

# RENEWABLE ENERGY COUNTRY PROFILES

## **PACIFIC**



September 2012 edition

[www.irena.org](http://www.irena.org)





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

The energy statistics presented here span the period from 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).





# AUSTRALIA



**22.3 million** Population (2010)

**1,131.6 billion USD** GDP (2010)

**50,680 USD** GDP per capita (2010)

FIGURE 1: GDP PER CAPITA FOR 2010

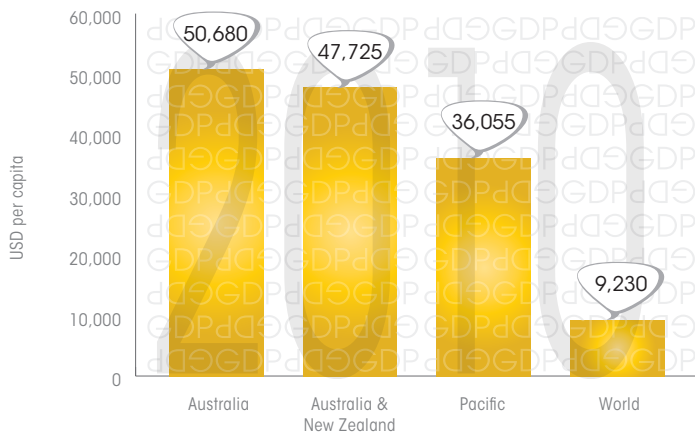
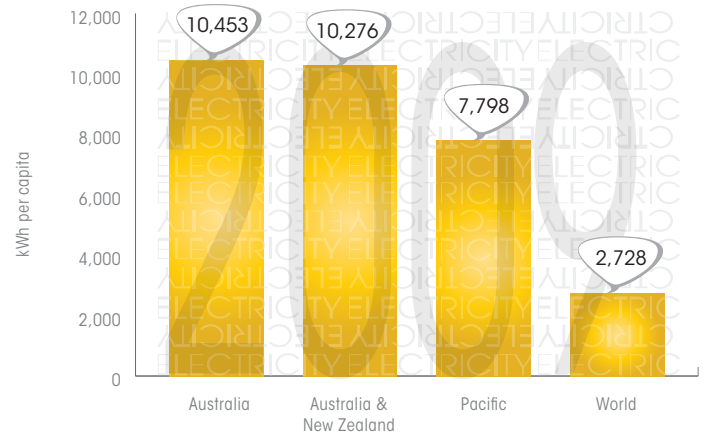


FIGURE 2: ELECTRICITY USE PER CAPITA FOR 2009



The Pacific includes Australia, the Cook Islands, Fiji, Kiribati, the Marshall Islands, the Federated States of Micronesia, Nauru, New Zealand, Niue, Palau, Papua New Guinea, Samoa, the Solomon Islands, Tonga, Tuvalu and Vanuatu.

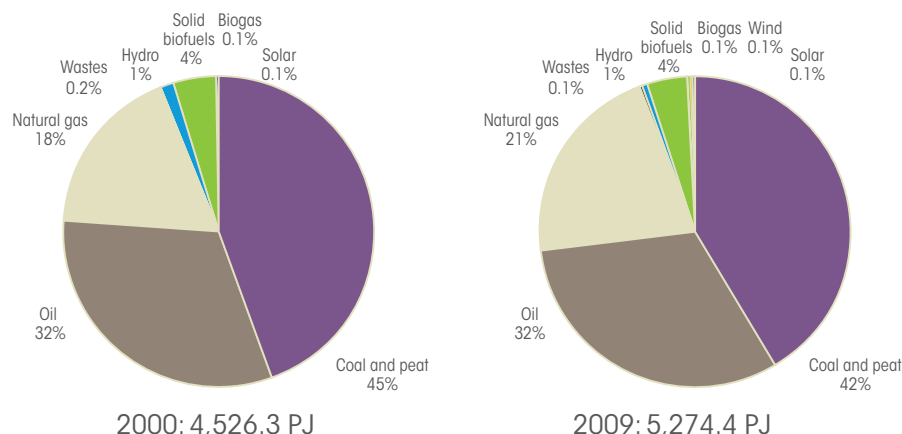
## ENERGY NATIONAL PROFILE 2009

- Total Primary Energy Supply: 5,274.4 PJ – Of which renewables: 289.4 PJ (5.5%)
- Energy self-sufficiency: 235.8%
- Fuel imports: 25.9 billion USD (12.9% of total imports)
- Electricity generation: 244.4 TWh – Of which renewables: 18.9 TWh (7.7%)
- Electricity use per capita: 10,453 kWh
- Electrical capacity: 56.9 GW – Of which renewables: 10.5 GW (18.4%)
- Electricity access rate: 100.0%
- Share of population using solid fuels: < 5%

### TARGETS:

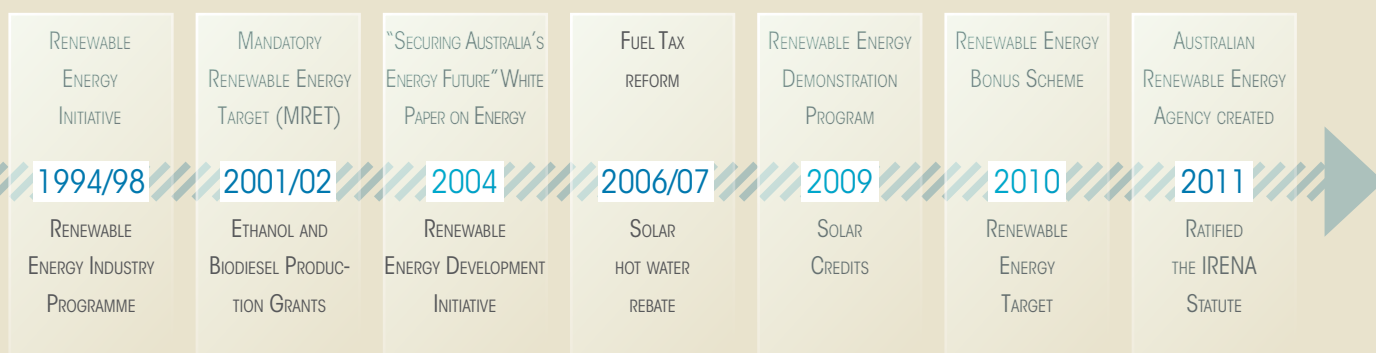
- 20% of electricity generation from renewables by 2020

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 15 out of 183

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

- 600 million litres of biodiesel per year announced (4 projects)
- 470 million litres of bioethanol per year announced (3 projects)
- 2 MW of biomass-fired by the end of 2013 (2 projects) and more than 250 MW announced (25 projects)
- 125 MW of geothermal by the end of 2015 (4 projects) and more than 135 MW announced (18 projects)
- Around 260 MW of marine announced (8 projects)
- 530 MW of solar photovoltaic by the end of 2015 (6 projects) and more than 700 MW announced (15 projects)
- Around 250 MW of solar thermal by the end of 2015 (3 projects) and around 1,250 MW announced (10 projects)
- More than 4,300 MW of wind by the end of 2015 (26 projects) and more than 14,600 MW announced (90 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 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.

IRENA welcomes your comments and feedback at [statistics@irena.org](mailto:statistics@irena.org)



# COOK ISLANDS

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

FIGURE 1: GDP PER CAPITA FOR 2010

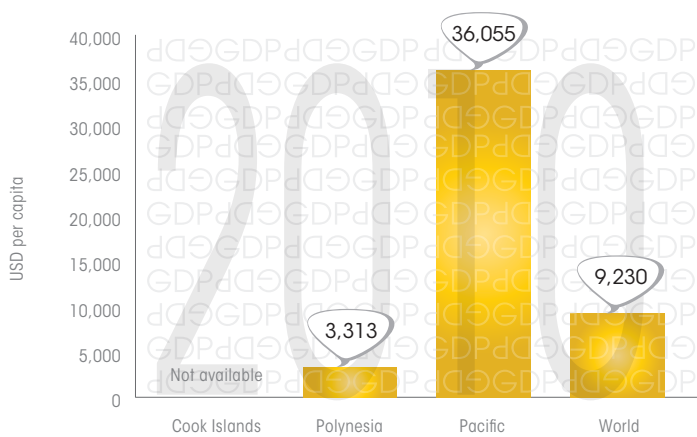
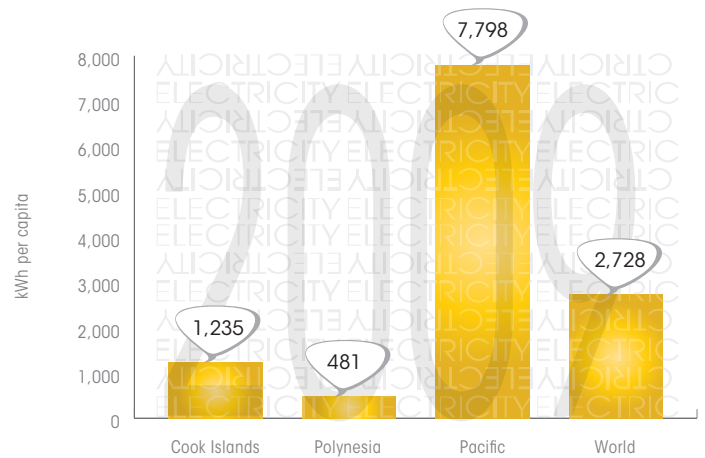


FIGURE 2: ELECTRICITY USE PER CAPITA FOR 2009



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

The Pacific includes Australia, the Cook Islands, Fiji, Kiribati, the Marshall Islands, the Federated States of Micronesia, Nauru, New Zealand, Niue, Palau, Papua New Guinea, Samoa, the Solomon Islands, Tonga, Tuvalu and Vanuatu.

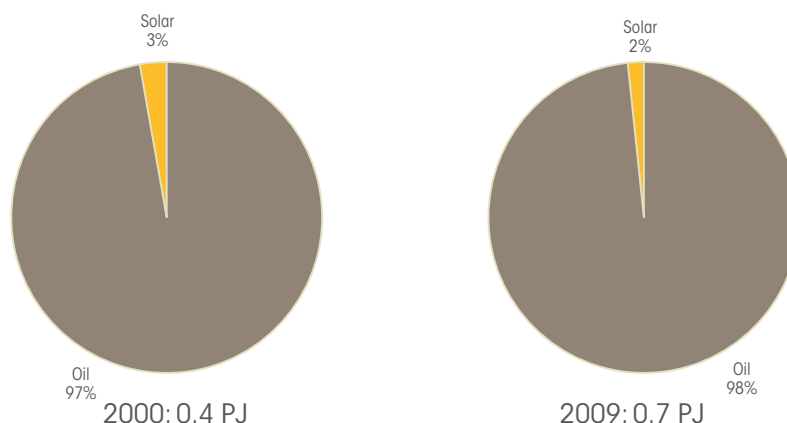
## ENERGY NATIONAL PROFILE 2009

- 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.

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



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

FIGURE 1: GDP PER CAPITA FOR 2010

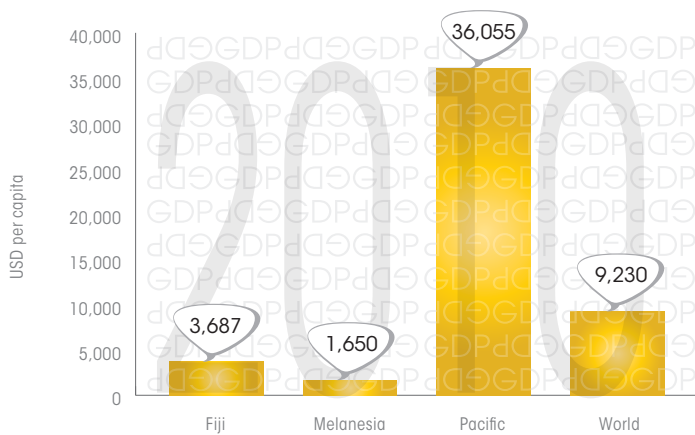
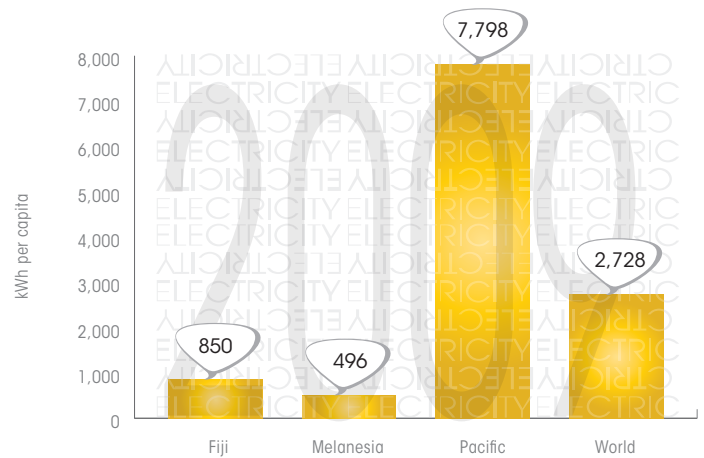


FIGURE 2: ELECTRICITY USE PER CAPITA FOR 2009



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

The Pacific includes Australia, the Cook Islands, Fiji, Kiribati, the Marshall Islands, the Federated States of Micronesia, Nauru, New Zealand, Niue, Palau, Papua New Guinea, Samoa, the Solomon Islands, Tonga, Tuvalu and Vanuatu.

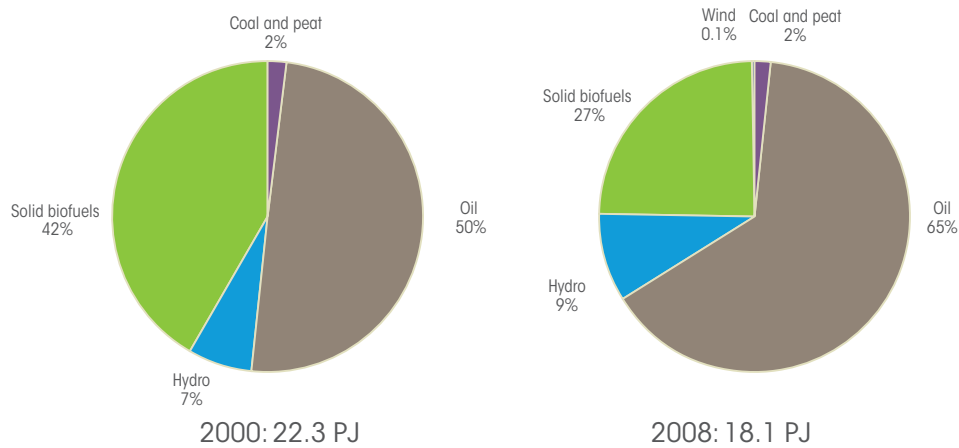
## ENERGY NATIONAL PROFILE 2009

- 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

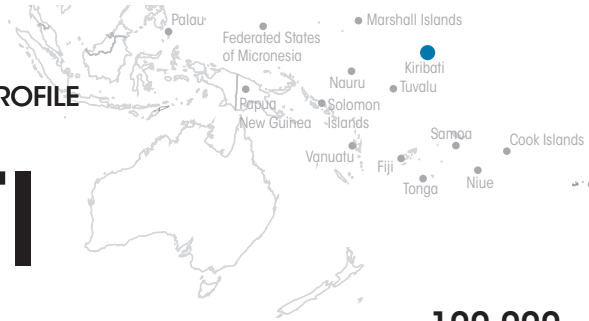
Wind ● Solar ● Hydro ● Biomass ● Geothermal ● Ocean ●

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.

# KIRIBATI



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

FIGURE 1: GDP PER CAPITA FOR 2010

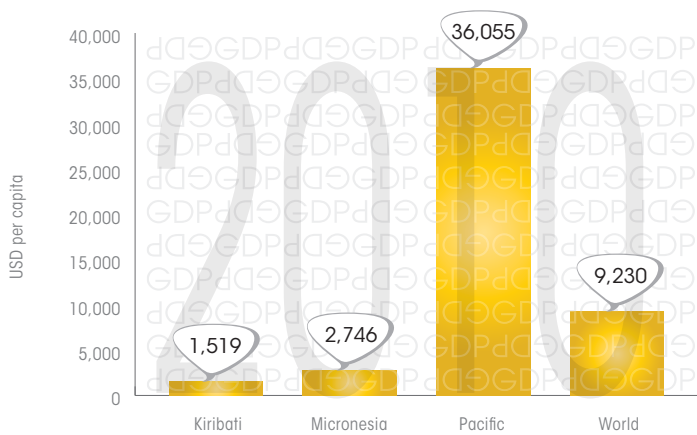
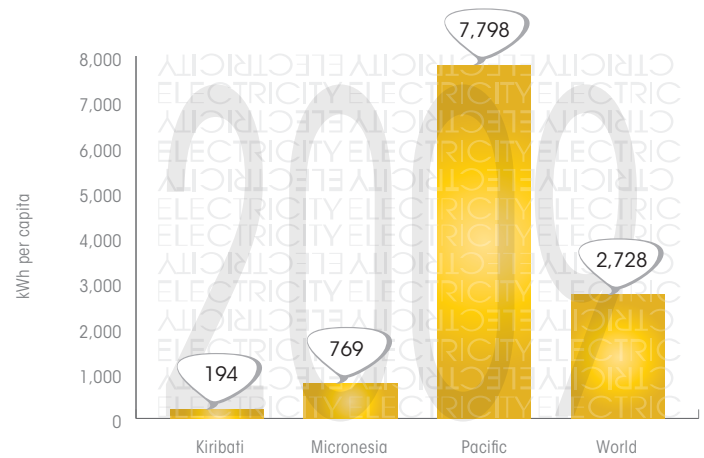


FIGURE 2: ELECTRICITY USE PER CAPITA FOR 2009



Micronesia includes Kiribati, the Marshall Islands, the Federated States of Micronesia, Nauru and Palau  
 The Pacific includes Australia, the Cook Islands, Fiji, Kiribati, the Marshall Islands, the Federated States of Micronesia, Nauru, New Zealand, Niue, Palau, Papua New Guinea, Samoa, the Solomon Islands, Tonga, Tuvalu and Vanuatu.

