Scaling-up Solar PV in the Western Balkan Region

Synthesis of Country Findings

Vienna, Austria

November 12 2019

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Outline

1. Introduction
2. Serbia
3. Bosnia and Herzegovina
4. Kosovo
5. Questions and Discussion

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Introduction

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Introduction

Project has three main objectives:

1. Analyze the current market context for **distributed solar PV** in three Contracting Party countries: **Serbia, BiH, and Kosovo**
2. Identify the **key barriers**
3. Outline **concrete steps** to help scale-up the market

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Serbia (Maja Turkovic)

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Legal Framework (1) - Serbia

- Energy Law: Both legal entity and physical person can be a producer and market participant
- Legal status: "household" vs. "plant"
- Legal framework for a trade of guarantees of origin ready
- No additional technical regulation needed with regard to self-consumption
- No incentives for self-consumption

Energy Law, art. 70 :

"A natural person producing electricity from renewable sources may also acquire the status of a privileged producer, the temporary status of a privileged producer, and the status of a producer from renewable sources, but only for one power plant with the installed power of up to 30 kW, under the conditions prescribed under Paragraphs 1-3 of this Article."

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Legal Framework (2) - Serbia

- DS Rules of Operation:
  - Define self-consumption
  - Regulate technical conditions for connection
- From DSO point of view the ultimate point of connection is the meter

DS Rules of Operation (2017)

4.9.2.2. Parallel operation with the DS where part of the energy is fed into to the DS and the other part is used for self-consumption;

4.9.3.10. Self-consumption of a power plant is the consumption of electricity in a power plant that is measured by a meter that measures the electricity delivered to the DS

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Legal Framework (3) - Serbia

- Regulation on the construction of specific objects: PV systems up to 50 kW can be installed without the building permit (for the plant)

- Applicable for solar systems not connected to the power grid

Regulations on the special type of objects/structures and special type of works, which do not require the act of the competent authority, as well as on the type of objects/structures being constructed or the type of works being conducted based on the permission for construction works, as well as on the scope and content and technical documentation control that is provided along with the procedure request which is conducted by the competent authority (Official Gazette RS no.2/2019).

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Technical possibilities (1) - Serbia

ACTIVITIES AFTER OBTAINING A BUILDING PERMIT OR DECISION ON APPROVAL OF CONSTRUCTION WORKS

- ✓ Signing Connection Service Agreement with the DSO
- ✓ Submitting the Request for Connection to the DSO
- ✓ Regulation of balancing responsibility and access to the system at the point of connection – signing contract with the supplier
- ✓ Signing the power plant Operating contract with the DSO

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Technical possibilities (2) - Serbia

DSO concerns

- No (technical) problem with connection of large prosumers - their production is always smaller than approved capacity at the point of connection
- The regulator has exempted prosumers from paying for reactive power - they take as much reactive power from the grid as they want (relevant for commercial/industrial consumers)
- Prosumers generally decrease losses in the DS, but this doesn't apply to large prosumers, where the energy flows and produces losses and has dramatic impact on the DS.
- The point of connection is usually not optimal from the DSO point of view

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Cost Effectiveness (1) - Serbia

Assumptions:

50% of production for self-consumption, 50% excess power delivered to the grid

Unit investment cost 0.80 Eur/W

PV Plant installed capacity 250 kW (≈ 2000 m2)

Starting electricity price 66 Eur/MWh

Starting price for excess power 42 Eur/MWh

OPEX 2 Eur/kW

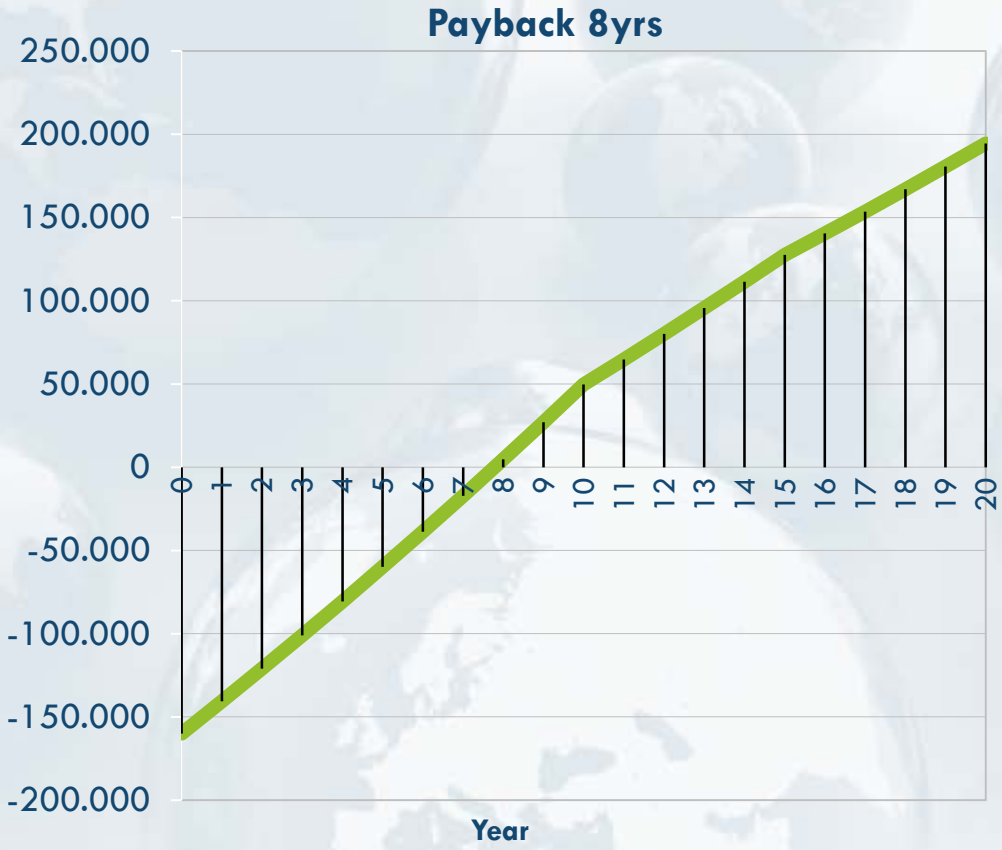
Annual degradation of PV panel capacity 1%

