Albanian Power Sector Performance, Challenges and Opportunities

Shkëlqim Bozgo
Managing Partner
SEA Consulting

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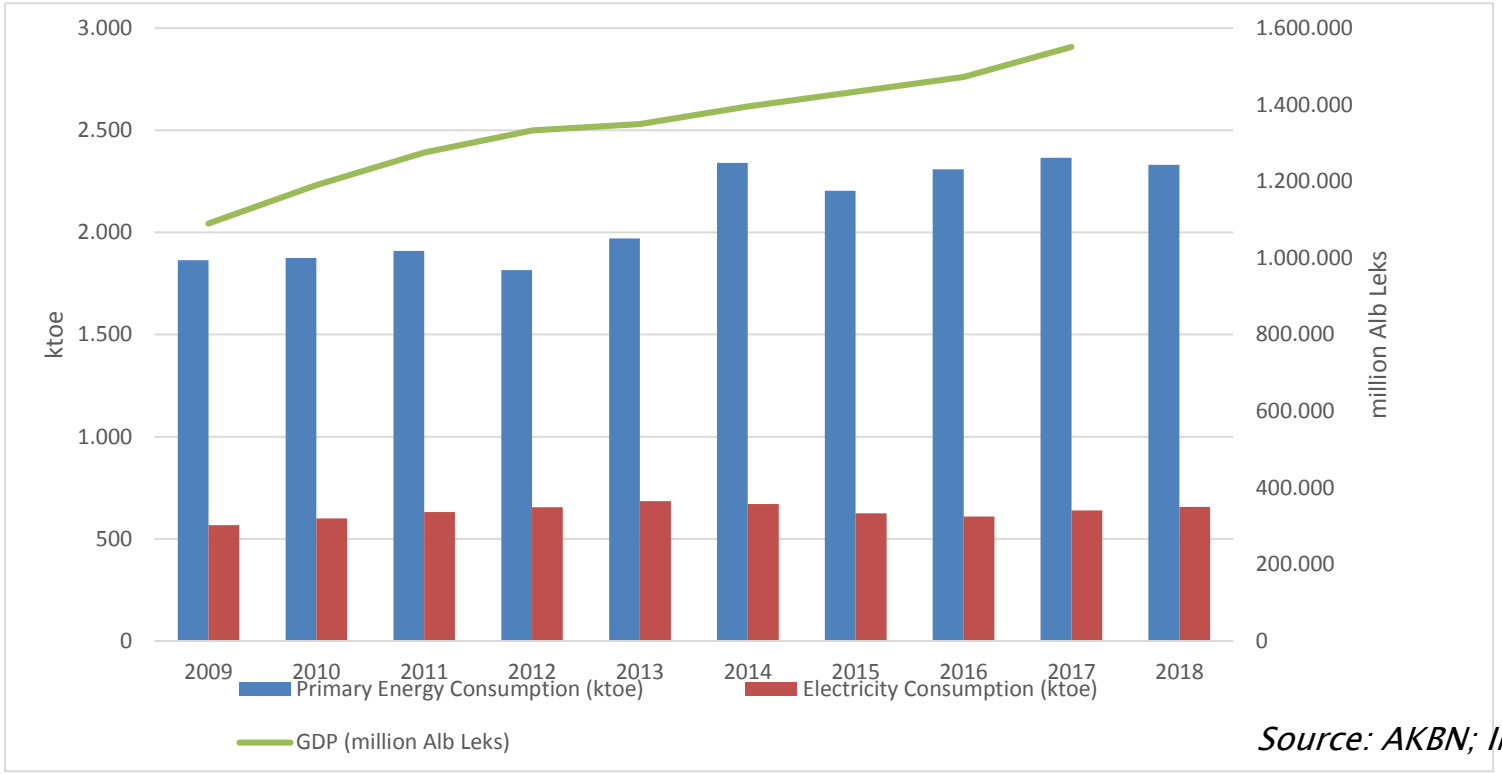
Sustainable Energy Advisors

- Established in 2017
- Founders; Three ex-Commissioners of ERE and TAP management experience
- Energy, Natural Gas Regulation, Management RES, sustainable development
- Partnering in Albania and the region
- Clients; banks, private investors, international organizations.

