

# Albania

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### 1. Overview of Electricity Supply

Albania has experienced an abnormally high growth rate of electrical consumption, averaging an 8.6 percent annual increase since 1992. A large part of that growth has been artificially stimulated by extraordinarily high rates of electricity theft, nonpayment of electric bills and tariff rates well below cost. Consumers have failed to conserve electricity or to make adequate use of alternative fuels for the past decade.

The abnormally high demand, together with reduced hydroelectricity production in 2000, 2001 and 2002 caused by reduced river flows, has caused a substantial supply deficit, which has caused a social and economic crisis. Albania's capacity to import electricity is constrained by a transmission system in dire need of rehabilitation and upgrades to expand its capacity.

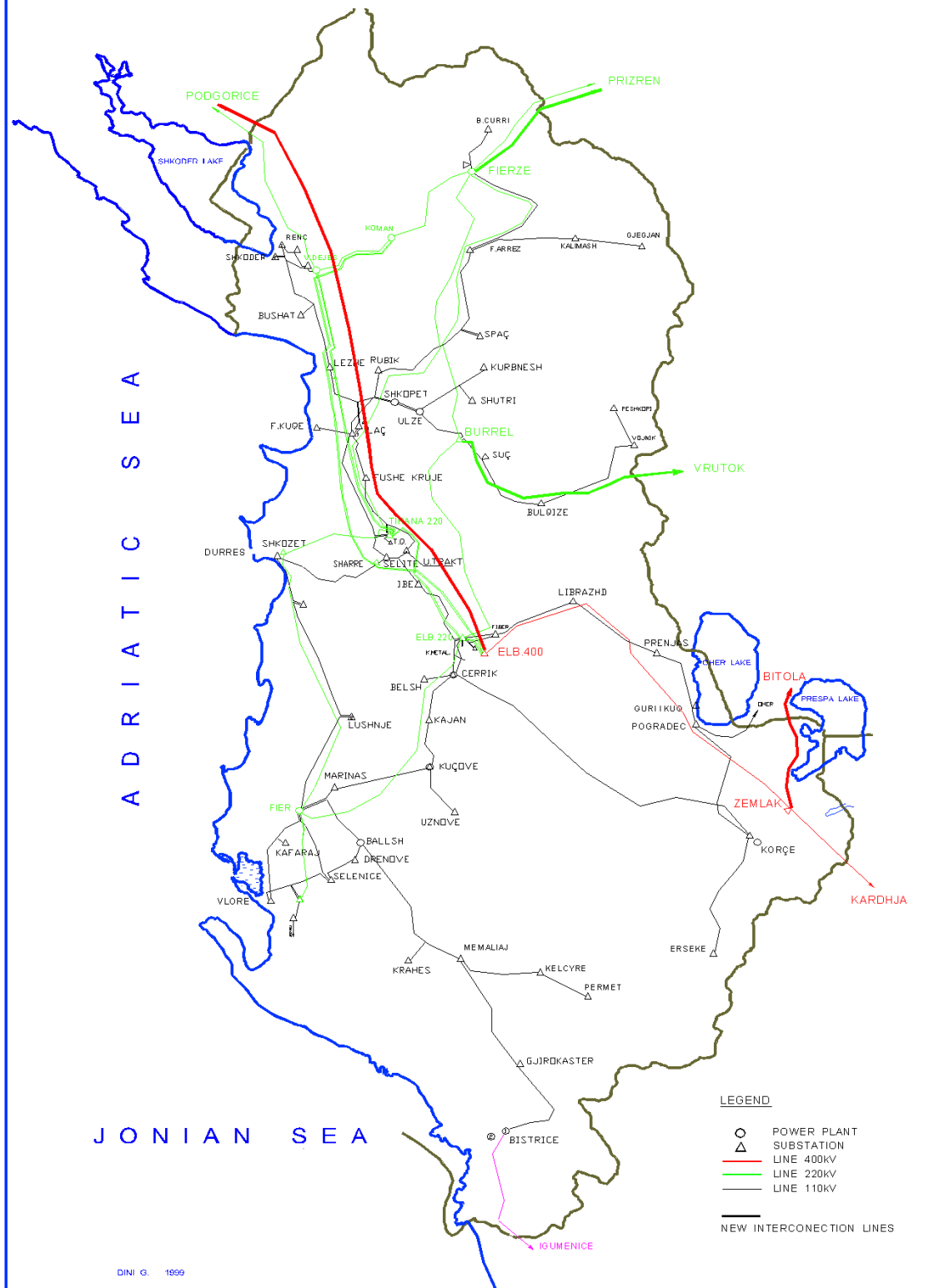
The artificially high electricity consumption, particularly for electric space heating, has diverted a valuable resource away from commercial and industrial uses that would otherwise create jobs and contribute to economic growth. The Government has subsidized imported power purchases, thereby diverting state resources from other critical government programs. In 2001, the subsidy reached 4,530 million ALL (US \$31.5 million).

