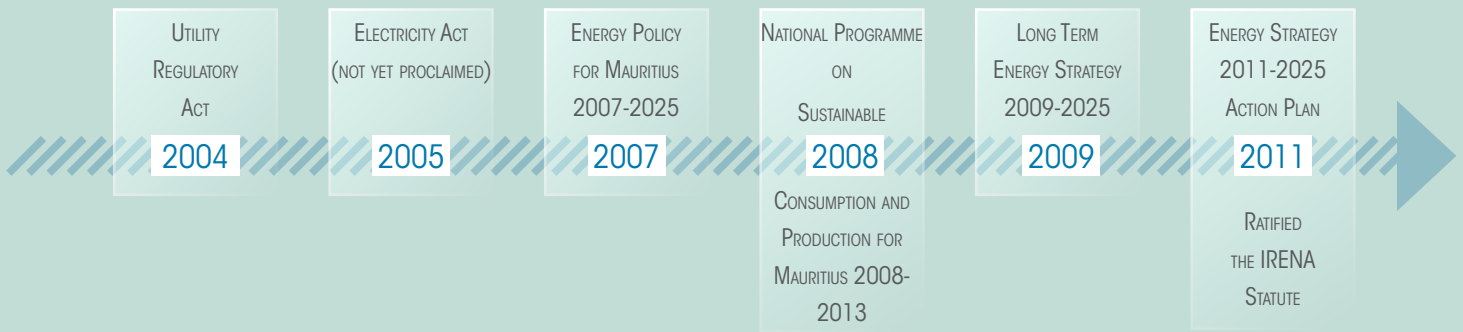
- 35% of electricity generation from renewables by 2025

FIGURE 3: TOTAL PRIMARY ENERGY SUPPLY\* IN 2000 AND 2010



\*excluding electricity trade

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



WORLD BANK EASE OF DOING BUSINESS INDEX FOR 2012: RANKED 23 OUT OF 183

RENEWABLE ENERGY PROJECTS FROM THE GOVERNMENT AND PRIVATE SECTORS:

- 38 MW of wind capacity addition by the end of 2014 (2 projects)

NUMBER OF REGISTERED CLEAN DEVELOPMENT MECHANISM PROJECTS FOCUSING ON RENEWABLE ENERGY: 0

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 pre-judge 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 UN data; Share of fuel imports in total imports: World Trade Organisation; Electrical capacity: IEA, EIA; Electricity access rate: World Energy Outlook 2011 database (IEA); Share of population using solid fuels: World Health Organisation; Targets: REN21, IRENA; Policy/legislation: IEA, Reegle, 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.

# FEDERATED STATES OF MICRONESIA

**111,000** Population (2010)  
**297 million USD** GDP (2010)  
**2,678 USD** GDP per capita (2010)

FIGURE 1: GDP PER CAPITA FOR 2010

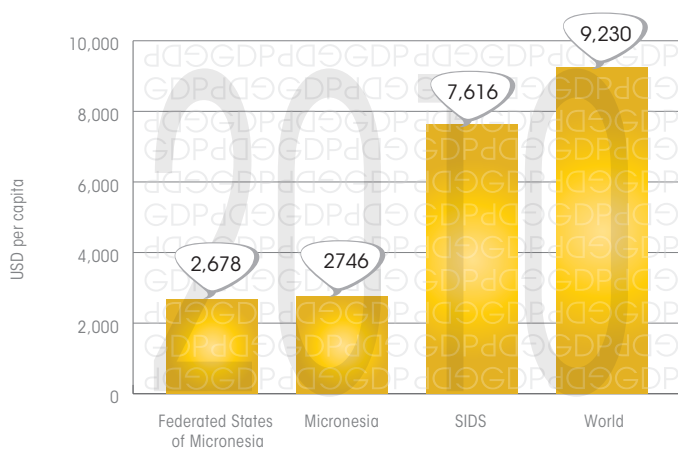
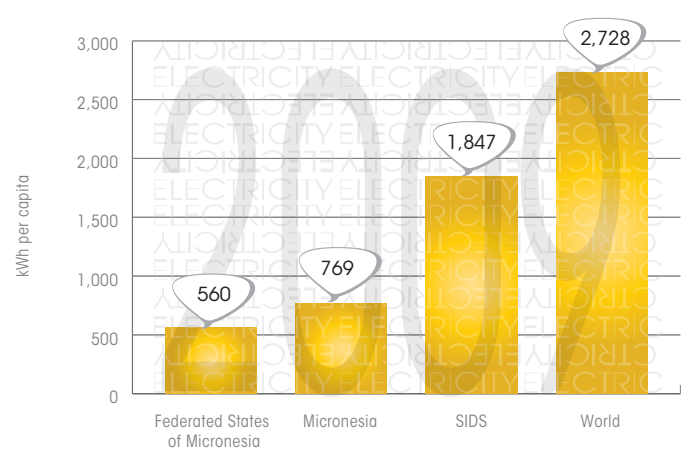


FIGURE 2: ELECTRICITY USE PER CAPITA FOR 2009



Micronesia includes Kiribati, the Marshall Islands, the Federated States of Micronesia, Nauru and Palau.

SIDS include Antigua and Barbuda, Bahamas, Bahrain, Barbados, Belize, Cape Verde, Comoros, the Cook Islands, Cuba, Dominica, the Dominican Republic, Fiji, Grenada, Guinea-Bissau, Guyana, Haiti, Jamaica, Kiribati, the Maldives, the Marshall Islands, the Federated States of Micronesia, Mauritius, Nauru, Niue, Palau, Papua New Guinea, Samoa, Sao Tome and Principe, Singapore, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, the Seychelles, the Solomon Islands, Suriname, Timor-Leste, Tonga, Trinidad and Tobago, Tuvalu and Vanuatu.

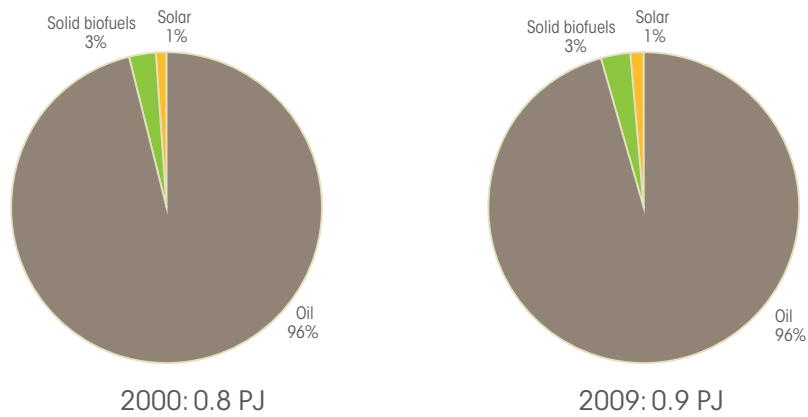
## ENERGY NATIONAL PROFILE 2009

- Total Primary Energy Supply: 0.9 PJ – Of which renewables: 0.0 PJ (4.2%)
- Energy self-sufficiency: 3.9%
- Fuel imports: Not available
- Electricity generation: 69 GWh – Of which renewables: 3 GWh (4.3 %)
- Electricity use per capita: 560 kWh
- Electrical capacity: 28 MW – Of which renewables: 5 MW (17.9%)
- Electricity access rate: 65.0%
- Share of population using solid fuels: 44%

### TARGETS:

- Decrease the import and use of imported petroleum fuels by 50% by 2020
- 10% of electricity generation from renewables in urban centres and 50% in rural areas by 2020

FIGURE 3: TOTAL PRIMARY ENERGY SUPPLY\* IN 2000 AND 2009



\*excluding electricity trade

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

- No information available

WORLD BANK EASE OF DOING BUSINESS INDEX FOR 2012: Ranked 140 out of 183

RENEWABLE ENERGY PROJECTS FROM THE GOVERNMENT AND PRIVATE SECTORS:

- No information available

NUMBER OF REGISTERED CLEAN DEVELOPMENT MECHANISM PROJECTS FOCUSING ON RENEWABLE ENERGY: 0

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 pre-judge 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 UN data; Share of fuel imports in total imports: World Trade Organisation; Electrical capacity: IEA, EIA; Electricity access rate: World Energy Outlook 2011 database (IEA); Share of population using solid fuels: World Health Organisation; Targets: REN21, IRENA; Policy/legislation: IEA, Reegle, 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.



# NAURU



**10,000** Population (2010)  
**54 million USD** GDP (2009)  
**5,396 USD** GDP per capita (2009)

FIGURE 1: GDP PER CAPITA FOR 2010

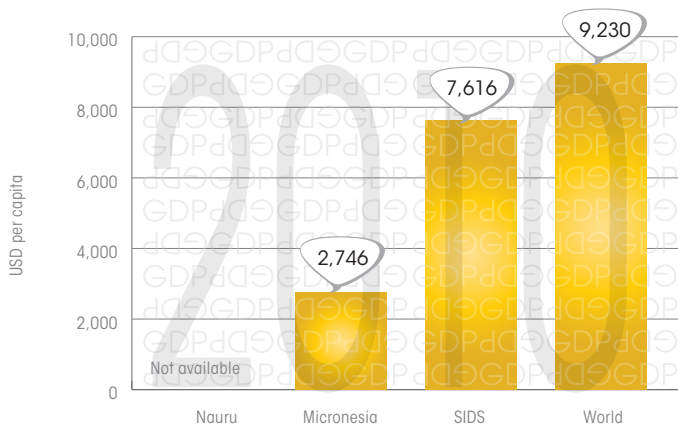
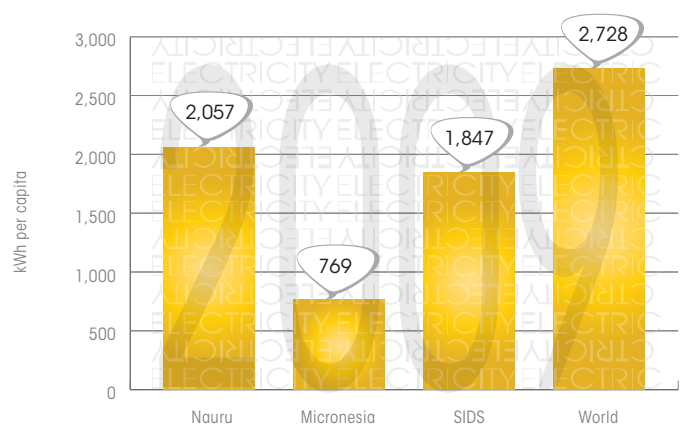


FIGURE 2: ELECTRICITY USE PER CAPITA FOR 2009



Micronesia includes Kiribati, the Marshall Islands, the Federated States of Micronesia, Nauru and Palau. SIDS include Antigua and Barbuda, Bahamas, Bahrain, Barbados, Belize, Cape Verde, Comoros, the Cook Islands, Cuba, Dominica, the Dominican Republic, Fiji, Grenada, Guinea-Bissau, Guyana, Haiti, Jamaica, Kiribati, the Maldives, the Marshall Islands, the Federated States of Micronesia, Mauritius, Nauru, Niue, Palau, Papua New Guinea, Samoa, Sao Tome and Principe, Singapore, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, the Seychelles, the Solomon Islands, Suriname, Timor-Leste, Tonga, Trinidad and Tobago, Tuvalu and Vanuatu.

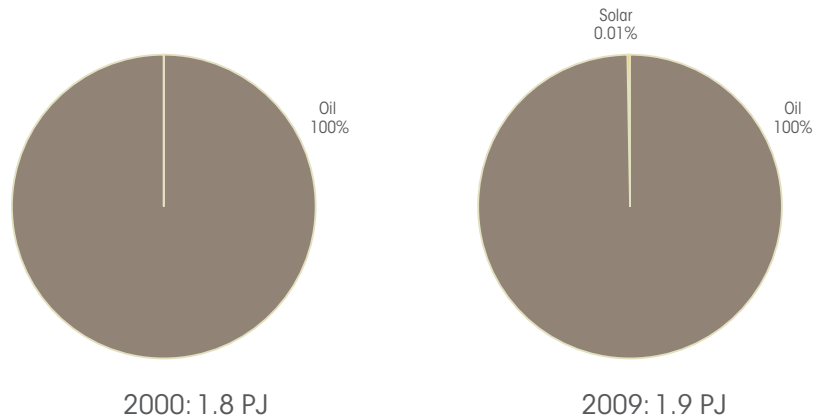
## ENERGY NATIONAL PROFILE 2009

- Total Primary Energy Supply: 1.9 PJ – Of which renewables: 0.0 PJ (0.0%)
- Energy self-sufficiency: 0.0%
- Fuel imports: Not available
- Electricity generation: 21.2 GWh – Of which renewables: 0.0 GWh (0.2%)
- Electricity use per capita: 2,057 kWh
- Electrical capacity: 4.85 MW – Of which renewables: 0.05 MW (1.0%)
- Electricity access rate: 100.0%
- Share of population using solid fuels: 5%

### TARGETS:

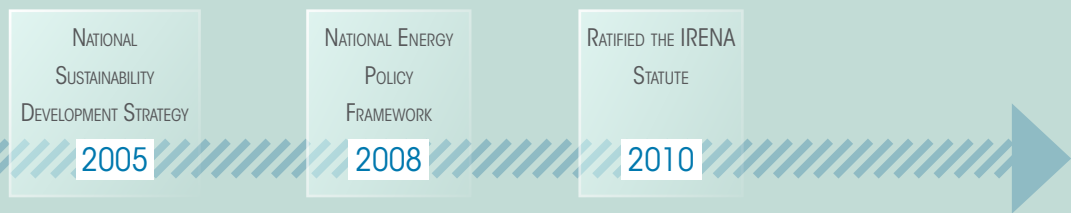
- 50% of energy demand from alternative energy sources (including renewables) by 2015

FIGURE 3: TOTAL PRIMARY ENERGY SUPPLY\* IN 2000 AND 2009



\*excluding electricity trade

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



WORLD BANK EASE OF DOING BUSINESS INDEX FOR 2012: Not ranked

RENEWABLE ENERGY PROJECTS FROM THE GOVERNMENT AND PRIVATE SECTORS:

- No information available

NUMBER OF REGISTERED CLEAN DEVELOPMENT MECHANISM PROJECTS FOCUSING ON RENEWABLE ENERGY: 0

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 pre-judge 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 UN data; Share of fuel imports in total imports: World Trade Organisation; Electrical capacity: IEA, EIA; Electricity access rate: World Energy Outlook 2011 database (IEA); Share of population using solid fuels: World Health Organisation; Targets: REN21, IRENA; Policy/legislation: IEA, Reegle, 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.