Albania Primary Energy & Electricity Demand versus GDP



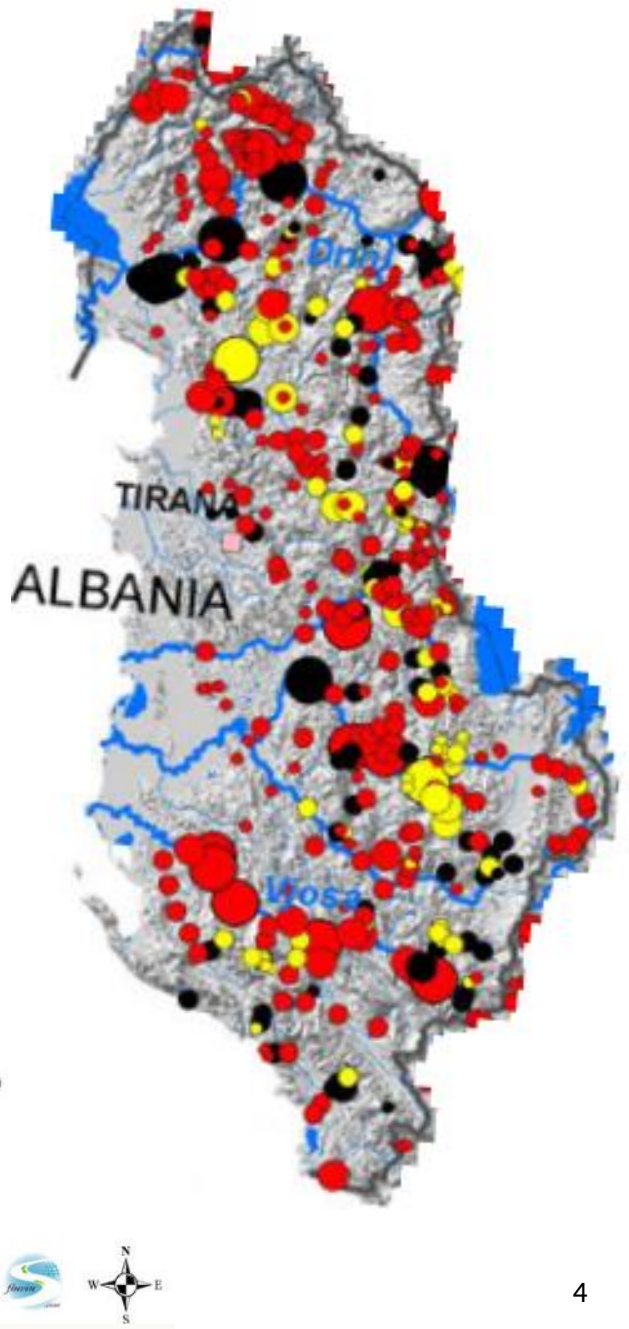
Source: AKBN; INSTAT

- Primary energy demand follows GDP growth
- Electricity demand;
  - growing at a slightly lower rate than primary energy
  - constitutes around 30% of primary energy consumption

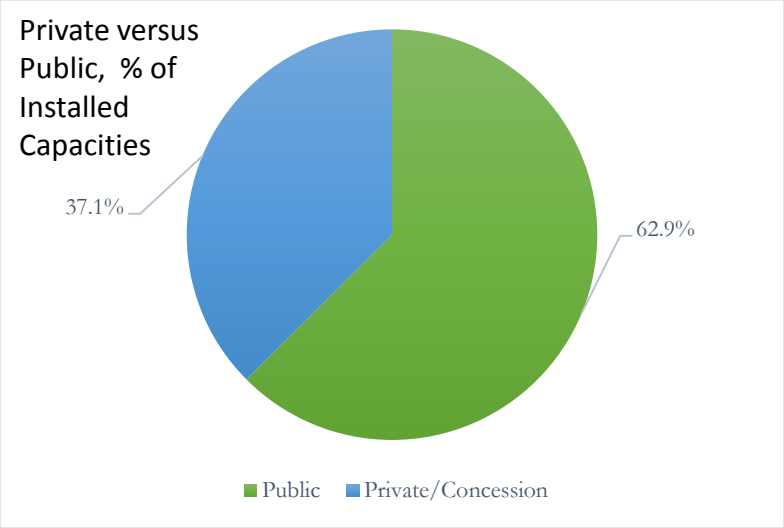
Power Generation

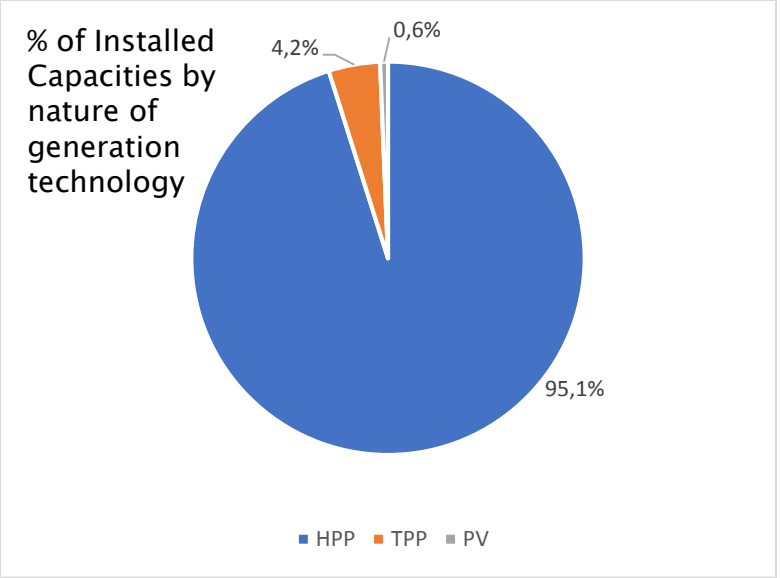
Albania's current demand is covered by;

- Domestic production (Hydro & PV)
- Imports (Interconnections)



Nature of Generation Capacities





Installed capacity of KESH (public utility) dominates the market

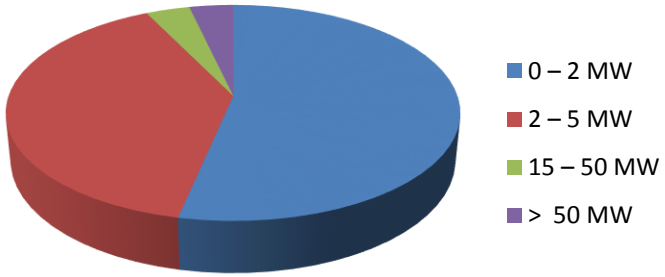
Vlora TPP (97MW) built since 2009 but no product. Hydro remains the only source of power generation. PV debuting

Technology	No	Installed Capacity		Ownership			
				Public		Concession or Private	
				No	Installed Capacity	No	Installed Capacity
		(MW)	%		(MW)		(MW)
Hydro	165	2,204	95.70	3	1,350	162	854
Thermal	1	98	4.26	1	98	0	0
PV	7	14.9	0.04	1	1	6	13.9
Wind	0	0	0	0	0	0	0
TOTAL	**167**	**2,303**	**100.00**	**5**	**1,449**	**162**	**854**

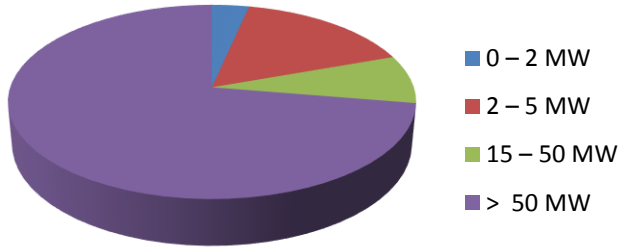
(Source: ERE)

Classification of Hydro Power Plants

Number of HPP by Type



Capacity



- Number of small HPP (<5MW) dominates

Large HPP (>50MW) make 72.4% of the total installed capacity in the country

Hydro Power Plants Classified by installed capacity	Connected into:				Total	
	Transmission		Distribution			
	No.	Capacity	No.	Capacity	No.	Capacity
0 – 2 MW	7	8	81	67	88	75
2 – 5 MW	28	183	37	173	65	356
15 – 50 MW	6	177	0	-	6	177
mbi 50 MW	6	1,595	0	-	6	1,595
TOTAL	**47**	**1,963**	**118**	**240**	**165**	**2,203**

Albania Power Production 1985-2018 (GWh)

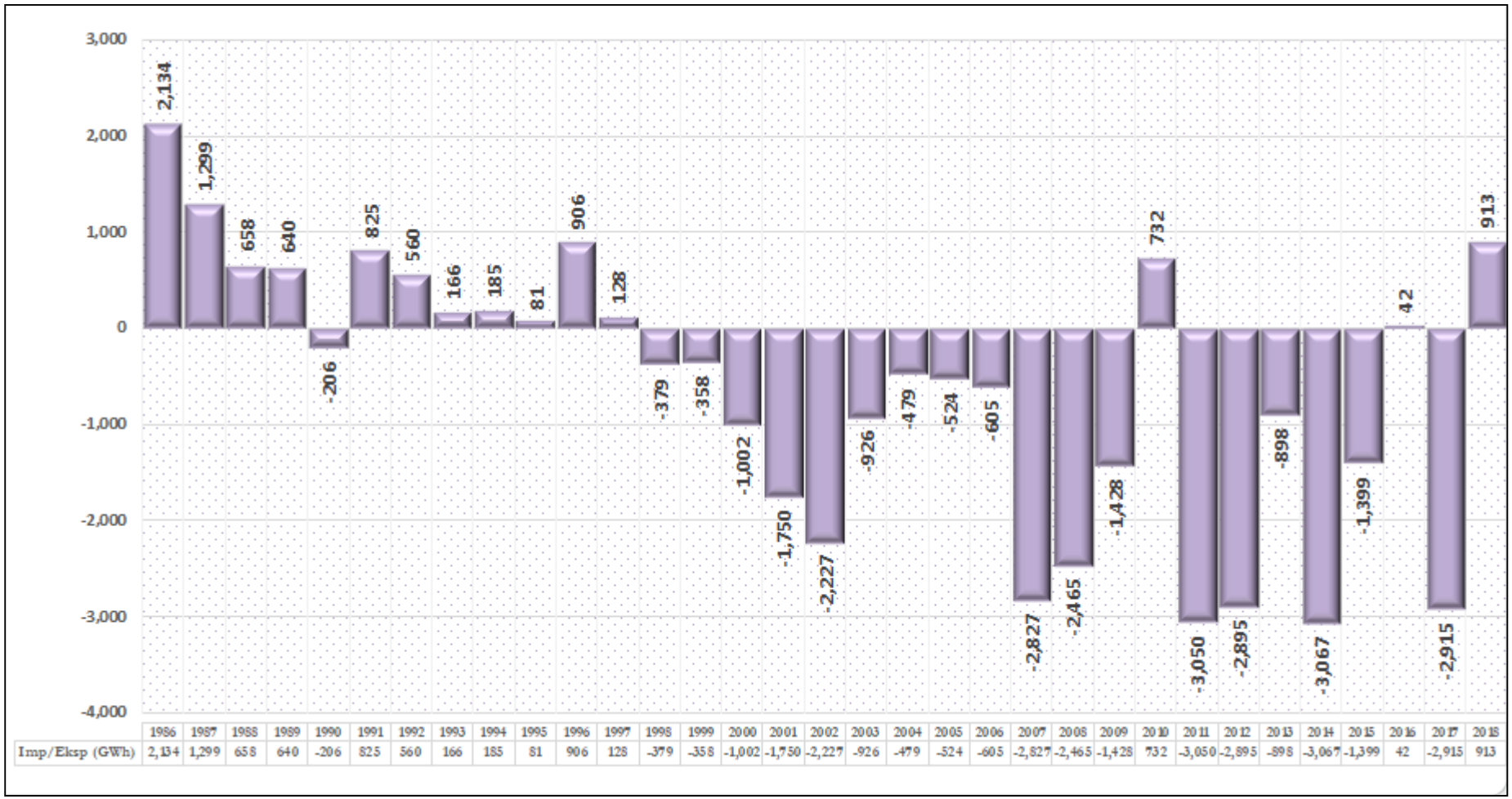
	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
GWh/VIT	3,115	5,084	4,371	3,963	4,177	3,215	3,786	3,385	3,482	3,904	4,399	5,793	5,182	5,068	5,369	4,737	3,681	3,204	4,894	5,453	5,409	5,516	2,940	3,795	5,230	7,743	4,158	4,722	6,956	4,724	5,866	7,136	4,525	8,552
Average	4,810	4,810	4,810	4,810	4,810	4,810	4,810	4,810	4,810	4,810	4,810	4,810	4,810	4,810	4,810	4,810	4,810	4,810	4,810	4,810	4,810	4,810	4,810	4,810	4,810	4,810	4,810	4,810	4,810	4,810	4,810	4,810	4,810	4,810

- After a long period of stagnation new generation capacities have started to come on stream
- Domestic production is still primarily based on hydro
- Annual power production remains highly uncertain due to unpredictability of weather and rainfall. Apparently climatic changes have increased the amplitudes of annual variations.

Power production has also an uncertain seasonal profile

	Janar	Shkurt	Mars	Prill	Maj	Qershor	Korrik	Gusht	Shtator	Tetor	Nentor	Dhjetor
Mesatar	571,051	547,196	591,519	563,450	567,179	442,003	366,975	336,341	293,383	331,718	381,685	521,787
2018	879,390	1,049,115	1,284,372	1,174,335	1,001,941	530,874	565,999	577,730	485,891	269,899	261,760	470,847

Import / Export balance (GWh)



	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Imp/Eksp (GWh)	2,134	1,299	658	640	-206	825	560	166	185	81	906	128	-379	-358	-1,002	-1,750	-2,227	-926	-479	-524	-605	-2,827	-2,465	-1,428	732	-3,050	-2,895	-898	-3,067	-1,399	42	-2,915	913

- Since 1998 Albania has become a **net importer** of electricity
- The National Strategy of Energy foresees that Albania's import dependence is expected to continue in the future.

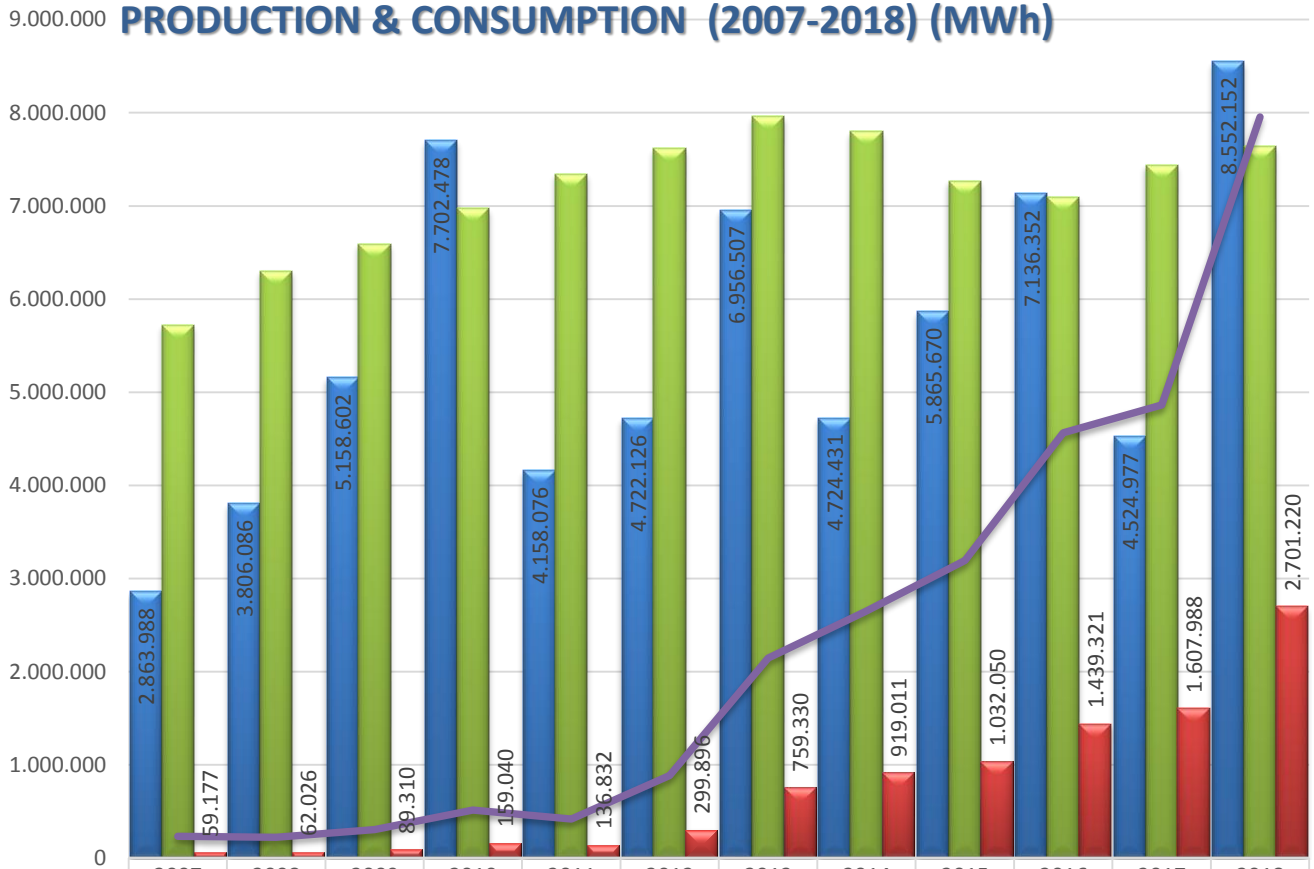
RES Potential

- **Small Hydro Power Plants** (up to 15 MW)
  - As end of 2018 MIE has signed 194 contracts for 540 SHPP
- **Photovoltaic**;
  - First PV production in 2018, 7 Priority Producers (capacity 14.9 MW_p)
  - 10 PV producers with 21.5 MW_p licensed by ERE during 2018
  - Ministry of Energy, auctioned the construction of a 50 MW PV plant in Akerni, Vlore. India Power Corporation is the winner
  - Plans for additional PV capacities and tenders
- **Wind** still at its infancy but country has considerable potential.
  - A number of investors have already applied for wind farm licenses
- **Biofuels, geothermal etc.**
  - No real progress

Promoting RES

- Albania's target for RES 38% in year 2020
- Supportive schemes (Law 7/2017 in line with Directive 2009/28/CE):
- **Priority Producer (PP)**:
  - a preferential status given to producers of electricity from renewable sources,
  - in the case of SHPP the installed capacity limit is up to 15 MW.
- **Current** PP support schemes:
  - **Feed in tariffs**
    - Applicable to small renewable resources (wind: up to 3 MW, all other technologies: up to 2 MW).
    - Already implemented for SHPP, PV, Wind.
  - **Feed in Premium** (Contracts for Difference)
    - Applicable to all other Priority Producers – if they choose to participate in the scheme.
    - Has not yet started implementation.
  - **Net metering energy schemes**.
    - CoM decision approved recently for PV up to 500 kW
    - Has not yet started implementation.

POWER PRODUCTION FROM PRIVATE & CONCESSION HPPP VERSUS TOTAL DOMESTIC PRODUCTION & CONSUMPTION (2007-2018) (MWh)



	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
TOTAL DOMESTIC POWER PRODUCTION 2007-2018 (MWh)	2.863.988	3.806.086	5.158.602	7.702.478	4.158.076	4.722.126	6.956.507	4.724.431	5.865.670	7.136.352	4.524.977	8.552.152
TOTAL ANNUAL CONSUMPTION 2007-2018 (MWh)	5.719.000	6.300.000	6.593.000	6.970.000	7.342.000	7.617.000	7.961.000	7.796.000	7.266.000	7.094.000	7.440.000	7.639.000
POWER PRODUCTION FROM PRIVATE & CONCESSION HPP 2007-2018 (MWh)	59.177	62.026	89.310	159.040	136.832	299.896	759.330	919.011	1.032.050	1.439.321	1.607.988	2.701.220
POWER PRODUCTION FROM PRIVATE & CONCESSION HPP 2007-2018 (MWh) IN % OF ANNUAL CONSUMPTION	1%	1%	1%	2%	2%	4%	10%	12%	14%	20%	22%	35%

- Power **consumption** during the last decade (2007-2018) has grown at an average rate of 2.67%. Growth is expected to remain at the same levels or higher.
- Production from SHPP and RES increased dramatically by **60%** in 2018 versus year 2017

Impact of Priority Producers (PP)

- **Council of Ministers Decision No.244, dt 30.03.2016 (Art 11.2) ensures that production of all PP (SHPP, PV) will be bought from DSO (OSHEE).**
- **Growing installed capacity is increasing production PP rapidly**
  - The power generated from PP during year 2018 reached 22% of the total power consumption from tariff customers
- **As a result the cost of power purchase by the Universal Supplier (OSHEE) has also bounced.**
  - Cost of buying the energy produced from PP during 2018 constituted 50.2% of the cost of energy purchase from OSHEE to meet consumption. The cost of the same was only 22.5% for year 2017!
- **Such development is increasing pressure to either**

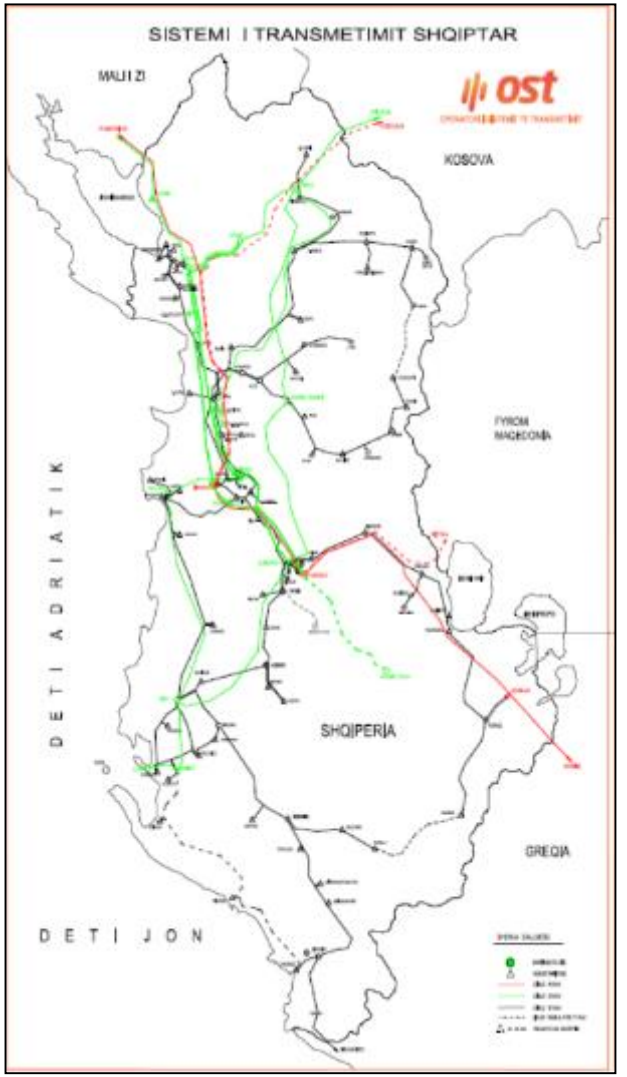
(i) increase the regulated tariffs for end consumers or

(ii) reduce incentives for Priority Producers or

(iii) both of them.

Albanian Transmission System

Interconnector Type and Voltage Level	Length in km		Growth during last decade 2009-2018	
	2009	2018	km	%
400 kV overhead line Albania (Zemblak) – Greece (Kardia) Albania (Tiranë) – Montenegro (Podgoricë) Albania (Tiranë) – Kosovo (Prishtinë) *Albania (Elbasan 2) – Nth Macedonia (Manastir / under construction)*	120.2	445.7	325.5	270.8 %
220 kV overhead line Albania (Fierze) – Kosovo (Prizren) Albania (V Dejës) – Montenegro (Podgoricë)	1,128.0	1,250.0	122.0	10.8 %
154 kV overhead line Albania (Bistrica 1) – Greece (Myrtos)	34.4	34.4	-	-
Total	**2,498.8**	**3,388.1**	**889.3**	**35.6 %**



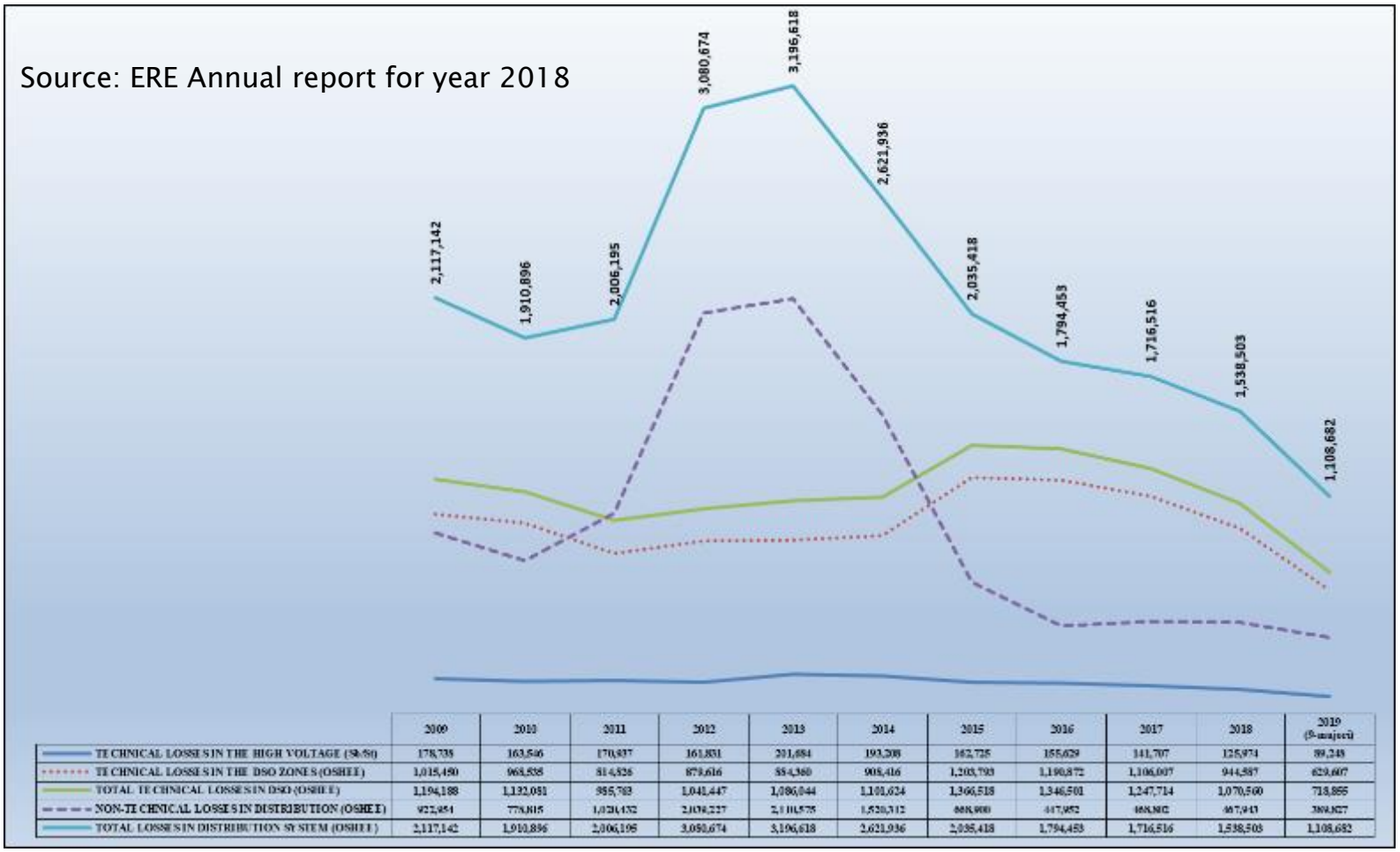
- Interconnectors with neighboring countries provide almost any time;
  - sufficient capacities for the needed electricity exchanges and
  - transits though interconnection
  - congestions have been verified certain times. (ERE, annual report 2018).

Distribution System

- Albania is considered as a single distribution zone
- DSO (OSHEE) owns the system and is in a monopoly position.
- After the failed experience of 2010-2014 when 76% of the shares were sold to CEZ, the power distribution system and services is back in the hand of a 100% public company OSHEE. OSHEE plays also the role of Universal Service Provider to tariff customers.
- Unbundling of the DSO (OSHEE SHA) in progress = split into two new companies;
  - Physical operation and maintenance of the distribution system,
  - Universal Service Supplier of tariff customers.
- During 2018 ERE has taken the following decisions;
  - Transfer of the License of the Operator of the Power Distribution System to the "Operatori i Sistemit të Shpërndarjes" sh.a. (O.S.SH sh.a.) and
  - Transfer of the License for the Power Supply to the "Furnizuesi i Shërbimit Universal" sh.a. (FSHU sh.a.),
- During the transition phase both companies will remain under the umbrella of OSHEE until full unbundling.

Management of Power Losses

Source: ERE Annual report for year 2018

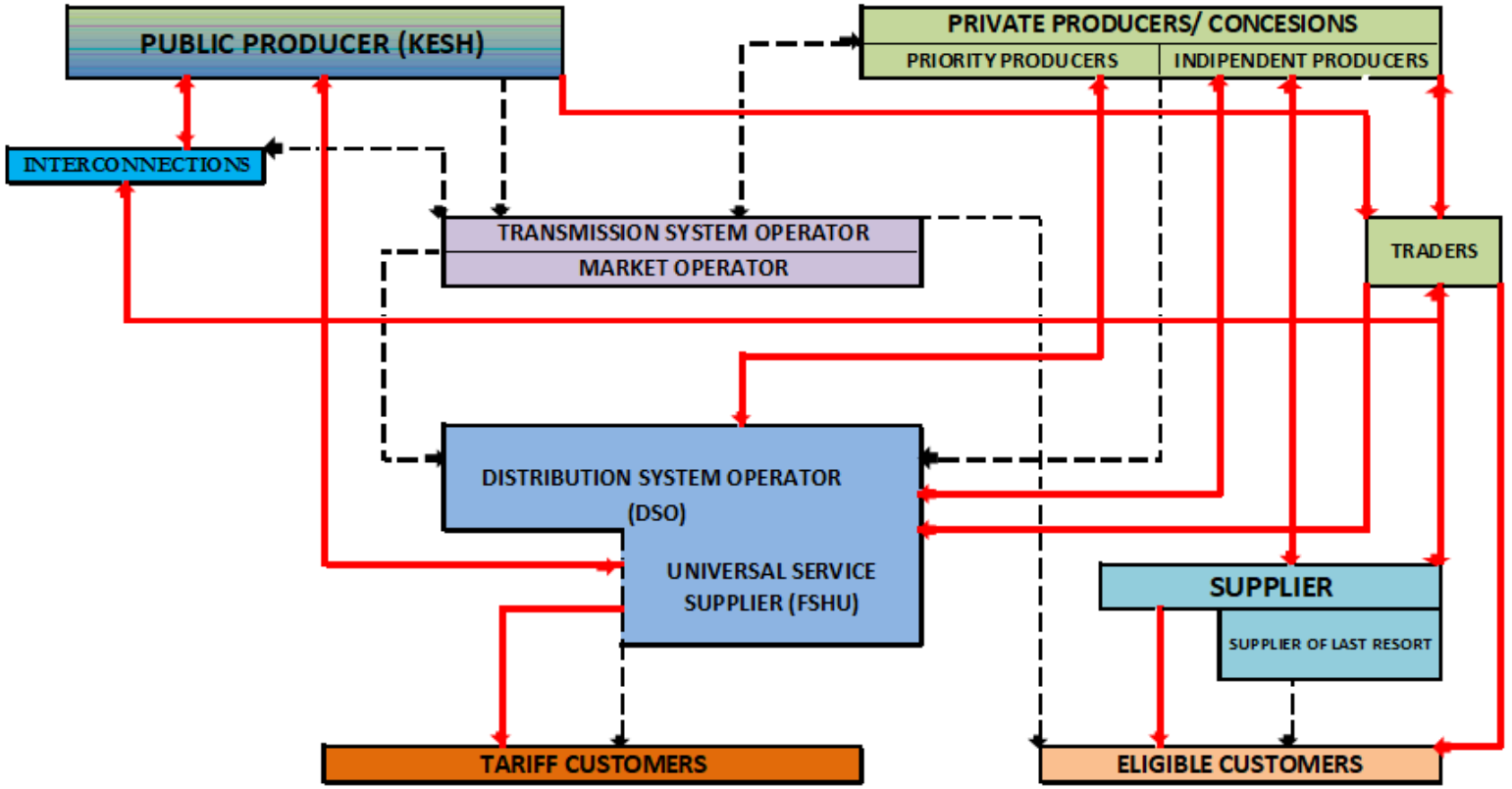


	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019 (9-months)
TECHNICAL LOSSES IN THE HIGH VOLTAGE (50/50)	178,735	163,546	170,837	161,831	201,684	193,208	162,725	155,629	141,707	125,974	89,248
TECHNICAL LOSSES IN THE DSO ZONES (OSHEE)	1,015,450	968,538	814,526	879,616	884,360	908,416	1,203,793	1,190,872	1,106,007	944,587	629,607
TOTAL TECHNICAL LOSSES IN DSO (OSHEE)	1,194,188	1,132,051	985,763	1,041,447	1,086,044	1,101,624	1,366,518	1,346,501	1,247,714	1,070,560	718,855
NON-TECHNICAL LOSSES IN DISTRIBUTION (OSHEE)	922,954	778,845	1,020,432	2,038,227	2,110,575	1,520,312	868,900	447,952	468,802	467,943	389,827
TOTAL LOSSES IN DISTRIBUTION SYSTEM (OSHEE)	2,117,142	1,910,896	2,006,195	3,080,674	3,196,618	2,621,936	2,035,418	1,794,453	1,716,516	1,538,503	1,108,682

- Progressive reduction of power losses and improvement of collection rate are positive signs of the improvement of performance after a failed experience of 2009-2014 of the Distribution System

ALBANIAN POWER MARKET STRUCTURE

Power & Energy Flows in the Market



LEGJEND:

➡ POWER FLOW

➡ CONTRACTUAL FLOW

SOURCE: www.ere.gov.al

ALBANIAN POWER MARKET MODEL

- Following approval of the new Power Law 43/2015 (transposing Directive 72/2009/EC **a new market model** should have been in place
- The Council of Ministers with Decision No. 244 dt. 30.03.2016 defined the conditions for the public service obligations, which would serve also as a **temporary Market Model** until the new model is approved.
- On the same year (2016) with CoM Decision 519 dt. 13.07.2016 the Government **approved the new Market Model.** This model becomes applicable from the moment the Albanian Power Exchange (APEX) becomes operational .
- **APEX is not established yet** (expected to be in place next year) therefore the temporary market model is still in place

Reforms in the Power Sector

- Adoption and progressive implementation of the Energy Acqui
  - EU Directives and Regulations transposed in the Power, Natural Gas, RES Laws
  - Secondary legislation progressing
- Attracting private investments
- Market opening
- Strengthening of the power infrastructure
- TSO certified

Enforcing Market Opening

- **Phase 1:**
  In 2011 all consumers connected in voltage equal and higher than 110 KV and any other consumer with consumption over 150 MWh/year were enforced to go into the open market.
- **Phase 2:**
  In year 2015 the new Power Law 43/2015 enforced the opening of the market of the following categories (Article 109);

Nr.	Voltage Level	Timeline by when the eligible customer should go into the open market
1	35 kV	No later than 30 June 2016
2	20 kV	No later than 31 December 2016
3	10 kV dhe 6 kV	No later than 31 December 2017

Status of progress:

- Majority of Eligible Customers are already in the unregulated market but most of them are yet supplied by the Supplier of Last Resort.
- Prices of SoLR are regulated and defined on monthly basis and sometimes are significantly higher than the regulated prices
- The time for being supplied by the SoR is limited to 2 years

Gas to Power

- Why gas?
  - Diversification of power generation
  - Promotion of RES (in Albania and the region)
  - Security of supply
- Potential sources of supply;
  - TAP close to completion and start of operations
  - Shell declared discovery under assessment (Shpirag)
- Gas Master Plan
- Albgaz established as combined TSO/DSO and certified
- Potential natural gas projects;
  - Pipeline Fier-Vlore to supply Vlora TPP
  - IAP
  - ALKOGAP
- Gas to Power
  - Vlora TPP (97MW)
  - Korca TPP (500 MW)

Figura 3-4: Njësitë Vendore që mund të merren në konsiderate për analizën e gazit

Thank You!

Contact:
shkelqim.bozgo@sea-consulting.co
www.sea-consulting.co

SEA Consulting
Sustainable Energy Advisors

Primary energy demand forecast