## ENERGY NATIONAL PROFILE 2009

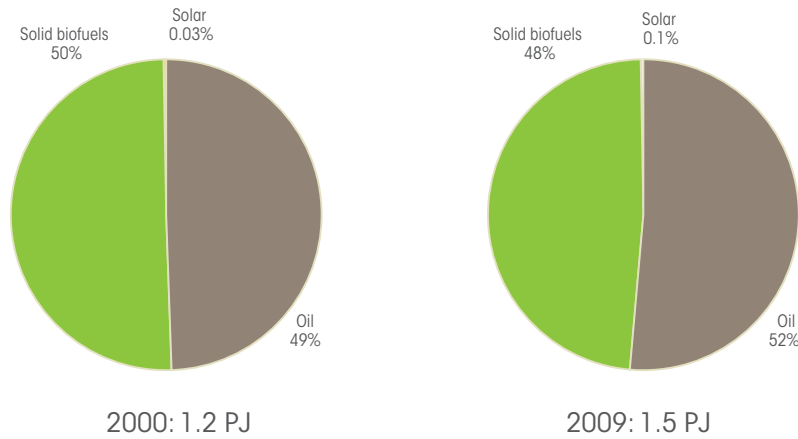
- Total Primary Energy Supply: 1.5 PJ – Of which renewables: 0.7 PJ (48.3%)
- Energy self-sufficiency: 48.3%
- Fuel imports: 16 million USD (16.2% of total imports)
- Electricity generation: 22.8 GWh – Of which renewables: 0.6 GWh (2.6%)
- Electricity use per capita: 194 kWh
- Electrical capacity: 5.8 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.

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





# 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

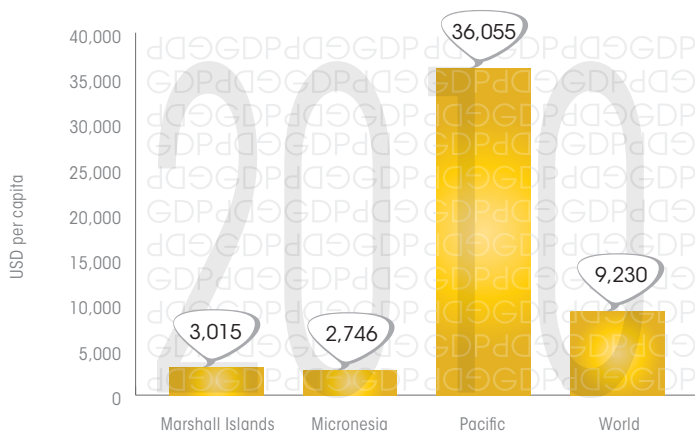
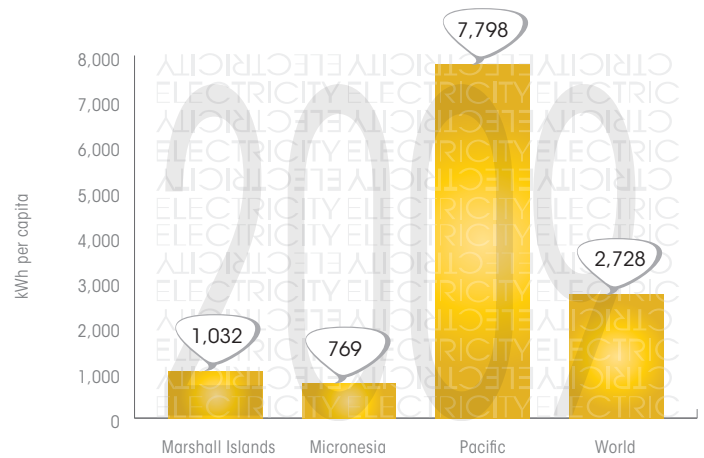


FIGURE 2: ELECTRICITY USE PER CAPITA FOR 2009



Micronesia includes Kiribati, the Marshall Islands, the Federated States of Micronesia, Nauru and Palau.  
 The Pacific includes Australia, the Cook Islands, Fiji, Kiribati, the Marshall Islands, the Federated States of Micronesia, Nauru, New Zealand, Niue, Palau, Papua New Guinea, Samoa, the Solomon Islands, Tonga, Tuvalu and Vanuatu.

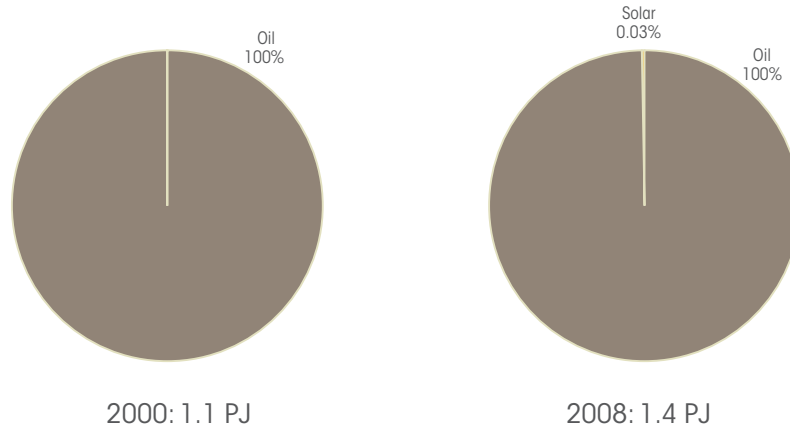
## ENERGY NATIONAL PROFILE 2009

- 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.

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

# 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

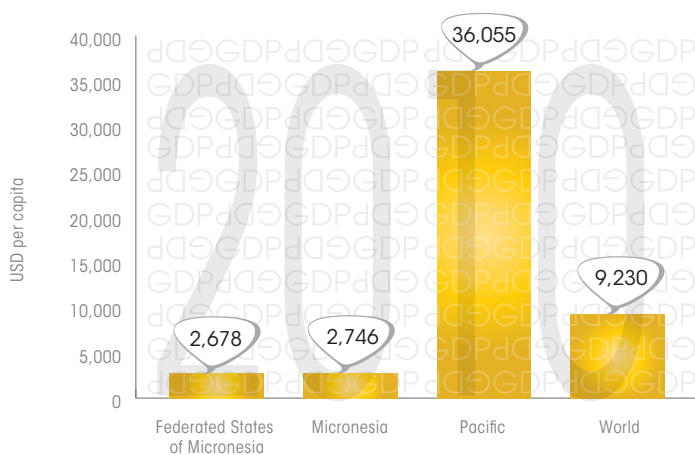
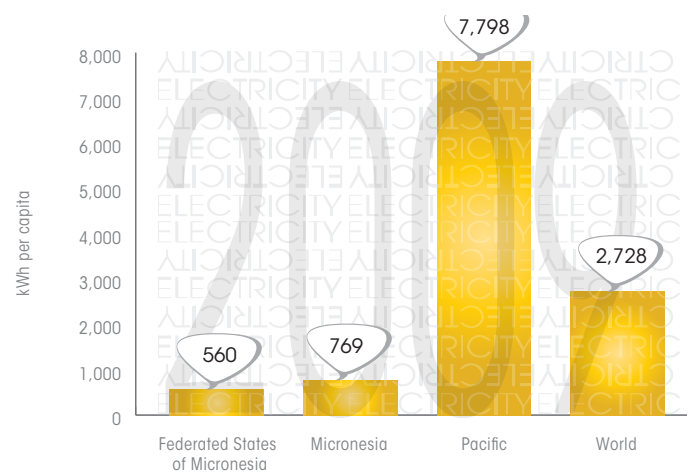


FIGURE 2: ELECTRICITY USE PER CAPITA FOR 2009



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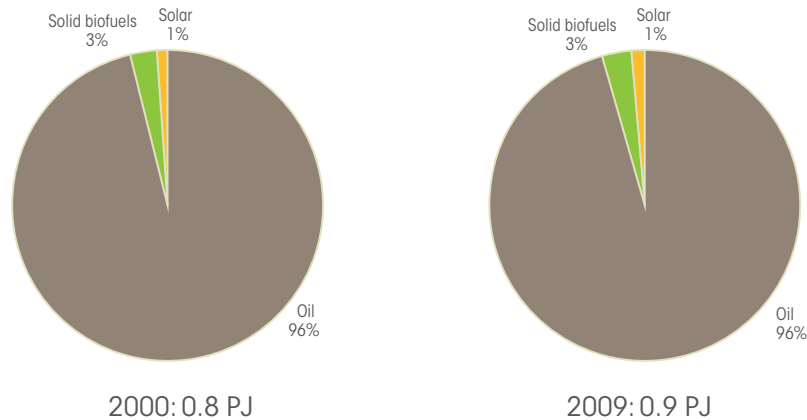
## ENERGY NATIONAL PROFILE 2009

- 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.