**Albania**  
**Country Summary Table**

Demographical Information	
Population, millions (2003)	3.2
Land area, thousand Ha (2002)	2,875
Macroeconomic Information (2003)	
GDP, billion US\$	5.0

Real GDP growth rate, percent	6.00
Foreign direct investment (net), million US\$	178
Electricity sector	
Electricity tariff, US¢/kWh (2002)	4.2
Collection rate, percent (2002)	93
Load utilization factor, percent (2000)	NA
Electricity disposition, billion kWh (2003)	
Generation	4.11
Consumption	5.51
Exports	0.20
Imports	1.89
Generation capacity, GW (2003)	
Nuclear	0.0
Thermal	0.2
Hydro	1.4
Other renewables	0.0
<b>Total</b>	<b>1.7</b>
<i>Sources: European Bank for Reconstruction and Development, U.S. Energy Information Administration, Food and Agriculture Organization of the United Nations.</i>	

# Albanian electro-energetic System



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Albanian Electrical System

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## 2. Energy Policy, Barriers and Incentives

On April 27, 2005 the Albanian Parliament passed an Energy Efficiency Law that:

- Create the legal framework required for the promotion and improvement of the efficient use of energy, in whole its energy cycle.
- Establishes the economical use of energy sources, the establishment of more reliable energy supply conditions, as well as the minimization of impact on the environment
- Establishes an Energy Efficiency Fund and Financing of the Fund
- Fund of the Electricity Regulatory Entity in cases when decides to implement Energy Efficiency and Renewable Energy Systems programs for different categories of customers of power sector pursuant to Articles 8(2)(e) and 28(2)(gj) of the law No.9072, dated 22.05.2003 "On power sector".
- The Administration of the Fund shall be performed by the National Agency of Energy that shall seek to implement the increase of energy efficiency and renewable energy systems in all regions.
- The Minister shall approve for the implementation of energy efficiency and renewable energy system programs prepared by the National Agency of Energy
- Investments aimed at the penetration of renewable energy systems including small hydro power plants, biomass, wind power plants, etc).
- Carries out energy efficiency and renewable energy awareness campaign

Additional energy policy, barriers and incentives include:

- Energy – Investing in Modernization of the Electricity Sector
- Energy – Adding new generation to lessen the dependence on hydroelectric
- Energy – Ensuring energy self-sufficiency
- All renewables – Difficult economical conditions
- All renewables – Low electricity prices
- Hydroelectric – Renovating Existing Capacity
- Wind - Lack of any previous studies on wind energy resource potential

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## 3. Wind

There are no operational wind energy power plants in Albania and no known projects in the planning. However, there are some old wind mills still used for grinding wheat or other grains, as well as water pumping. The total number of such turbines and the current operating

conditions are unknown. There are a number of opportunities for the installation of large wind facilities. Additionally, there is the potential for small wind power facilities in the remote zones, where the cost to deliver the fuel for electricity and heat supply is expensive.

Developing wind energy is one of the supported and sustainable options for long-term energy sector development program in Albania. Its development, though, requires strong governmental and international financing support. According to the newly adopted energy strategy, feasibility study should be done for selection of the best sites of installation of wind power farms with total capacity of 100-150 MW in the future.

The most promising sites are located along the Adrian coast, as well as the hills and ridges running in the north to south direction along the coast. It is also highly probable that there are isolated locations in the mountain passes and near the two big lakes at the Macedonian border.

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## 4. Biomass

Biomass energy could be important in Albania's future, consisting of the following four main resources: Urban wastes, agricultural residues, forest residues, and animal wastes. The potential of Urban wastes from the main Albanian cities was calculated as approximately 405615 Toe-ton oil equivalent, predicted for the year 2010.

The energy potential from agricultural residues was calculated at approximately 43004 GJ in 1995. Forestry biomass resources were calculated to be approximately 460 millions of GJ in 1995. The energy potential from animal residue's was calculated at approximately 12 740 GJ in 1995 with a trend to be increased in the future. These numbers should be considered estimates; a more comprehensive study should be carried out for real validation.