**1,600** Population (2010)  
**Not available** GDP (2010)  
**Not available** GDP per capita (2010)

FIGURE 1: GDP PER CAPITA FOR 2010

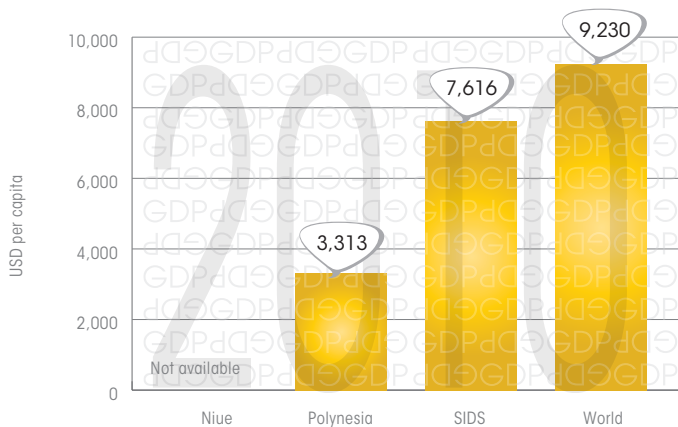
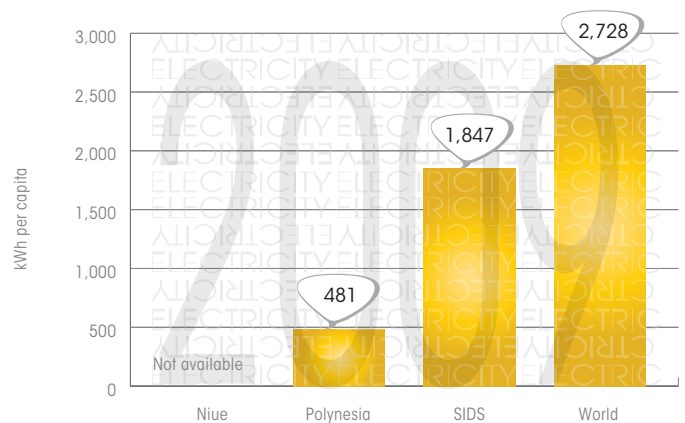


FIGURE 2: ELECTRICITY USE PER CAPITA FOR 2009



Polynesia includes the Cook Islands, Niue, Samoa, Tonga and Tuvalu.  
 SIDS include Antigua and Barbuda, Bahamas, Bahrain, Barbados, Belize, Cape Verde, Comoros, the Cook Islands, Cuba, Dominica, the Dominican Republic, Fiji, Grenada, Guinea-Bissau, Guyana, Haiti, Jamaica, Kiribati, the Maldives, the Marshall Islands, the Federated States of Micronesia, Mauritius, Nauru, Niue, Palau, Papua New Guinea, Samoa, Sao Tome and Principe, Singapore, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, the Seychelles, the Solomon Islands, Suriname, Timor-Leste, Tonga, Trinidad and Tobago, Tuvalu and Vanuatu.

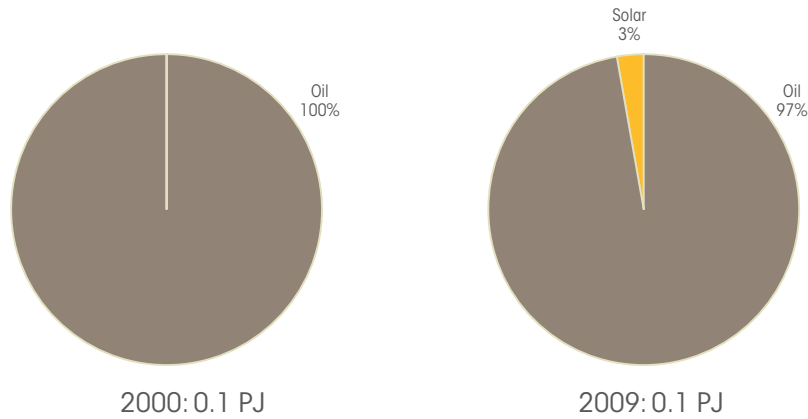
## ENERGY NATIONAL PROFILE 2009

- Total Primary Energy Supply: 0.1 PJ – Of which renewables: 0.0 PJ (2.6%)
- Energy self-sufficiency: 2.6%
- Fuel imports: Not available
- Electricity generation: 3.0 GWh – Of which renewables: 0.1 GWh (2.0%)
- Electricity use per capita: Not available
- Electrical capacity: 2.455 MW – Of which renewables: 0.055 MW (2.2%)
- Electricity access rate: 97.0%
- Share of population using solid fuels: 5%

### TARGETS:

- 100 % of electricity generation from renewables by 2020

FIGURE 3: TOTAL PRIMARY ENERGY SUPPLY\* IN 2000 AND 2009



\*excluding electricity trade

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



WORLD BANK EASE OF DOING BUSINESS INDEX FOR 2012: Not ranked

RENEWABLE ENERGY PROJECTS FROM THE GOVERNMENT AND PRIVATE SECTORS:

- No information available

NUMBER OF REGISTERED CLEAN DEVELOPMENT MECHANISM PROJECTS FOCUSING ON RENEWABLE ENERGY: 0

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 pre-judge 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 UN data; Share of fuel imports in total imports: World Trade Organisation; Electrical capacity: IEA, EIA; Electricity access rate: World Energy Outlook 2011 database (IEA); Share of population using solid fuels: World Health Organisation; Targets: REN21, IRENA; Policy/legislation: IEA, Reegle, 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.

# PALAU



**20,000** Population (2010)  
**171 million USD** GDP (2010)  
**8,370 USD** GDP per capita (2010)

FIGURE 1: GDP PER CAPITA FOR 2010

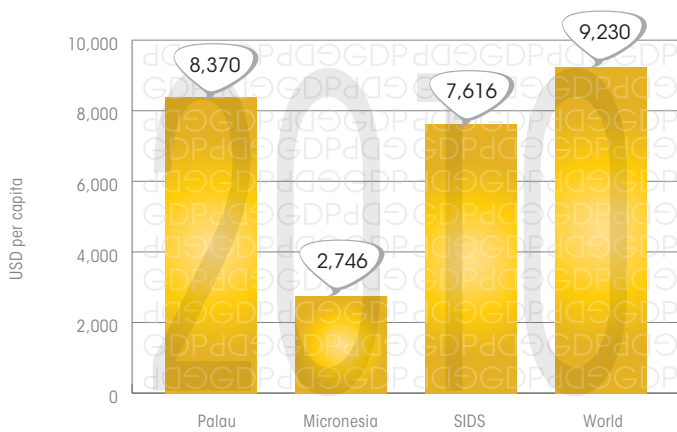
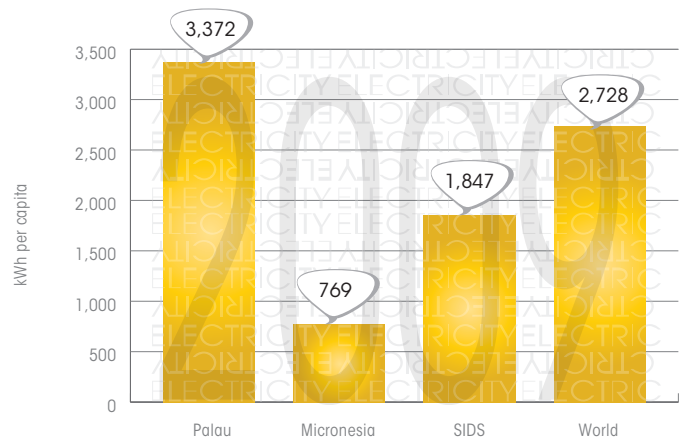


FIGURE 2: ELECTRICITY USE PER CAPITA FOR 2009



Micronesia includes Kiribati, the Marshall Islands, the Federated States of Micronesia, Nauru and Palau. SIDS include Antigua and Barbuda, Bahamas, Bahrain, Barbados, Belize, Cape Verde, Comoros, the Cook Islands, Cuba, Dominica, the Dominican Republic, Fiji, Grenada, Guinea-Bissau, Guyana, Haiti, Jamaica, Kiribati, the Maldives, the Marshall Islands, the Federated States of Micronesia, Mauritius, Nauru, Niue, Palau, Papua New Guinea, Samoa, Sao Tome and Principe, Singapore, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, the Seychelles, the Solomon Islands, Suriname, Timor-Leste, Tonga, Trinidad and Tobago, Tuvalu and Vanuatu.

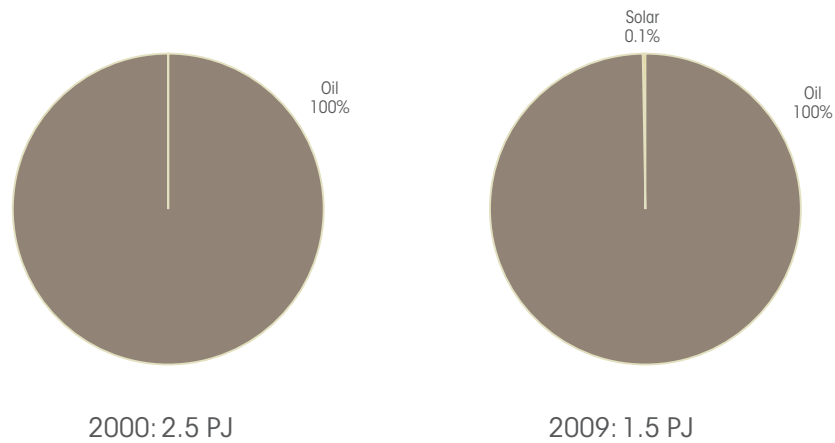
## ENERGY NATIONAL PROFILE 2009

- Total Primary Energy Supply: 1.5 PJ – Of which renewables: 0.0 PJ (0.1%)
- Energy self-sufficiency: 0.1%
- Fuel imports: Not available
- Electricity generation: 84.9 GWh – Of which renewables: 0.5 GWh (0.6%)
- Electricity use per capita: 3,372 kWh
- Electrical capacity: 39.3 MW – Of which renewables: 0.3 MW (0.8%)
- Electricity access rate: 99.0%
- Share of population using solid fuels: < 5%

### TARGETS:

- 20% of primary energy from renewables by 2020

FIGURE 3: TOTAL PRIMARY ENERGY SUPPLY\* IN 2000 AND 2009



\*excluding electricity trade

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



WORLD BANK EASE OF DOING BUSINESS INDEX FOR 2012: Ranked 116 out of 183

RENEWABLE ENERGY PROJECTS FROM THE GOVERNMENT AND PRIVATE SECTORS:

- No information available

NUMBER OF REGISTERED CLEAN DEVELOPMENT MECHANISM PROJECTS FOCUSING ON RENEWABLE ENERGY: 0

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 pre-judge 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 UN data; Share of fuel imports in total imports: World Trade Organisation; Electrical capacity: IEA, EIA; Electricity access rate: World Energy Outlook 2011 database (IEA); Share of population using solid fuels: World Health Organisation; Targets: REN21, IRENA; Policy/legislation: IEA, Reegle, 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.



# PAPUA NEW GUINEA

**6.9 million** Population (2010)  
**9.5 billion USD** GDP (2010)  
**1,382 USD** GDP per capita (2010)

FIGURE 1: GDP PER CAPITA FOR 2010

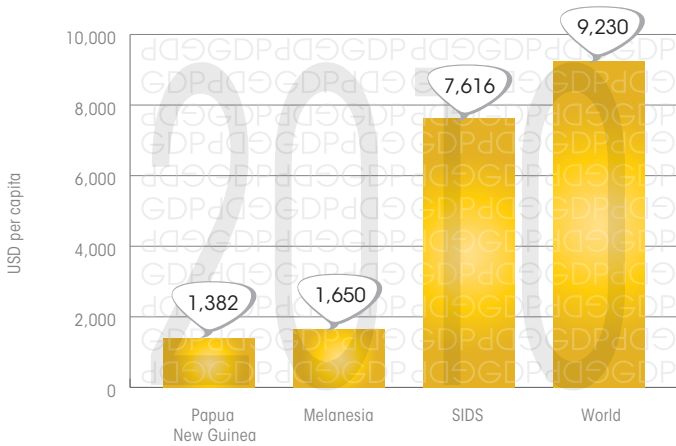
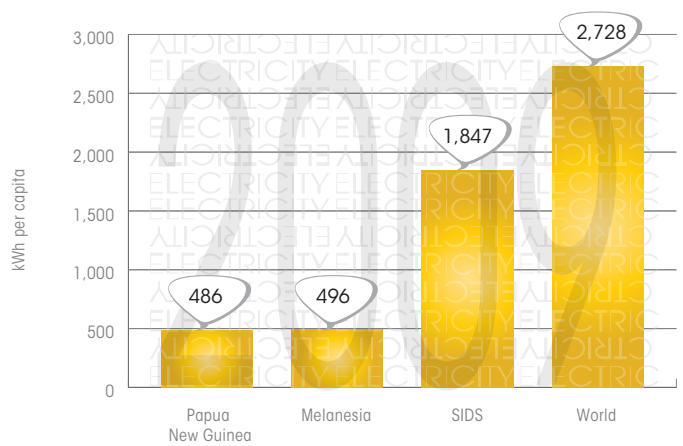


FIGURE 2: ELECTRICITY USE PER CAPITA FOR 2009



Melanesia includes Fiji, Papua New Guinea, the Solomon Islands and Vanuatu. SIDS include Antigua and Barbuda, Bahamas, Bahrain, Barbados, Belize, Cape Verde, Comoros, the Cook Islands, Cuba, Dominica, the Dominican Republic, Fiji, Grenada, Guinea-Bissau, Guyana, Haiti, Jamaica, Kiribati, the Maldives, the Marshall Islands, the Federated States of Micronesia, Mauritius, Nauru, Niue, Palau, Papua New Guinea, Samoa, Sao Tome and Principe, Singapore, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, the Seychelles, the Solomon Islands, Suriname, Timor-Leste, Tonga, Trinidad and Tobago, Tuvalu and Vanuatu.

## ENERGY NATIONAL PROFILE 2009

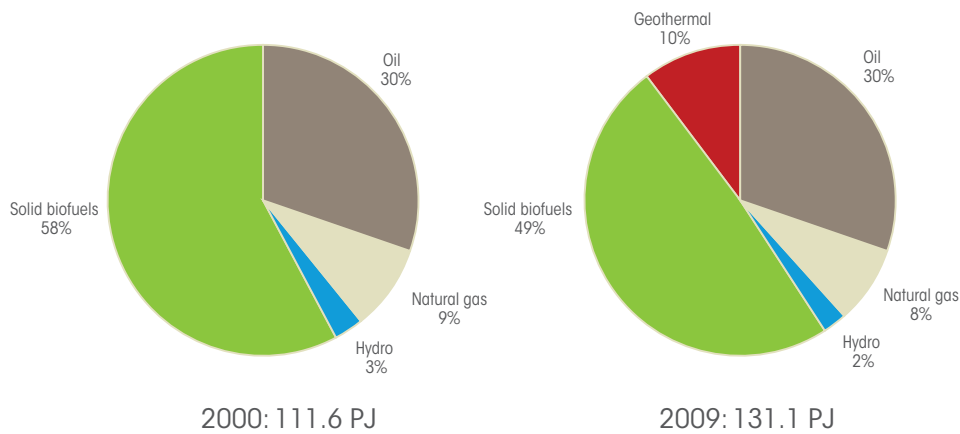
- Total Primary Energy Supply: 131.1 PJ – Of which renewables: 80.6 PJ (61.5%)
- Energy self-sufficiency: 133.7%
- Fuel imports: Not available
- Electricity generation: 3,501 GWh – Of which renewables: 1,225 GWh (35.0%)
- Electricity use per capita: 486 kWh
- Electrical capacity: 722 MW – Of which renewables: 294 MW (40.7%)
- Electricity access rate: 13.0%
- Share of population using solid fuels: Not available

### TARGETS:

- No information available



FIGURE 3: TOTAL PRIMARY ENERGY SUPPLY\* IN 2000 AND 2009



\*excluding electricity trade

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

SIGNED THE IRENA  
STATUTE

2009

WORLD BANK EASE OF DOING BUSINESS INDEX FOR 2012: Ranked 101 out of 183

RENEWABLE ENERGY PROJECTS FROM THE GOVERNMENT AND PRIVATE SECTORS:

- No information available

NUMBER OF REGISTERED CLEAN DEVELOPMENT MECHANISM PROJECTS FOCUSING ON RENEWABLE ENERGY: 1

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 pre-judge 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 UN data; Share of fuel imports in total imports: World Trade Organisation; Electrical capacity: IEA, EIA; Electricity access rate: World Energy Outlook 2011 database (IEA); Share of population using solid fuels: World Health Organisation; Targets: REN21, IRENA; Policy/legislation: IEA, Reegle, 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.

# SAINT KITTS AND NEVIS



**52,000** Population (2010)  
**673 million USD** GDP (2010)  
**12,847 USD** GDP per capita (2010)

FIGURE 1: GDP PER CAPITA FOR 2010

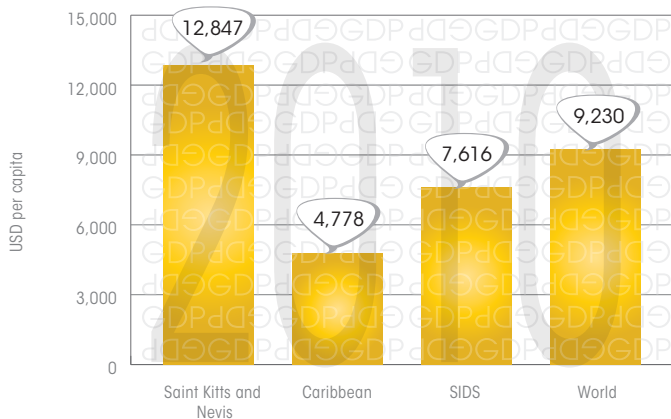
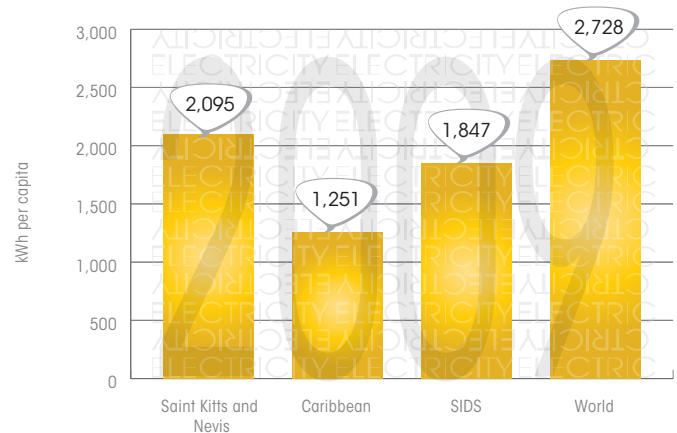


FIGURE 2: ELECTRICITY USE PER CAPITA FOR 2009



The Caribbean include Antigua and Barbuda, Bahamas, Barbados, Cuba, Dominica, the Dominican Republic, Grenada, Haiti, Jamaica, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, and Trinidad and Tobago.  
 SIDS include Antigua and Barbuda, Bahamas, Bahrain, Barbados, Belize, Cape Verde, Comoros, the Cook Islands, Cuba, Dominica, the Dominican Republic, Fiji, Grenada, Guinea-Bissau, Guyana, Haiti, Jamaica, Kiribati, the Maldives, the Marshall Islands, the Federated States of Micronesia, Mauritius, Nauru, Niue, Palau, Papua New Guinea, Samoa, Sao Tome and Principe, Singapore, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, the Seychelles, the Solomon Islands, Suriname, Timor-Leste, Tonga, Trinidad and Tobago, Tuvalu and Vanuatu.

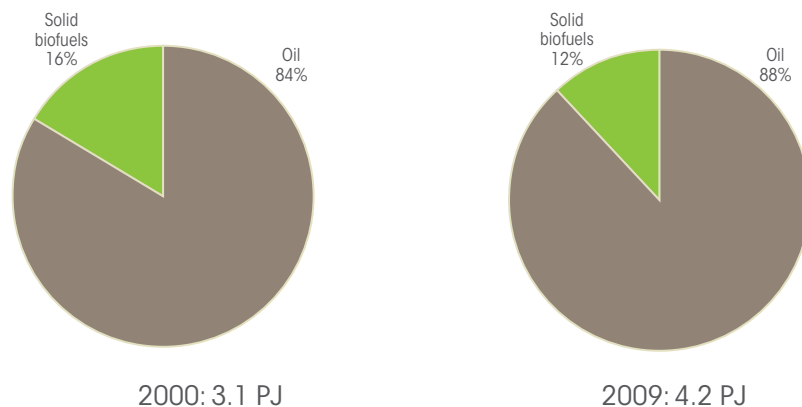
## ENERGY NATIONAL PROFILE 2009

- Total Primary Energy Supply: 4.2 PJ - Of which renewables: 0.5 PJ (11.9%)
- Energy self-sufficiency: 11.9%
- Fuel imports: Not available
- Electricity generation: 142.0 GWh - Of which renewables: 0.0 GWh (0.0%)
- Electricity use per capita: 2,095 kWh
- Electrical capacity: 22 MW - Of which renewables: 0.0 MW (0.0%)
- Electricity access rate: 95.0%
- Share of population using solid fuels: < 5%

### TARGETS:

- 20% of renewable capacity by 2015

FIGURE 3: TOTAL PRIMARY ENERGY SUPPLY\* IN 2000 AND 2009



\*excluding electricity trade

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



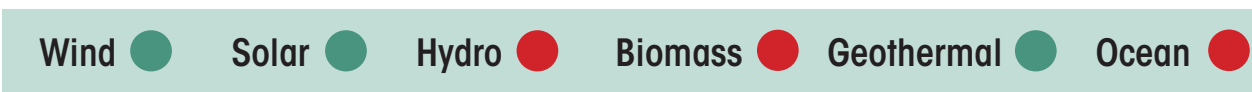
WORLD BANK EASE OF DOING BUSINESS INDEX FOR 2012: Ranked 95 out of 183

RENEWABLE ENERGY PROJECTS FROM THE GOVERNMENT AND PRIVATE SECTORS:

- About 160 MW of geothermal capacity addition announced (2 projects)
- 5 MW of wind capacity addition announced (1 project)

NUMBER OF REGISTERED CLEAN DEVELOPMENT MECHANISM PROJECTS FOCUSING ON RENEWABLE ENERGY: 0

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 prejudice 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 UN data; Share of fuel imports in total imports: World Trade Organisation; Electrical capacity: IEA, EIA; Electricity access rate: World Energy Outlook 2011 database (IEA); Share of population using solid fuels: World Health Organisation; Targets: REN21, IRENA; Policy/legislation: IEA, Reegle, 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.

# SAINT LUCIA



**174,000** Population (2010)  
**1.2 billion USD** GDP (2010)  
**6,890 USD** GDP per capita (2010)

FIGURE 1: GDP PER CAPITA FOR 2010

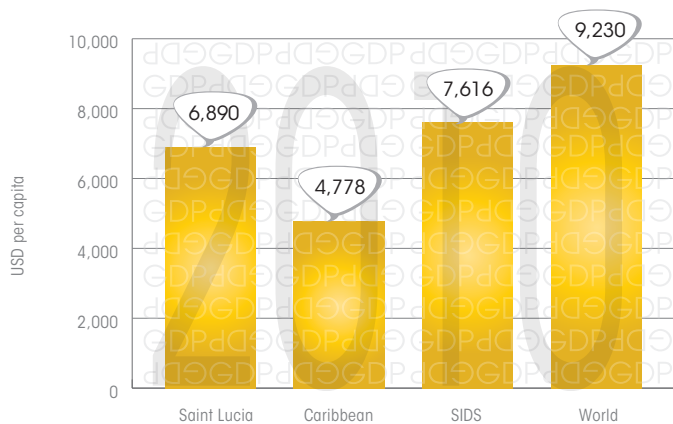
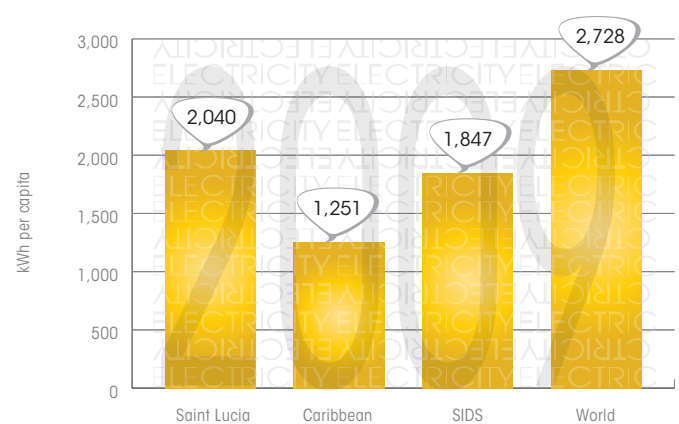


FIGURE 2: ELECTRICITY USE PER CAPITA FOR 2009



The Caribbean include Antigua and Barbuda, Bahamas, Barbados, Cuba, Dominica, the Dominican Republic, Grenada, Haiti, Jamaica, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, and Trinidad and Tobago.  
 SIDS include Antigua and Barbuda, Bahamas, Bahrain, Barbados, Belize, Cape Verde, Comoros, the Cook Islands, Cuba, Dominica, the Dominican Republic, Fiji, Grenada, Guinea-Bissau, Guyana, Haiti, Jamaica, Kiribati, the Maldives, the Marshall Islands, the Federated States of Micronesia, Mauritius, Nauru, Niue, Palau, Papua New Guinea, Samoa, Sao Tome and Principe, Singapore, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, the Seychelles, the Solomon Islands, Suriname, Timor-Leste, Tonga, Trinidad and Tobago, Tuvalu and Vanuatu.

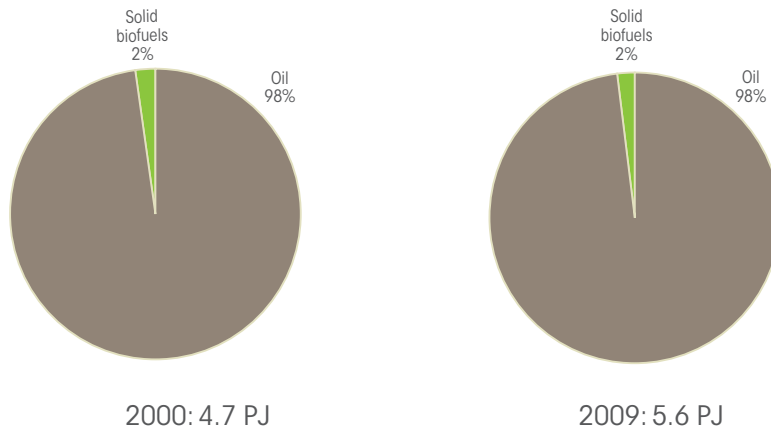
## ENERGY NATIONAL PROFILE 2009

- Total Primary Energy Supply: 5.6 PJ - Of which renewables: 0.1 PJ (1.8%)
- Energy self-sufficiency: 1.8%
- Fuel imports: 145 million USD (25.9% of total imports)
- Electricity generation: 363.0 GWh - Of which renewables: 0.0 GWh (0.0%)
- Electricity use per capita: 2,040 kWh
- Electrical capacity: 76 MW - Of which renewables: 0.0 MW (0.0%)
- Electricity access rate: 98.0%
- Share of population using solid fuels: < 5%

### TARGETS:

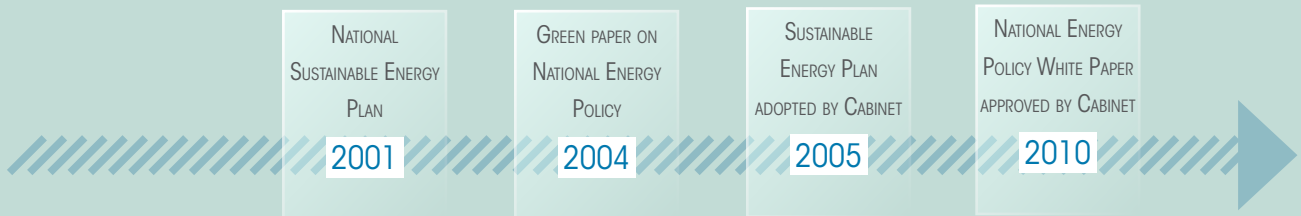
- No information available

FIGURE 3: TOTAL PRIMARY ENERGY SUPPLY\* IN 2000 AND 2009



\*excluding electricity trade

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



WORLD BANK EASE OF DOING BUSINESS INDEX FOR 2012: Ranked 52 out of 183

RENEWABLE ENERGY PROJECTS FROM THE GOVERNMENT AND PRIVATE SECTORS:

- 7 MW of waste-to-energy capacity addition announced (1 project)
- 15 MW of geothermal capacity addition announced (1 project)

NUMBER OF REGISTERED CLEAN DEVELOPMENT MECHANISM PROJECTS FOCUSING ON RENEWABLE ENERGY: 0

RENEWABLE ENERGY RESOURCES:

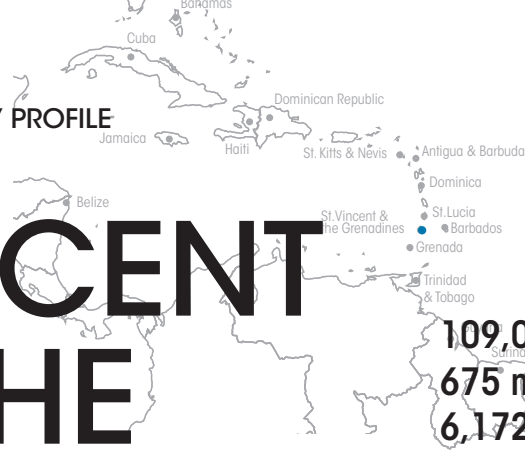
● High ● Medium ● Low ● Unknown ✕ Not applicable

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 UN data; Share of fuel imports in total imports: World Trade Organisation; Electrical capacity: IEA, EIA; Electricity access rate: World Energy Outlook 2011 database (IEA); Share of population using solid fuels: World Health Organisation; Targets: REN21, IRENA; Policy/legislation: IEA, Reegle, 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.



# ST. VINCENT AND THE GRENADINES

**109,000** Population (2010)  
**675 million USD** GDP (2010)  
**6,172 USD** GDP per capita (2010)

FIGURE 1: GDP PER CAPITA FOR 2010

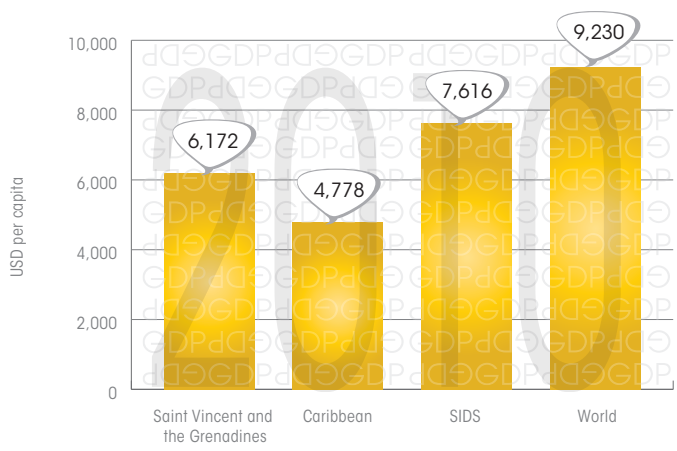
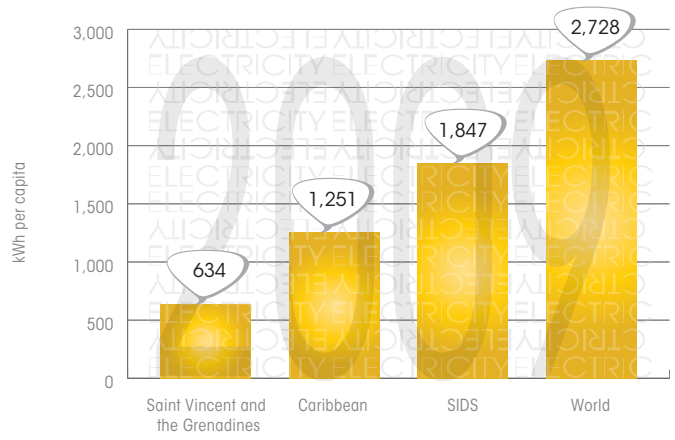


FIGURE 2: ELECTRICITY USE PER CAPITA FOR 2009



The Caribbean include Antigua and Barbuda, Bahamas, Barbados, Cuba, Dominica, the Dominican Republic, Grenada, Haiti, Jamaica, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, and Trinidad and Tobago.  
 SIDS include Antigua and Barbuda, Bahamas, Bahrain, Barbados, Belize, Cape Verde, Comoros, the Cook Islands, Cuba, Dominica, the Dominican Republic, Fiji, Grenada, Guinea-Bissau, Guyana, Haiti, Jamaica, Kiribati, the Maldives, the Marshall Islands, the Federated States of Micronesia, Mauritius, Nauru, Niue, Palau, Papua New Guinea, Samoa, Sao Tome and Principe, Singapore, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, the Seychelles, the Solomon Islands, Suriname, Timor-Leste, Tonga, Trinidad and Tobago, Tuvalu and Vanuatu.

## ENERGY NATIONAL PROFILE 2009

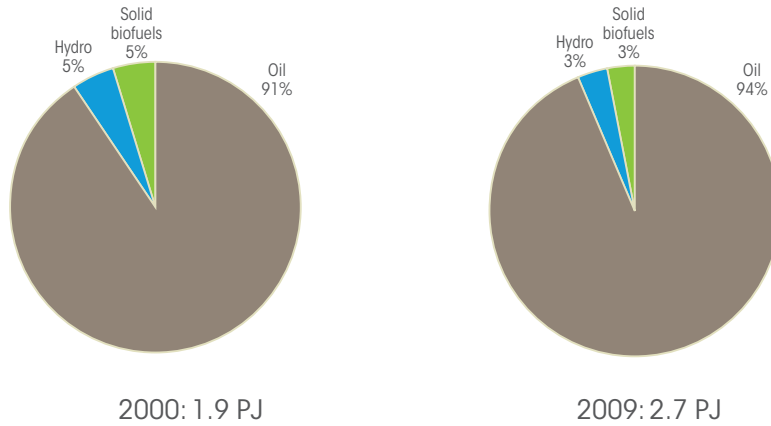
- Total Primary Energy Supply: 2.7 PJ - Of which renewables: 0.2 PJ (6.1%)
- Energy self-sufficiency: 6.1%
- Fuel imports: 83 million USD (21.9% of total imports)
- Electricity generation: 140.0 GWh - Of which renewables: 24.0 GWh (17.1%)
- Electricity use per capita: 634 kWh
- Electrical capacity: 41 MW - Of which renewables: 6.4 MW (15.6%)
- Electricity access rate: Not available
- Share of population using solid fuels: Not available

### TARGETS:

- 30% of electricity generation from renewables by 2015
- 60% of electricity generation from renewables by 2020

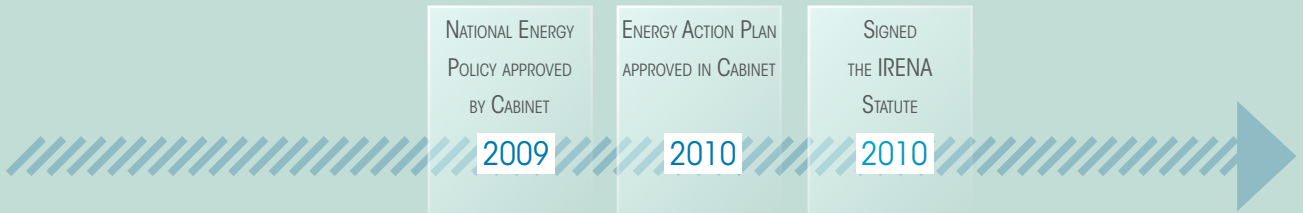
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FIGURE 3: TOTAL PRIMARY ENERGY SUPPLY\* IN 2000 AND 2009



\*excluding electricity trade

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



WORLD BANK EASE OF DOING BUSINESS INDEX FOR 2012: Ranked 75 out of 183

RENEWABLE ENERGY PROJECTS FROM THE GOVERNMENT AND PRIVATE SECTORS:  
 • No information available

NUMBER OF REGISTERED CLEAN DEVELOPMENT MECHANISM PROJECTS FOCUSING ON RENEWABLE ENERGY: 0

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 prejudice 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 UN data; Share of fuel imports in total imports: World Trade Organisation; Electrical capacity: IEA, EIA; Electricity access rate: World Energy Outlook 2011 database (IEA); Share of population using solid fuels: World Health Organisation; Targets: REN21, IRENA; Policy/legislation: IEA, Reegle, 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.



# SAMOA



**183,000** Population (2010)  
**595 million USD** GDP (2010)  
**3,249 USD** GDP per capita (2010)

FIGURE 1: GDP PER CAPITA FOR 2010

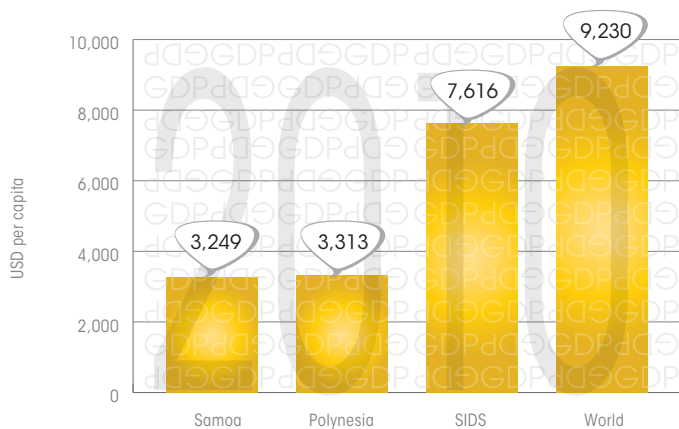
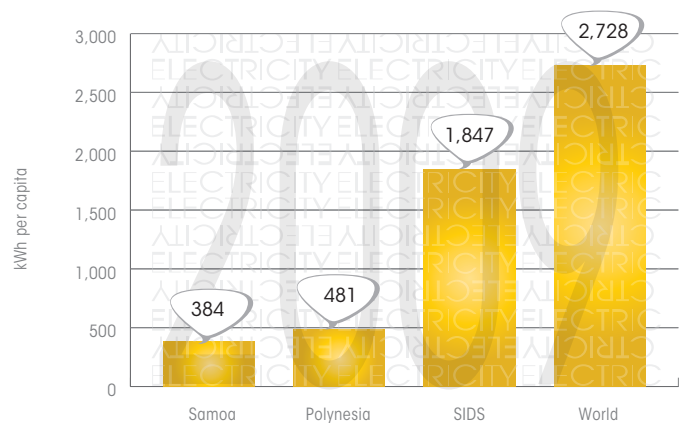


FIGURE 2: ELECTRICITY USE PER CAPITA FOR 2009



Polynesia includes the Cook Islands, Niue, Samoa, Tonga and Tuvalu.

SIDS include Antigua and Barbuda, Bahamas, Bahrain, Barbados, Belize, Cape Verde, Comoros, the Cook Islands, Cuba, Dominica, the Dominican Republic, Fiji, Grenada, Guinea-Bissau, Guyana, Haiti, Jamaica, Kiribati, the Maldives, the Marshall Islands, the Federated States of Micronesia, Mauritius, Nauru, Niue, Palau, Papua New Guinea, Samoa, Sao Tome and Principe, Singapore, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, the Seychelles, the Solomon Islands, Suriname, Timor-Leste, Tonga, Trinidad and Tobago, Tuvalu and Vanuatu.

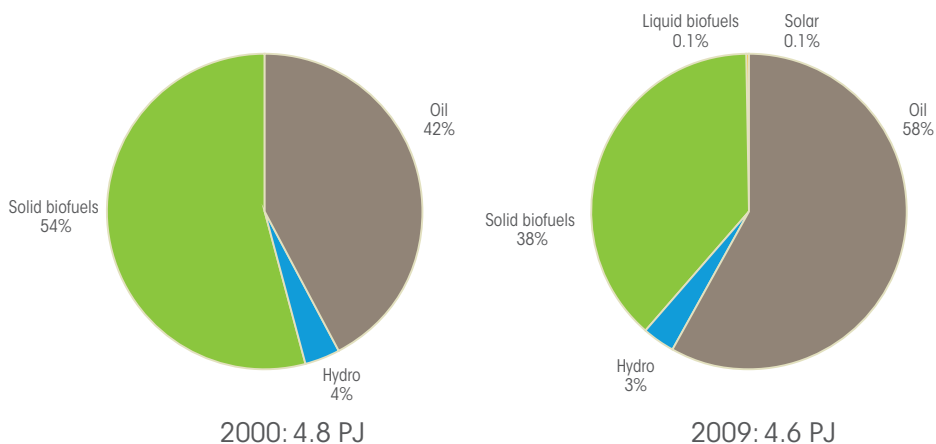
## ENERGY NATIONAL PROFILE 2009

- Total Primary Energy Supply: 4.6 PJ – Of which renewables: 1.9 PJ (41.8%)
- Energy self-sufficiency: 41.8%
- Fuel imports: 54 million USD (17.6% of total imports)
- Electricity generation: 108.0 GWh – Of which renewables: 44.4 GWh (41.1%)
- Electricity use per capita: 384 kWh
- Electrical capacity: 41.5 MW – Of which renewables: 12 MW (28.9%)
- Electricity access rate: 95.0%
- Share of population using solid fuels: 44%

### TARGETS:

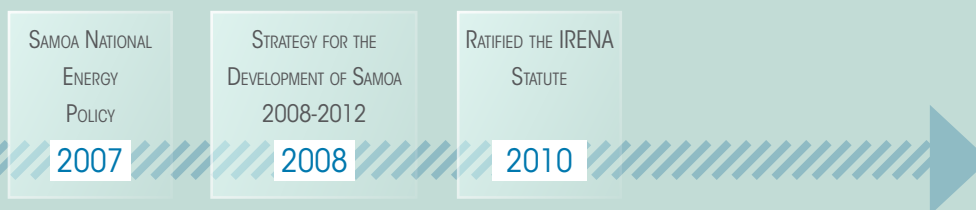
- 20 % of primary energy from renewables by 2030

FIGURE 3: TOTAL PRIMARY ENERGY SUPPLY\* IN 2000 AND 2009



\*excluding electricity trade

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



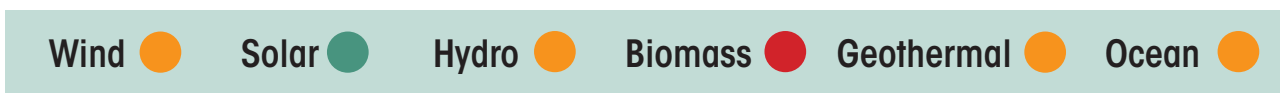
WORLD BANK EASE OF DOING BUSINESS INDEX FOR 2012: Ranked 60 out of 183

RENEWABLE ENERGY PROJECTS FROM THE GOVERNMENT AND PRIVATE SECTORS:

- No information available

NUMBER OF REGISTERED CLEAN DEVELOPMENT MECHANISM PROJECTS FOCUSING ON RENEWABLE ENERGY: 0

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 pre-judge 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 UN data; Share of fuel imports in total imports: World Trade Organisation; Electrical capacity: IEA, EIA; Electricity access rate: World Energy Outlook 2011 database (IEA); Share of population using solid fuels: World Health Organisation; Targets: REN21, IRENA; Policy/legislation: IEA, Reegle, 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.



# SÃO TOME AND PRINCÍPE

**165,000** Population (2010)  
**201 million USD** GDP (2010)  
**1,215 USD** GDP per capita (2010)

FIGURE 1: GDP PER CAPITA FOR 2010

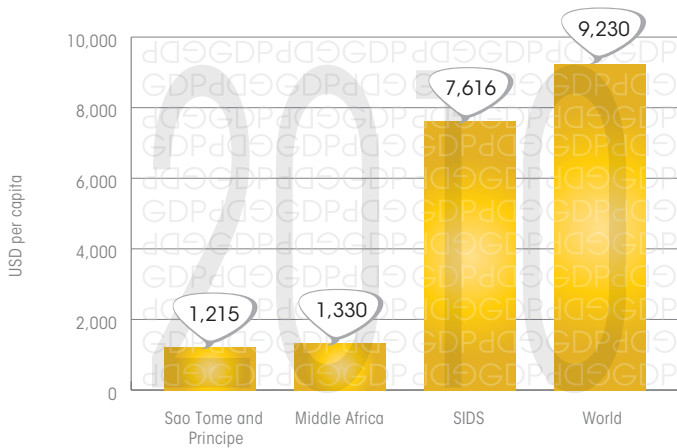
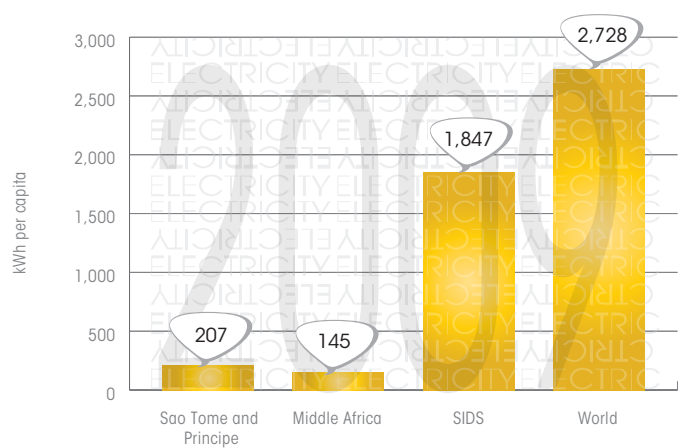


FIGURE 2: ELECTRICITY USE PER CAPITA FOR 2009



Middle Africa includes Angola, Cameroon, the Central African Republic, Chad, Congo, the Democratic Republic of Congo, Equatorial Guinea, Gabon and Sao Tome and Principe. SIDS include Antigua and Barbuda, Bahamas, Bahrain, Barbados, Belize, Cape Verde, Comoros, the Cook Islands, Cuba, Dominica, the Dominican Republic, Fiji, Grenada, Guinea-Bissau, Guyana, Haiti, Jamaica, Kiribati, the Maldives, the Marshall Islands, the Federated States of Micronesia, Mauritius, Nauru, Niue, Palau, Papua New Guinea, Samoa, Sao Tome and Principe, Singapore, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, the Seychelles, the Solomon Islands, Suriname, Timor-Leste, Tonga, Trinidad and Tobago, Tuvalu and Vanuatu.

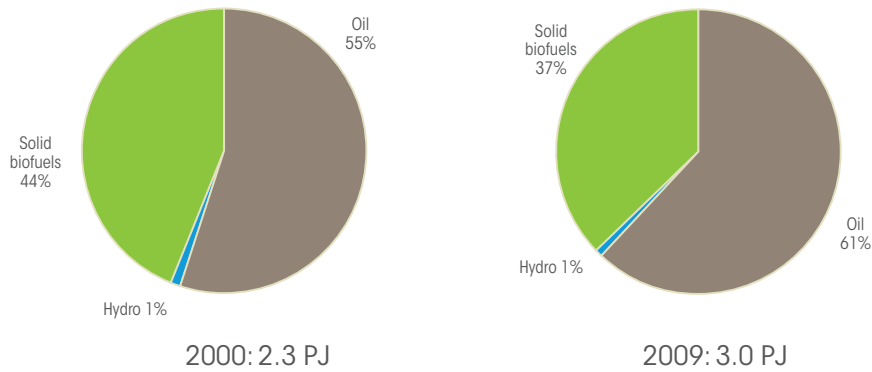
## ENERGY NATIONAL PROFILE 2009

- Total Primary Energy Supply: 3.0 PJ - Of which renewables: 1.2 PJ (38.7%)
- Energy self-sufficiency: 38.7%
- Fuel imports: 18 million USD (16.1% of total imports)
- Electricity generation: 48.9 GWh - Of which renewables: 12.0 GWh (24.5%)
- Electricity use per capita: 207 kWh
- Electrical capacity: 14 MW - Of which renewables: 6 MW (42.9%)
- Electricity access rate: 60.0%
- Share of population using solid fuels: Not available

### TARGETS:

- No information available

FIGURE 3: TOTAL PRIMARY ENERGY SUPPLY\* IN 2000 AND 2009



\*excluding electricity trade

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



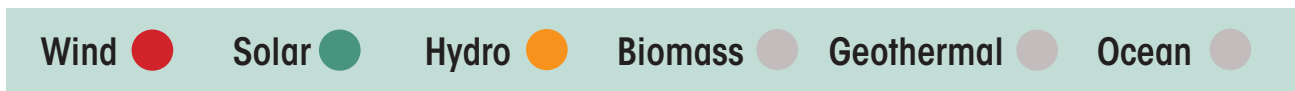
WORLD BANK EASE OF DOING BUSINESS INDEX FOR 2012: Ranked 163 out of 183

RENEWABLE ENERGY PROJECTS FROM THE GOVERNMENT AND PRIVATE SECTORS:

- No information available

NUMBER OF REGISTERED CLEAN DEVELOPMENT MECHANISM PROJECTS FOCUSING ON RENEWABLE ENERGY: 0

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 pre-judge 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 UN data; Share of fuel imports in total imports: World Trade Organisation; Electrical capacity: IEA, EIA; Electricity access rate: World Energy Outlook 2011 database (IEA); Share of population using solid fuels: World Health Organisation; Targets: REN21, IRENA; Policy/legislation: IEA, Reegle, 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.

# SEYCHELLES



**87,000** Population (2010)  
**963 million USD** GDP (2010)  
**11,130 USD** GDP per capita (2010)

FIGURE 1: GDP PER CAPITA FOR 2010

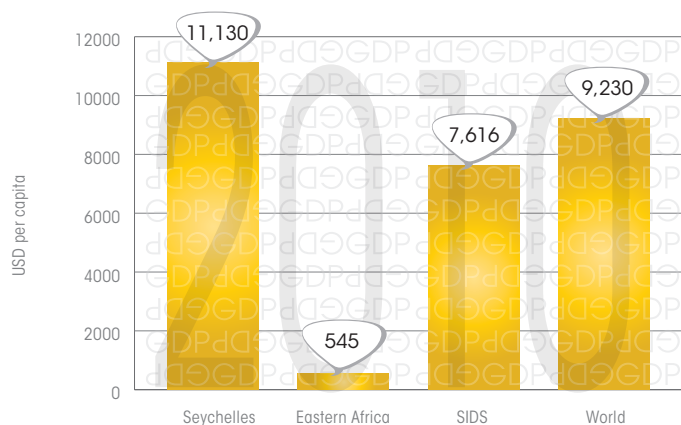
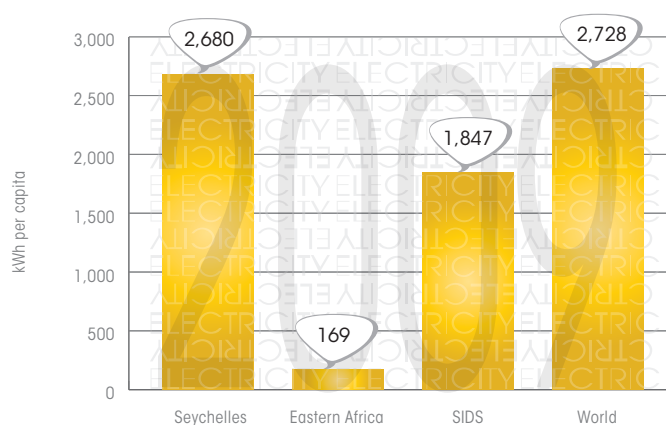


FIGURE 2: ELECTRICITY USE PER CAPITA FOR 2009



Eastern Africa includes Burundi, Comoros, Djibouti, Eritrea, Ethiopia, Kenya, Madagascar, Malawi, Mauritius, Mozambique, Rwanda, Seychelles, Somalia, the United Republic of Tanzania, Uganda, Zambia and Zimbabwe.

SIDS include Antigua and Barbuda, Bahamas, Bahrain, Barbados, Belize, Cape Verde, Comoros, the Cook Islands, Cuba, Dominica, the Dominican Republic, Fiji, Grenada, Guinea-Bissau, Guyana, Haiti, Jamaica, Kiribati, the Maldives, the Marshall Islands, the Federated States of Micronesia, Mauritius, Nauru, Niue, Palau, Papua New Guinea, Samoa, Sao Tome and Principe, Singapore, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, the Seychelles, the Solomon Islands, Suriname, Timor-Leste, Tonga, Trinidad and Tobago, Tuvalu and Vanuatu.

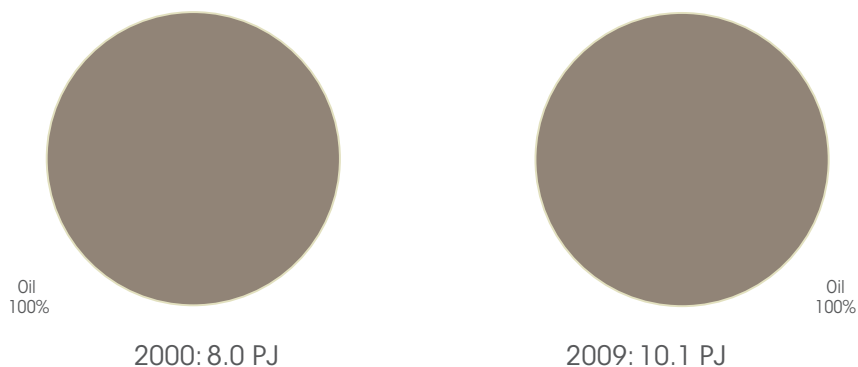
## ENERGY NATIONAL PROFILE 2009

- Total Primary Energy Supply: 10.1 PJ - Of which renewables: 0.0 PJ (0.0%)
- Energy self-sufficiency: 0.0%
- Fuel imports: 164 million USD (25.3% of total imports)
- Electricity generation: 275.7 GWh - Of which renewables: 0.0 GWh (0%)
- Electricity use per capita: 2,680 kWh
- Electrical capacity: 95 MW - Of which renewables: 0 MW (0%)
- Electricity access rate: 96.0%
- Share of population using solid fuels: < 5%

### TARGETS:

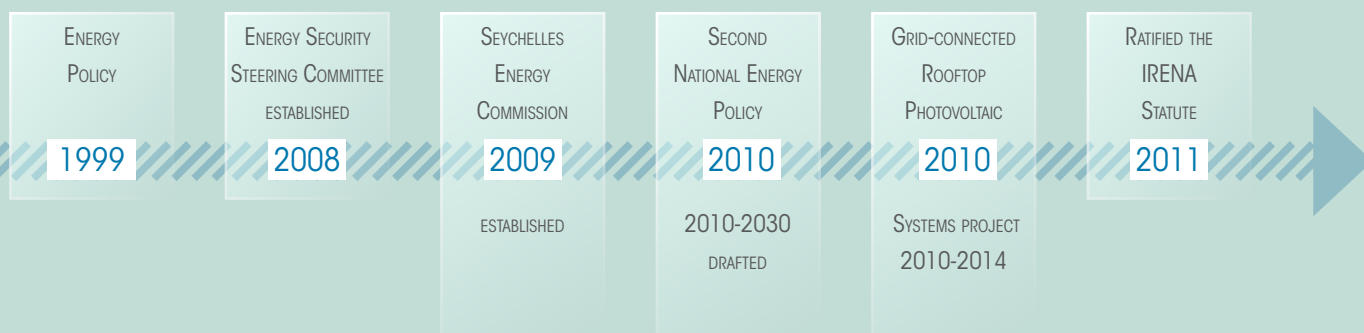
- 5% of electricity generation from renewables by 2020
- 15% of electricity generation from renewables by 2030

FIGURE 3: TOTAL PRIMARY ENERGY SUPPLY\* IN 2000 AND 2009



\*excluding electricity trade

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



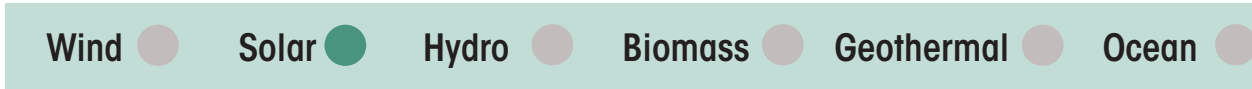
WORLD BANK EASE OF DOING BUSINESS INDEX FOR 2012: Ranked 128 out of 183

RENEWABLE ENERGY PROJECTS FROM THE GOVERNMENT AND PRIVATE SECTORS:

- 18 MW of wind capacity addition announced (1 project)

NUMBER OF REGISTERED CLEAN DEVELOPMENT MECHANISM PROJECTS FOCUSING ON RENEWABLE ENERGY: 0

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 pre-judge 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 UN data; Share of fuel imports in total imports: World Trade Organisation; Electrical capacity: IEA, EIA; Electricity access rate: World Energy Outlook 2011 database (IEA); Share of population using solid fuels: World Health Organisation; Targets: REN21, IRENA; Policy/legislation: IEA, Reegle, 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.

# SINGAPORE



**5.1 million** Population (2010)  
**213.2 billion USD** GDP (2010)  
**41,987 USD** GDP per capita (2010)

FIGURE 1: GDP PER CAPITA FOR 2010

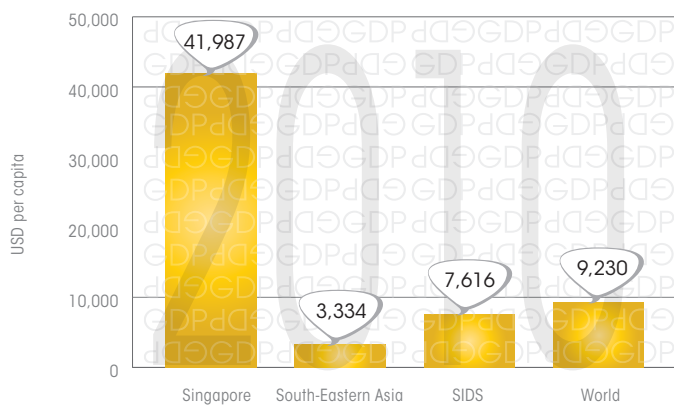
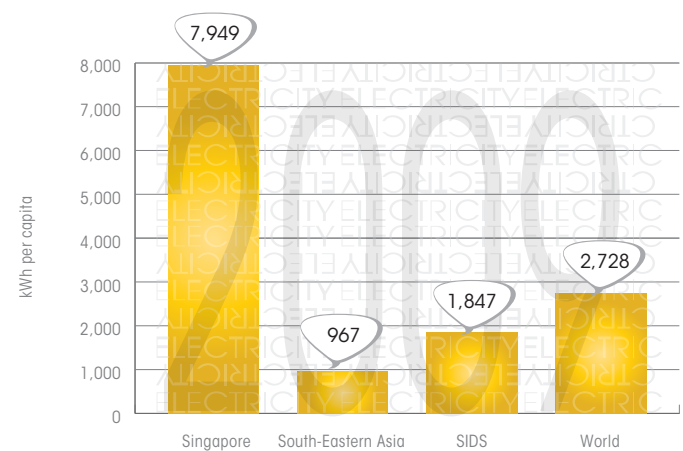


FIGURE 2: ELECTRICITY USE PER CAPITA FOR 2009



South-Eastern Asia includes Brunei Darussalam, Cambodia, Indonesia, the Lao People's Democratic Republic, Malaysia, Myanmar, the Philippines, Singapore, Thailand, Timor-Leste and Vietnam.

SIDS include Antigua and Barbuda, Bahamas, Bahrain, Barbados, Belize, Cape Verde, Comoros, the Cook Islands, Cuba, Dominica, the Dominican Republic, Fiji, Grenada, Guinea-Bissau, Guyana, Haiti, Jamaica, Kiribati, the Maldives, the Marshall Islands, the Federated States of Micronesia, Mauritius, Nauru, Niue, Palau, Papua New Guinea, Samoa, Sao Tome and Principe, Singapore, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, the Seychelles, the Solomon Islands, Suriname, Timor-Leste, Tonga, Trinidad and Tobago, Tuvalu and Vanuatu.

## ENERGY NATIONAL PROFILE 2009

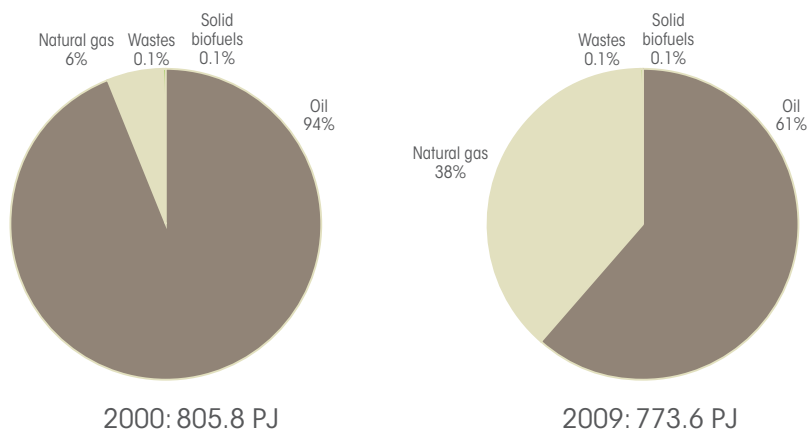
- Total Primary Energy Supply: 773.6 PJ - Of which renewables: 0.6 PJ (0.1%)
- Energy self-sufficiency: 0.2%
- Fuel imports: 81.2 billion USD (26.1% of total imports)
- Electricity generation: 41.8 TWh - Of which renewables: 42.0 GWh (0.1%)
- Electricity use per capita: 7,949 kWh
- Electrical capacity: 10.7 GW - Of which renewables: 302 MW (2.8%)
- Electricity access rate: 100.0%
- Share of population using solid fuels: < 5%

### TARGETS:

- No information available

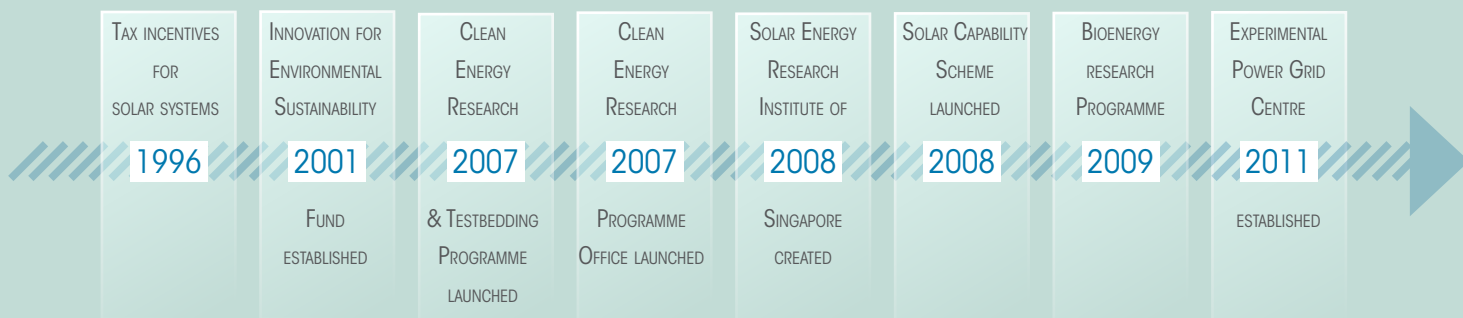


FIGURE 3: TOTAL PRIMARY ENERGY SUPPLY\* IN 2000 AND 2009



\*excluding electricity trade

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



WORLD BANK EASE OF DOING BUSINESS INDEX FOR 2012: Ranked 1 out of 183

RENEWABLE ENERGY PROJECTS FROM THE GOVERNMENT AND PRIVATE SECTORS:

- More than 30 MW of biomass-fired capacity addition committed
- More than 10 MWp of solar photovoltaic capacity addition committed

NUMBER OF REGISTERED CLEAN DEVELOPMENT MECHANISM PROJECTS FOCUSING ON RENEWABLE ENERGY: 1

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 UN data; Share of fuel imports in total imports: World Trade Organisation; Electrical capacity: IEA, EIA; Electricity access rate: World Energy Outlook 2011 database (IEA); Share of population using solid fuels: World Health Organisation; Targets: REN21, IRENA; Policy/legislation: IEA, Reegle, 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.



# SOLOMON ISLANDS

**538,000** Population (2010)  
**679 million USD** GDP (2010)  
**1,261 USD** GDP per capita (2010)

FIGURE 1: GDP PER CAPITA FOR 2010

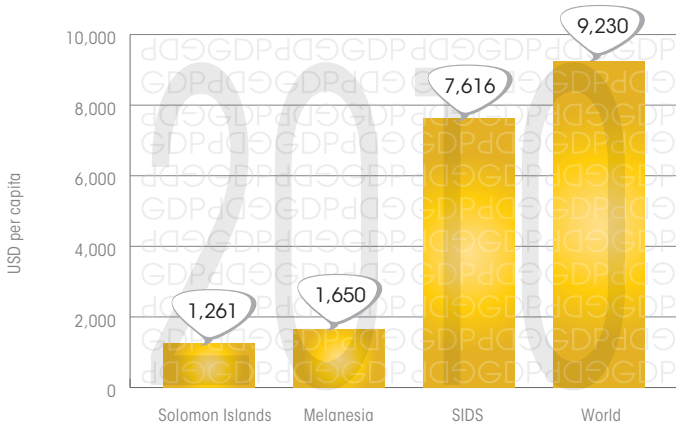
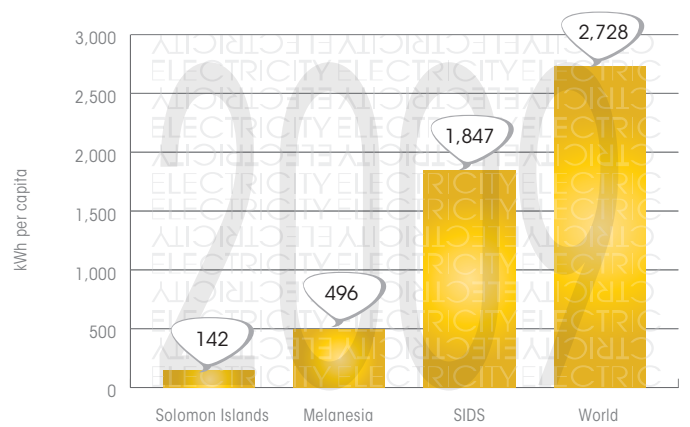


FIGURE 2: ELECTRICITY USE PER CAPITA FOR 2009



Melanesia includes Fiji, Papua New Guinea, the Solomon Islands and Vanuatu. SIDS include Antigua and Barbuda, Bahamas, Bahrain, Barbados, Belize, Cape Verde, Comoros, the Cook Islands, Cuba, Dominica, the Dominican Republic, Fiji, Grenada, Guinea-Bissau, Guyana, Haiti, Jamaica, Kiribati, the Maldives, the Marshall Islands, Mauritius, Nauru, Niue, Palau, Papua New Guinea, Samoa, Sao Tome and Principe, Singapore, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, the Seychelles, the Solomon Islands, Suriname, Timor-Leste, Tonga, Trinidad and Tobago, Tuvalu and Vanuatu.

## ENERGY NATIONAL PROFILE 2009

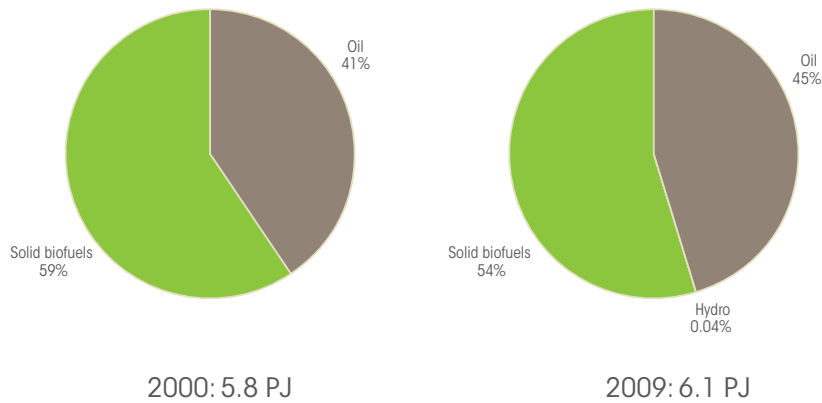
- Total Primary Energy Supply: 6.1 PJ – Of which renewables: 3.4 PJ (54.5%)
- Energy self-sufficiency: 54.5%
- Fuel imports: 99 million USD (24.4% of total imports)
- Electricity generation: 84.3 GWh – Of which renewables: 0.6 GWh (0.7%)
- Electricity use per capita: 142 kWh
- Electrical capacity: 36.1 MW – Of which renewables: 0.1 MW (0.3%)
- Electricity access rate: 15.0%
- Share of population using solid fuels: 92%

\*2009

### TARGETS:

- 50% of electricity generation from renewables by 2015

FIGURE 3: TOTAL PRIMARY ENERGY SUPPLY\* IN 2000 AND 2009



\*excluding electricity trade

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



WORLD BANK EASE OF DOING BUSINESS INDEX FOR 2012: Ranked 74 out of 183

RENEWABLE ENERGY PROJECTS FROM THE GOVERNMENT AND PRIVATE SECTORS:

- No information available

NUMBER OF REGISTERED CLEAN DEVELOPMENT MECHANISM PROJECTS FOCUSING ON RENEWABLE ENERGY: 0

RENEWABLE ENERGY RESOURCES: ● High ● Medium ● Low ● Unknown ✕ Not applicable

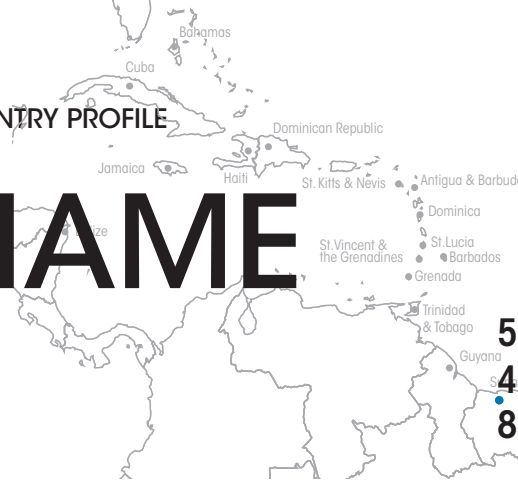
Wind ● Solar ● Hydro ● Biomass ● Geothermal ● Ocean ●

Note: The information on resources should be taken as an indication only. It refers to a general trend of available resources, and does not pre-judge 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 UN data; Share of fuel imports in total imports: World Trade Organisation; Electrical capacity: IEA, EIA; Electricity access rate: World Energy Outlook 2011 database (IEA); Share of population using solid fuels: World Health Organisation; Targets: REN21, IRENA; Policy/legislation: IEA, Reegle, 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.

# SURINAME



**525,000** Population (2010)  
**4.4 billion USD** GDP (2010)  
**8,292 USD** GDP per capita (2010)

FIGURE 1: GDP PER CAPITA FOR 2010

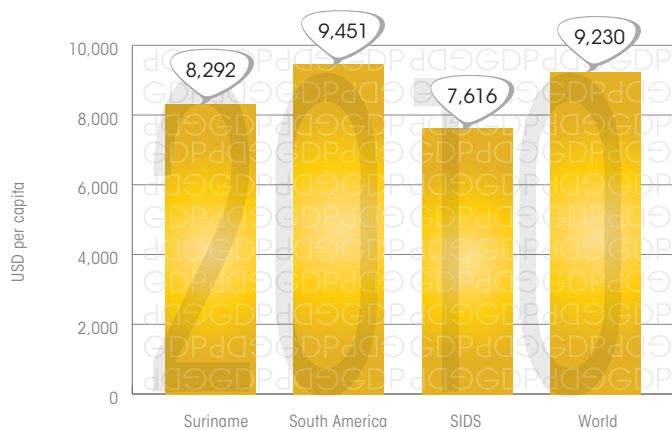
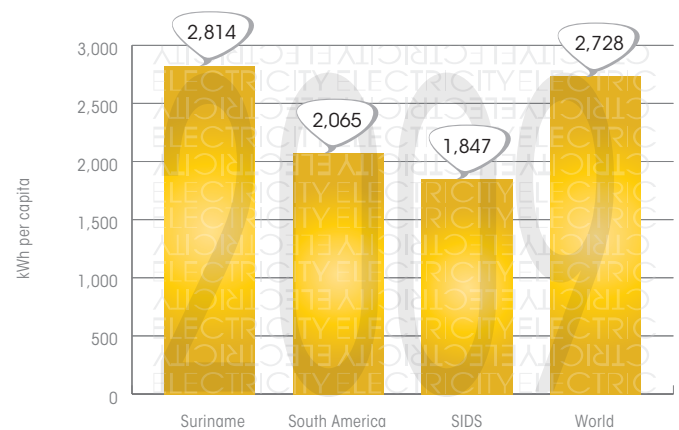


FIGURE 2: ELECTRICITY USE PER CAPITA FOR 2009



South America includes Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, Guyana, Paraguay, Peru, Suriname, Uruguay and Venezuela. Latin America includes Argentina, Belize, Bolivia, Brazil, Chile, Colombia, Costa Rica, Ecuador, El Salvador, Guatemala, Guyana, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, Suriname, Uruguay and Venezuela. SIDS include Antigua and Barbuda, Bahamas, Bahrain, Barbados, Belize, Cape Verde, Comoros, the Cook Islands, Cuba, Dominica, the Dominican Republic, Fiji, Grenada, Guinea-Bissau, Guyana, Haiti, Jamaica, Kiribati, the Maldives, the Marshall Islands, the Federated States of Micronesia, Mauritius, Nauru, Niue, Palau, Papua New Guinea, Samoa, Sao Tome and Principe, Singapore, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, the Seychelles, the Solomon Islands, Suriname, Timor-Leste, Tonga, Trinidad and Tobago, Tuvalu and Vanuatu.

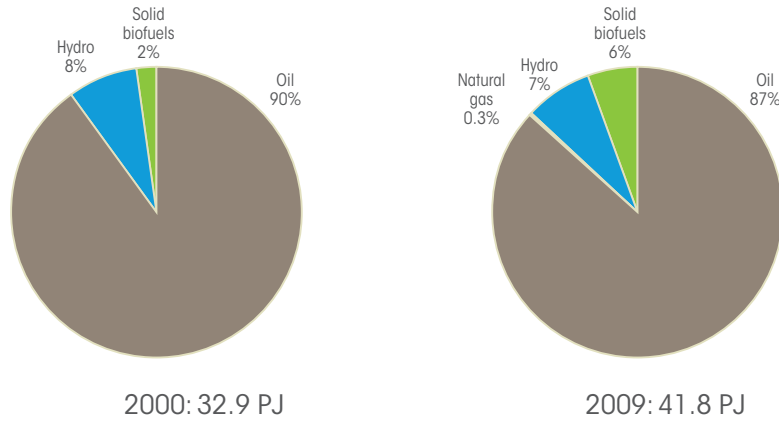
## ENERGY NATIONAL PROFILE 2009

- Total Primary Energy Supply: 41.8 PJ - Of which renewables: 5.4 PJ (12.9%)
- Energy self-sufficiency: 86.4%
- Fuel imports: 264 million USD (18.3% of total imports)
- Electricity generation: 1,618 GWh - Of which renewables: 857.4 GWh (53.0%)
- Electricity use per capita: 2,814 kWh
- Electrical capacity: 389 MW - Of which renewables: 189 MW (48.6%)
- Electricity access rate: Not available
- Share of population using solid fuels: Not available

### TARGETS:

- No information available

FIGURE 3: TOTAL PRIMARY ENERGY SUPPLY\* IN 2000 AND 2009



\*excluding electricity trade

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



WORLD BANK EASE OF DOING BUSINESS INDEX FOR 2012: Ranked 158 out of 183

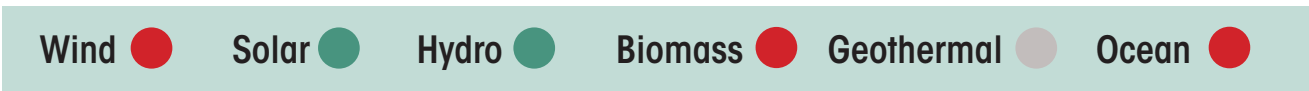
RENEWABLE ENERGY PROJECTS FROM THE GOVERNMENT AND PRIVATE SECTORS:

- No information available

NUMBER OF REGISTERED CLEAN DEVELOPMENT MECHANISM PROJECTS FOCUSING ON RENEWABLE ENERGY: 0

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 prejudice 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 UN data; Share of fuel imports in total imports: World Trade Organisation; Electrical capacity: IEA, EIA; Electricity access rate: World Energy Outlook 2011 database (IEA); Share of population using solid fuels: World Health Organisation; Targets: REN21, IRENA; Policy/legislation: IEA, Reegle, 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.

# TIMOR-LESTE



**1.1 million** Population (2010)

**875 million USD** GDP (2010)

**778 USD** GDP per capita (2010)

FIGURE 1: GDP PER CAPITA FOR 2010

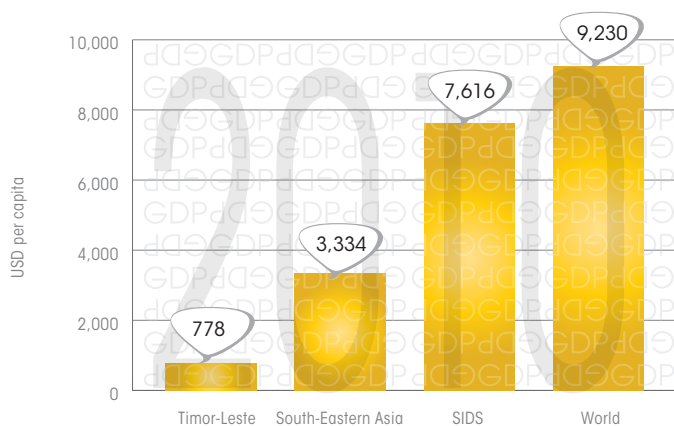
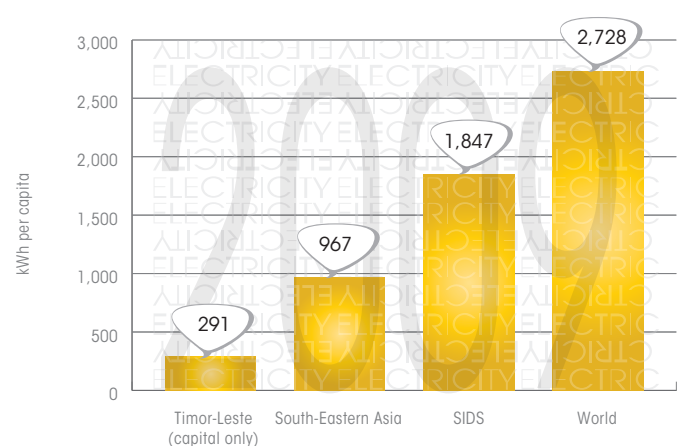


FIGURE 2: ELECTRICITY USE PER CAPITA FOR 2009



South-Eastern Asia includes Brunei Darussalam, Cambodia, Indonesia, the Lao People's Democratic Republic, Malaysia, Myanmar, the Philippines, Singapore, Thailand, Timor-Leste and Vietnam.

SIDS include Antigua and Barbuda, Bahamas, Bahrain, Barbados, Belize, Cape Verde, Comoros, the Cook Islands, Cuba, Dominica, the Dominican Republic, Fiji, Grenada, Guinea-Bissau, Guyana, Haiti, Jamaica, Kiribati, the Maldives, the Marshall Islands, the Federated States of Micronesia, Mauritius, Nauru, Niue, Palau, Papua New Guinea, Samoa, Sao Tome and Principe, Singapore, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, the Seychelles, the Solomon Islands, Suriname, Timor-Leste, Tonga, Trinidad and Tobago, Tuvalu and Vanuatu.

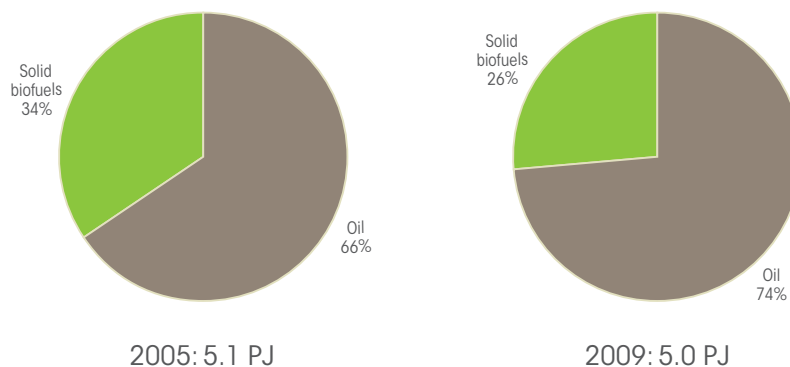
## ENERGY NATIONAL PROFILE 2009

- Total Primary Energy Supply: 5.0 PJ - Of which renewables: 1.3 PJ (26.4%)
- Energy self-sufficiency: 2,261.4%
- Fuel imports: Not available
- Electricity generation: 131.7 GWh - Of which renewables: 0.0 GWh (0.0%)
- Electricity use per capita: 291 kWh (capital only)
- Electrical capacity: 44 MW - Of which renewables: 0.0 MW (0.0%)
- Electricity access rate: 22.0%
- Share of population using solid fuels: Not available

## TARGETS:

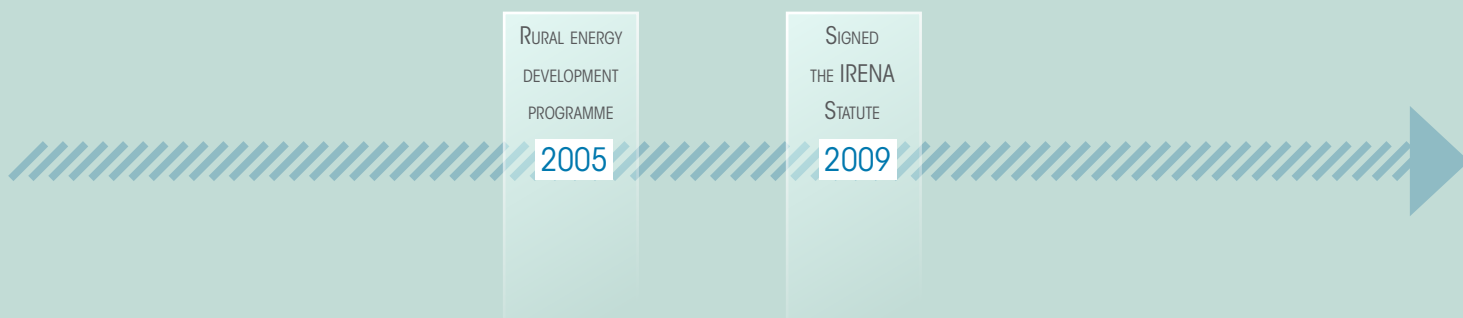
- 50% of electricity generation from renewables by 2020

FIGURE 3: TOTAL PRIMARY ENERGY SUPPLY\* IN 2005 AND 2009



\*excluding electricity trade

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



WORLD BANK EASE OF DOING BUSINESS INDEX FOR 2012: Ranked 168 out of 183

RENEWABLE ENERGY PROJECTS FROM THE GOVERNMENT AND PRIVATE SECTORS:

- No information available

NUMBER OF REGISTERED CLEAN DEVELOPMENT MECHANISM PROJECTS FOCUSING ON RENEWABLE ENERGY: 0

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 prejudice 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 UN data; Share of fuel imports in total imports: World Trade Organisation; Electrical capacity: IEA, EIA; Electricity access rate: World Energy Outlook 2011 database (IEA); Share of population using solid fuels: World Health Organisation; Targets: REN21, IRENA; Policy/legislation: IEA, Reegle, 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.





**104,000** Population (2010)  
**357 million USD** GDP (2010)  
**3,435 USD** GDP per capita (2010)

FIGURE 1: GDP PER CAPITA FOR 2010

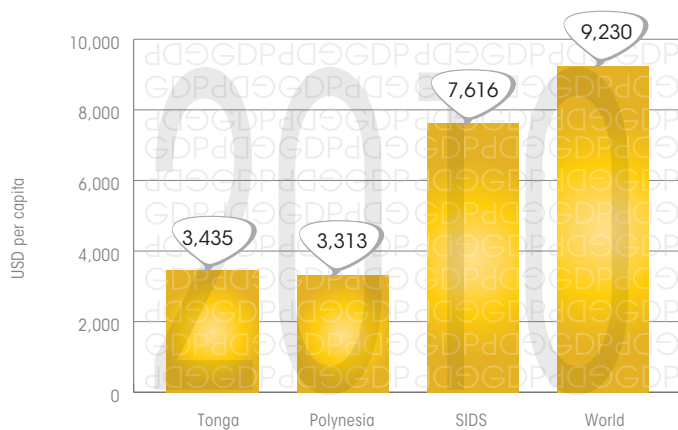
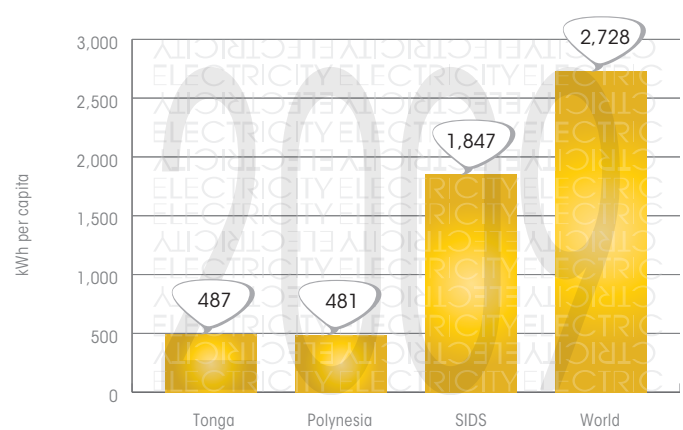


FIGURE 2: ELECTRICITY USE PER CAPITA FOR 2009



Polynesia includes the Cook Islands, Niue, Samoa, Tonga and Tuvalu.

SIDS include Antigua and Barbuda, Bahamas, Bahrain, Barbados, Belize, Cape Verde, Comoros, the Cook Islands, Cuba, Dominica, the Dominican Republic, Fiji, Grenada, Guinea-Bissau, Guyana, Haiti, Jamaica, Kiribati, the Maldives, the Marshall Islands, the Federated States of Micronesia, Mauritius, Nauru, Niue, Palau, Papua New Guinea, Samoa, Sao Tome and Principe, Singapore, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, the Seychelles, the Solomon Islands, Suriname, Timor-Leste, Tonga, Trinidad and Tobago, Tuvalu and Vanuatu.

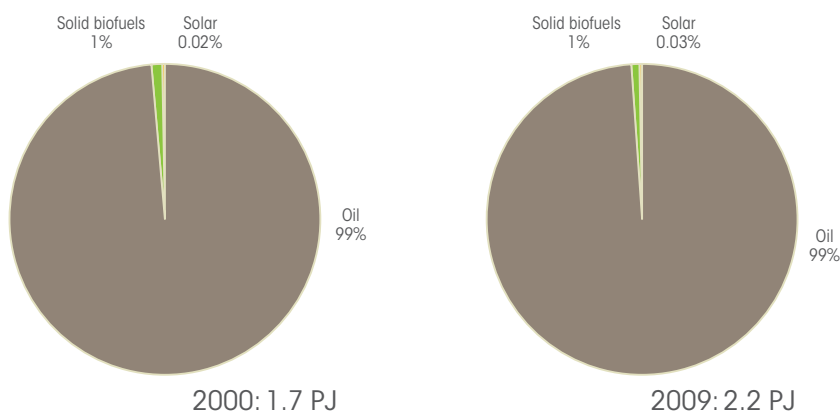
## ENERGY NATIONAL PROFILE 2009

- Total Primary Energy Supply: 2.2 PJ – Of which renewables: 0.0 PJ (1.0%)
- Energy self-sufficiency: 1.0%
- Fuel imports: 35 million USD (20.3% of total imports)
- Electricity generation: 51.6 GWh – Of which renewables: 0.2 GWh (0.4%)
- Electricity use per capita: 487 kWh
- Electrical capacity: 12.075 MW – Of which renewables: 0.075 MW (0.6%)
- Electricity access rate: 95.0%
- Share of population using solid fuels: 45%

### TARGETS:

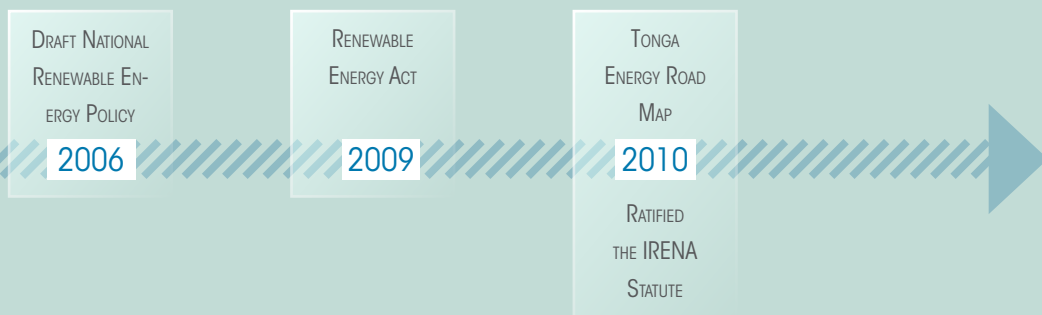
- 50% of electricity generation from renewables by 2012
- 18% of energy generation reduced by 2020 compared to 2000

FIGURE 3: TOTAL PRIMARY ENERGY SUPPLY\* IN 2000 AND 2009



\*excluding electricity trade

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



WORLD BANK EASE OF DOING BUSINESS INDEX FOR 2012: Ranked 58 out of 183

RENEWABLE ENERGY PROJECTS FROM THE GOVERNMENT AND PRIVATE SECTORS:

- No information available

NUMBER OF REGISTERED CLEAN DEVELOPMENT MECHANISM PROJECTS FOCUSING ON RENEWABLE ENERGY: 0

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 UN data; Share of fuel imports in total imports: World Trade Organisation; Electrical capacity: IEA, EIA; Electricity access rate: World Energy Outlook 2011 database (IEA); Share of population using solid fuels: World Health Organisation; Targets: REN21, IRENA; Policy/legislation: IEA, Reegle, 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.

# TRINIDAD & TOBAGO



**1.3 million** Population (2010)  
**20.9 billion USD** GDP (2010)  
**15,614 USD** GDP per capita (2010)

FIGURE 1: GDP PER CAPITA FOR 2010

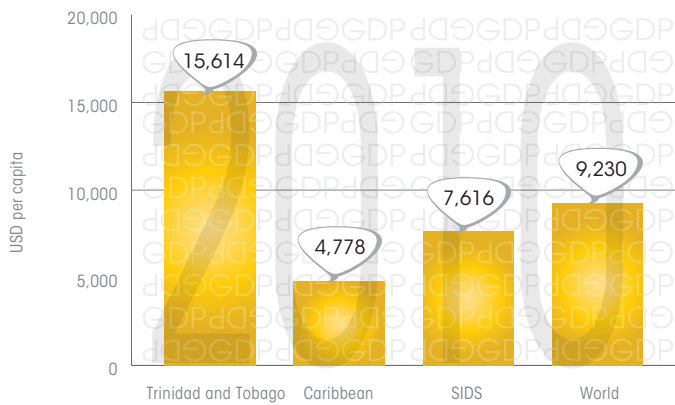
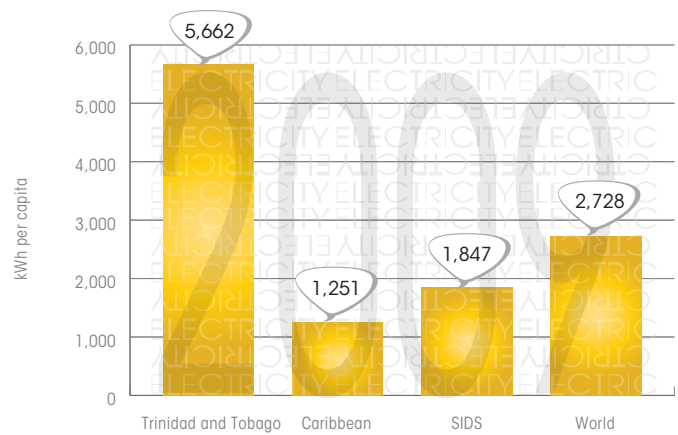


FIGURE 2: ELECTRICITY USE PER CAPITA FOR 2009



The Caribbean include Antigua and Barbuda, Bahamas, Barbados, Cuba, Dominica, the Dominican Republic, Grenada, Haiti, Jamaica, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, and Trinidad and Tobago.  
 SIDS include Antigua and Barbuda, Bahamas, Bahrain, Barbados, Belize, Cape Verde, Comoros, the Cook Islands, Cuba, Dominica, the Dominican Republic, Fiji, Grenada, Guinea-Bissau, Guyana, Haiti, Jamaica, Kiribati, the Maldives, the Marshall Islands, the Federated States of Micronesia, Mauritius, Nauru, Niue, Palau, Papua New Guinea, Samoa, Sao Tome and Principe, Singapore, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, the Seychelles, the Solomon Islands, Suriname, Timor-Leste, Tonga, Trinidad and Tobago, Tuvalu and Vanuatu.

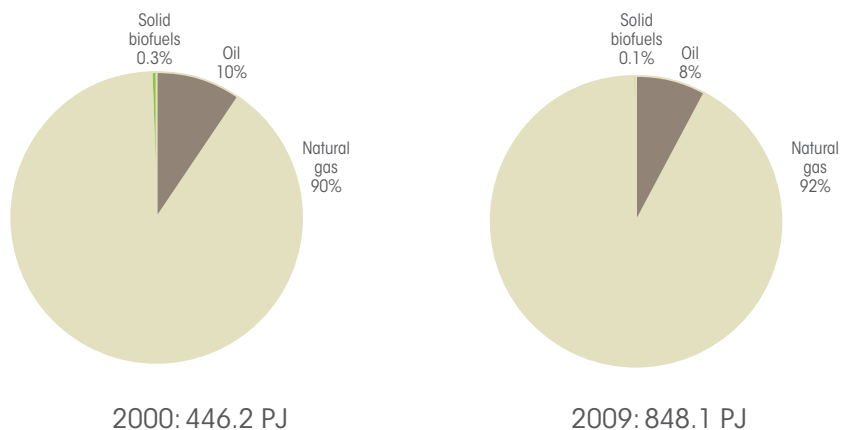
## ENERGY NATIONAL PROFILE 2009

- Total Primary Energy Supply: 848.1 PJ - Of which renewables: 0.5 PJ (0.1%)
- Energy self-sufficiency: 217.2%
- Fuel imports: 2.2 billion USD (32.9% of total imports)
- Electricity generation: 7.7 TWh - Of which renewables: 19.0 GWh (0.2%)
- Electricity use per capita: 5,662 kWh
- Electrical capacity: 1,429 MW - Of which renewables: 5.0 MW (0.3%)
- Electricity access rate: 99.0%
- Share of population using solid fuels: < 5%

### TARGETS:

- No information available

FIGURE 3: TOTAL PRIMARY ENERGY SUPPLY\* IN 2000 AND 2009



\*excluding electricity trade

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



WORLD BANK EASE OF DOING BUSINESS INDEX FOR 2012: Ranked 68 out of 183

RENEWABLE ENERGY PROJECTS FROM THE GOVERNMENT AND PRIVATE SECTORS:

- No information available

NUMBER OF REGISTERED CLEAN DEVELOPMENT MECHANISM PROJECTS FOCUSING ON RENEWABLE ENERGY: 0

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 prejudice 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 UN data; Share of fuel imports in total imports: World Trade Organisation; Electrical capacity: IEA, EIA; Electricity access rate: World Energy Outlook 2011 database (IEA); Share of population using solid fuels: World Health Organisation; Targets: REN21, IRENA; Policy/legislation: IEA, Reegle, 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.



# TUVALU

**10,000** Population (2010)  
**31 million USD** GDP (2010)  
**3,190 USD** GDP per capita (2010)

FIGURE 1: GDP PER CAPITA FOR 2010

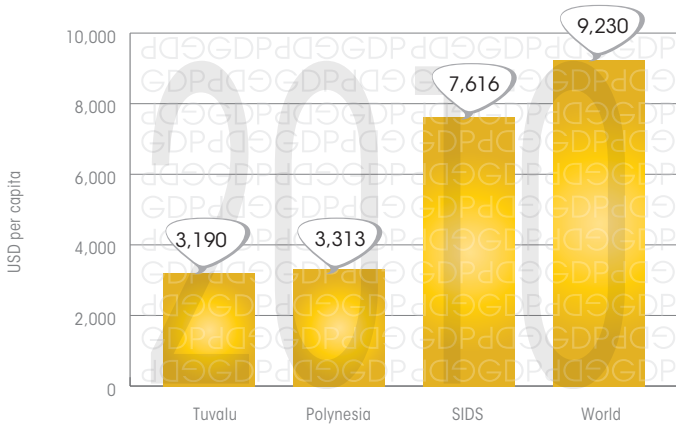
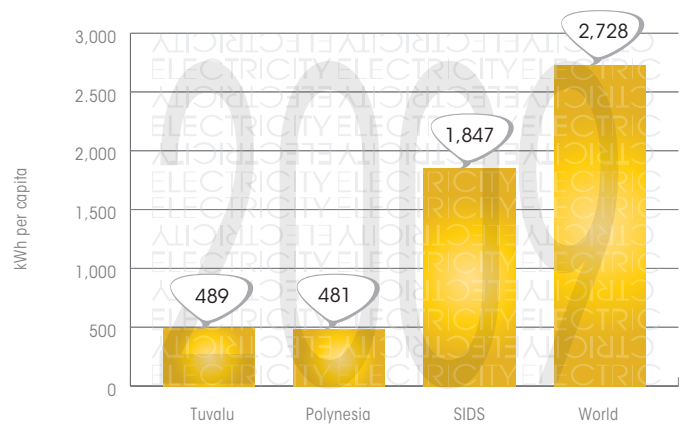


FIGURE 2: ELECTRICITY USE PER CAPITA FOR 2009



Polynesia includes the Cook Islands, Niue, Samoa, Tonga and Tuvalu.  
 SIDS include Antigua and Barbuda, Bahamas, Bahrain, Barbados, Belize, Cape Verde, Comoros, the Cook Islands, Cuba, Dominica, the Dominican Republic, Fiji, Grenada, Guinea-Bissau, Guyana, Haiti, Jamaica, Kiribati, the Maldives, the Marshall Islands, the Federated States of Micronesia, Mauritius, Nauru, Niue, Palau, Papua New Guinea, Samoa, Sao Tome and Principe, Singapore, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, the Seychelles, the Solomon Islands, Suriname, Timor-Leste, Tonga, Trinidad and Tobago, Tuvalu and Vanuatu.

## ENERGY NATIONAL PROFILE 2009

- Total Primary Energy Supply: Not available – Of which renewables: Not available
- Energy self-sufficiency: Not available
- Fuel imports: 3 million USD (16.7% of total imports)
- Electricity generation: 6.4 GWh – Of which renewables: 0.2 GWh (3.1%)
- Electricity use per capita: 489 kWh
- Electrical capacity: 3.89 MW – Of which renewables: 0.09 MW (2.3%)
- Electricity access rate: 92.0%
- Share of population using solid fuels: 25%

### TARGETS:

- 100 % of electricity generation from renewables by 2020

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

TUVALU  
NATIONAL ENERGY  
POLICY  
2009

WORLD BANK EASE OF DOING BUSINESS INDEX FOR 2012: Not ranked

RENEWABLE ENERGY PROJECTS FROM THE GOVERNMENT AND PRIVATE SECTORS:

- No information available

NUMBER OF REGISTERED CLEAN DEVELOPMENT MECHANISM PROJECTS FOCUSING ON RENEWABLE ENERGY: 0

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 pre-judge 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 UN data; Share of fuel imports in total imports: World Trade Organisation; Electrical capacity: IEA, EIA; Electricity access rate: World Energy Outlook 2011 database (IEA); Share of population using solid fuels: World Health Organisation; Targets: REN21, IRENA; Policy/legislation: IEA, Reegle, 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.

# VANUATU



**240,000** Population (2010)  
**689 million USD** GDP (2010)  
**2,875 USD** GDP per capita (2010)

FIGURE 1: GDP PER CAPITA FOR 2010

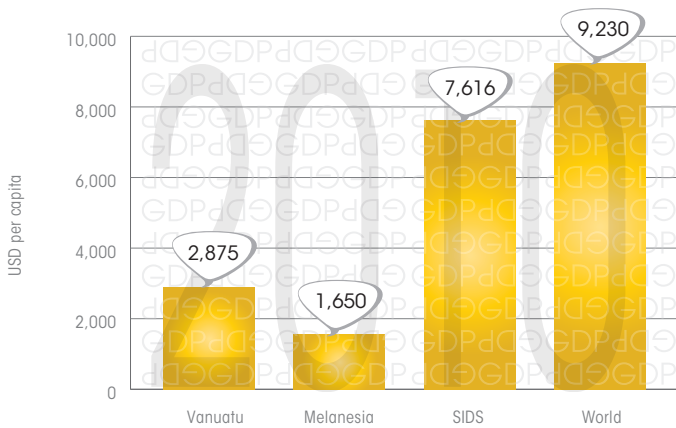
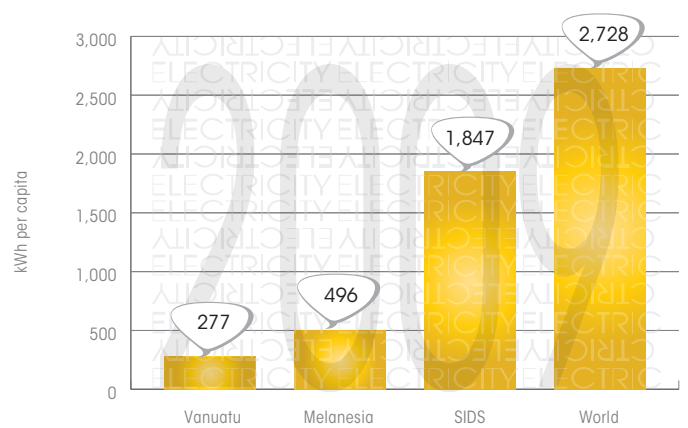


FIGURE 2: ELECTRICITY USE PER CAPITA FOR 2009



Melanesia includes Fiji, Papua New Guinea, the Solomon Islands and Vanuatu. SIDS include Antigua and Barbuda, Bahamas, Bahrain, Barbados, Belize, Cape Verde, Comoros, the Cook Islands, Cuba, Dominica, the Dominican Republic, Fiji, Grenada, Guinea-Bissau, Guyana, Haiti, Jamaica, Kiribati, the Maldives, the Marshall Islands, the Federated States of Micronesia, Mauritius, Nauru, Niue, Palau, Papua New Guinea, Samoa, Sao Tome and Principe, Singapore, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, the Seychelles, the Solomon Islands, Suriname, Timor-Leste, Tonga, Trinidad and Tobago, Tuvalu and Vanuatu.

## ENERGY NATIONAL PROFILE 2009

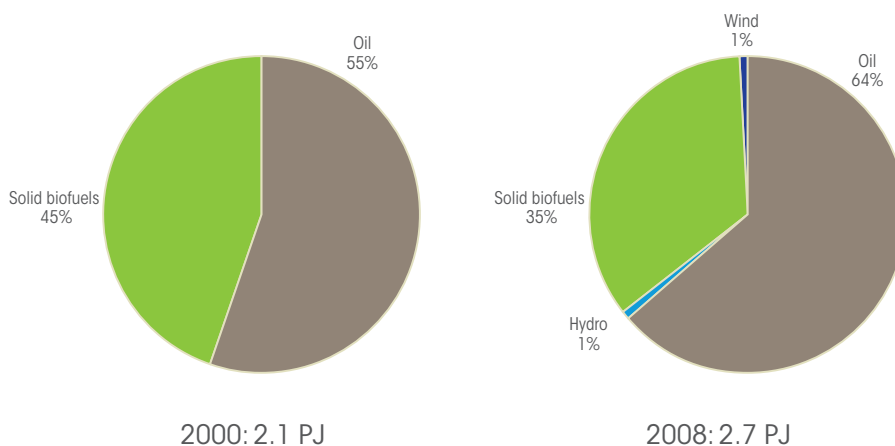
- Total Primary Energy Supply: 2.7 PJ – Of which renewables: 1.0 PJ (36.2%)
- Energy self-sufficiency: 36.5%
- Fuel imports: Not available
- Electricity generation: 64.7 GWh – Of which renewables: 12.0 GWh (18.5%)
- Electricity use per capita: 277 kWh
- Electrical capacity: 30.7 MW – Of which renewables: 6.1 MW (19.9%)
- Electricity access rate: 27.0%
- Share of population using solid fuels: 85%

### TARGETS:

- 100% of energy from renewables

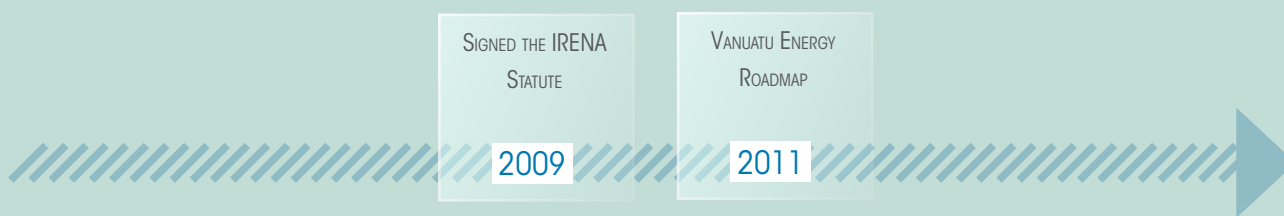


FIGURE 3: TOTAL PRIMARY ENERGY SUPPLY\* IN 2000 AND 2008



\*excluding electricity trade

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



WORLD BANK EASE OF DOING BUSINESS INDEX FOR 2012: Ranked 76 out of 183

RENEWABLE ENERGY PROJECTS FROM THE GOVERNMENT AND PRIVATE SECTORS:

- No information available

NUMBER OF REGISTERED CLEAN DEVELOPMENT MECHANISM PROJECTS FOCUSING ON RENEWABLE ENERGY: 0

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 pre-judge 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 UN data; Share of fuel imports in total imports: World Trade Organisation; Electrical capacity: IEA, EIA; Electricity access rate: World Energy Outlook 2011 database (IEA); Share of population using solid fuels: World Health Organisation; Targets: REN21, IRENA; Policy/legislation: IEA, Reegle, 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.

# GLOSSARY

## 1 – 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 reduc-

tion credits which can be traded and sold, and used by industrialised countries to 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                             |
|---|--|--|--|---|--|-----------------------------------|
| <b>High</b><br>     | Several areas with average wind speed above 7 m/s at 50 m high         | Several areas with global horizontal irradiation 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. agriculture, wood and residues          | One or more sites can be equipped with a large scale facility (>10 MW)   | Wave power above 30 kW/m          |
| <b>Medium</b><br>  | 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 between 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 |
| <b>Low</b><br>     | No area identified with average wind speed above 5 m/s                 | No identified area with global horizontal irradiation 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. agriculture, wood and residues           | One or more sites can be equipped with a small scale facility (<1 MW)    | Wave power below 10 kW/m          |
| <b>Unknown</b><br> | No data identified by IRENA as yet                                     |  |  |   |  |                                   |





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