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

# NAURU



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

FIGURE 1: GDP PER CAPITA FOR 2010

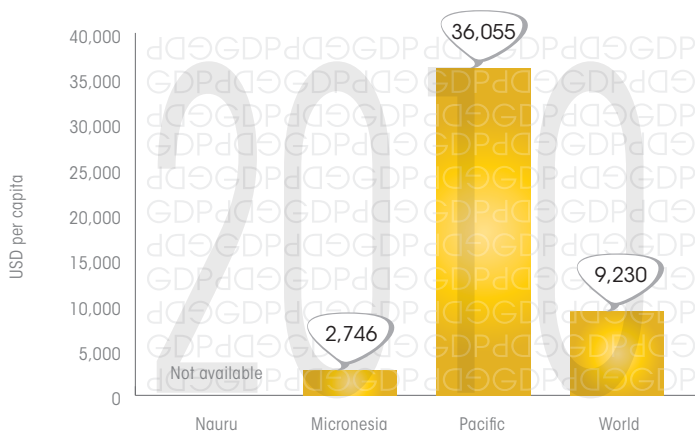
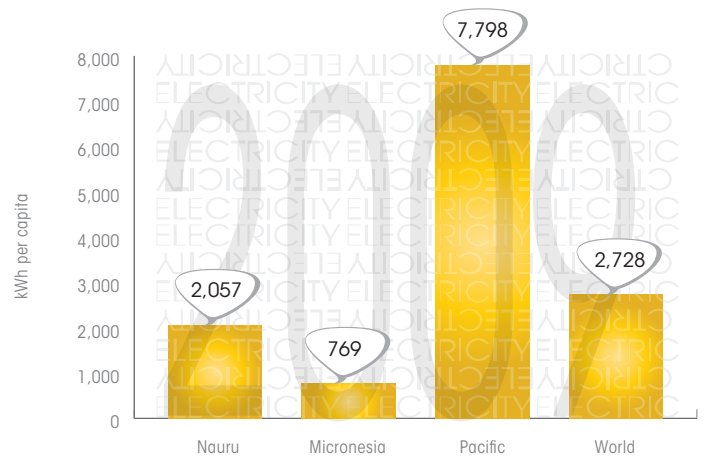


FIGURE 2: ELECTRICITY USE PER CAPITA FOR 2009



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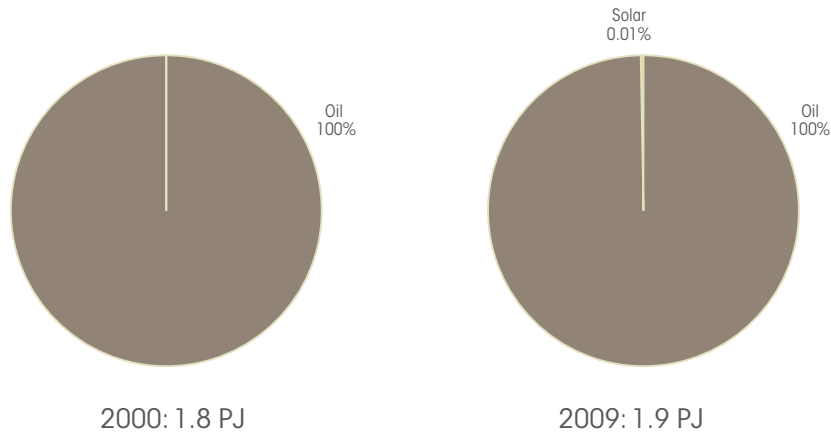
## ENERGY NATIONAL PROFILE 2009

- 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.

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

# NEW ZEALAND

**4.4 million** Population (2010)  
**142.5 billion USD** GDP (2010)  
**32,620 USD** GDP per capita (2010)

FIGURE 1: GDP PER CAPITA FOR 2010

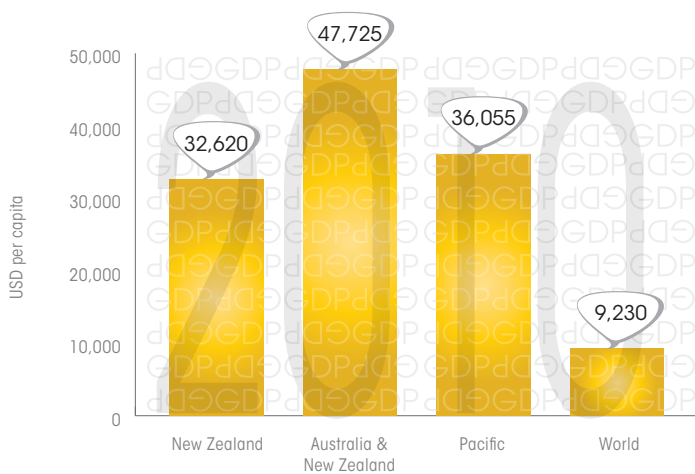
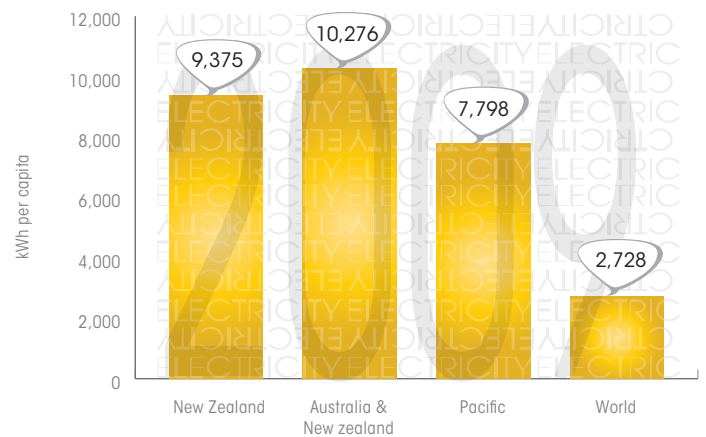


FIGURE 2: ELECTRICITY USE PER CAPITA FOR 2009



The Pacific includes Australia, the Cook Islands, Fiji, Kiribati, the Marshall Islands, the Federated States of Micronesia, Nauru, New Zealand, Niue, Palau, Papua New Guinea, Samoa, the Solomon Islands, Tonga, Tuvalu and Vanuatu.

## ENERGY NATIONAL PROFILE 2009

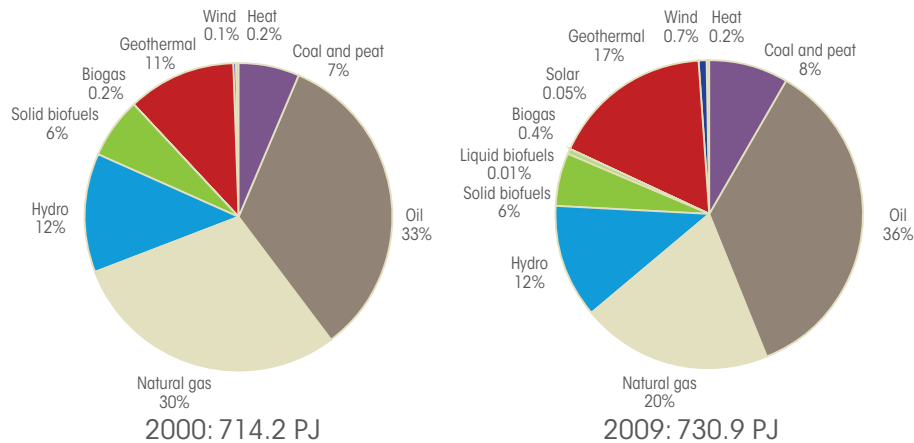
- Total Primary Energy Supply: 730.9 PJ – Of which renewables: 261.6 PJ (35.8%)
- Energy self-sufficiency: 87.6%
- Fuel imports: 4.6 billion USD (15.1% of total imports)
- Electricity generation: 43.5 TWh – Of which renewables: 31.2 TWh (71.7%)
- Electricity use per capita: 9,375 kWh
- Electrical capacity: 9.5 GW – Of which renewables: 6.6 GW (70.0%)
- Electricity access rate: 100.0%
- Share of population using solid fuels: < 5%

### TARGETS:

- 90 % of electricity generation from renewables by 2025

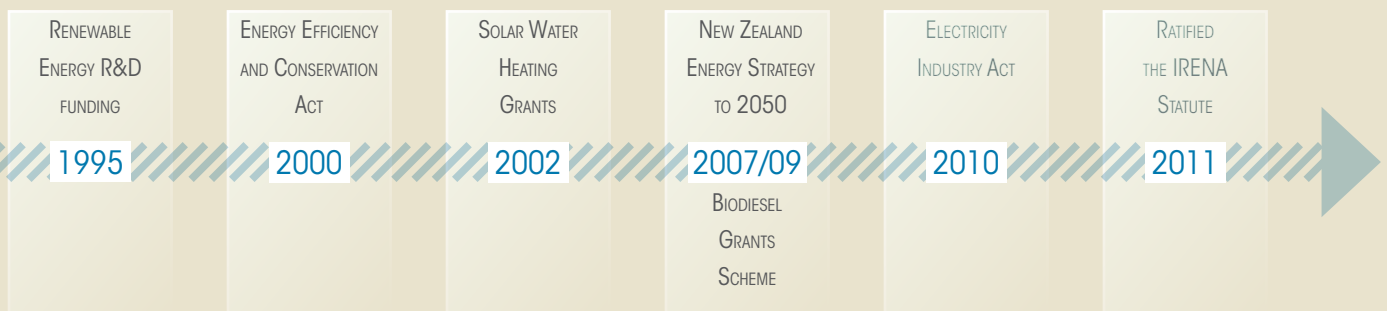


FIGURE 3: TOTAL PRIMARY ENERGY SUPPLY\* IN 2000 AND 2009



\*excluding electricity trade

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



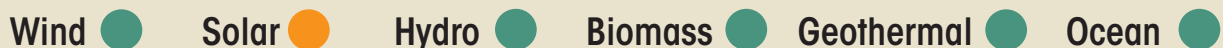
WORLD BANK EASE OF DOING BUSINESS INDEX FOR 2012: Ranked 3 out of 183

RENEWABLE ENERGY PROJECTS FROM THE GOVERNMENT AND PRIVATE SECTORS:

- Around 100 MW of geothermal capacity addition by mid 2013 (2 projects) and 510 MW announced (5 projects)
- 290 MW of wind capacity addition by 2016 (3 projects) and around 3,600 MW announced (17 projects)
- 400 MW of marine capacity addition announced (3 projects)
- Around 50 MW of small hydro capacity addition announced (2 projects)

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

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



Note: The information on resources should be taken as an indication only. It refers to a general trend of available resources, and does not 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.

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





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

FIGURE 1: GDP PER CAPITA FOR 2010

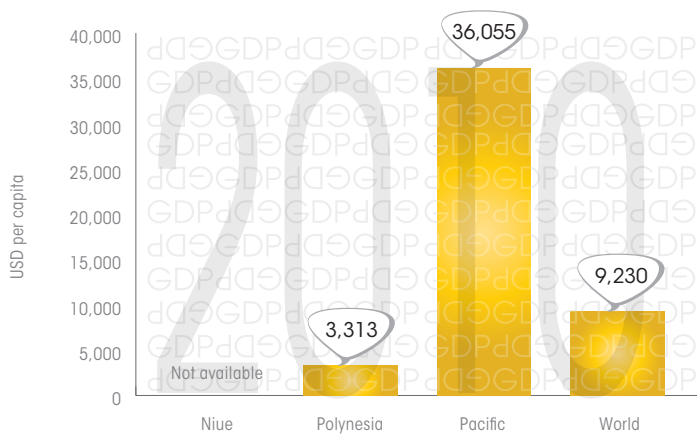
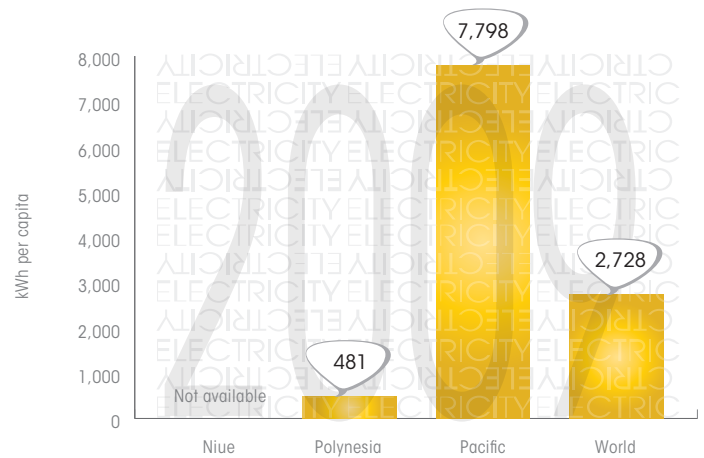


FIGURE 2: ELECTRICITY USE PER CAPITA FOR 2009



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

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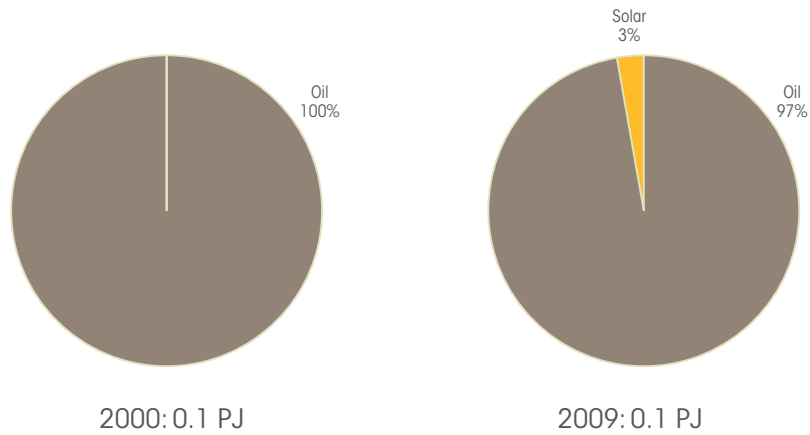
## ENERGY NATIONAL PROFILE 2009

- 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.

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

# PALAU



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

FIGURE 1: GDP PER CAPITA FOR 2010

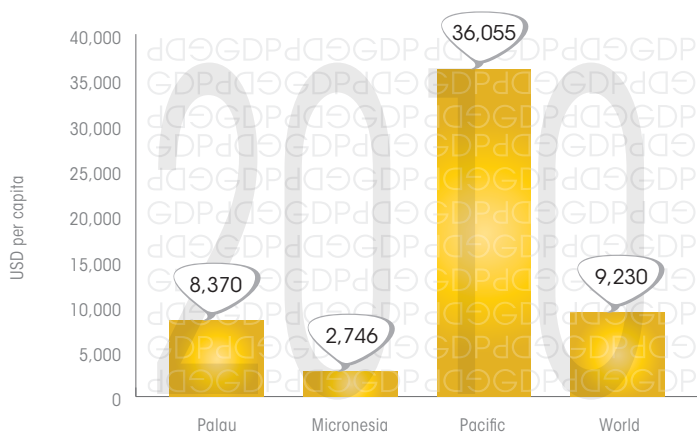
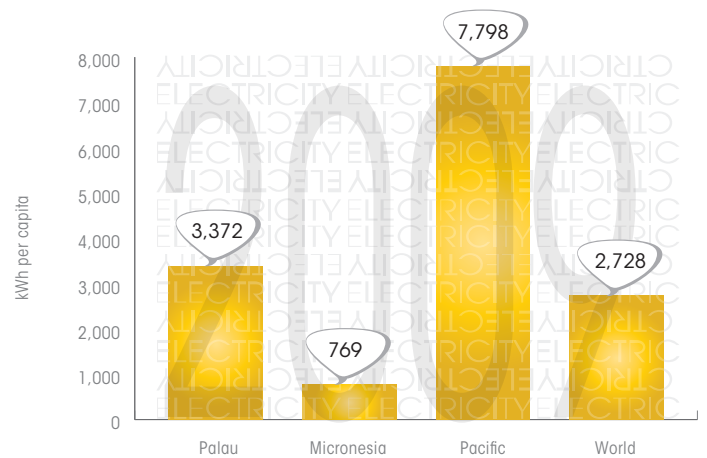


FIGURE 2: ELECTRICITY USE PER CAPITA FOR 2009



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

The Pacific includes Australia, the Cook Islands, Fiji, Kiribati, the Marshall Islands, the Federated States of Micronesia, Nauru, New Zealand, Niue, Palau, Papua New Guinea, Samoa, the Solomon Islands, Tonga, Tuvalu and Vanuatu.

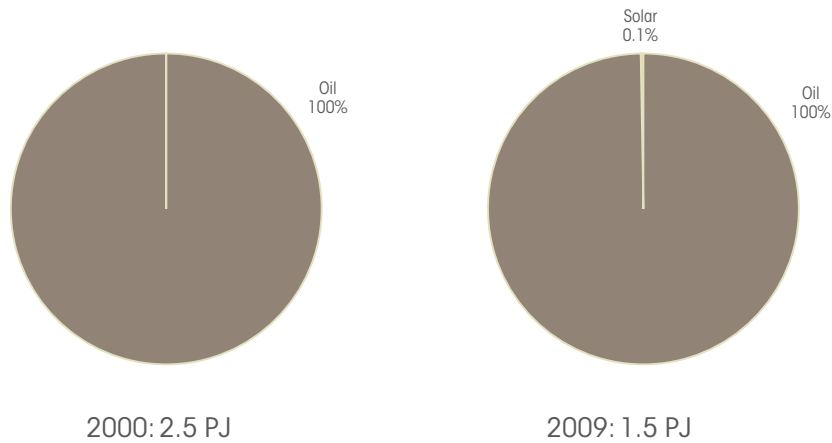
## ENERGY NATIONAL PROFILE 2009

- 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



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.

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



# 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

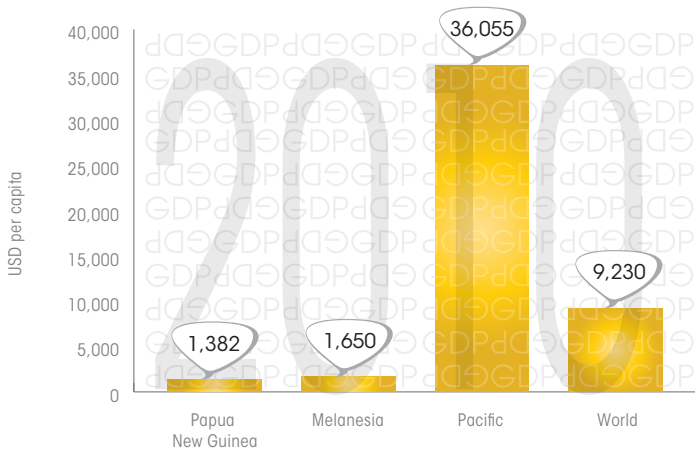
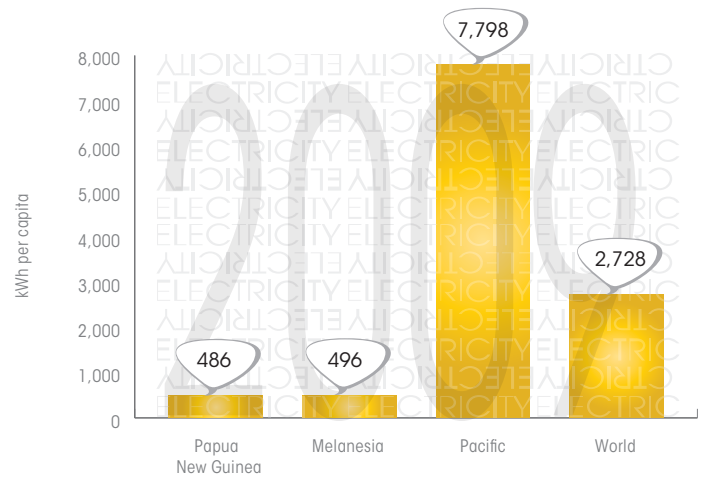


FIGURE 2: ELECTRICITY USE PER CAPITA FOR 2009



Melanesia includes Fiji, Papua New Guinea, the Solomon Islands and Vanuatu. The Pacific includes Australia, the Cook Islands, Fiji, Kiribati, the Marshall Islands, the Federated States of Micronesia, Nauru, New Zealand, Niue, Palau, Papua New Guinea, Samoa, the Solomon Islands, Tonga, Tuvalu and Vanuatu.

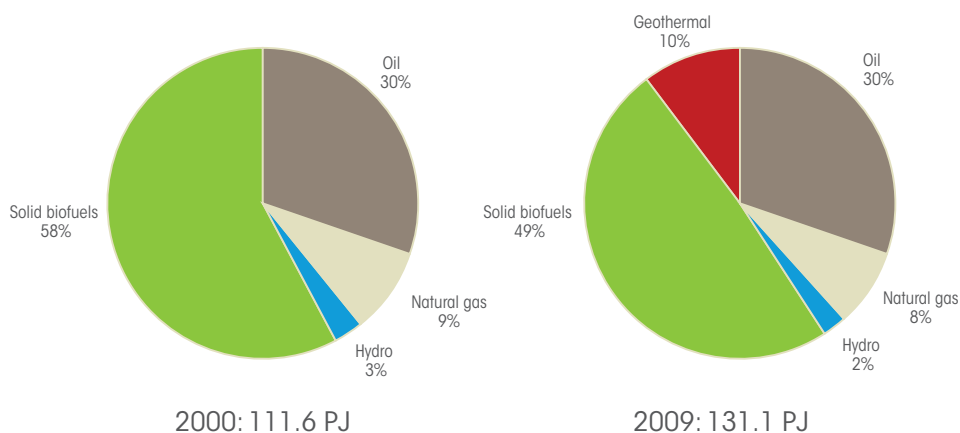
## ENERGY NATIONAL PROFILE 2009

- 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.

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

# SAMOA



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

FIGURE 1: GDP PER CAPITA FOR 2010

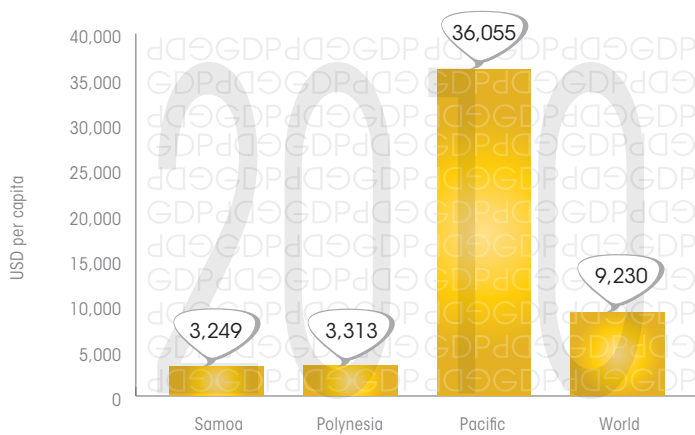
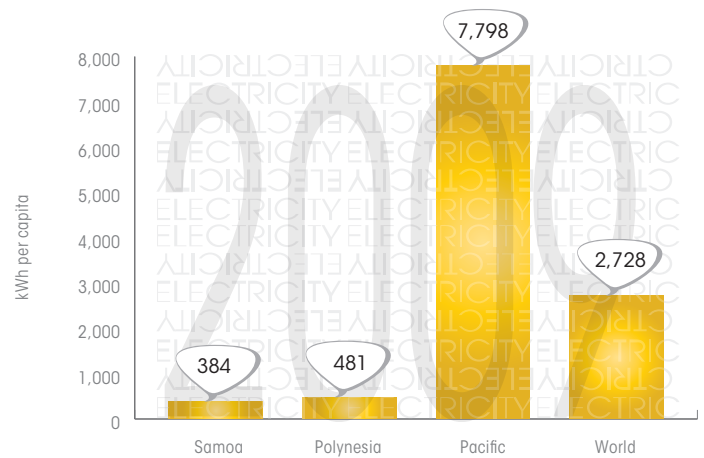


FIGURE 2: ELECTRICITY USE PER CAPITA FOR 2009



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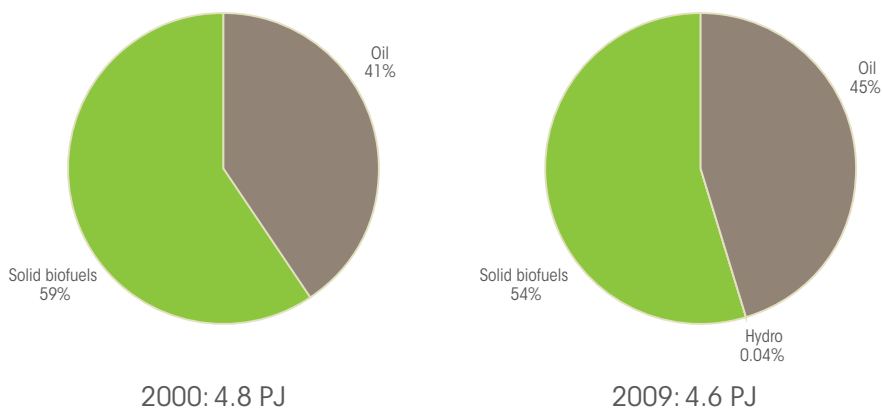
## ENERGY NATIONAL PROFILE 2009

- 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

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.

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# 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

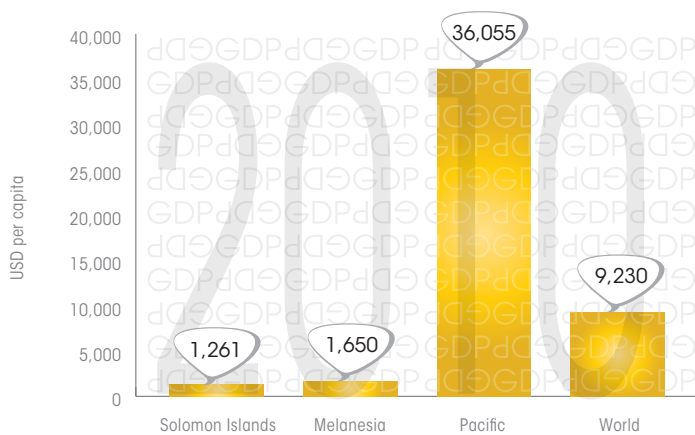
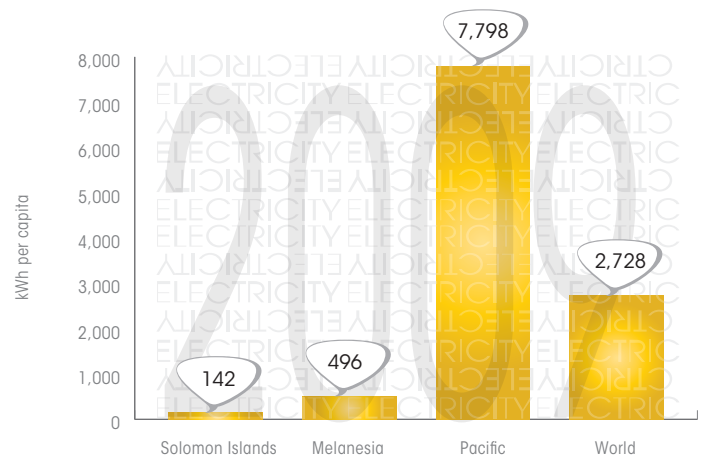


FIGURE 2: ELECTRICITY USE PER CAPITA FOR 2009



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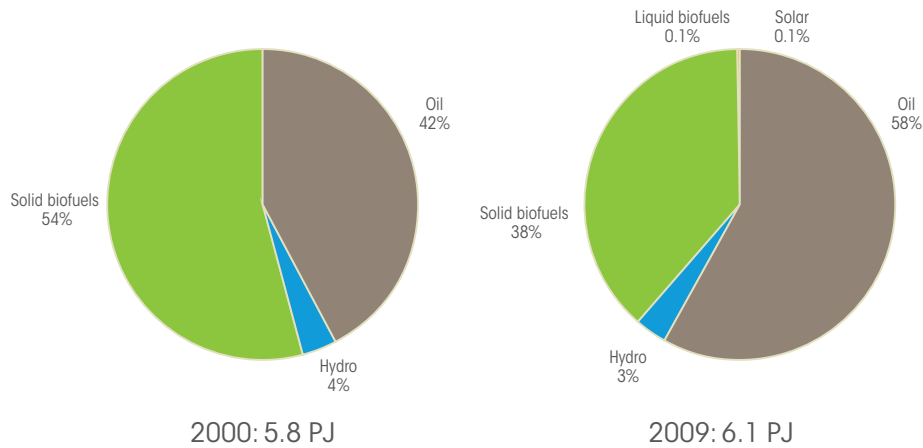
## ENERGY NATIONAL PROFILE 2009

- 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%

### 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

NATIONAL ENERGY POLICY  
2006

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.

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

# TONGA



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

FIGURE 1: GDP PER CAPITA FOR 2010

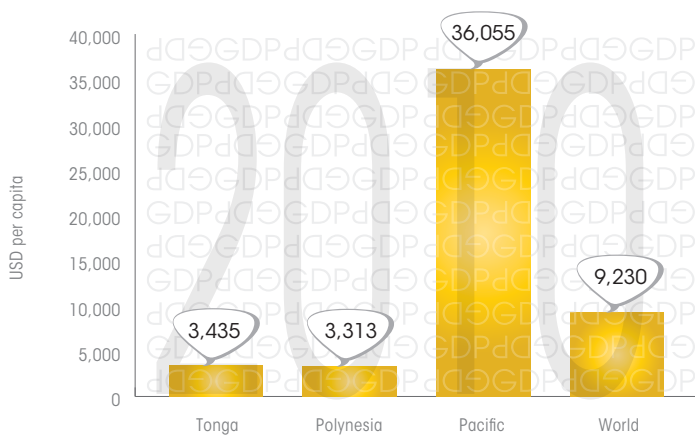
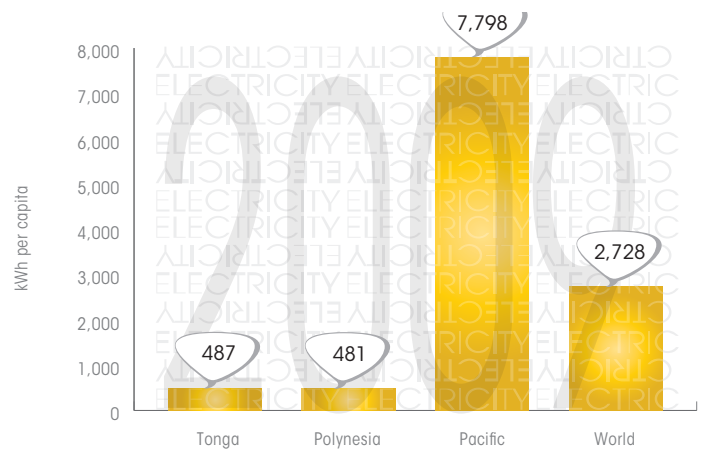


FIGURE 2: ELECTRICITY USE PER CAPITA FOR 2009



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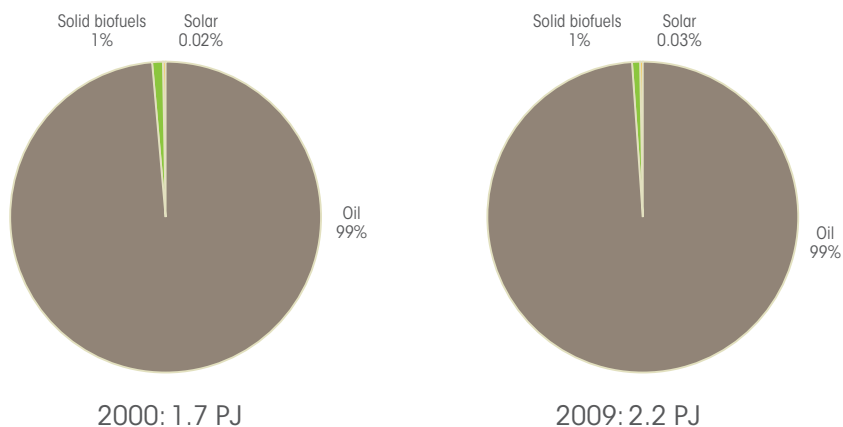
## ENERGY NATIONAL PROFILE 2009

- 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:

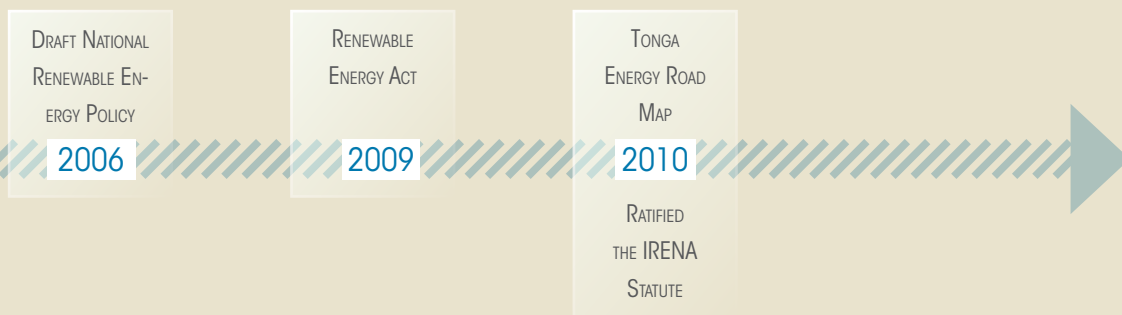
- 50% of electricity generation from renewables by 2012
- 18% of energy generation reduced by 2020 compared to 2000

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.



# TUVALU

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

FIGURE 1: GDP PER CAPITA FOR 2010

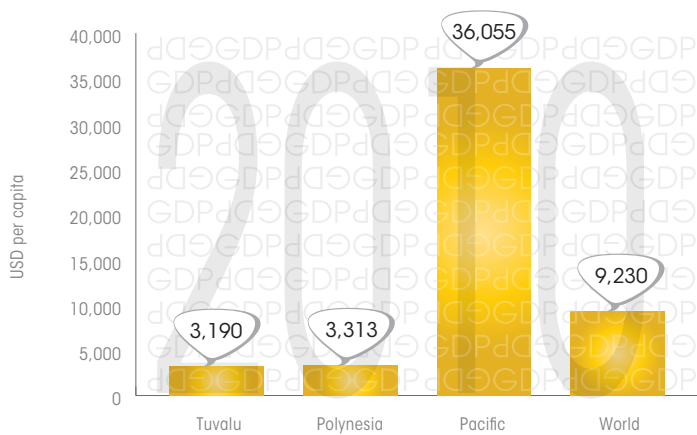
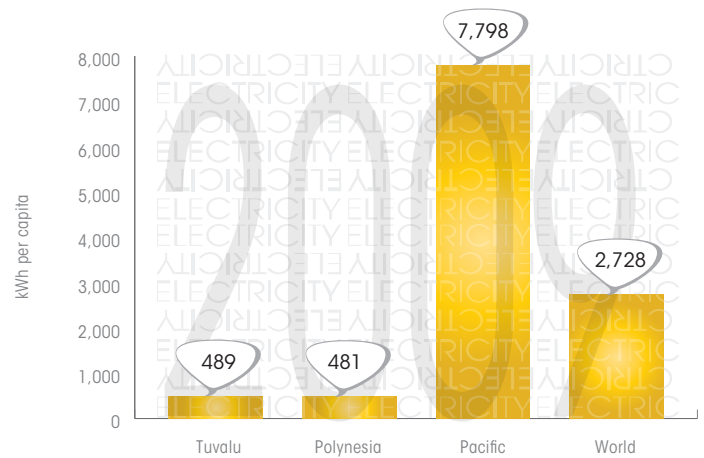


FIGURE 2: ELECTRICITY USE PER CAPITA FOR 2009



Polynesia includes the Cook Islands, Niue, Samoa, Tonga and Tuvalu.  
 The Pacific includes Australia, the Cook Islands, Fiji, Kiribati, the Marshall Islands, the Federated States of Micronesia, Nauru, New Zealand, Niue, Palau, Papua New Guinea, Samoa, the Solomon Islands, Tonga, 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

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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 ●

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# VANUATU



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

FIGURE 1: GDP PER CAPITA FOR 2010

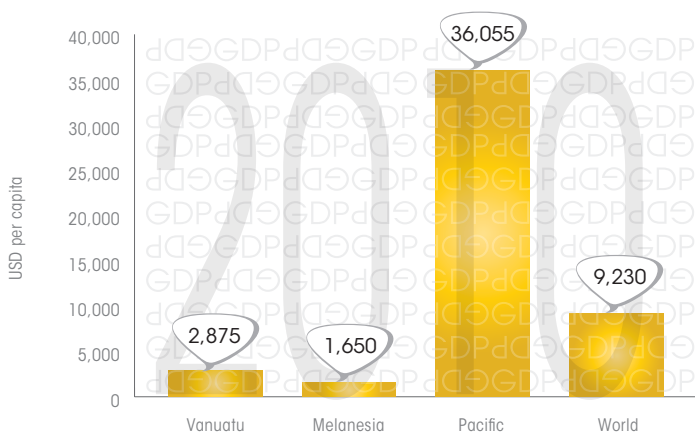
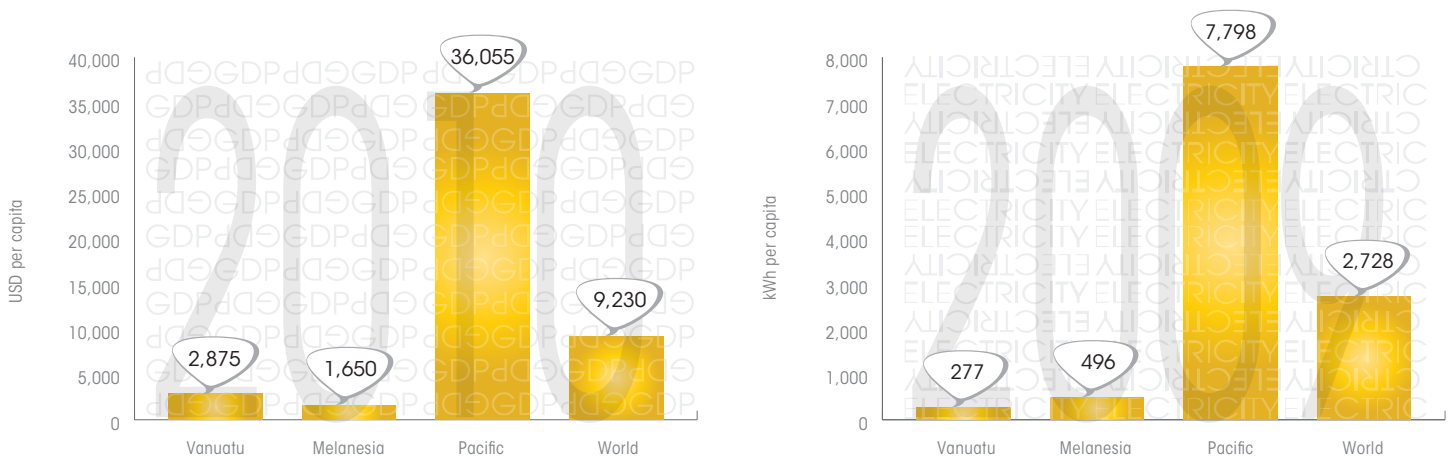


FIGURE 2: ELECTRICITY USE PER CAPITA FOR 2009



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

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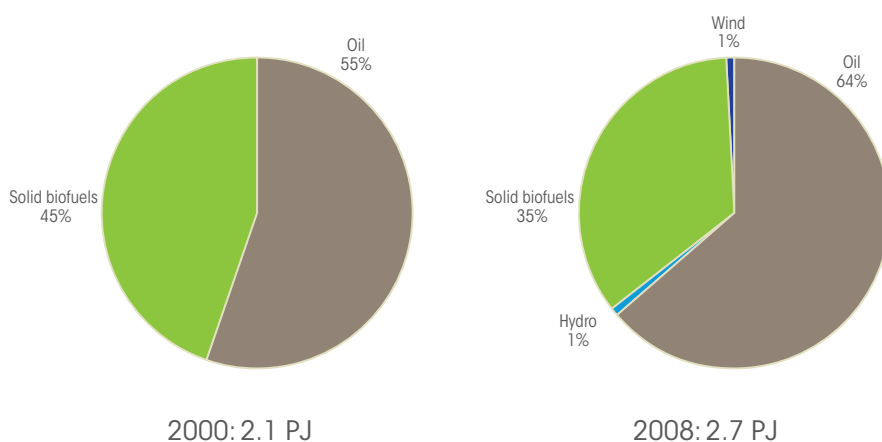
## ENERGY NATIONAL PROFILE 2009

- 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:

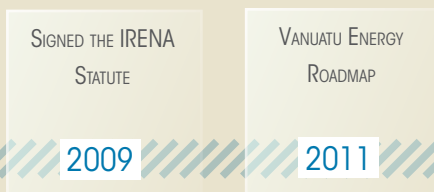
- 100% of energy from renewables

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



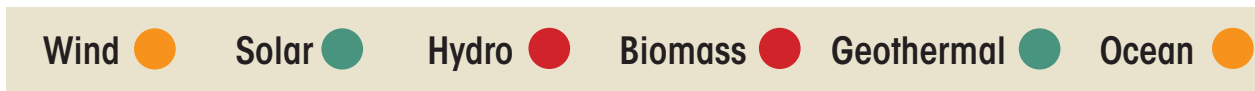
WORLD BANK EASE OF DOING BUSINESS INDEX FOR 2012: Ranked 76 out of 183

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# 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> 	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> 	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> 	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> 	No data identified by IRENA as yet					





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