Factors for calculating ROI

Electricity price increase 3%

Discount rate 2%

Annual fee increase for system access 2%



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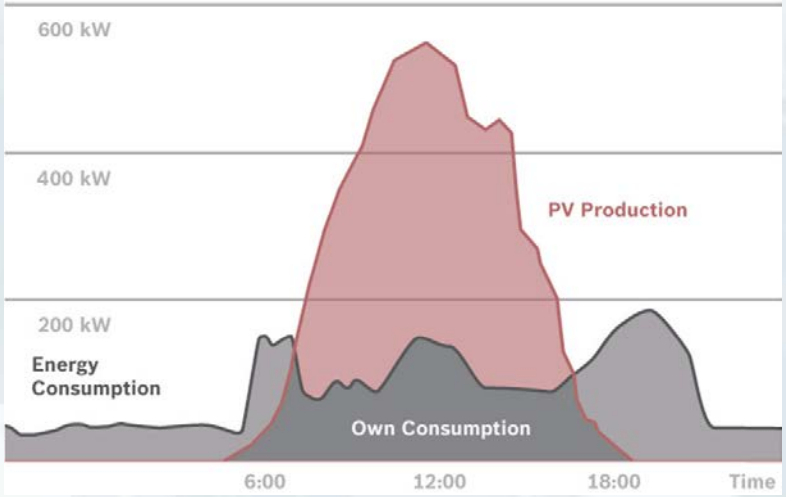
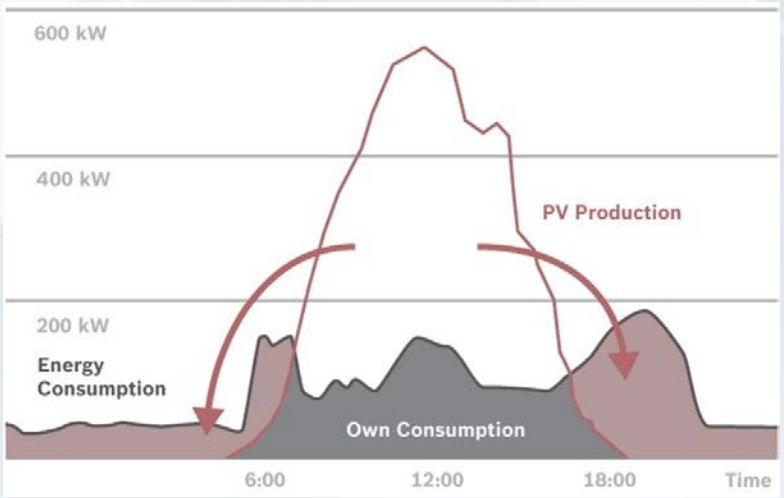
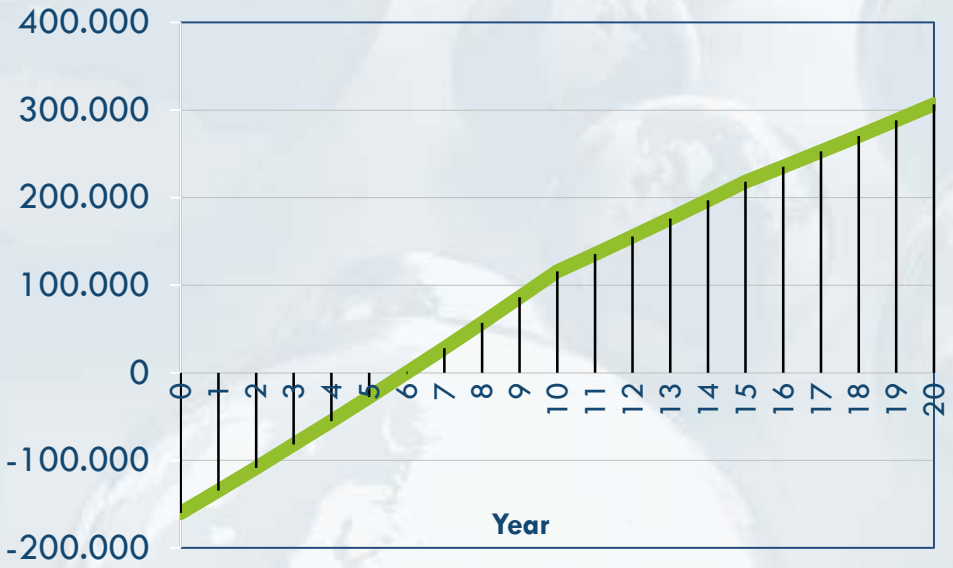
Cost Effectiveness (2) - Serbia





With Net Metering payback is 6 years.



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Barriers – Serbia (1)

- Insufficient **information**
- **Low retail electricity prices** (on average 58 EUR/MWh for households)
- PV installations not treated as a plant
- No methodology for calculation of delivered energy
- Undefined procedure for obtaining Operational Permit for different types of facilities
- Balancing of prosumers-households (low level of matching between production and consumption periods)

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Barriers – Serbia (2)

- **No incentives**
- Treatment of **reactive energy**
- Additional costs for prosumers – "redundant" control meter
- Costly and time-consuming **administrative procedures**:
  - Incorporation of self-consumption installations into spatial and environmental planning
  - Connection to the grid and related contractual obligations
  - Licensing and permitting procedures

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Next Steps (1) - Serbia

Legal implications of transposing Policy Guidelines for Prosumers (EnCS, February 2018) into national legislation

Energy Law and by-laws	Planning and Construction Law	Law on Energy Efficiency	Law on Environmental Protection	Tax Laws
Definition of prosumer; No license; Fine-tuning rules for connection	Approval for construction works; Standardization of equipment and installations (certification)	Energy Services	Environmental Impact Assessment	Legal entity-entrepreneur

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Next Steps (2) - Serbia

- Net metering introduction in legislation
- Defining a clear legal procedure - "fine tuning"
- Consideration of incentive measures by adjusting existing regulation governing taxation (e.g. exemption from VAT on equipment and related installation work; exemptions on the personal income of citizens for the cost of purchasing and installing PV equipment)

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Next Steps (3) - Serbia

- Education - bottom-up approach with key target stakeholders:
  - Households/individual residential consumers, which consume 1,600 kWh per month or more
  - Households in collective housing / apartment buildings, through aggregators or COOPs;
  - Small businesses (SMEs) – industrial consumers, manufacturing, services;
  - Agricultural sector-farmers, individual and through cooperatives.
- Ministry of Energy to form a working group to amend regulation

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Bosnia and Herzegovina (Mirza Kusljugic)

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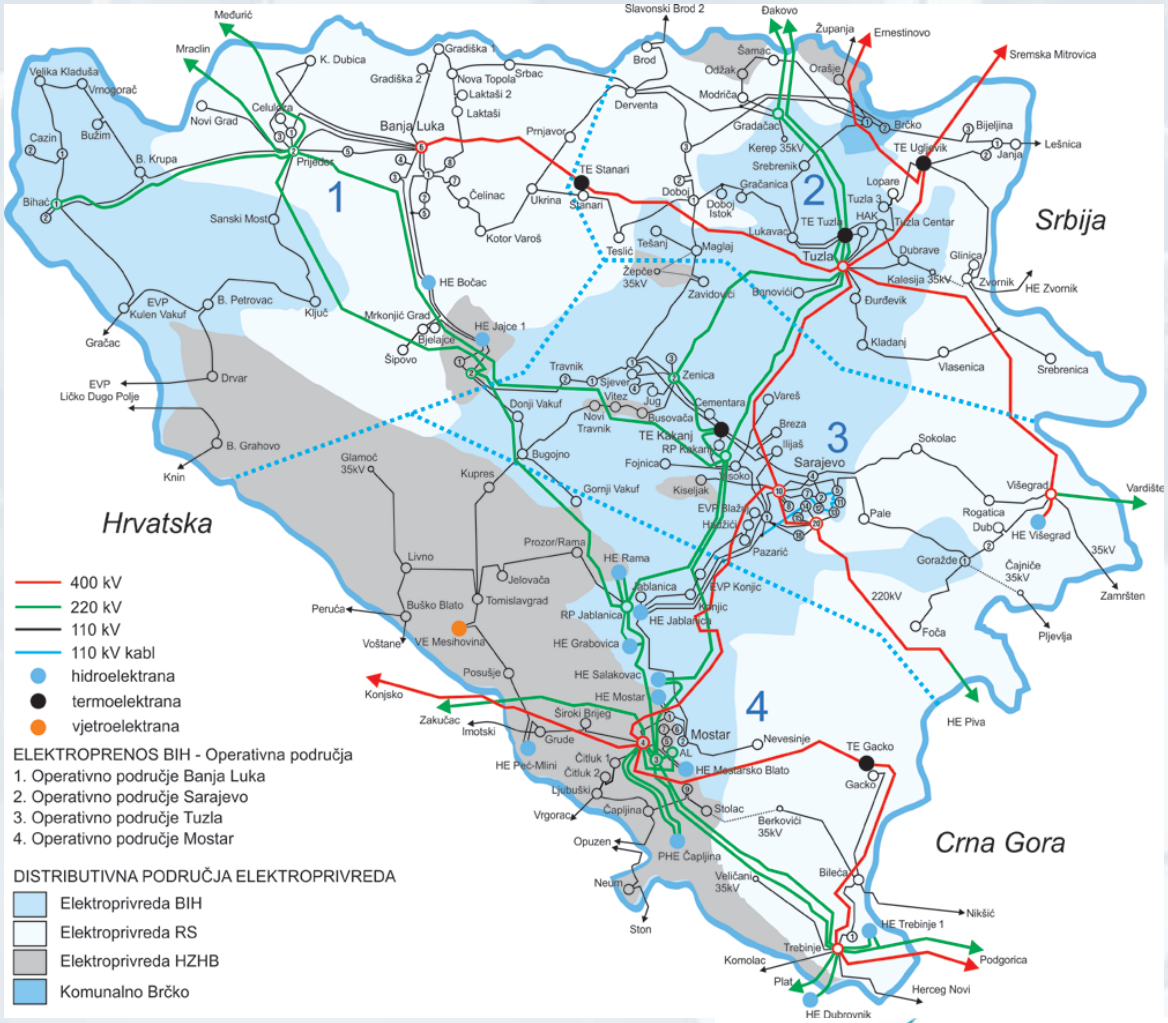
Basic metrics of B&H electric power sector



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Basic metrics of B&H electric power sector

- Generation in 2018. – 17,8 TWh (HPP+RES **7,0 TWh)**
- Consumption in 2018. – **10,0+1,6** TWh, max. 2.000 MW
- 1st energy transition: unfinished unbundling no competition
- Regulated price for 55% of the consumed electricity.
- Average price: households €73/MWh, SMEs €61-90/MWh
- Current strategic generation expansion plans until 2035. – BAU, focus on new/replacement TPPs (export orientation)

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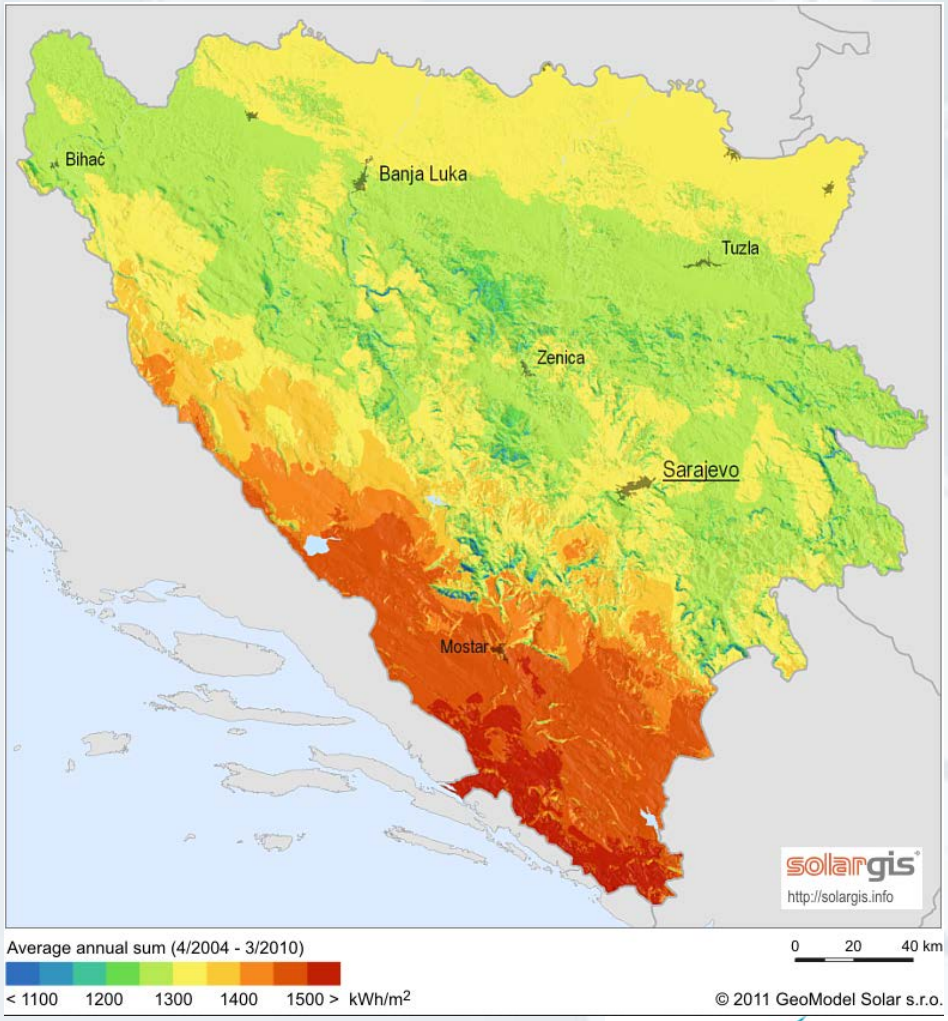
Current state of RES and PV



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Current state of RES and PV

- **Targets for support until 2020:**
- sHPP (up to 10 MW): 162,3 MW (712 GWh) (FiT)
- WPP: 142,8 MW (307 GWh) (FiT and reference price)
- **PV solar: 20 MW - mainly 150 kW (27,5 GWh) (FiT)**
- RE support fees: 1,3-3,83 €/MWh
- Prosumers legaly permitted but not implemented (VAT).
- Production for self-consumption without net feed-in!!

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Proposed regulation for PV

- GIZ ProRE project (governments, regulators, RES operators). Initial proposal. Final review in 2020.
- Prosumers, FiT, FiP with auctions
- **PV: ≤23/30 kW: FiT fixed or net-billing (no limit);**
- **PV: 23/30 – 100 kW: FiT fixed (quota)**
- **PV: 100-150/250 kW: FiT with linear decrease (quota)**
- PV: 150/250-10,000 kW: FiP, auctions (quota)

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Workshop findings

- Workshop with key sector stakeholders and SMEs
- **Focus on production for self-consumption in SMEs**
- Permitting and licencing (up to 1 MW), VAT
- Identified interest of SMEs
- Need to further define PV (up to 250 kW – small scale) – NET-FiT
- No payment or fixed costs for balancing

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Barriers and next steps

- **<u>Barriers (especially for PV NET-FiT):</u>**
- **Costly and time-consuming permitting procedure**
- **Licencing**
- **VAT**
- Grid connection impact – losses, voltage, Q (site specific)
- Loss of revenue for DSOs
- Insufficient information for SMEs

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Barriers and next steps

- **Next steps:**
- PV prosumers inclusion in NECP plans for RES
- Organization of SMEs (through Chambers of Commerce) to prepare advocacy campaign for prosumers status (NET-FiT) during public consultations in 2020
- Information sharing, education and technical support for intereseted SMEs (in coordination with supplyers).

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Kosovo (Dardan Abazi)

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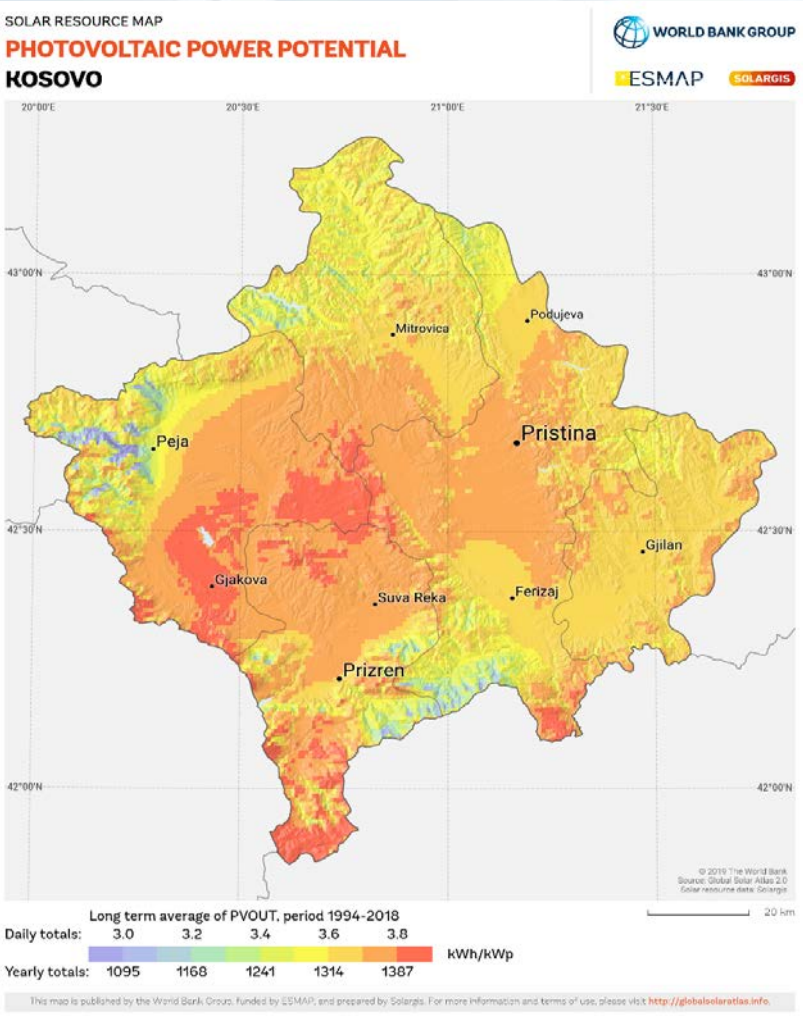
Introduction

Population	**1.795.666**
Per capita electricity demand	3157 kWh per year
Range of solar insolation (include any solar maps that have been conducted)	Kosovo has on average 2,066 hours with sun per year or approximately 5.7 hours per day.
Total current installed solar capacity (if available), and if available, number of individual systems	There are 6.6 MW of solar energy installed, another 3.4 MW of solar energy under construction, and 60 MW of pending preliminary authorizations. The current solar installation consists of only 0.46% of total installed capacity.
Range of total solar installed costs (EUR/kW) in the country (if available),	~1200 - 1500 EUR/kw



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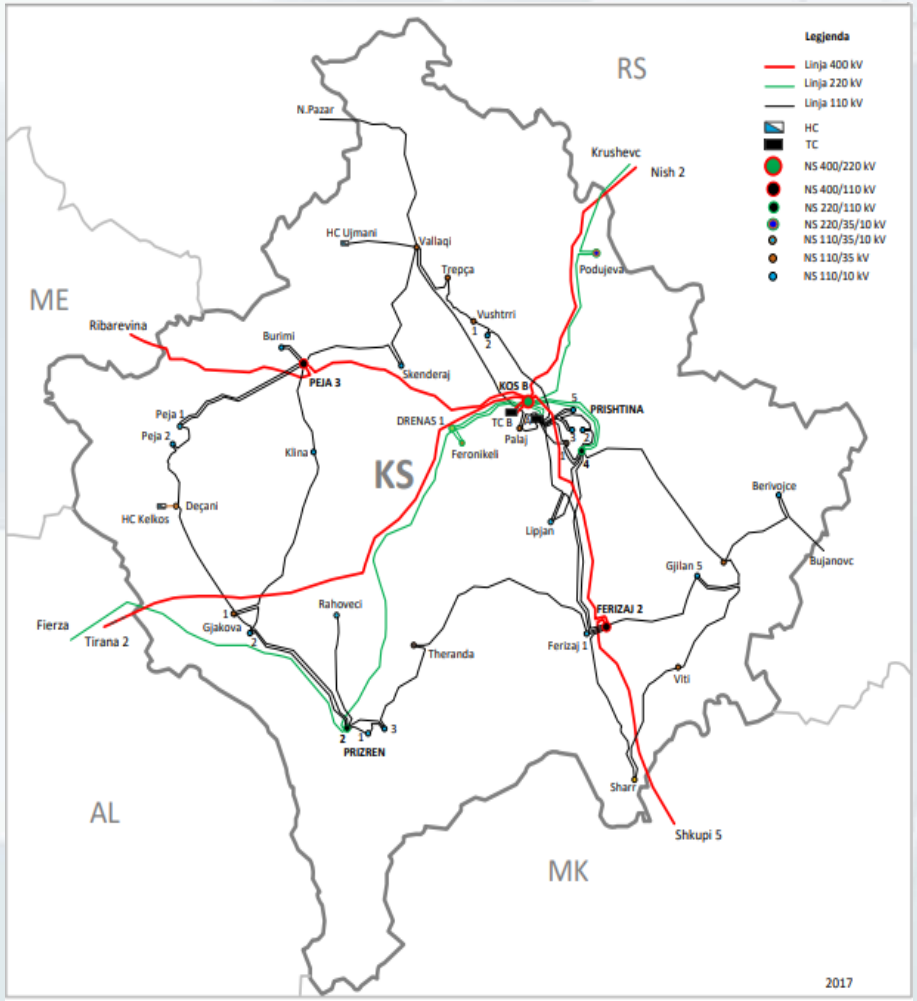

Transmission network infrastructure	
	Length in km
400 kv	279.7
220 kv	231.8
110 kv	841.8
Total	1353.3

Distribution network infrastructure	
	Total km
35 kv	514.1
10 (20) kv	1998
10 kv	5070
6 kv	50
3 kv	5
0.4 kv	20088.2
Total	27725.3

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Annual Electricity Demand (MWh)

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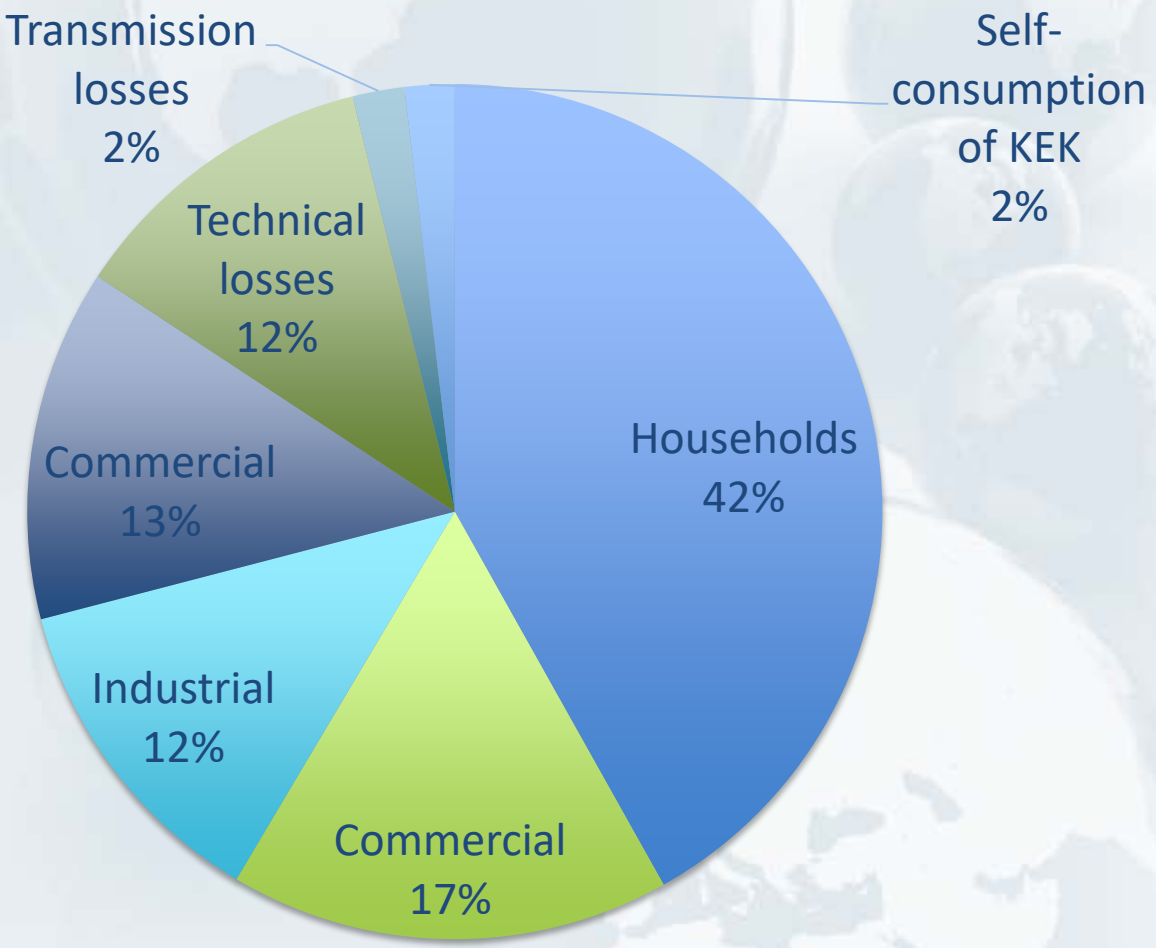
Breakdown of Electricity Demand



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Current National Targets

	Mandatory	Voluntary
Target of energy from renewable sources in gross final consumption of energy (%) for 2020	25%	29.47%
Expected total adjusted energy consumption (ktoe)	1729.82	1729.82
Expected amount of energy from renewable sources corresponding to the 2020 target (ktoe)	432.46	509.70

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Main Policy Mechanisms

	Distributed RES - PV		
	Within Supporting Scheme	Outside Supporting Scheme (Regulated Framework)	Outside Supporting Scheme (Market-Based Conditions)
Priority Dispatch	YES	YES	YES
Liability to Imbalance Cost	25%	YES except for generation entities with a capacity under 500 kW	YES except for generation entities with a capacity under 500 kW
Selling the electricity through a Power Purchase Agreement (PPA)	Yes the PPA should be 12 years.	Yes the PPA should be at least 1 year	Yes the PPA should be at least 1 year
Feed-in Tariff	YES	NO, the relevant price (referent price) is set annually by ERO.	No, prices are determined by the market rules.

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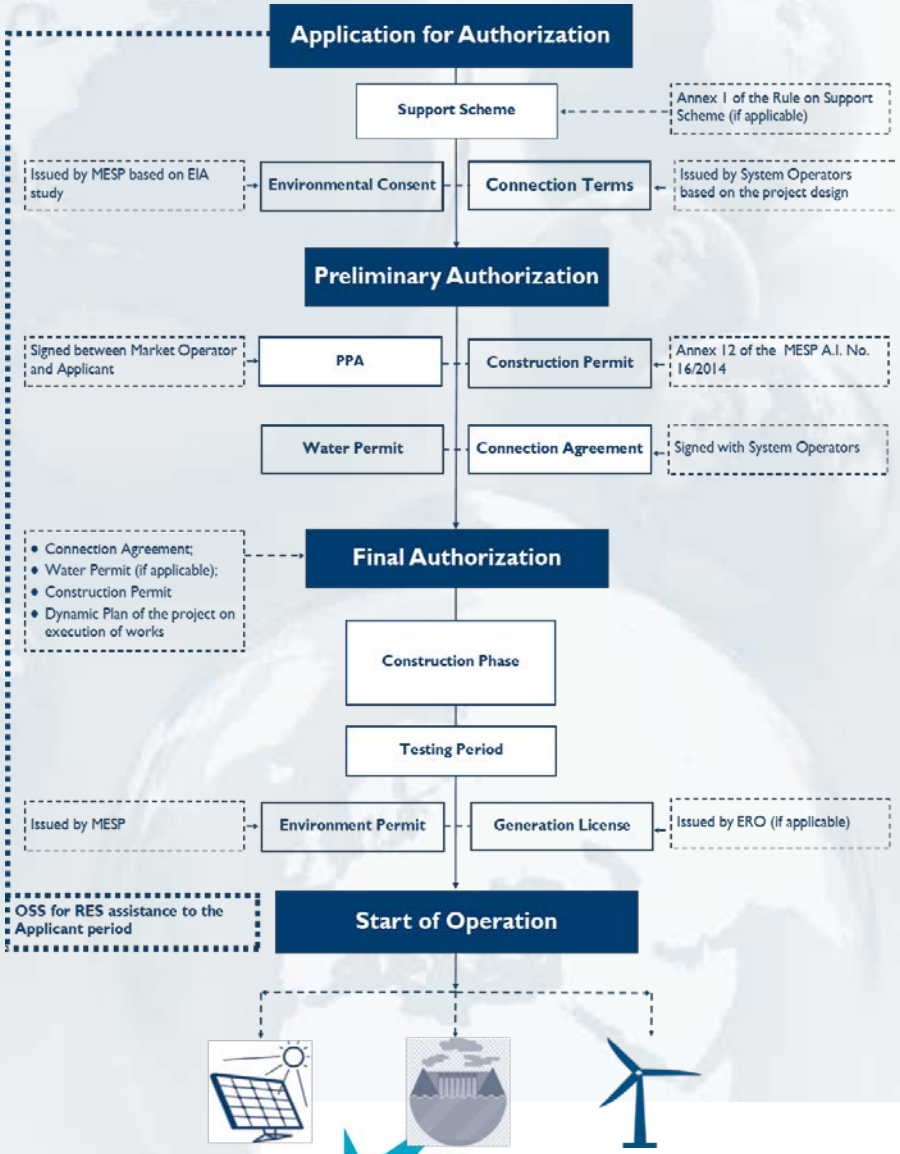
Main challenges

- Long procedures
- Lack of institutional capacity
- Lack of One-Stop Shop
- High VAT (18%) and lack of tax incentives
- Lack of institutional coordination
- Lack of favorable financial environment



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Prosumers

- Lack of implementation of current policy framework (Regulation on Support Scheme for Prosumers)
- Lack of institutional independence and functionality (ERO)

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Recommendations

- The establishment of a one stop-shop system for PV
- Increasing institutional capacity – especially municipalities
- VAT reduction or exemption

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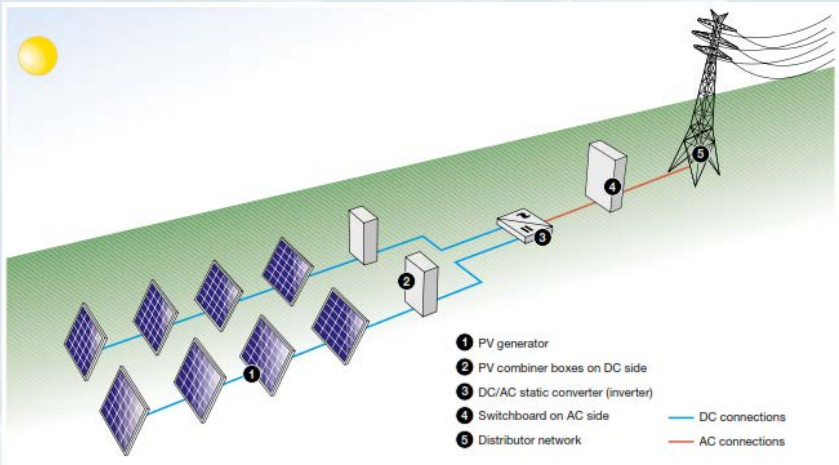
Recommendations

- More institutional coordination
- Financing projects through
- Independence and functionalization of independent institutions (ERO)
- Reduction of Limitation of Voltage for Prosumer status
- Increased capacity of ERO to deal with projects



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Questions and Discussion

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