### Albania Biomass Resource Data

Biomass resource type	Total production	Production density
<b>Percent of total land area covered by</b>		
Forests	10%	
Shrublands, savanna, and grasslands	5%	
Cropland and crop/natural vegetation mosaic	81%	
Urban and built-up areas	0%	
Sparse or barren vegetation; snow and ice	0%	
Wetlands and water bodies	3%	
<b>Primary crop production, tonne</b>	(avg. 1999–2001, tonne)	(tonne /1000 Ha)
Total primary crops (rank among COO)	3,930,424 (24)	1,434 (15)
Top 10 primary crops		
Alfalfa for Forage & Silage	1,800,000	657
Maize for Forage & Silage	483,333	176
Wheat	310,667	113
Vegetables Fresh (misc)	250,000	91
Watermelons	233,333	85

Maize	212,000	77
Potatoes	173,967	63
Tomatoes	161,333	59
Grapes	73,467	27
Sugar Beets	46,633	17
<b>Animal units, number</b>	(avg. 1999–2000, number)	(number / 1000 Ha)
Cattle	720,000	263
Poultry	4,000,000	1,460
Pigs	81,000	30
Equivalent animal units	792,400	289
<b>Annual roundwood production</b>	(1996–98, 000 m <sup>3</sup> )	(m <sup>3</sup> / Ha)
Total	409	149.3
Fuel	346	126.3
Industrial	64	23.4
Wood-based panels	16	5.8
	(1996–98,000 metric tons)	(metric tons / Ha)
Paper and paperboard	16	5.8
Recovered paper	NA	NA

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## 5. Solar

There are no installed photovoltaic systems identified at this time, although The Ministry of Energy aims to install enough solar panels to provide 62.9 ktoe of energy by 2015. The total investment cost is estimated at USD 79 million. Investment costs are to be shared between the state budget and private investors.

The largest solar thermal heating system currently operating in Albania consists of three sets of solar panels totaling 48 m<sup>2</sup>, that are installed from Center of Energy Efficiency (founded by EU and National Energy Agency).

The climate of Albania is a typical Mediterranean one, with a hot and dry summer. This climate is good for the use of solar energy (about 1503.8 kWh/m<sup>2</sup> per year).

The global annual radiation varies between 3.2 kWh/m<sup>2</sup>/day in the North East part of Albania and 6 kWh/m<sup>2</sup>/day in Fier, with a country average of 4.0 kWh/m<sup>2</sup>/day which is seen as a good solar energy regime.

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## 6. Geothermal

There are many thermal springs and wells in Albania, which represent a potential for geothermal energy. To date, the geothermal sources have never been used as a source of energy.

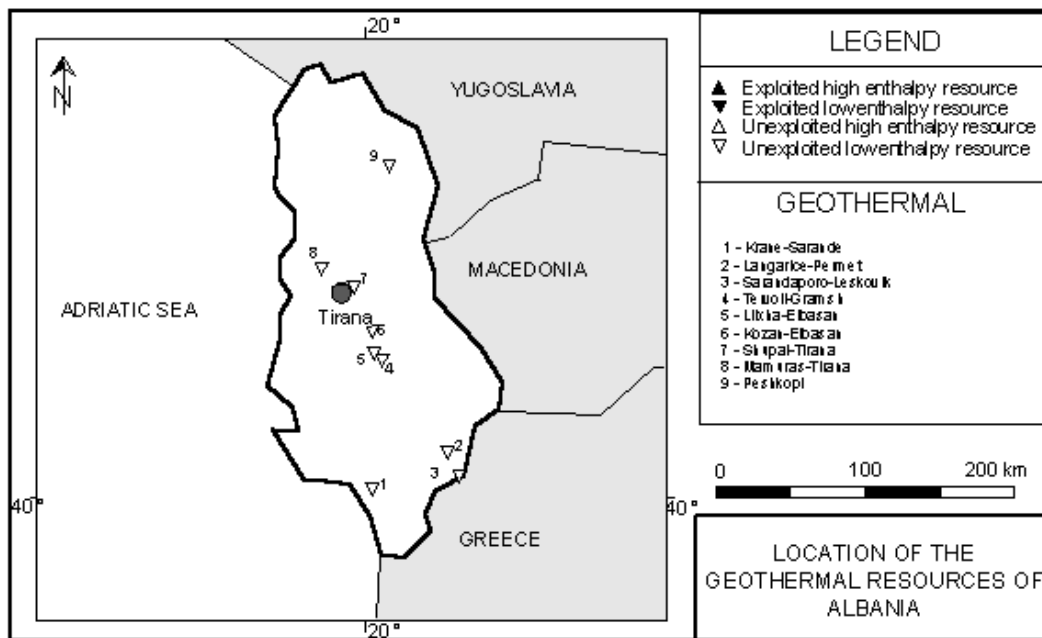
The geothermal situation in Albania offers two directions for exploitation of geothermal energy:

- The use of thermal water springs and wells of low enthalpy, which covers a wide territory from South, near the Albanian-Greek border to the Northeast districts in Diber region. The water temperatures reach values of up to 60°C.
- The use of hot thermal waters, brought out from deep abandoned oil and gas wells and single wells, for geothermal energy in a form of a "Vertical Earth Heat Probe". At 2000 m depth the waters temperature reaches a value of about 48°C.

In many deep oil and gas wells there are thermal water fountain outputs with a temperature that varies from 32 to 65.5°C. These waters are from different depth levels (800-3000 m) of limestone reservoirs and sandstone reservoirs.

The thermal springs and wells in Albania are located in three areas:

- Kruja geothermal area - a zone that has the largest geothermal resources in Albania, with a length of 180 km and a width of 4-5 km. It starts on the Adriatic coast, north of Rodoni Cape in Ishmi region, and continues from Tirana, Elbasani up to southeastern Albanian-Greek border and extends to the Konica district in Greece.
- Ardenica geothermal area- Located 40 km North of Vlora. The area extends on the part of peri-Adriatic Depression where the Vlora-Elbasan-Diber transverse passes.
- Peshkopia geothermal area- Situated in northeastern Albania, in the Korabi hydrogeologic zone.



### Albania's Geothermal Resources (Source: Black Sea Regional Energy Center)

The most important resources explored until now are located in the northern part of the Kruja geothermal area, from Lixha Elbasan in the south to Ishmi north of Tirana. The values of the specific reserves vary between 38.5 and 39.6 GJ/m<sup>2</sup>. The southern part of the Kruja area has resources of 20.63 GJ/m<sup>2</sup>.

In the Ardenica geothermal area the specific reserves amount to 0.39 GJ/m<sup>2</sup>.

Geothermal resources of Peshkopia area have been estimated similar to those of the northern half of the Kruja geothermal area.

In the peri Adriatic Depression, there are areas with a geothermal gradient of 18-20°C/km where there are several abandoned oil and gas wells which could be used for single or double ground-source heat pump installations. They are located in the plain area of the country, e.g. in Divjaka and Kolonja where greenhouses could be built to use the hot water for heating them.

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## ***7. Hydroelectric***

Albania is known for its enormous hydropower potential. So far, the country has exploited only 35 percent of the total potential. The average output from hydropower is 4169 GWh. Total hydropower reserves are estimated at around 3,000 MW. Potential annual generation may reach up to 10 TWh. New plants in the southern part of Albania (Vjosa and Devoll) have been successful in exploiting nearby rivers.

The Albanian Power System (APS) was created in 1957, but its origins come long before then. The total installed energy capacity in Albania is about 1650 MW, of which 1446 MW (87.2 percent) are HPP-s providing more than 95 percent of total energy supply. Three HPP-s constructed on Drini River (north of Albania) compose 80 percent of the country's installed capacity. The annual generation capacity of the country has been approx. 3300 – 3500 GWh, reaching 5800 GWh in 1996. With an average rainfall of 1500 mm and an average available head of about 600 m, there is still an enormous potential to be developed.

The energy production is highly dependent on the hydrological situation. KESH, the operator of the APS, is also encountering problems with the technical and “non-technical” losses. The electricity demand has increased considerably over the last 10 years. The residential sector consumes over 60 percent of electricity production.

Apart from the large and medium sized HPP-s, there are 83 small hydropower plants (SHPP-s) in Albania (owned by KESH) ranging from 0.05 to 1.2 MW. Their installed capacity is 14 MW (this represents 1 percent of the APS hydropower capacity) and the average annual production has been about 50 million kWh. Their utilization scheme is often incorporated for electricity generation and irrigation. Most of them are connected to the national grid. Actually these SHPP-s are in poor working conditions or out of work because of the outdated technology, lack of spare parts and poor maintenance. The production level in recent years is about 12 GWh.

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## ***8. Relevant Links***

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## 9. References

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## 10. Country Contacts

Contacts made in the preparation of this assessment are gratefully thanked for their contribution to this report. Contacts include: