Energy Community Regulatory Board

Small Customers' Electricity Generation from Renewable Energy Sources

– Rules and Practices in the Energy Community –

March 2013

[Note: information reflecting situation as of collection period 2012; 2011 data]

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1 INTRODUCTION

1.1 The Energy Community Regulatory Board

The Energy Community Regulatory Board (**ECRB**)[1] operates based on Article 58 of the Energy Community Treaty[2]. As an institution of the Energy Community the ECRB advises the Energy Community Ministerial Council and Permanent High Level Group on details of statutory, technical and regulatory rules and should make recommendations in the case of cross-border disputes between regulators. With a view to contributing to the realization of core objectives of the Treaty – such as market integration, facilitation of investments, competition and security of supply in South East Europe – the ECRB engages in streamlining of regulatory measures and providing stable regulatory market framework. The key objective of the cooperation of energy regulators within the ECRB is to support the harmonized development of regulatory rules in the Energy Community. The ECRB also takes the role of a coordination body between the national regulators with a view to exchanging knowledge and developing common best practice solutions for implementing the Treaty in a harmonized way.[3]

1.2 Scope

Over-attracting support schemes for electricity production from renewable energy sources (RES) are likely to lead to over-installation of new power plants on all voltage levels. In particular support schemes for photovoltaics promote small and micro generation. In the Energy Community electricity generation was in the past to a prevailing extent perceived as an activity of the monopolistic incumbent. Consequently, legal frameworks and rules have developed rather slowly in relation to independent generation. Still, it it is important to ensure that the practices and rules in the Contracting Parties allow for small generation on low voltage level (small and micro generation).

The present report describes the currently existing rules and procedures for households' and other small customers' generation from RES.

1.3 Methodology

Input to the present report has been collected from national regulatory authorities based on a questionnaire (cf Annex I). Input has been received from

- Bosnia and Herzegovina[4]
- Croatia
- Italy
- FYR of Macedonia
- Kosovo[*]

[1] For details see: http://www.ecrb.eu/portal/page/portal/ECRB_HOME
[2] Signed in Athens on 25 October 2005. Following ratification, the Treaty entered into force on 1 July 2006. For details on the Treaty and the Energy Community see: www.energy-community.org.
[3] For more details on the ECRB, its members, organisation and Work Program please refer to www.ecrb.eu.
[4] Where results for Bosnia and Herzegovina differ for its entities (the Federation of Bosnia and Herzegovina -FBIH and the Republika Srpska - RS), they are displayed separately in this survey
[*] This designation is without prejudice to positions on status, and is in line with UNSCR 1244 and the ICJ Opinion on the Kosovo declaration of independence

- Moldova
- Montenegro
- Serbia
- Turkey
- Ukraine

Albania is not included in the report since rules and procedures for households' and other small customers' generation from RES currently do not exist. A draft law on RES is under preparation.

1.4 Notes on units, abbreviations and other important

Since this report deals with electricity generation, explanations and comments within this report may be unclear in relation to thermal production. Therefore, if not specified, capacities of power plants and power limits in this report are presented in kW or MW and represent power in relation to production of electricity (kW or MW electrical).

Facilities or equipment used for producing only heat are not covered in this Report.

Abbreviations used in the present report are:

CHP	Combined Heat and Power - used as an abbreviation for cogeneration power plants
RES	Renewable Energy Source(s)
FIT	Feed-In Tariff (systems) – refers to a support scheme for subsidizing production of electricity for RES or for subsidizing production in high-efficiency CHP
N/A	Not available
NRA	National Regulatory Authority
PV	Photo-Voltaic
Q	Question – refers to a specific question of the Questionnaire, as listed in Annex I. Example. Q1.2 refers to Question 1.2. in the Questionnaire.
WEM	Wholesale Electricity Market

2 ANALYSIS

This chapter provides a detailed description of the situation in the analyzed markets. Due to the descriptive nature of the answers, answers on particular countries are usually shown side-by-side as the most appropriate manner for presenting information[5]. However, major findings and recommendations are provided in chapter 3 “Findings and Recommendations”.

Generally, it has to be noted that **legislation and practice is still underdeveloped since independent small-scale electricity production is relatively new** for Energy Community Contracting Parties. Therefore, the structure of this chapter was prepared in order to provide easier reading and understanding.

2.1 Definitions and Basic Data

With the exception of Italy and Turkey, all analyzed markets **lack definitions for “micro” and “small”** generation in legislation. This is not surprising since a commonly agreed international standard or practice does not exist. Essentially, a small generator in one country may be considered large in another. In relation to exceptions, in Italy “micro” generation power plants are power plants less than 50 kW and “small” generation power plants are power plants up to 1 MW. In Turkey there is a definition of small generation that includes renewable generators up to 500 kW and micro CHP, the latter being indirectly defined as CHP up to 50 kW.

Even if a general definition of generation sizes does not exist, due to the popularity of RES subsidized electricity production, **all analyzed markets have abundant categories related to RES production**. Usually, facilities using different RES sources have different buy-off prices (feed-in tariffs) and different RES sources typically dictate different typical sizes of facilities. This is evident from Table 1 providing an overview of n other definitions or categorizations in legislation regarding the size of generation[6].

Table 1 Other definitions or categorizations in legislation regarding the size of generation

Bosnia and Herzegovina	Yes **Federation of BiH (FBiH)**, defined in the FBiH Government Decree on usage of renewables and cogeneration: a) micro power plants up to 150 kW included; mini power plants 150 kW to 1 MW included; small power plants from 1 MW to 10 MW included; large power plants over 10 MW b) micro cogeneration plants up to 50 kW; small cogeneration plants from 50 kW to 1 MW; medium cogeneration plants from 1 MW to 20 MW; large cogeneration plants over 20 MW **Republika Srpska (RS),** defined in the RS Government Decree on generation and consumption of energy from renewable energy sources and co-generation: - the facilities connected to the distribution network which use renewable energy sources for generation of electricity of the installed capacity of up to 1 MW inclusive, - the facilities connected to transmission or distribution network which use renewable energy sources for generation of electricity of the installed capacity of more than 1 MW to 5 MW inclusive, - the facilities connected to the transmission or distribution network which use renewable energy sources for generation of electricity of the installed capacity of more than 5 MW to 10 MW inclusive, - the facilities connected to the transmission or distribution network which use renewable energy sources for generation of electricity of the installed capacity of more than 10 MW, - the facilities which use renewable energy sources for generation of electricity and which are not connected to the transmission or distribution network. The Rules of the Regulatory Commission defined the generation facility, not dividing them into micro and small

[5] The analysis in this chapter does not follow the structure of the questionnaire due to the nature of the responses.
[6] Questionnaire question Q1.3, annex I.

	plants. In the rule book for issuance of the certificate for generation facility which uses RES and EC there is a definition of the micro co-generation facility, meant by the facility of the maximum installed capacity of less than 50 kWe. In the rule book for issuance of the certificate for generation facility which uses RES and EC there is a definition of the micro co-generation facility, meant by the facility of the installed capacity equal to or more than 50 kWe, but less than 1 MW
Croatia	For CHP, the Croatian feed-in-tariff system distinguishes between: - micro CHP – generators up to 30 kW - small CHP – generators from 30 kW up to 1 MW - medium CHP – generators from 1 MW up to 35 MW - large CHP – over 35 MW Additionally, the Croatian feed-in-tariff system knows two large groups – up to 1 MW and over 1 MW. There is some subdivision for different RES primary energy sources: - solar plants have categories (0-10kW, 10-30kW, 30kW-1MW, over 1MW) - biomass/biogas (0-300kW, 300-1MW,1MW-2MW,2MW-5MW, 5-10MW, over 10MW) Regarding, hydropower plants, apart from the division - up to 1 MW and over 1 MW – there is no categorization. However, since hydropower plants over 10 MW cannot be supported, this limit is informally referred to as the limit for "small hydro".
FYR of Macedonia	The Decree on feed-in tariffs determines some subdivisions for different RES, in order to use the feed-in tariffs: photovoltaic power plants have categories (0-0,05MW; 0,05MW-1MW) - wind power plants (0-50MW) - biogas power plants have categories (0-0,5MW; 0,5MW-2MW) - hydro power plants (0-10MW). However, since hydro power plants over 10 MW cannot be supported, this limit is informally referred to as the limit for "small hydro power plants - SHPP". For the purposes of the present report, data are given separately for SHPP, using a definition that SHPP are below 10 MW. Generators of electricity can only be legal entities which have license for generation of electricity. Generators of electricity from RES that use feed-in tariffs are named preferential producers.
Italy	The "micro" generation power plants are power plants, also CHP power plants, less than 50 kW. The "small" generation power plants are power plants, also CHP power plants, up to 1 MW.
Kosovo*	There are no other definitions for small generation-producer but the feed -in tariff will cover hydro power plants up to 10 MW, and this limit is informally referred to as the limit for "small hydro" There are also activities that require no licence as: 1. The generation of electricity at an electricity site with total capacity not exceeding 5 MW; 2. Heat generation by heating plants for self-consumption or with capacity not exceeding 1 MW; 3. The generation of electricity for self-consumption, where neither the generation facility nor the consumers of the electricity are connected to the transmission system or the distribution system;
Moldova	Power plant for internal use - power plant using more than 40% of its average annual electricity output for meeting the internal demand of the power plant holder; - Power plant for public purpose- power plant using at least 60% of its average annual electricity output for public purpose; - Power plants with a capacity exceeding 20 MW. - Enterprises producing electricity from RES with a capacity not less than 10 kW. - Power plant of 5 MW and above.
Montenegro	In the rules for functioning of the electricity distribution system, Article 48 there is a classification of small power plants according to the installed capacity, manner of work, type of generation, voltage level of generators and voltage level of connection.
Serbia	In the new Energy Law categorization regarding size is recognized with respect to privileged electricity producer where it is defined that status of privileged electricity producer may acquire producers: 1. using renewable energy sources in the process of electricity generation in an individual power plant other than the hydroelectric power plant the installed power of which exceeds 30MW; 2. Simultaneously generating electricity and heat in an individual co-generation plant with high level of efficiency of primary energy in an individual production facility the installed power of which does not exceed 10 MW. Secondary legislation is in the process of harmonization with the primary legislation.

Turkey	As renewable are regarded: - Channel type hydro - River type hydro - Hydro with reservoir area below 15 km2 - Pumped-storage hydro
Ukraine	Yes. Wind power plants: up to 600kW, from 600kW to 2000 kW, over 2000kW Small Hydro - electric power station that generates electricity through the use of hydroelectric power, the installed capacity not exceeding 10 MW (Energy Law). Starting from 01/04/2013 new definitions will be added to the Energy Law: Micro Hydro - electric power station that generates electricity through the use of hydroelectric power, the installed capacity not exceeding 200 kW. Mini Hydro - electric power station that generates electricity through the use of hydroelectric power, the installed capacity more than 200kW but not exceeding 1MW.

Customers with excess power – or more precisely network users that are both customers and producers – **in most cases are not recognized in legislation** (see Table 2). Mainly, such network users are perceived and treated as "producers". Exceptions are Montenegro and Turkey.

Table 2 Definitions in legislation regarding customers with excess power

	Bosnia and Herzegovina	Croatia	FYR of Macedonia	Italy	Kosovo*
Does the legislation recognize customers with excess generation? i.e. legislation may use only customers and generators. If this is the case, are such network users treated as "customers" or "generators" regarding rights/obligations?	NO There is no definition of "net metering	NO Customers with excess energy that is sold to the grid are treated as "producers".	NO Legislation uses defines customers and generators (producers), and in some cases both as network users. However, there are no customers with excess generation	NO Customers with excess generation are treated as producers	NO Customers with excess energy that is sold to the grid are treated as "producers".
	Moldova	**Montenegro**	**Serbia**	**Turkey**	**Ukraine**
	NO Customers with excess energy that is sold to the grid are treated as "producers".	YES Stated in Article 90 of the Energy Law: Generators of electricity from renewable energy sources in facilities up to 20 kW installed capacity or in high-efficiency cogeneration in facilities of up to 50 kW installed capacity shall have a right to exchange electricity that is delivered to the system or takes from the distribution system during a year	NO Legislation recognizes only customers and generators. Such network user is treated as a customer for the in-take and as a generator for the off-take of electricity.	YES Generators producing only for their own needs are regarded as auto-producers. Auto-producers are allowed to sell a percentage of their excess generated electricity.	NO Customers with excess generation are considered as producers (generation) of electricity (under license - if required, and without license, if it is not required by legislation).

Due to the popularity of PV installations and feed-in systems supporting them, **additional definitions are present regarding solar power plants that are not related to size, but rather to the construction type.** Typically, PV installations are seen as ground-mounted or installed on buildings/rooftops.

Table 3 Additional definitions used to categorize solar power plants

Bosnia and Herzegovina	N/A
Croatia	The Croatian feed-in-tariff system distinguishes between "building integrated solar plants" as PV installations (solar plants) built on rooftops and facades of buildings (any type of residential or commercial building, but not on industrial facilities) and "ground mounted solar plants". However, there is no categorization in size
FYR of Macedonia	The Decree on feed-in tariffs determines that in order to be eligible for feed-in tariffs, the photovoltaic power plants must be in one of these two categories: 0-0,05MW or 0,05MW-1MW. The total maximum capacity for photovoltaic power plants for the support of feed-in tariffs is 10 MW in FYR of Macedonia
Italy	The feed-in-tariff system distinguishes between FV power plants on top of building and other FV power plants
Kosovo*	N/A
Moldova	N/A
Montenegro	The Rulebook of the Government of Montenegro on types and classification of installations for generation of energy from renewable and high cogeneration defines installations with capacity up to 1 MW connected to the distribution system including solar power plants on buildings or constructions; as independent installations
Serbia	N/A
Turkey	The support mechanisms determined in the Law on Generation of Electricity from Renewable Energy Sources have some differentiation between different solar plants.
Ukraine	Feed-in tariff coefficients are different for following types of solar power plants - ground mounted units; - units mounted (installed) on the roofs of houses and buildings, installed capacity exceeding 100 kW; - units mounted (installed) on the roofs of houses and buildings, installed capacity not exceeding 100 kW - units mounted (installed) on the facades of houses and buildings (regardless of their capacity).

2.2 Generation capacity of small customers

Table 4 and Table 5 show data on electricity production. Data is available only sparsely, evidently as a result of several factors:

- Definitions or categorizations are a prerequisite for any statistics. Since the analyzed countries do not have proper definitions it is not surprising that data cannot be obtained either.
- The need to distinguish and monitor all production is relatively new. Due to national energy strategies as well as national targets for RES and energy efficiency, statistics have only recently started to investigate production facilities of customers. Historically, there was no particular need to monitor production predominantly used for consumption by customers (own consumption) or generators as stand-by power.

- Distribution system operators have little or no interest in generators not producing power for the grid apart from defining conditions for network use if a customer requires a synchronous operation of the generator with the grid.

Table 4 Data on generation – PART 1

Level		MW in year 2011				
		Bosnia and Herzegovina	Croatia	FYR of Macedonia	Italy	Kosovo*
All national generation	Installed capacity[7]	3803	N/A	1935	N/A	12,25[4]
	Power available to the grid	3617	3976	N/A	122302	11,42[4]
Generation capacity of all customers	Installed capacity[8]	0[5]	N/A	N/A	N/A	0
	Available capacity to the grid	0[5]	N/A	N/A	N/A	0
Known generation capacity of small customers (if no definition of small is appropriate – please use LV level)	Installed capacity[9]	0,06[5]	N/A	N/A	N/A	0
	Available capacity to the grid	0,06[5]	N/A	N/A	N/A	0
Known generation capacity at LV level	Installed capacity at low voltage[10]	0,06[5]	N/A[1]	N/A[2]	N/A	N/A
	Power available on the grid	0,06[5]	0,4	N/A	N/A	N/A
Supported/subsidized generation capacity at all voltage levels level[11]	Installed capacity at all voltage levels[12]	0[5]	N/A	10,164[3]	N/A	0
	Power available on the grid	0[5]	109,35	N/A	N/A	0
Supported/subsidized generation capacity at LV level[13]	Installed capacity at low voltage[14]	0[5]	N/A	10,164[3]	N/A	0
	Power available on the grid	23,81[5]	0,4		N/A	0
Notes on data	[1]Prior to the introduction of the feed in tariff for RES and high-efficiency CHP, the DSO did not allow delivery of energy into the grid from customers. Therefore, the generation on LV is actually only supported generation. [2]All SHPP and PV are connected to the distribution grid (below 35 kV), which means that the installed capacity on the distribution grid is 32,2MW. [3]By 31.12.2012 there were 29 electricity generators (preferential producers) with installed capacity of 10,164MW (13 SHPP with capacity of 6,377MW and 16 PV with capacity of 3,787MW) selling electricity to the market operator at feed-in tariffs. All of these 29 generators are connected to distribution grid. [4]The data provided is for the generators connected in 10 kV. [5] Data has been provided only for Republika Srpska					

[7] Nominal power of generators.
[8] Nominal power of generators in customer installations.
[9] Nominal power of generators in customer installations.
[10]Nominal power of all generators in the LV grid.
[11] E.g. RES production in feed-in-systems.
[12] Nominal power of all supported/subsidized generators.
[13] E.g. RES production in feed-in-systems.
[14] Nominal power of all generators connected at LV level.

Table 5 Data on generation – PART 2

Level		MW in year 2011				
		Moldova	Montenegro	Serbia	Turkey	Ukraine
All national generation	Installed capacity[15]	396	No	7.203	52911	N/A
	Power available to the grid	300	No		30200	53310,6* * web-page of Ukrenergo (TSO)
Generation capacity of all customers	Installed capacity[16]	50		N/A	N/A	N/A
	Available capacity to the grid	10		N/A	N/A	N/A
Known generation capacity of small customers (if no definition of small is appropriate – please use LV level)	Installed capacity	N/A		N/A	N/A	N/A
	Available capacity to the grid [17]	N/A		N/A	N/A	N/A
Known generation capacity at LV level	Installed capacity at low voltage[18]	N/A		47	N/A	N/A
	Power available on the grid	N/A			N/A	N/A
Supported/subsidized generation capacity at all voltage levels level[19]	Installed capacity at all voltage levels[20]	16,085		9,4	N/A	Installed capacity (total) – 409,655 MW - Wind Power Plant (WPP) – 146,415 MW; - Biomass – 4,2MW; - Solar power – 188,224 MW; - Small Hydro – 70,816 MW
	Power available on the grid	15			N/A	Installed capacity (total) – 409,655 - Wind Power Plant (WPP) – 146,415, - Biomass – 4,2, - Solar power – 188,224, - Small Hydro – 70,816
Supported/subsidized generation capacity at LV level[21]	Installed capacity at low voltage[22]	0,085		9,4	N/A	N/A
	Power available on the grid	0,085			N/A	N/A

[15] Nominal power of generators.
[16] Nominal power of generators in customer installations.
[17] Nominal power of generators in customer installations.
[18] Nominal power of all generators in the LV grid.
[19] E.g. RES production in feed-in-systems.
[20] Nominal power of all supported/subsidized generators.
[21] E.g. RES production in feed-in-systems.
[22] Nominal power of all generators connected at LV level.

2.3 Connection Issues

2.3.1 Connection Costs

Methodologies for determining connection costs for generators **vary among the analyzed markets** as shown in Table 6 and Table 7. This can be attributed to the relatively recent development of independent electricity production in the Energy Community Contracting Parties and only recent introduction of support schemes for RES-e.

For further examination of connection costs related to customers with excess power, the findings of the present report should be cross-checked and elaborated in the view of connection costs for customers that just consume power. This issue is important given the fact that most countries do not recognize customers with excess power (as explained in 2.1). For example, two types of connection charges could be determined for connecting the same network user – one based on the methodology for connecting a customer and the other based on the methodology for producers; in this case clarification is needed on which is relevant. The 2013 ECRB report "Analysis of existing grid connection rules and their customer-friendliness" provides analysis on connection costs and issues for household customers' connection to low voltage networks. However, additional investigation is needed.

From the answers in Table 6 and Table 7 it can be seen that real costs prevail in the determination of connection costs for generators (7 out of 10 answers), with the notable exception of Ukraine where connection costs are socialized via DSO tariffs. The term "real cost" is intentionally used in this context because most answers indicate "cost reflective methodologies" but are not specific regarding the real costs of interventions in the grid. Bosnia and Herzegovina, Croatia and FYR of Macedonia reported the application of deep connection costs, whereas Serbia reported that the real costs do not include system expansion.

Somehow counter weighting the reported deep/real connection costs, generators in most cases do not pay network use for delivery of energy (so-called "g" tariff). For details please see the answers to point 3.3 in Table 6 and Table 7.

Table 6 Connection costs - PART 1

Question	Bosnia and Herzegovina	Croatia	FYR of Macedonia	Italy	Kosovo*
3.1. What kind of costs do small and micro generators (dedicated producers) pay to the DSO for a connection? **How are those connection costs determined?** **Who decides on the cost?**	**FBiH**: Generators pay one fee for connection which includes connection costs and costs of creating technical conditions of the network. According to the General Conditions for Supply of Electricity in FBiH, generators are treated separately are obliged to sign contract with DSO and regulate their mutual relations, including conditions, dynamics and scope of financing **RS**: Real costs of connection to the distribution network and costs of required modifications in the existing network, while the network use by the electricity generator is not paid. The DSO determines the amount of costs in case he executes the connection based on the real connection costs but normally he only defines the technical requirements for the connection (non-standard connection to the distribution network).	Generators pay real costs of connection and network reinforcement works needed for connecting the new generator. The DSO primarily defines the cost basis on unit material costs and labor costs that are a result of public procurement of such materials on a larger scale. The generator is charged with all costs that occur. The generator may submit an objection to the costs to the DSO and disputes related to these issues are handled by the NRA	The grid connection charge and the charge for altering energy parameters as defined in the connection approval for existing users are set by the DSO and comprise of the connection construction charge or existing connection upgrade charge as well as the users' share in the costs incurred for the provision of technical conditions in the system to which new users are to be connected or increasing the capacity of existing connections. The charge is calculated pursuant to the methodology stipulated in the Grid Code for distribution of electricity. The user may submit an objection to the costs of connection to the DSO and disputes related to these issues are handled by the ERC. The connection rules and the connection charge-setting methodology are part of the Grid Code. The Grid Code for distribution of electricity was issued by the DSO, with prior approval of the regulator.	Low Voltage (LV) and Medium Voltage (MV) connection charges: - for RES and high-efficiency CHP small and micro generators are defined by NRA on a conventional basis (they are not cost reflective); - for non-RES small and micro generators, are defined and published by each DSO based on real costs.	At the moment costs are calculated by DSO. The regulator is currently reviewing and approving the Connection Charging Methodology for the DSO. The methodology will set up these terms.

Question	Bosnia and Herzegovina	Croatia	FYR of Macedonia	Italy	Kosovo*
3.2. In situations where existing customers want to sell excess energy, what kind of costs do they pay to change their connection or change their conditions for using the network? How are costs for the change determined? Who decides on the cost?	**FBiH** N/A **RS**: For small capacity structures (below 44 kW) it is possible to make "net metering" of the generated and consumed electricity in a way and following the requirements, defined by regulations	Same as for 3.1	Same as for 3.1	Same as for 3.1 with a difference related to the connection charges that are allowed for the gap between the new required and the existing power.	Same as for 3.1
3.3. What kind of costs do small and micro generators pay for network use (e.g. tariffs for generation)**?** **Is there a difference for customers with excess generation?**	**FBiH**: Small and micro generators pay tariffs for users of distribution system for covering costs of using distribution and transmission grid, distribution and transmission losses, operation of ISO, including the costs of secondary and tertiary regulation services and over-accepted reactive energy. NO **RS**: There is no tariff for the network use for generation of electricity, while customers with net metering pay for the network use as any other customer.	Generators are not charged network use tariffs (transmission or distribution tariffs) when producing (providing energy into the grid). When consuming power from the grid, they are treated as normal customers and pay transmission or distribution tariffs according to their categorization (usually as “small commercial customer” for small customer production)	Generators are not charged network use tariffs (transmission or distribution tariffs) when producing (providing energy into the grid). When consuming power from the grid for own consumption, they are treated as normal customers and pay transmission or distribution tariffs according to the categorization.	Generators are not charged with network use tariffs (transmission or distribution tariffs) when producing (providing energy into the grid). When consuming power from the grid, they are treated as normal customers and pay transmission or distribution tariffs according to their categorization.	Same as for Q3.1

Table 7 Connection costs - PART 2

Question	Moldova	Montenegro	Serbia	Turkey	Ukraine
3.1. What kind of costs do small and micro generators (dedicated producers) pay to the DSO for a connection? How are those connection costs determined? Who decides on the cost?	They pay for directly connection (material and labor costs) The cost for connection to the grid is done for each case separately according to the size of performed work and used materials.	Costs of connection include the following: equipment, devices and material; work conduction; mechanization; development of technical documentation. Costs are determined based on the methodology for setting prices, terms and conditions for connection to the distribution system (Article 5) and the pricelist for standard connection to the distribution grid. DSO decides on the costs.	The generator pays only its individual connection costs without paying costs for system expansion. Individual connection costs are determined according to the connection costs methodology issued by the regulator. The DSO decides on the costs, according to the connection costs methodology issued by the regulator.	Connection fee-determined by NRA Cost-based	According to the Ukrainian legislation the costs for connection of RES generators are to be considered when the distribution tariff is approved. The cost of connection are determined based on a feasibility study and a financial estimate (the examination is obligatory) of the project and included to the investment program of the network companies.
3.2. In situations where existing customers want to sell excess energy, what kind of costs do they pay to change their connection or change their conditions for using the network? How are costs for the change determined? Who decides on the cost?	They pay all costs related to connection. In such cases they receive free Connection notices and Technical conditions foreseen in Notice. The cost for connection is paid according to construction estimate, elaborated by DSO or TSO in accordance with Norms of estimate for works of electrical installations mounting	Same as for Q3.1.	Customer selling electricity is not recognized by the legislation.	Not yet determined Possibly NRA will do	In order to sell the electricity to the WEM customers should get the status of “generator”. In order to sell electricity directly to the customers they are required to have the status of “supplier”. The amount and the procedure of calculating the fee for relative license are set by the Governmental Regulation №516 of 13/07/1995.

Question	Moldova	Montenegro	Serbia	Turkey	Ukraine
3.3. What kind of costs do small and micro generators pay for network use (e.g. tariffs for generation)**? Is there a difference for customers with excess generation?**	Generators are not charged network use tariffs (transmission or distribution tariffs) when producing (providing) energy into the grid. When consuming power from the grid, they are treated as normal customers and pay transmission or distribution tariffs according to their categorization.	Costs of use of capacity and losses in the Distribution grid, but not costs of use of electricity for consumption on own installations with the capacity up to 20 kW and consumption is less than generation	Generator does not pay for network use. Customer with excess generation is not recognized by the legislation.	Same for all types of generators. (usage fee) No difference yet. Possibly in the future.	There are no network tariffs for generators (including small and micro).

It should be mentioned that there is **discrimination between RES and non-RES generation** in some of the analyzed markets in **relation to connection costs** as shown in Table 8.

Table 8 Discrimination of connection costs for RES and non-RES generators

Bosnia and Herzegovina	In Republika Srpska, investors pay connection costs of the plants. The DSO is obliged to make (on his own expense) a detailed analysis of the connection possibilities and requirements as well as the necessary modifications of the existing network for the purpose of providing conditions for connection of the plant and determine the reasonable timetable for realization of the proposed method of connection for those plants that plan for using renewable energy sources.
Italy	Connection costs for RES and high-efficiency CHP small and micro generators are defined by the NRA on a conventional basis (they are not cost reflective)
FYR of Macedonia	According to Article 125 of the Energy Law, the regulator shall oblige the relevant energy system operator to cover the grid connection costs of preferential generators and recover the costs incurred as part of the regulated services price, when needed for the purpose of: – providing incentives for electricity generation from renewable energy sources or at high-efficiency cogeneration plants; or – attaining the targets set forth in the Strategy on Energy Development, Energy Efficiency Strategy and Strategy on Renewable Energy Sources. The Energy Regulatory Commission shall stipulate the period for the duration of which operators shall perform the obligation, as well as the requirements to be met by preferential generators in order to be connected to the relevant system. However, this is not in practice.

2.3.1 Conditions for Grid Access

A very important aspect of supporting RES generators is the aspect of local production and local consumption of electricity. In general, feed-in support schemes – as indicated by name – are constructed in a manner that support for generators is based on electricity delivered (fed) into the grid. Therefore, network users try to deliver into the grid as much electricity as possible since the buy-off price is significantly higher than the price of electricity for end-use. In other words, it is more profitable to sell energy to the grid than to use the generator to lower the amount of electricity taken from the grid. Consequently, this means that on a particular location investors will separate generators and consumption. In extreme cases, if the own consumption and metering requirements (gross and net production) of a generator or power plant are not properly defined, the investor will try to minimize "own consumption" of the generator (or power plant) on the "expense" of the local "customer". The questionnaire (question Q3.4) aimed at identifying **whether RES support schemes differentiate between dedicated generators and customer generation. All countries replied that there is no distinction**. However, Italy additionally reported that for PV power plants the support schemes have a specific tariff for auto-consumed energy.

When discussing connection issues, RES discrimination can also be viewed from the aspect of technical conditions for using the network. One particularly important issue is **priority access or guaranteed access to the grid for electricity produced from RES** as prescribed by Article 16 Paragraph 3 of Directive 2009/28/EC[23]. This issue is partially tackled by the questionnaire underlying the present report (question 3.6)

[23] OJ L 140 p 16 et seq (5.6.2009).

aiming to indentify whether legislation (e.g. grid code) discriminates RES or micro/small generation in terms of technical conditions for using the network.

Table 9 provides an overview of the related answers. **5 countries have priority dispatch for RES generators**. Priority dispatch is perceived as a particular issue in respect to other technical conditions for using the grid.

Table 9 Discrimination related to technical conditions for RES and small generators using the network

Does legislation (e.g. grid code) discriminate RES or micro/small generation in terms of technical conditions for using the network?	
Bosnia and Herzegovina	YES. **FBiH:** Only eligible power generators have dispatch priority; the DSO has the obligation to take all energy. **RS**: Generators that are entitled to the obliged redemption at the feed in tariff or redemption buyout for old facilities in exploitation, are obliged (1) to notify daily schedule to the Incentives' System Operator (SOI) unless the installed capacity of the generation facility is below 500 kW and (2) to notify daily schedule and pay 25% of the balancing costs while the rest of costs are being compensated via the fee for RES and EC. The SOI and the system operator to which network the facility is connected to is obliged to entitle the generator to the redemption buyout at the feed in tariff either with the obliged redemption for old facilities in exploitation, advantage in access to the network (dispatching) pursuant to the notified daily schedule, complying with the technical limits of the electric power system. Electricity generators that sell electricity to the market and have the entitled to receiving the premium provide access to the network, belong to the balance group and bear the balancing costs.
Croatia	YES. “Eligible producers of electric energy” have priority in dispatch; the TSO/DSO has the obligation to take over such energy. Eligible producers are RES production (that may or may not be supported by the deed-in-tariff system) and high-efficiency CHP.
FYR of Macedonia	YES. The distribution system operator shall provide priority access to the distribution system for the electricity generated from RES (preferential producers of RES and other producers of RES not using feed-in tariffs), taking due consideration of limits stemming from the possibilities in the electricity distribution system.
Italy	NO
Kosovo*	NO. There is no discrimination regarding RES connections on networks - the Distribution Code includes all technical requirements for small generation connected in the distribution grid.
Moldova	NO
Montenegro	YES. According to the Energy Law, Article 79(2) in the process of TSO/DSO operation and dispatching, the TSO/DSO gives preference to privileged producers, in accordance with technical capabilities of the system
Serbia	YES. With respect to connection conditions, the distribution network code recognizes small generators as generators with installed power up to 10MVA. Connection conditions for small generators are classified according to their installed power (6 groups), operating conditions, type of generator, generator voltage level and voltage level of connection (LV/MV). According to the Energy Law, Article 60, point 2, the privileged producer is granted priority in injection of the total produced electricity into a transmission or distribution system, except for the case when the safety of operations of these systems is endangered.
Turkey	NO
Ukraine	NO

Table 10 presents two specific issues related to the operation of micro- or small- generators that are very relevant to nearby consumption of electricity. The first issue is power quality monitoring (questionnaire Q3.7)

where Croatia, FYR of Macedonia, Kosovo* and Moldova require continuous monitoring. Since details have not been provided, it would be necessary for future research to determine the monitoring procedures and equipment. Extreme demands on **power quality monitoring** equipment may be too costly for small investors and too strict voltage quality standards may lead to problems in operation or larger investments. On the other hand, such equipment may be useful for the DSO to acquire realistic data for developing technical standards.

Island operation of generators is a situation where a part of the distribution grid is separated from the rest of the grid and the generator supplies the separated portion of the grid with electricity i.e. provides electricity to that part of the grid and to a possibly large number of other network users. This is different from isolated operation of a generator where a generator is used for local consumption without connection to the grid. Island operation is much more complex since the generator must comply with operational requirements defined by grid codes. Only Serbia reported that - according to the distribution code - small generators may work in island operation, but it has not happened in practice (see Table 10).

Table 10 Power quality monitoring and island operation of micro/small generators

Question	3.7. Is continuous monitoring of power quality required during operation for micro/small generators?	3.8. Does the DSO allow island operation of the grid for generators connected to the LV and/or MV grid?
Bosnia and Herzegovina	NO	NO
Croatia	PARTIALLY DSO defines case by case if all new generators and customers with excess power on LV must have continuous power monitoring.	NO
FYR of Macedonia	YES	NO
Italy	NO	NO
Kosovo*	YES	N / A
Moldova	YES	NO
Montenegro	NO	NO
Serbia	NO	YES (but not in practice)
Turkey	NO	N / A
Ukraine	NO	NO

2.4 Metering and Billing

One of the less complex issues related to metering for micro/small generators or customers with excess generation are the **technical requirements for meters**. As shown in Table 11, **advance meters** (with readings per 15 minute or 1 hour) **with remote control and reading are used nearly in all analyzed markets.**

Table 11 General requirements for meters used for micro/small generators, customers with excess generation or RES generators

<table>
<tr><td>Bosnia and Herzegovina</td><td>FBiH: N/A
RS: Metering devices need approval by type by the institute for methodology while ERS made a single specification of technical characteristics which are installed in the distribution network (e.g. some type of the installed meter devices are: Actaris SL7000, ENEL DMG2, MT1732 D2 Iskra, MT 831 ISKRA, etc)</td></tr>
<tr><td>Croatia</td><td>Advanced meter with GPRS communication that can meter power in all 4 quadrants in 15min intervals (all directions of apparent and reactive power). Storage of load profiles and remote reading are used in practice for all meters, although the grid code does not require such features for direct metering of LV generators.
In terms of accuracy, the following classes should be used:
<table>
<tr><td></td><td>active power metering</td><td>reactive power metering</td></tr>
<tr><td>low voltage, direct metering</td><td>1</td><td>2</td></tr>
<tr><td>low voltage, semi-direct metering</td><td>1</td><td>2</td></tr>
<tr><td>medium voltage for generators with connection capacity up 5 MW</td><td>1</td><td>2</td></tr>
<tr><td>medium voltage for generators with connection capacity exceeding 5 MW</td><td>0,5 S</td><td>1</td></tr>
<tr><td>high voltage, all generators</td><td>0,2 S</td><td>1</td></tr>
</table>
Accuracy of metering transformers (current and voltage) is defined in the grid code.</td></tr>
<tr><td>FYR of Macedonia</td><td>Advanced meter with GPRS communication with remote control. The generator is obliged to provide remote transmission of the data.
Electricity meters on the calculation metering point of the generators connected to the distribution grid must – as minimum standard – have the following characteristics, metering features and accuracy classes:
1. On low voltage grid, direct measurement:
- of peak capacity;
- active power meters with accuracy class of 2 for two-direction measurement
2. On low voltage grid, semi-indirect measurement:
current metering transformers with accuracy class of 0.5 or 0.5 s;
- active power meters with accuracy class of 1 (B) for two-direction measurement, and reactive
- power meters with accuracy class of 2;
- load curve archiving, and
- data collection by means of measured data collection system.
3. On medium voltage grid:
- indirect measurement;
- voltage metering transformer with accuracy class of 0.5;
- current metering transformer with accuracy class of 0.5 or 0.5 s;
- active power meters with accuracy class of 1 (B) for two-direction measurement, and reactive
- power meters with an accuracy class of 2 for two-direction measurement;
- load curve archiving, and
- data collection by means of measured data collection system</td></tr>
<tr><td>Italy</td><td>Advanced meter with telecommunication that can meter power in all 4 quadrants in 15 min intervals (all directions of apparent and reactive power).</td></tr>
<tr><td>Kosovo*</td><td>Metering code includes provisions for all generators.</td></tr>
<tr><td>Moldova</td><td>According to the regulation of electricity metering in commercial interests:
Electronic meters with the ability to record at least 45 days, with the possibility of recording in one or both directions for one or both types of electricity (active or reactive in all 4 quadrants). Accuracy class not lower than 0.5 S, and for reactive power meter accuracy class not lower than 1.</td></tr>
<tr><td>Montenegro</td><td>General conditions for metering are unique.</td></tr>
<tr><td>Serbia</td><td>According to the distribution network code, metering equipment has to be in line with national metrology legislation, general condition for electricity delivery and supply, national, IEC and other standards and rules.</td></tr>
<tr><td>Turkey</td><td>General rules apply - determined by the communiqué on meters.</td></tr>
<tr><td>Ukraine</td><td>For generators, selling electricity to the wholesale electricity market, the hourly metering with distant data reading is required. The requirements for the accuracy rating of meter, current and voltage transformers differ according to the voltage of connection and capacity of the unit.</td></tr>
</table>

As mentioned previously, definitions of a producer's own consumption is important when feed-in support schemes are in place because investors will try to transfer some of their own consumption (like supply for auxiliary equipment) to "other local consumption" supplied via another connection (a customer meter).

Five countries reported some **definitions related to own consumption**: Bosnia and Herzegovina (Republika Srpska only), Croatia, Moldova, Turkey and Ukraine. However, each country has a different approach:

- In Bosnia and Herzegovina (Republika Srpska only) "own consumption of generation facility" is defined as consumption of electricity in the electricity generator's facility taken from the generator tail. The consumption for one's own need is defined by the consumption of electricity at the location of the generation facility, but does not include "own consumption of generation facility".[24]
- In Croatia the grid code defines "available power" as the continuous power of a generation unit in normal conditions. It is limited by elements that are bottlenecks for continuous state, e.g. replacement of generator, again. Temporary changes (e.g. replacements during breakdowns) are not relevant. "Net available power" is defined as "gross available power" subtracted for the power/load of own consumption. Own consumption of a production unit (generator) is defined as consumption of auxiliary equipment (e.g. for water preparation, supply of water, air and fuel, exhaust cleaning), including losses in the block-transformer. This consumption is different for generators in operation and stand-by.
- In Moldova a classification of "own consumption" exists. First, this covers power plants for internal use, using more than 40% of their average annual electricity output for meeting the internal demand of the holder of the power plant. Secondly, the definition covers power plants for public purpose, for which at least 60% of their average annual electricity output is intended to be used for public purpose.
- In Turkey, there is a special license for "autoproducers" that produce for own consumption.
- In Ukraine, the Commercial Metering Instruction On Wholesale Electricity Market include the following definitions:

  "Electricity consumption for own needs of power plants and substations" is electricity consumption by equipment, which provides the necessary conditions for the operation of power plants and substations in the technological process of production, transmission and distribution of electricity.

  "Electricity for utility needs of power stations and substations" is defined as electricity consumption by auxiliary and non-industrial units required for the maintenance of primary production, but not directly associated with the process of production, transmission and distribution of electricity.

  Additionally, metering in power plants that sell electricity to the wholesale electricity market is organized in a way that provides separated metering of electricity consumption for own needs, electricity for utility needs and volumes injected to the grid.
- Even though FYR of Macedonia has no specific definitions related to "own consumption", in practice own consumption is considered as consumption of auxiliary equipment (e.g. for water preparation, supply of water, air and fuel, exhaust cleaning), including losses in the block-transformer.

[24] Additional information is provided in table 13.

Closely related to the definitions of own consumption of generators are **legal provisions regulating connections and exact metering points** in relation. For example, if a RES support scheme pays net electricity production[25] then it is important to know from which point electricity is taken for own consumption in relation to metering points. In Bosnia and Herzegovina, own consumption is taken from the tail of the generator, thus the meter at the metering point will – by definition – register net production. On the other hand, in Croatia generators can have separate metering points for supply of own consumption (for those situations where investors do not wish to cover own consumption with electricity from the generator's tail). Table 12 presents an overview on the provisions regulating connection or metering in case of dedicated generators regarding own consumption.

Table 12 Provisions regulating connection or metering in case of dedicated generators regarding own consumption

Bosnia and Herzegovina	**FBiH**: No provisions. **RS**: Yes. There should be a separate metering point for metering of electricity used for one's own need, exclusively for the purposes of the generation facility operation.
Croatia	The RES and high-efficiency feed-in-tariff system subsidizes only net production. The generators' own consumption should be: a) supplied by production from the generator b) supplied by electricity from the grid that is metered (usually on a different connection point than the connection point for delivery) and subtracted from (gross) production metered at delivery point. There are no other provision regulating metering for generators.
FYR of Macedonia	The RES feed-in-tariff system subsidizes only net production. The produced electricity is measured on the calculation meter, which is usually on the point of connection. There must be also a control meter installed. The generator's own consumption should be: a) supplied by production from the generator, or b) supplied by electricity from the grid.
Italy	No provisions.
Kosovo*	No provisions.
Moldova	The regulation onelectricity metering in commercial interests provides that the generator's own consumption should be: a) supplied by production from the generator b) supplied by electricity from the grid that is metered .
Montenegro	Rules on measuring of electricity in the distribution system apply.
Serbia	With respect to connection conditions, the distribution network code differentiates between small generators that produce electricity: a) only for own consumption; b) partly for own consumption and partly inject into the grid; c) inject into the grid. Legislation with respect to RES support scheme does not require that only net electricity production is supported.
Turkey	Yes, net electricity generated gets support.

[25] Production of the generator reduced by own consumption.

Ukraine	The rules of electricity usage define as follows: If a customer has a block-station or cogeneration unit the net electricity volume is determined between the customer and the network company. The net volume of electricity is determined with the integration period that corresponds to the period of wholesale electricity market prices determination. The supply contract is concluded for the volumes that are received by the customers. The volume of electricity generated by the block-station or cogeneration unit that excess the customer consumption and injected to the grid can be sold on the wholesale electricity market, to the regulated supplier or other customers (considering the appropriate legislation).

In relation to own consumption of generators and other local consumption that influences metering and connections, often generators are connected deeply within the installation of a customer. One **very common situation is for large MV or HV customers** (with their own substations) **to install generators somewhere within their installation**. With the popularity of feed-in systems growing - especially for PV - in such cases the small customer producer cannot deliver anything into the grid since there is no excess energy. In those cases, investors in RES advocate support systems that rely on measurements directly on the generator. Support systems that rely on measurements directly by the generator have different financial and energy flows compared to FIT systems. However, since it is more economical (electricity production at the location of consumption) there is a trend to develop such support systems for RES and CHP. In that sense, a vital requirement is proper measurement of electricity produced at the generator. Since this is a metering point deep within a customer's installation and "behind" the customer's metering point (from the DSO's perspective), such control meters (metering points) have not been under the DSO's authority. But since there may be a need to provide strict monitoring of such additional meters (e.g. for a new RES support scheme), the task falls to the natural candidate – to the DSO.

The questionnaire underlying the present report aimed at finding out if there are **provisions regulating metering of produced energy by generators within the installation of customers** in the analyzed markets. Based on received answers,

- Only Kosovo* knows related provisions (in the metering code) regulating metering of produced energy by generators within the installation of customers.
- In Ukraine, according to the rules of electricity usage, in case there is a cross flow of electricity between the consumer and the network of distribution operator, the metering systems must ensure the bi-directional metering.
- Even though Croatia does not have implemented related provisions, the DSO will require metering of own consumption if a generator participating in the FIT system has its own consumption supplied via an existing customer installation. If the customer and the generator are the same person, the DSO may allow a special metering point within the customer's installation (this is practice - not clearly defined in legislation). Additional "customer" metering points within another customer's installation are allowed by the Croatian General Conditions of Supply, however, the DSO must receive the NRA's approval.

Bosnia and Herzegovina (Federation of Bosnia and Herzegovina only), Croatia, FYR of Macedonia, Italy and Kosovo* stated that all energy delivered into the grid is metered. With the exception of Italy, the mentioned markets stated that when own consumption of the generator is supplied over a separate meter, the readings of those meters are subtracted to provide net energy delivered. Energy delivered by the generator in the FIT scheme system is billed monthly by eligible/preferential producers to the DSO (Federation of Bosnia and Herzegovina), the market operator (Croatia and FYR of Macedonia) or the supplier (Kosovo*). Additionally, in

Croatia and FYR of Macedonia own consumption is billed monthly by the DSO for network use and/or the supplier for energy consumed when the unit is not delivering energy to the grid. In Kosovo*, own consumption is billed monthly by the supplier for energy consumed. Other details regarding billing and metering of energy are given in Table 13.

Table 13 Billing and metering of energy

How is energy produced by micro/small generators or customers with excess generation metered and billed?	
Bosnia and Herzegovina	**FBiH:** All energy delivered into the grid is metered. When own consumption of the generator is supplied over a separate meter, than readings of those meters are subtracted to provide net energy delivered. Energy delivered by generator in the FIT scheme system is billed monthly by eligible producers to DSO. **RS:** The following requirements should be separately fulfilled: – metering of delivery of electricity generated by the generation facility in the electric distribution network and taking over from the electric distribution network, – metering of the electricity generated at generators, – metering of one's own consumption of electricity in the generation facility, – metering of consumption of electricity for one's own needs for other purposes; The connection requirements were defined by the electric power consent and contract on connection pursuant to the regulations. For small capacity structures (below 44 kW) it is possible to make "net metering" of the generated and consumed electricity. Energy delivered to the grid is billed monthly by to SOI.
Croatia	All energy delivered into the grid is metered. When own consumption of the generator is supplied over a separate meter, than readings of those meters are subtracted to provide net energy delivered. Energy delivered by generators in the FIT System is billed monthly by the eligible producer to the market operator. Own consumption is billed monthly by DSO for network use and by supplier for energy consumed (energy consumed when the unit is not delivering energy to the grid).
FYR of Macedonia	All electricity delivered into the grid is metered. When own consumption of the generator is supplied over a separate meter, than readings of those meters are subtracted to provide net electricity delivered. Electricity delivered by preferential producers using feed-in tariffs is billed monthly by the preferential producer to the market operator. Own consumption is billed monthly by DSO (which is also a supplier of electricity) for the electricity consumed (for network use and for electricity consumed when the unit is not delivering electricity to the grid).
Italy	All energy delivered into the grid is metered. Electricity injected into the grid is billed in monthly frequency.
Kosovo*	All energy delivered into the grid is metered. When own consumption of the generator is supplied over a separate meter, than readings of those meters are subtracted to provide net energy delivered. Energy delivered by generators is billed monthly by the eligible producer to the supplier. Own consumption is billed monthly by supplier for energy consumed.
Moldova	Point of metering and installation of metering equipment is determined at delimitation point. The readings of metering equipment installed in the metering points where the power plant is connected to the electricity transmission network are performed monthly by the TSO. The readings of metering equipment installed in the metering points where the power plant is connected to the electricity distribution network are performed monthly by the DSO and producer mutually.
Montenegro	Supplier prepares invoices, then the collected means are sent to the MO, and MO performs allocation of means to small generators and customers
Serbia	According to the Decree on incentive measures for electricity production from RES and CHP, energy produced by the privileged electricity producers is metered on the first day of each month, without charge, and by the 5th of the month metered data has to be submitted to the privileged producer.
Turkey	Net metering used.
Ukraine	In case of electricity selling to the WEM, including on feed-in tariff, metering of electricity injected to the grid is made hourly. Billing is made separately for each type of the contract: 1) for sale of generated electricity; 2) for electricity supply for own needs of the station (in case of own generation stopping).

Question Q4.6 of the questionnaire underlying the present report on **settlement periods in respect to billing for energy consumed/produced** is more appropriate for large producers than for small producers or customers with excess power. In reality, problems can occur with meter readings, unbalance settlements can be improperly carried out, FIT schemes may include prices that are corrected on a yearly basis, etc. All in all, settlement periods can exist for offsetting discrepancies in previous bills (previous periods). Table 14 presents an overview of the answers provided. However, due to the confusing term “settlement” that is used in electricity markets for different purposes and due to the fact that settlements usually involve financial clearance, the issue of settlements requires further investigation and clarification. This further investigation could address meter reading issues related to billing.

Table 14 Settlement periods in respect to billing for energy consumed/produced

Are there settlement periods in respect to billing for energy consumed/produced?	
Bosnia and Herzegovina	FBiH: None. RS: Yes.
Croatia	None.
FYR of Macedonia	The delivered electricity of the preferential producer is determined by the DSO, by reading of the calculation meter on every 1st day of the month at 00:00, and the reading data are submitted to the preferential producer and to the market operator. The preferential producer, according to the measurements data of DSO, issues invoice for the produced electricity in the previous month, by every 5th day of the current month, to the market operator. The market operator is obligated to pay the invoice by 15th day of the current month. The market operator may ask to check the invoice within 3 days from receiving of the invoice. The preferential producer is obligated within 3 days to inform the market operator and if the invoice is corrected, to deliver new invoice within 5 days.
Italy	N / A
Kosovo*	None. Billing is done monthly, and when is a case needed for settlements this is done in next bill.
Moldova	In accordance with the contract.
Montenegro	Monthly settlement, and for micro generators and customers with the capacity up to 20 kW annually.
Serbia	General conditions prescribe that settlement period for tariff customers are normally one month, three months the latest.
Turkey	Daily settlement-monthly billing.
Ukraine	The metering period on WEM is 1 hour. The billing period is 1 month.

2.5 Contracts

There are several most common types of contracts that network users (generators or customers with excess power) must sign with (system/market) operators:

- Connection contact, also known as contract on connection/increasing connecting capacity, contract for the connection or model agreement for grid connection,
- Network use contract, also known as contract for usage of distribution grid, contract on the access to the network, connection agreement, use of distribution grid contract or system use contract,
- Supply contact, also known as contract on supply with electricity,

- Power Purchase Agreement (PPA) or similar contract, also known as contract on sale of electricity or electricity sales contract,
- Buy-off contract related to FIT is a particular PPA, also known as contract on the obliged redemption of electricity at the feed in tariffs for generation from RES, selling contract or contract on purchase of electricity, and
- Contract on ancillary services.

The connection contract regulates the construction of the actual connection (connector) for the network users, the construction and equipment for metering point(s), etc. The contract is needed for connecting a new network user or for changes related to existing users that require physical changes in the network or the connection. It is signed between a generator and a DSO/TSO in all cases. The contract contains provisions relating to costs of the construction and timing of construction.

In Croatia, there is also a preliminary contract for the connection which is contracted prior to a contract for the connection in cases when the construction requires substantial efforts or time for the operator or network user to fulfill (e.g. obtaining rights for construction on public property, transfer of property, etc.).

The network use contract is contracted after a construction or a reconstruction of a connector has been completed. It is signed between a producer and the system operator (except in Montenegro where a supplier signs this contract on behalf of the DSO for customers).

The supply contract regulates supply of electricity for generator's own consumption. It is signed between a producer and a supplier or the DSO (if the DSO can provide electricity supply).

A Power Purchase Agreement or similar contract regulates the purchase of electricity from the producer. It is signed between a generator and an electricity market participant (supplier, trader, or eligible customer).

The term "Buy-off contract" usually stands for a standard PPA based on the national Feed-in system for RES (and CHP). It regulates purchase of electricity from generators participating in the FIT scheme. It is signed between an eligible/privileged producer and the market operator in Croatia, FYR of Macedonia, Italy and Montenegro. In Serbia, it is signed between a public supplier and a privileged electricity producer.

Currently in the Federation of Bosnia and Herzegovina, there is a transitional period where the DSO is the entity buying electricity from producers participating in FIT scheme. Upon its establishment, the RES and Cogeneration Operator will take over the buy-off.

Ukraine has model agreements on selling-buying of electricity produced by RES generators. The one is contacted by RES producer with a customer (or supplier), and the other one between RES producer and WEM Supplier (single buyer).

Contract on ancillary services regulates services provided by producers to the TSO and is present in Croatia, FYR of Macedonia and Montenegro. Montenegro also has a **Contract on ancillary and system services** which is signed between a producer and a DSO/TSO and it regulates mutual rights and obligations in respect of provision and usage of ancillary and system services.

Croatia has also a "Contract on control of facilities of the network user" which regulates details in control and management of generators by the network user in regards to the operation of the electric grid operated by the system operator. This contract appoints persons in charge; regulates giving and carrying out orders relevant for operation; regulates access to equipment; defines procedures during malfunctions; defines and

regulates communication among system operator, producer and technical service provider (if used by the producer).

Italy has a Dispatching contract for electricity feeding the grid which defines the condition for injecting produced electricity into the grid. It is signed between a producer and the TSO.

The answers provided for question Q.5 are provided in "Annex II – List of contracts with operators", whereas an overview of contracts is provided in Table 15.

Table 15 List of contracts with operators

	Connection contract	Network use contract	Supply contract	Power Purchase Agreement or similar contract	Buy-off contract related to FIT	Contract on ancillary services
Bosnia and Herzegovina	✓	✓	✓[1]	✓	✓	–
Croatia	✓	✓	✓	✓	✓	✓
FYR of Macedonia	✓	✓[2]	✓[2]	✓	✓	✓
Italy	✓[3]	✓[3]	✓	–	✓	–
Kosovo*	–	✓	–	✓	–	–
Moldova	–	–	–	✓	–	–
Montenegro	✓	✓	✓	–	✓	✓
Serbia	–	–	✓	✓	✓	✓[4]
Turkey	✓	✓	–	–	–	–
Ukraine	✓	–	–	–	✓	–

1 Federation of Bosnia and Herzegovina did not define a supply contract.

2 Contract that combines network use for generators and supply only own consumption.

3 The contract for the connection includes the contract for the using the connection.

4 The producer is obliged to offer ancillary services to the transmission or distribution system operator in line with technical capacities and Transmission and Distribution Grid Codes and Market Code and conclude a contract on ancillary services;

2.6 Sale of Energy

The questionnaire aimed at identifying how small producers can sell the energy they produce, ascertaining the current practice (e.g. current feed-in systems in place, buy-offs by incumbent monopolies, etc.). As a result, later in this chapter, **overviews of buy-off systems** are provided. However, for details (such as prices) please refer to other sources of information as pointed out in:

- Chapter 2.11 “Information and training”,
- Annex IV – Legislation related to support schemes for RES or CHP and
- Annex V – Educational material related to support schemes for RES or CHP.

For micro/small producers it is important to have a market participant obliged to purchase electricity they produce. Due to the typically lower volumes and predictability produced, micro/small producers have practically no negotiating power when approaching any supplier or trader. The questionnaire therefore aimed at identifying whether there is a party **obliged to buy electricity produced by RES generation outside the support scheme** (e.g. old hydro or non-eligible).

- Analysis shows that in all countries, except Moldova, no such obligation exists.
- In Moldova, electricity produced by RES generators shall be commercialized through the distribution grid and/or transportation grid if the generation capacity of the producer’ installation is 10 kW or more.
- In Ukraine all generators (with capacity or volumes of generated electricity exceeding boundary levels stated in the license conditions: more than 20MW) must sell electricity to the wholesale energy market (to the single buyer). This, for example, also applies to large hydro generation that is not eligible for feed-in tariffs.

Of course, most countries have an **obligation in place for purchase of electricity** of RES/CHP [26] generators that have been declared **“eligible” or “privileged**”. The specifics of the obligation differ depending on the setup of the FiT scheme. The differences are the result of two factors: firstly, different FiT systems have different counterparties for the purchase of electricity from RES generators – as presented later in this chapter. Secondly, different countries have different approaches and conditions for attaining “eligible” or “privileged” status. This last point also applies in situations where there may be additional criteria benefiting certain types of production[27].

Finally, the questionnaire also targeted explanation on whether there is a party obliged to **buy electricity not produced from “eligible” RES/CHP generation**. As previously explained, this is important for small/micro generation and, ever more important, for customers with excess energy whose volumes of production are even smaller. Unfortunately, again, no country reported obligatory purchase of electricity from such generators.

[26] Since some answers in Q7.2 (namely Moldova and Montenegro) were more relevant to Q7.1 the findings in this and the next paragraph were divided into answers relating to a) supported RES including supported CHP and b) non-eligible RES/CHP.
[27] For example, in Moldova CHP may obtain priority status to sell electricity, produced in cogeneration mode, only if the produced heat is delivery into a centralized heat supply system.

2.6.1 Bosnia and Herzegovina

Federation of Bosnia and Herzegovina

In FBIH, a RES and Cogeneration Operator is envisaged which will buy electricity from generators participating in the FIT scheme. Until then, in the transitional period the DSO is the entity buying electricity from generators participating in the FIT scheme. For such buy-off, prices are defined in the government's Decree on Usage of Renewables and Cogeneration and the DSO provides standard contracts. Production from other generators is purchased by the incumbent electricity company and competitive suppliers. The incumbent electricity company and competitive suppliers are entitled to export electricity.

Republika Srpska

In RS, a FiT is in place allowing eligible generators to buy-off at guaranteed prices for a period of 15 years. The energy buyer is OSI, an administrative body established for the purposes of operational implementation of the Incentives' System Operator. There is also an obligatory buy-off for old facilities which capacities do not exceed 5 MW (namely 1 MW for the plants using biogas) and which are older than 15 years.

2.6.2 Croatia

Croatia has a FiT system in place for RES and high-efficiency CHP. The Croatian Market Operator is the entity buying electricity from generators participating in the FIT scheme. The Market Operator provides standard contracts, prices are defined by the tariff system for electricity production from renewable power sources and cogeneration.

Generators and customers with excess energy are free to contract power delivery to any electricity market participant (an entity with a valid energy license given by the NRA). However, only the incumbent electricity company is currently buying off electricity – usually at a price defined as a percentage of the end-customer electricity price or as a percentage of the average production price of electricity defined for tariff customers.

Producers may choose to export energy instead of selling to a domestic market participant. However, this is not done since generators are either owned by the incumbent or are participating in the FIT. For those independent producers that do not participate in the FIT, export is too complicated since they are small producers.

2.6.3 FYR of Macedonia

The Market Operator (MEPSO, which is also the TSO) is the entity buying electricity from preferential generators using feed-in tariffs for RES. Feed-in tariffs for electricity produced from RES are defined by the governmental Decree on Feed-in Tariffs for Electricity Production from Renewable Energy Sources. The Market Operator provides standard contracts which are publicly available.

The previously mentioned Decree defines categories for different RES, in order to define feed-in tariffs:

- photovoltaic power plants have categories (0-0,05MW; 0,05MW-1MW)
- wind power plants (0-50MW)
- biogas power plants have categories (0-0,5MW; 0,5MW-2MW)

- hydro power plants (0-10MW).

Other generators are free to contract PPA with electricity market participants (suppliers, traders, eligible customers).

2.6.4 Italy

Among the analyzed markets, Italy offers the highest number of options for sales of energy.

- Firstly, small producers can sell the electricity injected into the grid directly in the electricity market. The selling prices are fixed by the result of the section of Day-Ahead Market.
- Additionally, small producers can contract the sales of electricity injected into the grid and the relative selling prices by bilateral agreements with suppliers and traders.
- All generators up to 10 MVA and all non-programmable RES power plants can sign with the GSE (Gestore dei Servizi Energetici) an agreement for dedicated withdrawals. GSE purchases the electricity produced at the zonal hourly market price (at Day-Ahead Market) and settles all the payments and fees (required for the use of the national grid) with the producers (dispatching service, transmission services and distribution services).

Italy also has implemented “on-the-spot trading” supported by GSE:

- RES and high-efficiency CHP power plants up to 200 kW, can sign with the GSE an agreement for “on-the-spot trading”.
- The mechanism gives the possibility of injecting the power produced by plants into the grid and of withdrawing the same power from the grid at times and on days when they are unable to produce, using the grid as a sort of “electricity tank”.
- “On-the-spot trading” does not concern electricity withdrawals which continue to be regulated by the suppliers; furthermore a contribution is defined to guarantee that service users receive an equivalence between what they pay for power withdrawn and the value of the power which is injected into the grid.
- The energy grant is the sum of two contributions, *energy quota* and *services quota*:
  - the *energy quota* contribution allows the users of this service to receive the value of the power they injected into the grid up to the energy costs they pay to the retail service companies which provided electricity;
  - the *services quota* contribution allows the users of this service to receive an amount of money equivalent to the costs they pay for using the grid for the total amount of electricity exchanged within the grid, just as if that energy hadn’t used the grid.
- GSE purchases the electricity produced at the zonal hourly market price (by Day-Ahead Market) and settles all the payments and fees (required for the use of the national grid) with the producers (dispatching service, transmission services and distribution services).

Finally, in Italy there is also a RES Feed-in system in which GSE pays to producers a price (including incentive), defined by Government, for all electricity produced by RES power plants up to 1 MW and injected into the grid.

2.6.5 Kosovo*

Kosovo* has a FiT scheme in place in which the public supplier is the entity buying electricity from generators participating in the FiT scheme. The public supplier provides standard contracts and prices are defined by the feed in tariff for electricity production from renewable power sources.

Small generators and customers with excess energy are free to contract power delivery to any electricity market participant with a valid energy license given by the NRA: supplier, trader or other generator.

However, the public supplier company is buying electricity for which a certificate of origin has been issued by the regulator at a regulated tariff determined by, or established according to a methodology approved by the regulator.

Generators and customers with excess energy are free to export energy.

2.6.6 Moldova

According to the *Law on Energy Produced from RES*, tariffs for RES are determined annually by type and production capacity of the installations, forecasted production and supplied volumes and period of supply of renewable energy.

Legislation requires suppliers of electricity (using regulated and non-regulated tariffs and supplying eligible customers, to negotiate and to conclude with combined heat and power plants and with power plants that generate electricity from renewable energy sources contracts on purchase of electricity, generated by them, at tariffs and in quantities regulated by the Agency.

Legislation also requires agents purchasing renewable energy and fuels to give priority to the local producers if similar offers exist from other countries.

2.6.7 Montenegro[28]

Montenegro has a FiT scheme defined by secondary legislation[29] . Generators within the FiT scheme sign contracts with the market operator in line with the *decree on tariff system for determining the incentive prices for electricity produced from renewable energy sources and high efficient cogeneration*.

2.6.8 Serbia

In Serbia, incentive measures for electricity generation using renewable energy sources are primarily defined by the Energy Law. Incentive measures, in accordance with the Article 60 of the Energy Law, shall include the obligation to purchase electricity from a privileged producer and feed-in tariffs for purchasing that energy and the period of validity of the obligation to purchase electricity and taking over balance responsibility.

The public supplier is obliged to purchase electricity from a privileged producer based on a contract on purchase of electricity in accordance with primary and secondary legislation. Incentive funds are provided by final customers by paying a special incentive fee billed as part of the transmission / distribution bill.

[28] Information presented here isobtained from the web site www.oie-res.me.
[29] Available online at http://www.oie-res.me/index.php?page=uredbe-i-pravilnici.

Upon the Ministry's proposal, the government prescribes incentive measures for electricity generation from renewable energy sources and purchase of such energy, depending on the type and power of a plant, prices for purchase of electricity from privileged producers and their validity period, obligations related to purchase and balance responsibility, contents and duration of a pre-contract and contract on purchase of electricity, manner of calculating the incentive fee and distribution of funds on that basis.

Upon the proposal of the Ministry, the latest until December of the current year the government shall adopt the level of the incentive fee for the following calendar year.

2.6.9 Turkey

Turkey has a FIT scheme determined by the *Law on Generation of Electricity from Renewable Energy Source*s. Annex "IV.8. Turkey" provides links to legislation describing the FIT scheme.

2.6.10 Ukraine

In Ukraine, the FIT relies on the single buyer (WEM supplier) who is obliged to buy all electricity generated by RES generators on feed-in tariff. Generation from large hydro power plants and generators that use blast-furnaces or coke oven gas are excluded from the FIT system.

Suppliers on regulated tariffs and consumers may buy electricity, produced by RES generators[30] at feed-in tariffs based on the bilateral contract.

Amendments to the new Law on Electricity approved on 20 November 2012 introduced additional stimulation for electricity produced from RES. In particular, starting from 01.01.2014 a feed-in ("green") tariff for selling electricity produced by households from PV installations with maximum capacity not exceeding 10 kW is established. Electricity produced by such household's PV installations is to be bought at FIT at the amount that exceeds the monthly consumption volume of household by regulated suppliers acting on the very territory. Electricity production by household's PV installation does not require license.

2.7 Market Issues

Markets rely on market participants that sell and buy. More participants and more merchandise lead to a more prosperous and better functioning market. Feed-in systems are suitable for developing energy markets because they provide safety for investors. However, they lock ever-larger volumes of electricity in long-term power purchase agreements. Switching to market-oriented schemes for supporting generation investments (in RES, CHP or other) requires a developed market. In general, development of energy markets (especially in the Energy Community) involves a lot of parallel processes. With that in mind, it can be observed that developments in the legislation concerning electricity generation are primarily intended for the wholesale markets and large producers. But, at the same time, new independent producers (of all sizes) are spawned by FiT schemes, and regularly only within FiT schemes. Consequently, the **legislation is usually a mixture**

[30] Again, generation from large hydro power plants and generators that use blast-furnaces or coke oven gas are excluded from this.

of provisions applicable to large producers (legislation regulating wholesale markets) on one hand **and "eligible" producers of all sizes** on the other hand in a protected shell of legislation organizing FIT schemes. In practice, this duality leads to entanglements for micro, small and medium producers that may have obligations that are not viable. Furthermore, customers with excess power usually do not participate in FiT schemes so they are – as a general rule – burden with all duties as large producers.

In the usual course of events, problems arise when legislators "forget" about small producers when dealing with "larger" market issues. An absurd example is the imbalance settlement for an individual micro generator.

This chapter aims at raising awareness to these issues by investigating the situation regarding market participation of micro/small generators.

The questionnaire presented the following questions:

Q8.1. Are micro/small generators or customers with excess generation required to participate in the electricity market? (e.g. Day-Head planning, balancing)?

Q8.2. Are micro/small generators required or allowed to provide ancillary services?

Q8.3. Do RES/CHP have priority dispatching (priority access to grid)? How does this relate to small/micro RES/CHP?

Q8.4. Are small generators (RES, non-RES, customers with excess generation) responsible for imbalances? How are they charged for imbalances? If they are not responsible, who is responsible?

Table 16 presents the answers to Q8.1, Table 17 for Q8.2 and Table 19 for Q8.4. Based on the answers provided in those tables, it is evident that **in most countries where FIT schemes are in place, generators participating in the FIT are shielded from balancing responsibility/costs**. The exceptions are Bosnia and Herzegovina and Italy. In some countries, like Croatia and FYR of Macedonia, larger RES/CHP generators are required to present a day-ahead plan for the use of the market operator but not for the sake of imbalance settlement. Based on the answers (see in particular table 17), offering of ancillary services is usually defined by legislation, but not required. Answers indicate that the issue of **ancillary services is under-developed**.

Article 16 Directive 2009/28/EC[31] deals with access to and operation of the grids. In particular, paragraph 2 requires either priority access or guaranteed access to the grid-system of electricity produced from renewable energy sources. The purpose of question Q8.3 was to ascertain if RES/CHP generators (small or large) have priority in dispatch. Based on the responses in table 18, in all countries, **dispatch priority is tied to the declaration of an "eligible"/"privileged" generat**or – i.e. RES or high-efficiency CHP - **or is stipulated in legislation for RES/CHP**.

[31] Directive 2009/28/EC on the promotion of the use of energy from renewable sources, OJ L No 140 p 16 et seq (5.6.2009).

Table 16 Market participation of small producers

Q8.1 Are micro/small generators or customers with excess generation required to participate in the electricity market? (e.g. Day-Head planning, balancing)?	
Bosnia and Herzegovina	**FBiH**: No. **RS:** Yes. A generator which is entitled to the obliged redemption at the feed in tariff or redemption buyout for old facilities in exploitation, is obliged to send a daily schedule to the Incentives' system operator (SOI), except when the installed capacity of the generation facility is less than 500 kW and is obliged to notify the daily schedule and to pay 25% of the balancing costs while the rest of costs are being compensated by the fee for RES and EC. SOI and system operator which network the facility is connected to, is obliged to provide generator being entitled to the redemption buyout at the feed in tariff either the obliged redemption for old facilities in exploitation, advantage in the access to the network (dispatching) pursuant to the notified daily schedule, complying with the technical limits of the electric power system. Generators of electricity that sell electricity in the market and are entitled to a premium, provided access to the network (to b arranged by the generator), belonging to the balance group and bearing the balancing costs.
Croatia	PARTIALLY Generators in the FIT over 5 MW are required to deliver a day-ahead plan, but are not charged with balancing costs. The Market operator pays the balancing costs for al generators in the FiT scheme. Generators and customers with excess power, outside the FiT scheme, that have electricity production licenses (have generators larger than 1 MW) have the obligation to participate in the day-ahead market.
FYR of Macedonia	YES, but this obligation is not implemented in practice. RES generators participating in the FIT (preferential producers) are not charged for imbalances, and they do not have balancing responsibility. The balancing responsibility for preferential producers is on the market operator. The market operator pays the cost for imbalances from the preferential producer to the TSO. The rules on balancing market apply as of 01.07.2013. The preferential producers above 10 MW have the obligation to submit physical nominations[32] for every day to the market operator. The preferential producers below 10 MW do not have an obligation of submitting physical nominations, but must submit the planned schedule of the excepted generation to the market operator. All other generators with electricity production licenses are required to participate in the electricity market and can form a balancing group. The cost for imbalance is according to the methodology given in the Electricity Market Rules. The rules on balancing market shall apply from 01.07.2013. All other generators with electricity production licenses must submit physical nominations for every day to the market operator, for the planned generation of the each generation unit for dispatching of the generator and available ancillary services for every dispatching unit.
Italy	All micro/small power plants participate in the Day-Ahead Market, but generally these are aggregated by dispatching point.
Kosovo*	No
Moldova	No. Because they conclude contracts with the DSO which participates in the electricity market.
Montenegro	No
Serbia	No obligation, but each electricity producer is entitled to sell produced electricity.
Turkey	No
Ukraine	No

[32] Physical nominations are used to inform the market operator and the TSO about the hourly schedule, consumption and electricity exchange, import and export of the specific day.

Table 17 Ancillary services requirements for small generators

Q8.2 Are micro/small generators required or allowed to provide ancillary services?	
Bosnia and Herzegovina	No
Croatia	For generation units over 5 MW and designated by the TSO as relevant to the operation of the grid, a contract on ancillary services must be contracted.
FYR of Macedonia	No. Until 31st of January 2014 the contract is concluded between the TSO and the generators that have public service obligation for providing ancillary services and operating reserve. From 1st of January 2015 the TSO shall provide ancillary services and operating reserve at market conditions based on open tender.
Italy	No
Kosovo*	They are not required, but they are allowed.
Moldova	N
Montenegro	No
Serbia	All generators are obliged to offer ancillary services to the transmission or distribution system operator in line with technical capacities and Transmission and Distribution Grid Codes and Market Code and to conclude a contract on the provision of system services with the transmission and distribution system operator.
Turkey	No
Ukraine	No

Table 18 Dispatch priority for RES/CHP generators

Q8.3 Do RES/CHP have priority dispatching (priority access to grid)? How does this relate to small/micro RES/CHP?	
Bosnia and Herzegovina	**FBiH**: According to the law, RES can obtain eligibility status. Eligible producers which have signed a contract with DSO/ RES and CHP Operator have priority in dispatching, within its published schedule. The DSO/ RES and CHP Operator is required to take over energy produced by eligible producers. **RS:** Generator which is entitled to the obliged redemption at the feed in tariff or redemption buyout for old facilities in exploitation, is obliged to notify the daily schedule to the Incentives' system operator (SOI), except when the installed capacity of the generation facility is less than 500 kW and is obliged to notify the daily schedule and to pay 25% of the balancing costs while the rest of costs are being compensated by the fee for RES and EC. The Incentives' System Operator (SOI) and System operator which network the facility is connected to is obliged to provide generator being entitled to the redemption buyout at the feed in tariff either with the obliged redemption for old facilities in exploitation, advantage in access to the network (dispatching) pursuant to the notified daily schedule, complying with the technical limits of the electric power system. Generators of electricity that sell electricity in the market and are entitled to a premium, provided access to the network (to b arranged by the generator), belonging to the balance group and bearing the balancing costs
Croatia	YES. By law, RES generators and high-efficiency CHP can obtain “eligibility status”. The TSO/DSO is required to take over energy produced by eligible producers.
FYR of Macedonia	YES. The system operator shall provide priority access to the system for the electricity generated from RES[33], taking due consideration of limits stemming from the possibilities in the electricity system.
Italy	YES. By law, electricity produced by RES and high-efficiency CHP power plants have priority in dispatching. There are no differences between the electricity produced by small/micro RES/CHP power plants and electricity produced by the other RES/CHP power plants.
Kosovo*	YES. By the Law on Electricity energy produced by RES has dispatching priority. The TSO/DSO is required to take over energy produced by eligible producers, but regarding access to the grid the generator must fulfill technical conditions required by distribution code and Public supplier is obliged to give priority to buy energy produced by RES with the regulated tariffs.
Moldova	YES. Principle of priority purchasing and dispatching of electricity generated by power plant from renewable energy sources and of electricity generated by combined heat and power plants.

[33] Preferential producers of RES and other producers of RES not using feed-in tariffs.

Q8.3 Do RES/CHP have priority dispatching (priority access to grid)? How does this relate to small/micro RES/CHP?	
Montenegro	YES, if they are privileged.
Serbia	Privileged electricity producer is entitled to the priority in injection of the total produced electricity into a transmission or distribution system, except when the safety of operations of these systems is endangered.
Turkey	Implicitly have priority in dispatching (within the support scheme, these generators sell their all generation to the system
Ukraine	YES

Table 19 Imbalance settlement for small generators

Q8.4 Are small generators (RES, non-RES, customers with excess generation) responsible for imbalances? How are they charged for imbalances? If they are not responsible, who is responsible?	
Bosnia and Herzegovina	**FBiH**: Generators from RES and CHP pay for imbalance costs in the case they are higher than referenced price used in imbalance settlement.
Croatia	Generators participating in the FIT are not charged for imbalances. The market operator as the entity buying off electricity from RES generators is charged imbalance costs. These costs are currently fixed to a reference price used in the imbalance settlement. All other generators with electricity production licenses (generators over 1 MW) are required to participate in the market and pay for imbalance.
FYR of Macedonia	RES generators participating in the FIT (preferential producers) are not charged for imbalances, and they do not have balancing responsibility. The balancing responsibility for preferential producers is on the Market operator. The Market operator pays the cost for imbalances from the preferential producer to the TSO. All other generators with electricity production licenses are required to participate in the electricity market and can form a balancing group. The cost for imbalance is according to the methodology given in the Electricity Market Rules. The rules on balancing market shall apply from July 1st 2013.
Italy	Up to now only programmable RES power plants - also all non-RES driven - are responsible for their imbalances. In particular programmable RES < 10 MVA are subject to slightly different rules (dual pricing, average, per Balancing Responsible Party (BRP) in any bidding zone). Non programmable RES power plants are not responsible for their imbalances (single pricing, per BRP). Changes to this regime are going to be introduced as of January 2013: non programmable RES power plants will be gradually responsible for imbalances. In particular, imbalances over the threshold (20% on hourly basis, 10% from July 2013 to December 2013) will be charged as imbalances from programmable RES power plants until the end of 2012, while imbalances up to the threshold will have the same treatment as non-programmable RES power plants until the end of 2012.
Kosovo*	YES, but partially. The balancing mechanism is currently not implemented in praxis.
Moldova	No, they are not responsible. Responsible are the DSO, TSO and system user[34].
Montenegro	No
Serbia	Taking over balance responsibility of privileged electricity producers is defined in the Energy Law as the one of incentive measure for use of RES in electricity generation. According to the *decree on incentive measures for electricity production from RES and CHP*, a privileged electricity producer, who concluded the contract with the buyer, belongs to the buyer's balancing group but does not pay charge for balancing services to the Buyer.
Turkey	No
Ukraine	No

[34] Natural person or legal entity to which the services of transmission or distribution of electricity are provided.

2.8 Licensing

The purpose of this chapter is not to provide a comprehensive review or benchmarking of licensing regimes in the Energy Community, but to provide minimal information on **licenses and legal requirements for participating in electricity markets in relation to electricity production**. In this respect the questionnaire underlying the present report in particular addressed the following aspects:

Q9.1. What is the role of NRA in the planning and construction of micro/small generators or generators within customer installations? Is there a special role concerning the planning and construction of RES generators?

Q9.2. What licenses (in relation to the electricity market, provided by the NRA) are needed by electricity producers? Are there exemptions for micro/small generators or generators within customer installations? Is there special treatment of RES generators?

Q9.3. What are the general requirements for obtaining licenses (in relation to the electricity market) needed by electricity producers? Are there exemptions or special conditions for micro/small producers, customer with excess power or RES producers?

Q9.4. Are there any special organizational requirements on the person performing electricity production? E.g. Is a limited company is required? Or maybe a company needs to register its business activities?

Table 20 presents the answers to Q9.1 from which it can be reasoned that **NRAs predominantly issue licenses for electricity producers after the construction of a generator**. Some NRAs provide special licenses related to FiT during construction. In Croatia, the NRA issues a preliminary ruling on eligibility status is given to RES/CHP plants under construction. In FYR of Macedonia a temporary status is given to preferential generators. In general, however, NRAs of the analyzed markets do not have special roles in the planning and construction of generators.

Table 21 and table 22 together present the **licensing regime for electricity producers**.

An important question for small electricity producers, including those aspiring to enter the FiT scheme, is whether or not a special company should be registered in order to carry out the activity of electricity production. Any **obligation that requires a person to change or register a new legal person**[35] **is perceived as a barrier to investments or barrier for RES**. Table 23 presents the situation regarding this particular issue. The analysis shows that

- Only Italy and Moldova do not have special organizational requirements on the body performing electricity production.
- Legal persons are required in Bosnia and Herzegovina, FYR of Macedonia, Kosovo* and Turkey.
- Croatia requires the body (without prejudice to natural persons) to “registered” for performing the energy activities for which it is licensed. In practice this presents problems for natural persons and special legal persons (civil society organizations, governmental institutions, local/regional government, etc.).

[35] Usually a stock company or limited liability company.

Table 20 Role of NRA in the planning and construction of micro/small generators or generators within customer installations

Q.9.1. What is the role of NRA in the planning and construction of micro/small generators or generators within customer installations? Is there a special role concerning the planning and construction of RES generators?	
Bosnia and Herzegovina	**FBiH:** prior to construction of generation facility, the Regulatory Commission for Electricity in Federation of Bosnia and Herzegovina (FERK) issues initial construction license. RES should obtain eligibility status. Initial license is not required for generation for own consumption **RS: f**or construction of the generation facilities of the capacity of more than 1 MW, it is necessary to have the license for construction issued by Regulatory Commission for Energy of Republika Srpska (RERS).
Croatia	After the commissioning of a generator, the NRA issues licenses for electricity production (except when the generator is below 1 MW or used for own purposes). Within the FIT, NRA issues preliminary rulings on eligibility status based on construction plans that enables investors to sign a contract on electricity buy-off contract with the market operator based on the Tariff system for electricity production from renewable power sources and cogeneration. When the generator is constructed the NRA issues a ruling on eligibility status defining special conditions related to FIT (e.g. obligations related to high-efficiency) and the ruling activates the FIT buy-off contract.
FYR of Macedonia	When the generator (legal entity) obtains the permit for construction of the plant, it may apply to the NRA for a license for performing generation of electricity. The NRA hall issue the license but the license shall not enter into force until the power plant is build and put into operation. After the construction is finished and the generator obtains a permit for usage of the plant, the NRA shall issue within 7 days a decision that the license shall enter into force. Also, the generator (legal entity) may apply to the NRA for a license for performing generation of electricity *after* the construction is finished and the generator obtains and a permit for usage of the plant. In this case the NRA shall issue the license which comes immediately in force. Within the feed-in tariff system, when the generator of RES (legal entity) obtains the permit for construction of the plant, it may apply to the NRA for issuing a resolution for obtaining the temporary status of a preferential generator. In cases when the power plant fulfills the RES and FIT requirements, the NRA shall issue a resolution for temporary status for preferential producers and shall register the power plant in the *Registry of Preferential Generators*. The temporary resolution shall also stipulate the deadline for putting the power plant into operation. The generator holding such temporary resolution and having built the plant with a license in force, shall submit to the NRA an application on obtaining the status of preferential generator and feed-in tariffs. In cases when the generator fulfills the requirements for obtaining the status of preferential generator and the plant is put in operation within the deadline and when the confirmation issued by the Energy Agency is positive, the NRAshall issue a resolution for obtaining the status of preferential producer and decision for feed-in tariffs.
Italy	The NRA defines the rules for allowing micro/small power plants to access to the grid and to the electricity market, but doesn't define the rules for planning and construing these power plants.
Kosovo*	The NRA grants the authorization for generator in line *the Rule on Authorization Procedure for Construction of new Generation Capacities*. There is no special role for the NRA in planning and construction.
Moldova	NRA has no role. Government approve s the construction of power plants with a capacity exceeding 20 MW, and approves increase of generation capacities of the existing combined heat and power plants if additional capacity exceeds 20 MW. The state authority in the field of renewable energy sources is the Agency for Energy Efficiency (AEE).
Montenegro	After the construction of generators, NRA issues licenses for electricity production.
Serbia	NRA has no role
Turkey	No role
Ukraine	No

Table 21 Licenses provided by the NRA to electricity producers

Q.9.2. What licenses (in relation to the electricity market, provided by the NRA) **are needed by electricity producers? Are there exemptions for micro/small generators or generators within customer installations? Is there special treatment of RES generators?**	
Bosnia and Herzegovina	**FBiH: a** license for generation is obtained from the NRA. The eligibility status of generator is approved by the NRA in a process of obtaining license for generation of electricity. **RS**: For construction of a generation facilities with a capacity of more than 1 MW, it is necessary to have the license for construction issued by the NRA. License for generation of electricity in the electric power structures of the capacity of more than 1 MW The NRA issues a certificate for generation facility which generates electricity from RES or in efficient co-generation, and which provesthat the facility generates electricity in a cost-effective way and protecting the environment
Croatia	A license from the NRA is required for generators of 1 MW and above. A license is not required when producing for own purposes/consumption, i.e. when no electricity is delivered to the grid. Those RES generators that wish to achieve the "eligibility status" and/or participate in the FIT, regardless of size, must obtain a ruling on their eligibility status. This status is regulated by the *ordinance on obtaining eligible status of electric power producer*.
FYR of Macedonia	License is required for all generators in order to perform generation of electricity. A license is not required when producing electricity for own consumption (the electricity is not delivered to the grid). Also see Q9.1.
Italy	The NRA does not provide licenses to the producers, but all producers - independently from size and source of power plant - have to sign the dispatching contract with the TSO for injecting produced electricity in the grid.
Kosovo*	License for generation exceeding 5 MW and for heat generation by heating plants for self-consumption with capacity exceeding 1 MW. There is no special treatment of RES.
Montenegro	A license from the NRA is required for generators up to 10 MW. A License is not required for generation of electricity for one's own needs; generation of electricity in plants with installed capacity of up to 1MW
Serbia	License for electricity production is needed if: 1) electricity is generated in facilities with total approved connection power of 1 MW or higher; 2) combined electricity and heat is generated in thermal power plants – district heating plants in facilities of over 1 MW of total approved electrical connection power and 1 MWt of total heat power;
Turkey	Generation license Auto producer license Exemption for micro/small: license holding and company establishment requirement waived
Ukraine	In order to participate in the WEM such licenses are required from producers: – License for electricity production; or – License for combined heat and power generation (for CHPPs). Amendments to the Law on Electricity passed on November 20th 2012 introduced additional stimulation for electricity produced from RES. In particular, starting from 01.01.2014 the Law established a feed-in ("green") tariff for selling electricity produced by households from PV installations with maximum capacity not exceeding 10 kW. Electricity production by household's PV installation does not require a license.

Table 22 General requirements for obtaining licenses

Q.9.3. What are the general requirements for obtaining licenses (in relation to the electricity market) **needed by electricity producers? Are there exemptions or special conditions for micro/small producers, customer with excess power or RES producers?**	
Bosnia and Herzegovina	**FBiH**: generation license requires a generator to own or have rights to use generation facilities. In a process of obtaining generation license, generator needs to obtain: municipal permit construction permit, electric power permit, environmental permit etc. In addition, generators must have the technical, organizational and financial qualifications necessary for performing the activities. The Rule on Licensing prescribes in detail the requirements for licenses for power generation. **RS**: general requirements for obtaining licenses are prescribed by the Role book on issuance of license.
Croatia	A license for electricity production requires a producer to own or have rights to use generators[36]. In addition, producers must have appropriate technical and organizational qualifications (staff or contracted services) necessary for operating their facilities. The Ordinance on licenses for performing energy activities prescribes in detail requirements for licenses for electricity production.
FYR of Macedonia	A license for electricity production requires a generator to own or have rights to use the plants (with all licenses related to construction, spatial planning, environmental protection, etc. – summarized by the "permit for use"). The Rulebook on licenses for performing energy activities prescribes in detail requirements for licenses for electricity production.
Italy	N/A
Kosovo*	A license for electricity production requires a producer to own or have rights to use generators (with all licenses related to construction, spatial planning, environmental protection, permission of water usage etc.) In addition, producers must have appropriate technical and organizational qualifications (staff or contracted services) necessary for operating their facilities. The Ordinance on licenses for performing energy activities prescribes in detail requirements for licenses for electricity production.
Moldova	To obtain licenses natural persons, individual entrepreneurs or legal entities shall: a) register in Moldova and submit a document confirming that; b) submit a financial report for the last year (in case of legal entity operating) or extract from the bank account in case of initiation of business; c) submit documents proving possession of power plant or electric networks, depending on the case; d) submit documents confirming that it has qualified staff necessary to carry out the activity for which license is requested and that power plant or electric networks, depending on the case, comply with technical requirements established by law. (3) Manager of an enterprise, requesting a license shall present documents proving that he/she: a) has permanent residence in Moldova; b) has higher education and possesses at least 5 years of experience in the energy field; c) has no previous penal antecedents related to activities in energy field and no penal antecedents for intentionally committed infractions, according to the Penal Code.
Montenegro	They are defined by the Energy Law, Article 55
Serbia	According to the Energy Law (Art. 22) the license shall be issued in the following cases: 1) if the applicant is registered for performing energy activity for which the license is issued; 2) if the energy facility is awarded with occupancy permit; 3) if energy facilities and other devices, installations or plants necessary for performing the energy activity meet the conditions and requirements defined by technical regulations, regulations on energy efficiency, regulations on fire and explosion protection, as well as regulations on environmental protection; 4) if the applicant meets prescribed conditions regarding professional personnel for performing technical management operations, operation and maintenance of energy facilities, and/or conditions regarding the number and professional expertise of employees for energy facilities maintenance jobs as well as jobs of the operators of these facilities; 5) if the applicant has financial sources necessary for performing energy activity; 6) if the manager, and/or members of the administrative bodies have not been lawfully convicted for criminal offences regarding performance of economic activity; 7) if the applicant is not banned from performing the activity, or if the legal consequences of the sentence have ceased; 8) if the applicant owns the evidence on legal basis of the usage of energy facility where the energy activity is performed; 9) if the process of insolvency and liquidation has not been initiated against the applicant; No exemptions or special conditions prescribed.

[36] With all licenses related to construction, spatial planning, environmental protection, etc. – summarized by the "permit for use" issued by a local planning office.

Turkey	Determined by by-law on electricity market licenses. (see Q 13)
Ukraine	The license for electricity production is issued in case of: - generation equipment capacity exceeding 5 MW; - generation equipment capacity exceeding 10 MW (for RES generators) or producer is going to sell electricity to the WEM. Amendments to the Law on Electricity passed on November 20th 2012 introduced additional stimulation for electricity produced from RES. In particular, starting from 01.01.2014 the Law established a feed-in ("green") tariff for selling electricity produced by households from PV installations with maximum capacity not exceeding 10 kW. Electricity production by household's PV installation does not require a license.

Table 23 Organizational requirements for electricity producers

Q.9.4. Are there any special organizational requirements on the person performing electricity production? E.g. Is a limited company is required? Or maybe a company needs to register its business activities?	
Bosnia and Herzegovina	YES. **FBiH**: Only legal persons can obtain generation license and they should be registered for power generation in their statement of registration at the court of jurisdiction. **RS**: Pursuant to the Law which defines this field.
Croatia	YES. Legal persons that need a license for electricity production must be registered for "electricity production" in their constituting act or registration at the Commercial Court. Craftsmen also need to be registered for the activity.
FYR of Macedonia	YES. Legal persons that need a license for electricity production must be registered at Central Registry of FYR of Macedonia.
Italy	NO.
Kosovo*	YES. Limited company (Legal person) is required and the business activity has to be register in Ministry Of Trade and Industry.
Moldova	NO. Natural persons, individual entrepreneurs or legal entities
Montenegro	N/A
Serbia	No special requirements apart from those listed in the previous question.
Turkey	Yes. Joint stock or limited liability companies established under Turkish Commercial Code can be granted a license.
Ukraine	The license for electricity production is issued for agent of economical activity in electricity production which has in his ownership or usage equipment with capacity exceeding 5 MW or equipment, generating electricity from RES, with capacity exceeding 10 MW; or if the producer is going to sell electricity to the WEM.

2.9 Planning and Construction

Similar to the purpose of the previous chapter, the purpose of the present chapter is to provide an **overview of the planning and construction of generators**.

For investors it is important to have simple or streamlined procedures in place as well as clear, comprehensive and available information. Since construction in the countries covered with this report spans a number of institutions, it is beneficial to create an institution (as a separated institution or as a distinctly recognizable unit of an existing institution) whose purpose is to facilitate the process of construction generators. These, so-called "**one-stop shops**" have their origin in similar institutions helping investors in general. However, in line with the popularity of FiT schemes, their usefulness is in magnified if they are

(legally) entrusted with streamlining (facilitating) administrative procedures related to the construction of generators. In relation to this the analysis shows the following results:

- In Kosovo* and Turkey the NRA is the authority that coordinates/streamlines the authorization process.
- In Italy, national legislation assigns the responsibility for (a) authorizing the construction and management of the RES power plants over 1 MW and (b) the grid construction necessary for connecting these power plants to the regional governments with the requirement to set up a with ao One-stop shop.
- Other countries replied that no authority is coordinating/streamlining the authorization process.

Similarly it is also relevant whether there is a **simplified authorization procedure for micro/small generation or RES generation**. Three countries reported such:

- In Croatia, integrated solar power plants that are constructed on rooftops or facades of residential and commercial buildings can be built without location or construction permits using a simpler procedure. Additionally, producers owning power plants under 1 MW do not require an energy license.
- Turkey emphasized that small generators do not require licenses or a company.
- In Italy, for RES power plants up to 1 MW, not including the grid construction necessary for connecting these power plants, national legislation defines a streamlining authorization process.

Two particular documents are considered crucial in preparation of constructing a power plant – the feasibility study and the environmental impact study. They are indispensable for large power plants, but for small generators their creation can be a problem.

For micro and small generators **environmental impact studies** are particularly problematic as well as constraints related to spatial planning. Undeveloped legislation and practice for micro and small generators in spatial planning and construction may lead to unrealistic requirements that generators cannot meet. For example, a simple but general requirement such as “No power plant is to be built in region X” can prohibit the construction of all power plants including micro power plants like small PV installations on rooftops. An environmental impact studies is usually created by an authorized company and involves a rigorous and lengthy procedure engaging several to numerous interested parties. These attributes are not necessarily bad because they ensure that the construction of a power plant will be a compromise of all interested parties with sound technical, economic and environmental characteristics. However, in case of small power plants the creation of such studies is too demanding - regarding time and money. An alternative is to have appropriate authorization procedures and legal requirements related to environmental/spatial impact in place.

Accordingly, the questionnaire underlying the present report aimed to identify whether there is a study on environmental impact (or similar) is required and if there are exemptions for micro/small generation or RES generation. Table 24 presents an overview of the status in the analyzed markets.

Table 24 Environmental impact study for generators

Q10.2 Is a Study on Environmental impact (or similar) necessary in the administrative procedure? Are there exemptions for micro/small generation or RES generation?	
Bosnia and Herzegovina	YES. FBiH: Ministry of Environment and Tourism decides on case by case basis whether study on environmental impact is necessary or not. RS: Among other things, it is necessary to have this document for getting an environmental license
Croatia	YES Study on environmental impact must be carried out for power plants over 100 MW and wind power plants over 20 MW. Based on decision by ministry in charge of environmental protection, a study may be necessary for: – power plants over 10 MW using fossil fuels or RES – hydro power plants over 5 MW – power plants over 10 MW
FYR of Macedonia	YES Study on environmental impact assessment (EIA) must be carried out. EIA is necessary for issuing the construction permit. The approval of the study for EIA is within the authorization of the mayor of the municipalities for the following categories: – RES plants with capacity less than 5 MW – Hydropower plants up to 2 MW. The approval of the study for EIA is within the authorization of the Ministry of environment and physical planning for the following categories: – RES plants with capacity of 5 MW to 200MW – - Hydropower plants with capacity of 2 MW to 10 MW.
Italy	YES. It is decided by each Region.
Kosovo*	YES. There are no exceptions for RES
Moldova	According to Regulation for construction/reconstruction of power plants, in the Feasibility Study Material is included and Study Environmental impact. There are no exemptions.
Montenegro	YES. Ministry in charge regulates this area (Ministry of economy, department for energy)
Serbia	According to the Energy Law (Art.30) for issuing the energy permit, among others, conditions related to environmental protection shall be met. According to the Energy Law (Art.30), more detailed conditions for issuing the energy permit, the contents of the request for energy permit issuance, depending on the type and purpose of the energy facility, the method for issuing the energy permit and the contents of the registry for issued energy permits and the registry for energy permits that have ceased to be valid, as well as more detailed conditions for giving consent for energy facilities for electricity generation for which the energy permit is not issued, shall be prescribed by the Ministry.
Turkey	YES. No exemptions
Ukraine	N/A

A feasibility study should always be prepared, no matter of the intended size of the future power plant. However, for small generators, especially those that aspire to enter a FiT scheme, the study can be simple (straightforward) and even standardized. Of course, if financing from a bank or other financial institution is necessary, then the feasibility study should be created more strictly and by a proven/authorized author or company. On question Q10.3 “Is a Feasibility Study (or similar) necessary in the administrative procedure? Are there exemptions for micro/small generation or RES generation (e.g. PV installations)?”, only Turkey responded that no feasibility study is required. All other countries (except Ukraine which did not give an answer), responded that a feasibility study is required.

Originally, question Q13 (requesting a list of permits needed for construction of a generator) was intended to obtain information for exploring procedures in different countries. Question Q13 requested a list of most important permits, rulings, licenses and contracts needed for constructing a new generator. Unfortunately, based on the received answers, it was impractical to provide a benchmarking or any analyses since the answers showed large discrepancies in procedures and involved institutions. In addition, answers from countries vary in detail. However, the obtained answers are helpful and meaningful. Therefore, they are provided in "Annex III – Indicative national list of permits for constructing generators".

This indicative list of permits for constructing generators should be observed in relation with contracts explained in chapter 2.5 "Contracts with operators" and listed in "Annex II – List of contracts with operators".

2.10 Trials Runs

This chapter deals with **trail runs or test periods required at the end of construction** - prior to the commissioning – that evaluate if a power plant withstands the minimal set of test defined by the DSO. These tests are a subset of all tests[37] carried out prior to commissioning of a power plant but are of special interest because they are related to the interaction of the power plant and the distribution grid.

If tests and conditions are too rigorous, there are a few consequences:

- if such tests and conditions are known prior to construction, the investor is usually forced to buy more costly[38] equipment;
- if such tests and conditions are defined *ad hoc* during the commissioning, the trails are usually unnecessarily prolonged;
- if such tests and conditions are not adequately prescribed by the legislation (e.g. Grid Code) or by some publicly available document, there may be differences in practice within the DSO supply area since different teams may be in charge and may impose different criteria for individual power plants which is questionable.

In all of the mentioned cases, always the p**otential of barriers for RES and potential complaints related to access to the grid** needs to be born in mind. Table 25 describes the general legislative framework for testing of generators (answers to Q10.1).

The goal of question Q10.2 was to find out if trails for small and micro generators standardized or if there are exemptions/simplifications in the trials. Unfortunately, nearly all countries do not have standardized trails for small and micro generators, with the exceptions of Turkey and Bosnia and Herzegovina[39]. Croatia informed that the Croatian DSO is in the process of standardizing test programs for power plants of different size and using different sources within the next couple of months. Most efforts have been given focused on producing a program for testing two categories of PV power plants a) up to 10 kW and b) 10-30 kW.

[37] Prior to commissioning, each structure must endure tests and examinations to prove the quality of construction (e.g. quality of building materials, stress tress, nominal operation tests, etc.)
[38] There is always a balance of costs and requirements. Introduction of new and inventive equipment regularly initiates defensive behavior of the DSO and consequently rigorous conditions providing excessive tolerance in the operation of power plants.
[39] In Republika Srpska trials conform to the regulations which define connection and acceptance of the generation facilities.

Table 25 Legislative framework for testing of generators

BIH	**FBiH:** The *Law on Physical Planning and Law on Construction* prescribes the general procedure for the testing operation, security and reliability during construction of buildings and facilities. **RS**: Testing is required for the first connection of a small plant into a parallel work with distribution network, for the purposes of testing under real operational circumstances.
Croatia	General conditions of supply limit temporary connection to the grid up to 15 days for testing equipment. The *Act of Spatial Planning and Construction* mentions testing and prescribes the general Procedure for tests during construction of buildings and facilities. The Grid Code provides lists of general tests and requirements that should be met during testing of generators (separately for DSO and TSO).
FYR of Macedonia	According to the *Law on construction*, the Energy Law and the Grid Code for distribution of electricity, the plant must be tested first before putting unto operation. The generator may request temporary license for test period to be issued by the NRA.
Italy	N/A
Kosovo*	N/A
Moldova	Until the commissioning (putting into operation) of generator (object reconstructed), staff of TSO will perform functional testing of individual and separate systems, which will conclude with the start of the test main and auxiliary equipment, after which it will proceed to a complex attempt of equipment.
Montenegro	Testing of generators is defined in the Law on space organization and construction of facilities
Serbia	According to the Energy Law (Art.136), in case of a need for connection of facilities with approved trial run in accordance to a special law, the approval for temporary connection of a facility may be issued.
Turkey	The Ministry grants project approval and acceptance.
Ukraine	N/A

Another important issue for investors is the **energy produced during trials** – not just the trials concerned with the power plant's interaction with the grid but the complete testing needed for the commissioning of the plant. Trails can be prolonged for a number of reasons - the larger the power plant, the larger probability for some prolongation. Also, it is not uncommon for particular power plants to be burdened with problems and nuisances leading to long trail periods. In such situations, since most renewable power sources cannot be stored, investors may lose earnings until a power purchase agreement comes into effect.

The analysis shows that

- Energy is not sold during trails in Montenegro and Turkey.
- Energy can be sold during trials but the conditions are not regulated in FYR of Macedonia, Kosovo*, Moldova, Serbia and Ukraine. More specifically in FYR of Macedonia, energy is sold only by the generators that have temporary license for test period issued by ERC. Kosovo* perceives that the buy-off could be a result of an agreement with the supplier, although no such case has been experienced in praxis yet. In Moldova, energy is sold only when the generator is connected to the grid. In Serbia, according to the Energy Law (Art.136), energy produced during the trial period is supplied according to the conditions, methods and procedures defined in the approval for temporary connection and energy supply. In Ukraine, conditions are determined in the connection agreement.

Bosnia and Herzegovina, Croatia and Italy have regulated buy-off as follows:

- In Bosnia and Herzegovina both entities have regulated buy-off. In Federation of Bosnia and Herzegovina, energy is sold to the DSO. In particular, generators that are eligible for the FIT and have contracted a FIT buy-off contract sell energy during trials at a price determined by FERK. In Republika Srpska, the licensee for distribution of electricity buys electricity for the price equal to the one paid for distribution losses.
- In Croatia, generators that are eligible for the FIT and have a FIT buy-off contract with the market operator sell energy during trials at a predetermined price. The price is 60% of average production price of electricity defined for tariff customers.
- In Italy the electricity produced and injected into the grid during trails is sold under the same conditions defined for the electricity produced and injected into the grid during the normal operation.

2.11 Information and Training

Article 14 Directive 2009/28/EC deals with **information and training**. Given the specific provisions of Article 14 it is appropriate to evaluate the status of information and training in relation to RES support schemes that are of interest to a large number of electricity customers who are more and more aware of their consumption and RES. The questionnaire underlying the present report addressed this with questions Q12.1 to Q12.3.

Question Q12.1 had a twofold intention. The first was to assess the **overall availability of informational materials on support schemes for RES**. Based on the responses, it can be concluded that the overall availability of information is **rather low**. The exceptions are Montenegro, Croatia and Italy with dedicated web sites providing information on RES for electricity production. Other responses indicated some legislation available on web sites of institution, mainly in their own language.

The second goal of question Q12.1 and a quick follow-up survey[40] was to gather links to web sites, online legislation and online educational materials. Based on all responses, the following information has been compiled:

- Annex IV – Legislation related to support schemes for RES or CHP presents links to available legislation (for most countries)
- Annex V – Educational material related to support schemes for RES or CHP presents links to available online educational or informational materials (for Croatia and FYR of Macedonia)
- Table 26 presents additional links not present in the previously listed annexes.

[40] Having in mind the general lack of mutual exchange of information on RES, the ECRB Customer Working Group (CWG) decided to enrich the report by proving exact links towards legislation and educational/informational materials currently available.

Table 26 Additional web sites with information on RES support schemes

Bosnia and Herzegovina	Republika Srpska: http://www.reers.ba/lat/node/1298 http://www.ers.ba/index.php?option=com_content&view=article&id=122:podsticaj-proizvodnje-iz-obnovljivih-izvora&catid=17:novosti&Itemid=66&lang=ba
Croatia	http://releel.mingorp.hr/default.aspx?id=39 http://oie.mingo.hr/ http://www.hrote.hr/default.aspx?id=121
Italy	www.gse.it
Montenegro	http://www.oie-res.me/ http://www.oie-res.me/index.php?page=uredbe-i-pravilnici
Serbia	http://www.aers.rs/Index.asp?l=2&a=120

Article 14 (1) Directive 2009/28/EC explicitly requires information on support measures to be made available to all relevant actors[41]. With that in mind, question Q12.2 assessed the **responsibilitiesd for producing and publicizing materials** explaining support schemes for RES.

- The NRA is responsible for informing on RES in Kosovo*and Turkey
- In Moldova the responsibility is with the Ministry Agency for Energy Efficiency (AEE).
- In Bosnia and Herzegovina, Croatia, FYR of Macedonia, Serbia and Ukraine, no authority or institution is responsible for informing on RES.
- In Italy, the GSE (Gestore dei Servizi Energetici) is responsible for producing and publicizing materials explaining support schemes for RES, which is expected due to the role of GSE in supporting RES in Italy.

Question Q12.3 deals with **how electricity customers informed** on support schemes for RES. Table 27 shows answers to that question. Although most of the countries did not responded or provide specifics, there are two leading conduits for information dissemination:

1. written information accompanying the bill, usually prescribed by legislation or
2. Information available to the customer on web sites.

[41] Such as consumers, builders, installers, architects, and suppliers of heating, cooling and electricity equipment and systems and of vehicles compatible with the use of energy from RES.

Table 27 How are electricity customers informed on support schemes for RES?

BIH	**FBiH**: Based on the Law on Electricity and issued licenses, DSO and suppliers are obliged to inform its customers on RES/CHP. **RS:** Through the bill, public media, Official Gazette etc.
Croatia	Based on the *Act on End-Customer Energy Efficiency*, the distribution system operator and all suppliers must provide "energy services" to customers. Those services should provide customers, in addition to energy efficiency advice, information on RES/CHP support schemes. However, "energy services" have not yet evolved.
FYR of Macedonia	The electricity bill should include information on the percentage of the share of the electricity generated by the preferential producer of RES and the average costs for this electricity, but from 01.01.2015. Also the electricity supplier should provide promotion material on energy efficiency and use of RES, with the electricity bill to the customers. The Ministry of economy every year pronounce public tender for subsidizing the costs for installment of the solar thermal systems for households. Electricity customers are also informed by the media, campaign and public debates.
Italy	Customers can find information on GSE website.
Kosovo*	Through, ERO Web page
Moldova	Not specified
Montenegro	Not specified
Serbia	Internet site of the Ministry in charge of energy sector activities
Turkey	Internet sites
Ukraine	Not specified

Feed-in systems for supporting RES or similar systems deliberately spark interest of investors and, sooner or later, certain needs arise. There is always a pressure to remove administrative barriers and streamline administrative procedures. However, the actual construction of micro and small power plants proves to be quite strenuous and demanding, especially if the national legislation does not distinguish small from large power plants.[42] The problem of construction is particularly evident on the construction of small PV installations when legislation proves to be absurdly complicated. This has been recognized as a problem in many European countries and was, therefore, countered with provisions in Directive 2009/28/EC aiming to improve construction of micro and small power plants by introducing specialized installers capable for designing and installing equipment for RES[43] as well as assisting in the administrative procedures related to the installation/construction. The relevant provisions of the Directive 2009/28/EC are Article 14(4) and the obligatory Annex IV. For this reason, the Question Q12.4 deals with certified installers of RES equipment.

At the moment, **none of the analyzed markets has implemented any certification scheme for installers** as defined in the Directive 2009/28/EC. However, Croatia and FYR of Macedonia recognize in their FiT schemes that a certification scheme for installers will be implemented with the transposition of Directive 2009/28/EC. In the meantime:

[42] Requiring exhaustive administrative procedures related to physical planning and construction, fully-fledged construction plans created and approved by licensed designer/engineers, in-depth feasibility studies and environmental impact studies, etc. Please refer to the discussion related to Q10 in chapter 2.9 "Planning and construction".
[43] The Directive 2000/28/EC specifies small-scale biomass boilers and stoves, solar photovoltaic and solar thermal systems, shallow geothermal systems and heat pumps.

- In Croatia, installation of solar power plants must be carried out by a legal or natural person registered for electric installation works and has at least one employed certified engineer of electrical engineering.
- In FYR of Macedonia, installation of power plants must be carried out by a legal or natural person registered for installation works and has employed certified engineers.

2.12 Guarantees of Origin

The status of implementation of Guarantees of Origin, as defined by Directive 2009/28/EC is presented in Table 28. The implementation is pertinent to Energy Community Contracting Parties based on the Decision of the Ministerial Council of the Energy Community D/2012/04/MC-EnC[44].

Table 28 Status of implementation of Guarantees of Origin

GO Status of implementation	
Bosnia and Herzegovina	**FBiH:** Government Decree on RES and CHP defines certification of origin of power generated from RES and CHP. FERK had adopted Rule on Guarantees of Origin, and completed public hearing procedure. Its adoption is pending due to waiting for adoption of a new RES and CHP Law, which is currently undergoing parliamentary procedure. **RS**: Development of draft material is currently on.
Croatia	A new Act on Energy was recently passed by the Croatian Parliament in October 2012 which defines secondary legislation related to GO and a period of 6 months to pass that legislation. The current draft of the Act on the Electricity Market also contains top-level provisions regarding obligations to the market operator and system operators related to GO. The Act on the Electric Market is supposed to be passed by the Croatian Parliament early in 2013.
FYR of Macedonia	Guarantees of origin for electricity generated from renewable sources and high efficient cogeneration plants are issued by the Energy Agency of the FYR of Macedonia. The Ministry of economy issued the Rulebook for renewable energy sources (Official Gazette 113/11), which stipulate in detail: 1) manner of issuing, transfer and revoking the guarantees of electricity origin generated from renewable energy sources by electronic means that should ensure accuracy, confidentiality thereof and prevent possible abuses; 2) manner, procedure and terms and conditions for recognition of guarantees of origin issued by foreign states; 3) contents, template and manner of keeping the Electronic Registry of Issued Guarantees of Electricity Origin Generated from Renewable Energy Sources, by taking due care that same quantity of electricity generated from renewable sources is registered only once.
Italy	The GO system was implemented in Italy by Legislative Degree n. 28/11 and by Ministry of Economic Development Degree of 6 July 2012. The procedure defined by GSE (Gestore dei Servizi Energetici) for the practicality of the Guarantees of Origin System will be approved in the next months, by Ministry of Economic Development.
Kosovo*	The *rule for the establishment of a system of certificates of origin for electricity produced from renewable energy sources, from waste and co-generation in combination with heat in a single generating unit* and associated schedules set out the provisions concerning the setting up, operation and maintenance of a system managed by ERO for the issuance, transfer, redemption and revocation/cancellation of certificates of GO with reference to electricity produced from renewable energy sources, from waste and in combination with heat, pursuant to Article 9 of the Law on Electricity.
Moldova	The GO for the electricity produced from renewable energy sources shall be issued to the producer by the grid operator based on a written application. The grid operator shall issue the origin guarantee only following an expertise at the producer, with a confirmation of the correctness and credibility that the energy is produced from renewable sources, not later than 30 calendar days as of the date of the receipt of the application. The procedure for issuance and use of GO, the application format for issuance of an origin guarantee, and the

[44] Decision on the Implementation of Directive 2009/28/EC and amending Article 20 of the Energy Community Treaty" dated 18. October 2012; http://www.energy-community.org/pls/portal/docs/1766219.PDF

	guarantee format shall be stipulated in a Regulation drafted by the NRA.
Montenegro	With respect to renewable energy sources and according to Article 48 of the Energy Law (O.G.28/2010), the NRAissues guaranties of origin to generators of electricity. This document is also defined in the Market Rules.
Serbia	N/A
Turkey	N/A
Ukraine	Related provisions are currently in development.

Regarding **other**[45] **certification** only Croatia, Bosnia and Herzegovina and Ukraine reported some sort of certification:

- In Croatia, large hydropower plants operated by the generation company HEP-Proizvodnja d.o.o., a daughter company of the incumbent HEP d.d., have been certified by TÜV[46] as RES facilities in accordance with "CMS Standard Erzeugung EE (10/08)". The certification has been carried out on a voluntary basis.
- In Bosnia and Herzegovina (Republika Srpska), the NRA issues certificates for generation facilities that generate electricity using renewable energy sources or in efficient co-generation, and that proves, by its obtaining, that the facility generates electricity in a cost-effective way and protecting the environment.
- In Ukraine cogeneration units may obtain qualification on the voluntary basis. Qualification is done by the special body in the sphere of energy conservation according to the procedure, approved by the Government.
- The *decree on means of issuance, transfer and cancellation of guarantees of origin for energy generated from renewable energy sources and high efficient cogeneration* defines in Montenegro a certification scheme but it is not in line with Article 15 Directive 2009/28/EC.

[45] Other than guarantees of origin.
[46] TÜV SÜD Industrie Service GmbH.

3 FINDINGS AND RECOMMENDATIONS

FINDING #1

Although there are different categorizations of RES/CHP power plants due to Feed-in Tariff systems, there is a **lack of definitions for "micro" and "small" generation in legislation**.

RECOMMENDATION #1

Definitions for "micro" and "small" generation in legislation can provide clear categories for generators which can lead to simplification of procedures, easier development of projects and standardization of equipment (and consequently lowering costs of equipment and services).

FINDING #2

Statistical data on electricity produced by micro and small generators is scarce. Some data exists, but is mainly related to generators participating in Feed-in Tariff systems. Data on electricity produced by customers with excess power or small generators not participating in Feed-in Tariff systems is nearly non-existent.

RECOMMENDATION #2

In order to better identify and monitor electricity production, DSO's should be given the task to systemize information and monitor existing micro and small generators as well as customers with generators injecting energy into the grid.

FINDING #3

Definitions concerning own consumption are not widely present. Net metering of produced energy (production of the generator decreased by own consumption) is not defined precisely enough in legislation.

RECOMMENDATION #3

Definitions concerning own consumption and requirements for net metering should be developed in order to facilitate RES/CHP development and implementation of guarantees of origin.

FINDING #4

All countries have RES/CHP support schemes utilized by new generators. Within such schemes, generators have guaranteed buy-off. However, generators outside such scheme are usually left to sell their energy on the market. Micro and small producers have rather low volumes and predictability of electricity production, making their sales difficult since they have practically no negotiating power when approaching a supplier or trader. For customers with excess energy, this situation is even more problematic because their volumes of production are even smaller.

RECOMMENDATION #4

Schemes for micro and small producers (whereas customers with excess energy are such producers) should be developed in order to facilitate sales of energy from micro/small generators. One approach is to regulate buy-off in order to provide a safe solution for small producers. Another approach could be to persuade micro and small producers to cooperate and aggregate in terms of energy production or representation.

FINDING #5

In most countries, legislation governing the electricity market is tailored to large producers and RES/CHP support schemes. Therefore, **provisions related to electricity producers are not suitable for small producers**. This includes licensing regimes, day-ahead planning, unbalance settlement, etc.

RECOMMENDATION #5

In the development of legislation, attention must be given to different categories of producers – large producers, small producers, generators within and outside RES/CHP support schemes. Market operation of micro/small generators should be developed.

FINDING #6

All analyzed markets provide **priority access** to the grid for RES/CHP, mainly as dispatch priority tied to the declaration of an “eligible”/”privileged” generator (which is RES or high-efficiency CHP) or by stipulation in legislation for RES/CHP.

RECOMMENDATION #6

Further development of legislation is needed in order to satisfy Article 16 (2) Directive 2009/28/EC requiring priority access or guaranteed access to the grid-system for electricity produced from renewable energy sources. In particular, there is a need to clarify “eligibility” for buy-off in contrast to “eligibility” for priority dispatch (e.g. for old RES power plants).

FINDING #7

Licensing regimes for electricity production may be too demanding for micro and small producers.

RECOMMENDATION #7

Licensing regimes should be developed in order to lessen the administrative burden on small producers. Exemptions for small producers should be introduced where appropriate.

FINDING #8

Most counties do not have an (functioning) institution or entity facilitating the process of constructing power plants ("**one-stop shops**").

RECOMMENDATION #8

Streamlining of the administrative procedures should be periodically carried out in order to embrace good practice and develop legislation. Within the streamlining, institutions should be appointed with tasks that relieve investors. In addition, digital registers are advocated in order to support the process and reduce unnecessary duplication and delivery of documentation.

FINDING #9

Connection conditions for micro and small generators (of any type) require additional development.

RECOMMENDATION #9

Grid codes should be adapted for most common micro and small generators (of a particular type or size) in order to provide basis for standardized trials and to allow investors proper information on equipment and grid conditions. For micro and small generators (of a particular type or size) tests prior to connection should be standardized resulting in earlier normal grid operations.

FINDING #10

Currently online available **information** and legislation on RES/CHP support schemes is broadly missing.

RECOMMENDATION #10

Efforts should be made to produce and make available comprehensive information on RES/CHP support schemes and topics related to the construction of (small) power plants. This is, in fact, required by Article 14 (1) Directive 2009/28/EC.

FINDING #11

None of the analyzed markets has implemented a **certification scheme for installers** as defined by Article 14(3) Directive 2009/28/EC.

RECOMMENDATION #11

Efforts should be made to implement a certification scheme as defined in Article 14 (3) Directive 2009/28/EC in line with timeframes set in the Directive or the Decision of the Ministerial Council of the Energy Community D/2012/04/MC-EnC.

FINDING #12

Apart from Italy, **guarantees of origin** are still under development in all countries.

RECOMMENDATION #12

Efforts should be made to implement guarantees of origin as defined in Article 15 Directive 2009/28/EC and disclosure as by Article 3 (9) Directive 2009/72/EC[47]. Efforts should be made within timeframes set by the Directives or the relevant decisions of the Ministerial Council of the Energy Community amending the Treaty implementing the Directives 2009/28/EC and 2009/72/EC.

[47] Directive 2009/72/EC of the European Parliament and of the Council of 13 July 2009 concerning common rules for the internal market in electricity and repealing Directive 2003/54/EC, OJ L 211 (14.8.2009).

ANNEX I – QUESTIONNAIRE

Q.1 - Definitions of categories of generation

Q.1.1. Is there a definition in legislation of “micro” generation?

Q.1.2. Is there a definition in legislation of “small” generation?

Q.1.3. Are there other definitions or categorizations in legislation regarding size of generation? (e.g. “small RES”, “small hydro”, etc.).

Q.1.4. Does the legislation recognize customers with excess generation? (i.e. Legislation may use only customers and generators. If this is the case, are such network users treated as “customers” or “generators” regarding rights/obligations?).

Q.1.5. Are there any definitions used to categorize solar power plants (PV installations and similar)? (e.g. Integrated Photovoltaics, Ground Mounted Photovoltaics, Commercial Rooftops, Residential Rooftops)

Q.2 - Generation capacity of small customers

Level		MW in year 2011
All national generation	Installed capacity (nominal power of generators)	
	Power available to the grid	
Generation capacity of all customers	Installed capacity (nominal power of generators in customer installations)	
	Available capacity to the grid	
Known generation capacity of small customers (if no definition of small is appropriate – please use LV level)	Installed capacity (nominal power of generators in customer installations)	
	Available capacity to the grid	
Known generation capacity at LV level	Installed capacity at low voltage (nominal power of all generators in the LV grid)	
	Power available on the grid	
Supported/subsidized generation capacity at all voltage levels level (e.g. RES production in Feed-in-systems)	Installed capacity at all voltage levels (nominal power of all supported/subsidized generators)	
	Power available on the grid	
Supported/subsidized generation capacity at LV level (e.g. RES production in Feed-in-systems)	Installed capacity at low voltage (nominal power of all generators connected at LV level)	
	Power available on the grid	
Notes on data	(Since data is subject to different interpretation/definition – please provide explanations.)	

Q.3 - Connection costs and issues

Q.3.1. What kind of costs do small and micro generators (dedicated producers) pay to the DSO for a connection? How are those connection costs determined? Who decides on the cost?

Q.3.2. In situations where existing customers want to sell excess energy, what kind of costs do they pay to change their connection or change their conditions for using the network? How are costs for the change determined? Who decides on the cost?

Q.3.3. What kind of costs do small and micro generators pay for network use (e.g. tariffs for generation)? Is there a difference for customers with excess generation?

Q.3.4. Do RES support schemes differentiate dedicated generators and customer generation? (i.e. Support schemes may promote distributed generation – generation at the location of consumption)

Q.3.5. Are there any subsidies for connection costs for micro/small or RES generators?

Q.3.6. Does legislation (e.g. grid code) discriminate RES or micro/small generation in terms of technical conditions for using the network?

Q.3.7. Is continuous monitoring of power quality required during operation for micro/small generators?

Q.3.8. Does the DSO allow island operation of the grid for generators connected to the LV and/or MV grid?

Q.4 - Metering and billing

Q.4.1. Are there definitions related to generators own consumption and/or local consumption?

Q.4.2. Are there provisions regulating connection or metering in case of dedicated generators regarding own consumption? (For example, a RES support scheme may require that only net electricity production is supported)

Q.4.3. Are there provisions regulating metering of produced energy by generators within the installation of customers?

Q.4.4. Please provide general requirements for meters used for micro/small generators, customers with excess generation or RES generators.

Q.4.5. How is energy produced by micro/small generators or customers with excess generation metered and billed?

Q.4.6. Are there settlement periods in respect to billing for energy consumed/produced?

Q.5 - List of contracts with operators

Provide a list of contracts needed (regardless of generator size):

a) *for connecting a new generators **OR** for changing network conditions to allow customers to sell excess energy prior to the beginning a construction **OR** for expanding existing generation (e.g. Contact with the TSO/DSO for connection)*

b) *for normal operation after connection (e.g. buyoff contract, supply contract, network contact with the DSO)*

Please list only contracts that are relevant to the energy legislation.

Please indicate exemptions/simplifications for PV or other small generators.

Name of contract	Contracting parties	Purpose of contract

Q.6 - List of Buyoff and support schemes

Provide a list of possible modalities how energy can be sold by small producers (e.g. feed-in system, buyoff by incumbent monopoly). Add rows if needed.

Please elaborate on practice – conditions, prices, existence of standard contracts, etc.

Purchasing party or support scheme	Description

Q.7 - Obligations for buyoff

Q.7.1. Is there a party obliged to buy electricity produced by RES generation that is not in a support scheme (e.g. old hydro or non-eligible)? Please elaborate.

Q.7.2. Is there a party obliged to buy electricity produced by micro/small generation that is not RES (e.g. non-eligible CHP, customers with excess power)? Please elaborate.

Q.8 - Market participation

Q8.5. Are micro/small generators or customers with excess generation required to participate in the electricity market? (e.g. Day-Head planning, balancing)?

Q8.6. Are micro/small generators required or allowed to provide ancillary services?

Q8.7. Do RES/CHP have priority dispatching (priority access to grid)? How does this relate to small/micro RES/CHP?

Q8.8. Are small generators (RES, non-RES, customers with excess generation) responsible for imbalances? How are they charged for imbalances? If they are not responsible, who is responsible?

Q.9 - Licensing in relation to the electricity market

Q9.5. What is the role of NRA in the planning and construction of micro/small generators or generators within customer installations? Is there a special role concerning the planning and construction of RES generators?

Q9.6. What licenses (in relation to the electricity market, provided by the NRA) are needed by electricity producers? Are there exemptions for micro/small generators or generators within customer installations? Is there special treatment of RES generators?

Q9.7. What are the general requirements for obtaining licenses (in relation to the electricity market) needed by electricity producers? Are there exemptions or special conditions for micro/small producers, customer with excess power or RES producers?

Q9.8. Are there any special organizational requirements on the person performing electricity production? E.g. Is a limited company is required? Or maybe a company needs to register its business activities?

Q.10 - Overall characteristics of the authorization procedure for building new capacity

Q.10.1. Is there an authority coordinating/streamlining the authorization process? (e.g. One-stop shop)

Q.10.2. Is a Study on Environmental impact (or similar) necessary in the administrative procedure? Are there exemptions for micro/small generation or RES generation?

Q.10.3. Is a Feasibility Study (or similar) necessary in the administrative procedure? Are there exemptions for micro/small generation or RES generation (e.g. PV installations)?

Q.10.4. Is there a simplified authorization procedure for micro/small generation or RES generation?

Q.11 - Trials

Q.11.1. Is testing of generators (during construction) defined in legislation? Please elaborate.

Q.11.2. Are trails for small and micro generators standardized? Are there any exemptions/simplifications?

Q.11.3. Is energy during trials sold?

Q.12 - Information and training

Q.12.1. Are there any informational materials available on support schemes for RES? (e.g. guides, application manuals)

Q.12.2. Who is responsible for producing and publicizing materials explaining support schemes for RES?

Q.12.3. How are electricity customers informed on support schemes for RES?

Q.12.4. Are there any requirements, certification schemes or qualification schemes for installers for small/micro generators (RES or non-RES)?

Q.13 - List of permits needed for construction of a generator

*Please provide a list of **most important** permits, rulings, licenses and contracts needed for constructing a new generator. Please specify the authority that provides the document (DSO, local planning office, NRA, …). Please add rows if necessary.*

Please indicate exemptions or specifics related to micro/small generation, existing electricity customers and RES.

Authority	Document and description

Q.14 - Guarantees of origin - Status of implementation

Q.15 - Other certification - Explanations on other certification of electricity production (green certificates, voluntary certifications of facilities, etc.).

ANNEX II – LIST OF CONTRACTS WITH OPERATORS

Information in this Annex is based on answers to Question 13.

	Name of contract	Contracting parties	Purpose of contract
Bosnia and Herzegovina	Federation of Bosnia and Herzegovina		
	Contract on connections/increasing connecting capacity	Generator and DSO	Construction and reconstruction of connection, metering point, etc, in order to connect new users to the distribution grid or to increase/decrease connection capacity.
	Contract for usage of distribution grid	Generator and DSO	Contract that determines usage of distribution grid. Contract is signed after construction and reconstruction of connection have been completed.
	Power Purchase agreement	Generator and II Tier Supplier	Regulates purchase of electricity from the generator
	Buy-off contract related to FiT	Generator and DSO (transitional period) or RES and Cogeneration Operator	In transitional period DSO us the entity buying electricity from generators participating in FIT scheme. Upon the establishment RES and Cogeneration Operator will take over its functions.
	Republika Srpska		
	Contract on connection/ increasing connecting capacity	DSO and generator	Construction and reconstruction of connection, metering point, etc, in order to connect new users to the distribution grid or to increase/decrease connection capacity
	Contract on the access to the network	DSO and generator	Construction and reconstruction of connection, metering point, etc, in order to connect new users to the distribution grid or to increase/decrease connection capacity
	Contract on the obliged redemption of electricity at the feed in tariffs for generation from RES/Contract on payment of the premium for electricity generated from RES, if it is the case.		
	Contract on sale of electricity outside the system of incentives for generation of electricity from RES if it is the case.		
	Contract on supply with electricity (for a part of electricity taken by the plant from the network)		
Croatia	Contract for the connection	Generator and DSO/TSO	(Re)construction of a connector, metering point, etc. needed for connecting a new network users or changes at existing metering points. A “preliminary contract for the connection” is contracted prior to a Contract for the connection when the construction requires substantial efforts or time by the system operator or network user to fulfill certain preconditions (e.g. obtaining rights for construction on public property, transfer of land to DSO, etc.).
	Network use contract	Generator and DSO/TSO	Contract defining network use. Contracted after a (re)construction of a connector has been completed. Can include supply provisions since the DSO substitutes for a supplier of last resort.
	Supply contract	Generator and supplier	Supply of electricity
	Power Purchase Agreement or similar contract	Generator and electricity market participant (supplier, trader, other generator)	Regulates purchase of electricity from the generator.
	Buy-off contract related to FIT	Generator and Market operator	The Market operator is the entity buying electricity from generators participating in the FIT scheme

	Contract on ancillary services	Generator and TSO	Regulates services provided by the generator to the TSO.
	Contract on control of facilities of network user	Generator and DSO/TSO	Regulates details in control and management of generators by the network user in regards to the operation of the electric grid by the system operator. This contract appoints persons in charge; regulates giving and carrying out orders relevant for operation; regulates access to equipment; defines procedures during malfunctions; defines and regulates communication among system operator, producer and technical service provider (if used by the producer).
FYR of Macedonia	Contract for the connection	Generator and DSO/TSO	(Re)construction of a connection, metering point, etc. needed for connecting a new network users or changes at existing metering points.
	Supply contract (which includes network use)	Generator and DSO (which is also a supplier of electricity) only for own consumption, when the electricity is consumed when the unit is not delivering electricity to the grid)	Contract defining also network use with the generators only for own consumption. Own consumption is billed monthly by DSO (which is also a supplier of electricity) for the electricity consumed (for network use and for electricity consumed when the unit is not delivering electricity to the grid).
	Power Purchase Agreement or similar contract	Generator and electricity market participant (supplier, trader, or eligible customer)	Regulates purchase of electricity from the generator. Generator which have public service obligation concludes regulated contract with the supplier of tariff customers until 31st of January 2014 and with the supplier of last resort.
	Buy-off contract related to feed-in tariffs for electricity from RES	Preferential producer and market operator	The Market operator is the entity buying all generated electricity from RES generators using feed-in tariffs (preferential producer).
	Contract on ancillary services	Generator and TSO	Until 31st of January 2012 the contract is concluded between the TSO and the generator which have public service obligation for providing ancillary services and operating reserve. From 1st of January 2015 TSO shall provide ancillary services and operating reserve on open tender on market conditions.
Italy	Contract for the connection	Producer and DSO/TSO	Getting the connection and adjusting the existing connection, including construction of the connection and installation of meters for electricity feeding the grid and, if necessary, for production. The contract for the connection including the contract for the using of connection when the power plant produces electricity and inject this one in the grid.
	Dispatching contract for electricity feeding the grid	Producer and TSO	Contract defining the condition for injecting produced electricity into the grid.
	Selling contract	Producer and electricity market operator (supplier, trader and GSE, the State-owned company which promotes and supports RES in Italy)	Contract for selling electricity injected into the grid.
	Supply contract	Producer and supply	Supply of electricity.
Kosovo*	Connection agreement	Investor-DSO	Use of network
	Power Purchasing Agreement	Investor Public Supplier	Sale of electricity
Moldova	Electricity sales contract (Contract for supply of electricity)	Generator and DSO	*Regulates purchase of electricity from the* generator.
Montenegro	Connection contract	Generator and DSO	For the connection of new or reconnection of existing generators
	Supply contract	Generator and Supplier	For supply of own installations
	Buy-off contract	Generator and MO	By this contract TSO buys electricity for system balancing

	Contract on ancillary and system services	Generator and TSO/DSO	Regulates mutual rights and obligations for in respect of provision a and usage of ancillary and system services
	Use of distribution grid contract	DSO and Supplier	Supplier signs this contract on behalf and for final customers.
	Contract on ancillary services	Generator and TSO	Defines types and quantities of services that will be engaged by TSO in accordance with defined criteria.
Serbia	Contract on purchase of electricity	Public supplier and Privileged electricity producer	Purchase of electricity of public supplier from the privileged electricity producer under the feed-in tariffs
Turkey	Connection contract	Generator-DSO or TSO	
	System use contract	Generator-DSO or TSO	
	Contract for recording the plant to system	Generator-system operator	

Ukraine	Model agreement for grid connection	grid owner and the applicant	Connection of the electrical units of the applicant to the grid after the connection authorization is fulfilled by the applicant. In case of RES connection the contract contains provisions relating to costs of the construction and technical requirements execution concerning the reimbursement of connection costs.
	Model agreement on selling-buying of electricity produced by RES generator between customer (or supplier) and RES generator	customer (or supplier) and RES generator	selling-buying of electricity
	Model agreement on selling-buying of electricity between WEM Supplier (single buyer) and the RES generator	WEM Supplier (single buyer) and the RES generator	selling-buying of electricity

ANNEX III – INDICATIVE NATIONAL LIST OF PERMITS FOR CONSTRUCTING GENERATORS

III.1. Bosnia and Herzegovina

Federation of Bosnia and Herzegovina

Authority	Document and description
Municipal/regional/entity physical planning office	Municipal permits are issued by municipal/regional/entity physical planning office depending on installed capacity and location of generation plant. The permit includes all municipal/regional/entity requirements and allowances.
DSO	Initial electric power permit is issued by DSO prior to construction specifying connection conditions, required interventions in the grid and other conditions necessary for connecting future grid user.
Municipal/regional/entity physical planning office	Construction permit is issued by municipal/regional/entity physical planning office. This permit verifies that investor has obtained all rights for starting the construction.
Energy permit	Energy permit is issued by Federal Ministry for Energy, Industry and mining. It is issued to developer upon registering in RES and CHP Register.
Municipal physical planning office	Operation permit is issued by the municipal/regional physical planning office. This permit is issued after construction and necessary testing. The operation permit allows the use of a facility.
FERK	Initial construction license for construction of generation facility issued by FERK. This license is required for construction of any facility or plant that will be used for generation of electricity. The exception to this requirement is construction of any facility or plant for own consumption.
FERK	Power Generation License issued by FERK. This license is required for any facility or plant that generates power.
FERK	Power Generation License issued by FERK. This license is required for any facility or plant that generates power.
FERK	Ruling on eligible status of power generator is issued by FERK. It is approved to power generator in a process of obtaining power generation license.
DSO	Electric power permit is issued by DSO after new grid user is connected to the grid. The connection permit lists connection conditions and allowance. The connection permit is used as a basis for signing contracts on connection/increase connection capacity and usage of distribution grid.

Republika Srpska

Authority	Document and description
RS Government	Contract on Concession (if applicable)
Ministry of water management, agriculture and forestry (Agency for water)	Water management guidelines and water management consent (if applicable)
DSO	Electric power consent
Ministry for spatial planning, civil engineering and ecology or competent local authorities	The site requirements
Ministry for spatial planning, civil engineering and ecology or competent local authorities	Environmental license (if applicable)
Ministry for spatial planning, civil engineering and ecology or competent local authorities	Approval for construction - the construction license
Regulatory Commission for Energy of Republika Srpska	License for construction of the generation electric power facility, the capacity of more than 1 MW

III.2. Croatia

Authority	Document and description
Local planning office	Location permits are issued by the local/regional/national planning office. The permit aggregates all locational requirements and allowances. The DSO/TSO issues a preliminary connection permit within the procedure of issuing a location permit. If needed, the environmental impact study must be carried out prior to the issuing of a location permit.
TSO/DSO	Preliminary connection permits are issued by the DSO/TSO prior to construction specifying connection conditions, required interventions in the grid and other conditions necessary for connecting the future network user.
Ministry of economy	An "energy permit" is required prior to a construction permit. The "energy permit" is part of the authorization procedure for building new generators and investigates the proposed investment. Integrated solar power plants that are constructed on rooftops or facades of residential and commercial buildings can be built without location or construction permits.
Local planning office	Construction permits are issued by the local/regional/national planning office. The permit verifies that a construction plan is created in line with a Location permit and that the investor has obtained all rights for starting construction.
Local planning office	Operation permits are issued by the local/regional/national planning office. This permit is issued after construction and necessary testing. All defects must be eliminated prior to the issuing. The operation permit allows the use of a facility.
NRA	License for electricity production is issued after construction (a person can request a license if he has an operation permit). Such a license is not required for generators up to 1 MW or generators that are exclusively used for supplying own consumption at a location.
NRA	Preliminary ruling on eligible status of electric power producer is issued based on a construction permit and eligibility criteria (RES and high-efficiency). The preliminary ruling allows a buy-off contract to be contracted. The preliminary ruling Is not issued for integrated solar power plants that are constructed on rooftops or facades of residential and commercial buildings (built without location or construction permits).
NRA	Ruling on eligible status of electric power producer is issued based on an operation permit and eligibility criteria (RES and high-efficiency). The ruling activates the FIT buy-off contract. The ruling is not issued for integrated solar power plants that are constructed on rooftops or facades of residential and commercial buildings (built without location or construction permits).
DSO/TSO	A connection permit is issued by the DSO/TSO after the new network user is connected to the grid. The connection permit lists connection conditions and allowances. The connection permit is used as a basis for the Contract on network use.

III.3. FYR of Macedonia

Authority	Document and description
Ministry for transport and communications or municipalities	Location permits are issued and the permit aggregates all locational requirements and allowances.
Ministry for transport and communications or municipalities	Construction permits are issued which that a construction plan is created and that the investor has obtained all rights for starting construction. The environmental impact study must be carried out prior to the issuing of a construction permit.
DSO	Permit for connection to the distribution systems
Energy Regulatory Commission	License for performing energy activity generation of electricity, but the license shall not enter into force until the power plant is build and put into operation. When the generator (legal entity) obtains the permit for construction of the plant, it may apply to ERC for issuing of license for performing energy activity generation of electricity. ERC shall issue the license for performing energy activity generation of electricity, but the license shall not enter into force until the power plant is build and put into operation. After the construction is finished and the generator obtains permit for usage of the plant, within 7 days ERC shall issue a decision that the license shall enter into force.
Energy Regulatory Commission	Under FIT system - Resolution for obtaining the temporary status of preferential generator The interested parties shall submit to the Energy Regulatory Commission the application on obtaining the

	temporary status of preferential generator. In cases when the applicant (power plant) fulfills the requirements, the Energy Regulatory Commission shall issue a resolution for temporary status for preferential producers and shall register the power plants in the Registry of Preferential Generators. The temporary resolution shall also stipulate the deadline for putting the power plant into operation.
Ministry for transport and communications or municipalities and licensed companies	Permit for usage of the plant is issued after construction and necessary testing. All defects must be eliminated prior to the issuing. The permit allows the use of a plant.
Energy Regulatory Commission	License for performing energy activity generation of electricity or the issued license before shall enter into force (after the construction is finished and the generator obtains permit for usage of the plant, within 7 days ERC shall issue a decision that the license shall enter into force.) Also, the generator (legal entity) may apply to ERC for issuing of license for performing energy activity generation of electricity, after the construction is finished and the generator obtains and permit for usage of the plant. ERC shall issue the license for performing energy activity generation of electricity, which is immediately in force.
Energy Agency	Signing in the Register of RES Power Plants The Energy Agency issues resolution that the plant is using renewable energy to generate electricity.
Energy Regulatory Commission	Under FIT system - Resolution for obtaining the status of preferential generator and use of feed-in tariffs The generator that have the temporary resolution and have built the plant and the license is in force, shall submit to the ERC an application on obtaining the status of preferential generator and feed-in tariffs. In cases when the generator fulfills the requirements for obtaining the status of preferential generator and the plant is put in operation within the deadline and when the confirmation issued by the Energy Agency is positive, ERC shall issue a resolution for obtaining the status of preferential producer and decision for feed-in tariffs. The feed-in tariff is determined under terms and conditions in effect on the day when the resolution for temporary status was issued by the Energy Regulatory Commission.
Market operator	Under FIT system - Electricity purchase contract The electricity market operator is obliged to purchase the electricity generated by preferential electricity generator. On the request from the preferential generator, the electricity market operator is obliged to sign the electricity purchase contract.

III.4. Italy

Authority	Document and description
Region	Construction and management permits are issued by Regions (or by Provincial Administration if delegated by Regions).

III.5. Kosovo*

Authority	Document and description
Municipal Authorities	Land use contract. Since the Municipal is administering the publicly owned land within the borders of the Municipality, therefore private investor has to conclude contract with Municipal authorities for using the land.
Ministry of Environment and Spatial Planning (MESP)	Water Permit. Law on Waters of the Republic of Kosovo* determines that MESP is responsible to manage the waters in Kosovo*, therefore the private investor has to obtain the Water Permit and to conclude concession contract with MESP for using the water to generate electricity.
Ministry of Environment and Spatial Planning (MESP)	Environmental agreement. Environmental Permit.
TSO/DSO	TSO or DSO Connection agreement
MESP (above 10 MW) Municipal Authority (until 10 MW)	Construction Permit
Public Electricity Supplier	Power Purchase Agreement
Energy Regulatory Office (ERO)	Authorization for Construction of Plant

III.6. Moldova

Authority	Document and description
Ministry of Economy or authorized juridical person	Feasibility Study Material
Government	Authorization of governmental commission, Government approve construction of power plants with a capacity exceeding 20 MW through Government decision.
Local public administration	Preliminary agreement of the location of the object planned for construction
Local public administration	Building authorization
Local public administration	Urbanism certificate

III.7. Montenegro

Authority	Document and description
Local planning office	Location permits is issued by the local planning office
TSO/DSO	Preliminary connection permits
Ministry of Economy	Energy permit for installations for electricity production. The Energy permit is a part of the authorization procedure (precondition) for building new or reconstruction existing generations.
Local planning office	Energy permit for installations for heat production and/or distribution
DSO	Connection consent an act issued by the DSO based on which installations are connected to the distribution system
DSO	Contract on connection is signed between the DSO and
NRA	License for electricity production is a document based on which all energy activities are performed
DSO	Connection permit
Local planning office	Construction permit is issued for installations are to be built based on the local planning document.
Ministry of Economy	Construction permit is issued for installations are to be built based on the Government planning document

III.8. Serbia

Authority	Document and description
Ministry	Energy permit The energy permit shall be obtained prior to construction of the following facilities: 1) facilities for electricity generation with power equal to, or over 1 MW; 2) facilities for combined electricity and heat generation in thermal power plants – district heating plants, in facilities of 1 MW or bigger of electricity power and of 1 MWt of total heat power or bigger; In cases of construction of energy facilities the power of which is under 1MW that use water as primary energy resource, for which energy permit is not issued, prior to obtaining consent for construction it shall be necessary to obtain consent of the Ministry stating that construction of such objects enables efficient and rational use of primary energy sources based on non-discriminatory criteria established and published by the Ministry.

III.9. Turkey

Authority	Document and description
applicant	Application form
applicant	Letter of undertaking
Notary	Certificate of authorization (for representatives of the company)

Trade Registry Gazzette	Articles of organization for company
Applicant and concerned authorities	Documents of plant (Forms, maps, single line diagram, termination plan etc.)
water utilization rights from State Water Affairs, source contracts from contracting parties	For renewables: hydros certify water utilization rights, wind powers certify land utilization rights, biomass/biogas etc. certify their source contracts
Applicant	Declaration: applicants' shareholders (having share of 10% or more, for publicly traded companies 5% or more) are not subject to legal acts of the Energy and Natural Sources Ministry
Trade Registry Gazzette	For applicants' legal person shareholders (having share of 10% or more, for publicly traded companies 5% or more): articles of organization
Applicant	Shareholding structure
Applicant and other bodies if needed	If control/supervision of the company belongs to real person shareholders: shareholders' of legal person shareholders explained until real person shareholders are reached.
Applicant	Name, address, criminal records of managers
Applicant (if needed other bodies)	Financial documents of shareholders having share of 10% or more, for publicly traded companies 5% or more (certifying assets and income)
Banks	Letter of guarantee

ANNEX IV – LEGISLATION RELATED TO SUPPORT SCHEMES FOR RES OR CHP

IV.1. Bosnia and Herzegovina

Federation of Bosnia and Herzegovina

Document name:
Zakon o električnoj energiji (Službene novine Federacije BiH, broj 41/02, 38/05 i 83/11)
Document name (English):
Not available
URL:
http://www.fbihvlada.gov.ba/hrvatski/zakoni/index.php http://www.fbihvlada.gov.ba/hrvatski/zakoni/index.php http://www.fbihvlada.gov.ba/hrvatski/zakoni/index.php
URL (English):
Not available

Document name:
Uredba o korištenju obnovljivih izvora energije i kogeneracije (Službene novine Federacije BiH, 36/10, 11/11 I 88/11) (primjena do 13.1.2013. godine)
Document name (English):
Not available
URL:
http://www.fbihvlada.gov.ba/hrvatski/zakoni/index.php http://www.fbihvlada.gov.ba/hrvatski/zakoni/index.php http://www.fbihvlada.gov.ba/hrvatski/zakoni/index.php
URL (English):
Not available

Document name:
Naputak o vođenju I ažuriranju registra projekata OIEiK (Službene novine Federacije BiH, 28/11) (primjena do 13.1.2013. godine)
Document name (English):
Not available
URL:
http://www.fmeri.gov.ba/legislativa.aspx
URL (English):
Not available

Document name:
Zaključci o utvrđivanju kriterija za korištenje sredstava za poticanje OIEiK u 2012. godini (Službene novine Federacije BiH, 26/12)
Document name (English):
Not available

URL:
Not available
URL (English):
Not available

Document name:
Zakon o električnoj energiji u Federaciji Bosne I Hercegovine (prijedlog)
Document name (English):
Not available
URL:
http://www.fmeri.gov.ba/prijedlog-zakona-o-elektricnoj-energiji-u-fbih.aspx
URL (English):
Not available

Document name:
Zakon o korištenju obnovljivih izvora energije I efikasne kogeneracije (prijedlog)
Document name (English):
Not available
URL:
http://www.fmeri.gov.ba/prijedlog-zakona-o-koristenju-obnovljivih-izvora-energije-i-efikasne-kogeneracije.aspx
URL (English):
Not available

Republika Srpska

Document name:
Уредба о производњи и потрошњи енергије из обновљивих извора и когенерације ("Службени гласник Републике Српске" број 28/11 и 39/11)
Document name (English):
Regulation/Decree on generation and consumption of electricity from renewable energy sources and cogeneration
URL:
http://www.reers.ba/node/1297 or http://www.reers.ba/sites/default/files/Uredba_VladeRS_OIE_sa_prilozima.pdf
URL (English):
http://www.reers.ba/node/1297 or http://www.reers.ba/sites/default/files/Decree_Generation_consumption_RES.pdf

Document name:
Правилник о подстицању производње електричне енергије из обновљивих извора и у ефикасној когенерацији ("Службени гласник Републике Српске" број 128/11 и 53/12)
Document name (English):
RULE BOOK on Incentives for Generation of Electricity from Renewable Sources and in Efficient Co-generation
URL:
http://www.reers.ba/node/1297 or http://www.reers.ba/sites/default/files/Pravilnik_o_podsticanju.pdf and

http://www.reers.ba/sites/default/files/Pravilnik_o_izmjeni_Pravilnika_o_podsticanju_mart2012.pdf
URL (English):
http://www.reers.ba/en/node/1488 or http://www.reers.ba/sites/default/files/Rule_book_Incentives_RES_25October2011.pdf and http://www.reers.ba/sites/default/files/Amendments_to_the_Rulebook_on_Incentives_27March2012.pdf

Document name:
Правилник о издавању сертификата за производно постројење које производи електричну енергију користећи обновљиве изворе енергије или у ефикасној когенерацији ("Службени гласник РС" број 25/11)
Document name (English):
RULE BOOK on issuance of the certificate for the generation facility which generates electricity using renewable energy sources or in efficient co-generation (Official Gazette of RS, number 25/11)
URL:
http://www.reers.ba/node/1297 or http://www.reers.ba/sites/default/files/Pravilnik_o_izdavanju_sertifikata_feb2011.pdf
URL (English):
http://www.reers.ba/en/node/270 or http://www.reers.ba/sites/default/files/Rule_Book_Certificates_GenerationFacility_RES.pdf

Document name:
Одлука о висини гарантованих откупних цијена и премија за електричну енергију произведену из обновљивих извора или у ефикасној когенерацији ("Службени гласник Републике Српске" број 128/11)
Document name (English):
DECISION On the level of feed-in prices and premiums for electricity generated from renewable energy sources and in efficient cogeneration facilities
URL:
http://www.reers.ba/node/1297 or http://www.reers.ba/sites/default/files/Odluka_o_garantovanim_cijenama_OIE.pdf
URL (English):
http://www.reers.ba/en/node/1488 or http://www.reers.ba/sites/default/files/Decision_on_the_feed_in_tariffs_25October2011.pdf

Document name:
Одлука о висини накнаде за подстицање производње електричне енергије из обновљивих извора и у ефикасној когенерацији ("Службени гласник Републике Српске" број 128/11)
Document name (English):
DECISION On the level of fee for providing incentive for generation of electricity from renewable energy sources and in efficient cogeneration facilities
URL:
http://www.reers.ba/node/1297 or http://www.reers.ba/sites/default/files/Odluka_o_garantovanim_cijenama_OIE.pdf
URL (English):
http://www.reers.ba/en/node/1488 or http://www.reers.ba/sites/default/files/Decision_Level_of_Fee_25October2011.pdf

IV.2. Croatia

Document name:
Pravilnik o korištenju obnovljivih izvora energije i kogeneracije (Narodne novine, br. 88/12)
Document name (English):
Ordinance on Use of Renewable Energy Sources and Cogeneration (Official Gazette, No. 88/12)
URL:
http://narodne-novine.nn.hr/clanci/sluzbeni/2012_08_88_2015.html
URL (English):
Not available

Document name:
Pravilnik o stjecanju statusa povlaštenog proizvođača električne energije (Narodne novine, br. 88/12)
Document name (English):
Ordinance on Acquiring the Status of Eligible Electricity Producer (Official Gazette, No. 88/12)
URL:
http://narodne-novine.nn.hr/clanci/sluzbeni/2012_08_88_2014.html
URL (English):
Not available

Document name:
Tarifni sustav za proizvodnju električne energije iz obnovljivih izvora energije i kogeneracije (Narodne novine, br. 63/12, 121/12)
Document name (English):
Tariff System for the Production of Electricity from Renewable Energy Sources and Cogeneration (Official Gazette, No. 63/12)
URL:
http://narodne-novine.nn.hr/clanci/sluzbeni/2012_06_63_1508.html amendmets: http://narodne-novine.nn.hr/clanci/sluzbeni/2012_11_121_2634.html
URL (English):
Not available

Document name:
Uredba o minimalnom udjelu električne energije proizvedene iz obnovljivih izvora energije i kogeneracije čija se proizvodnja potiče (Narodne novine, br. 33/07, 8/11)
Document name (English):
Regulation on the Minimum Share of Electricity Produced from Renewable Energy Sources and Cogeneration whose production is incentivised (Official Gazette, No. 33/07, 08/11)
URL:
http://narodne-novine.nn.hr/clanci/sluzbeni/297516.html Amendment: http://narodne-novine.nn.hr/clanci/sluzbeni/2011_01_8_165.html
URL (English):
Not available

Document name:
Uredba o naknadama za poticanje proizvodnje električne energije iz obnovljivih izvora energije i kogeneracije

(Narodne novine, br. 33/07, 133/07, 155/08, 155/09, 8/11, 144/11)
Document name (English):
The Ordinance on the Levy for Incentivizing Electricity Generation from Renewable Energy Sources and Cogeneration (Official Gazette, No. 33/07, 133/07, 155/08, 155/09, 08/11, 144/11)
URL:
http://narodne-novine.nn.hr/clanci/sluzbeni/297515.html Amendments: http://narodne-novine.nn.hr/clanci/sluzbeni/2007_12_133_3781.html http://narodne-novine.nn.hr/clanci/sluzbeni/2008_12_155_4217.html http://narodne-novine.nn.hr/clanci/sluzbeni/2009_12_155_3822.html http://narodne-novine.nn.hr/clanci/sluzbeni/2011_01_8_164.html http://narodne-novine.nn.hr/clanci/sluzbeni/2011_12_144_2882.html
URL (English):
Not available

IV.3. FYR of Macedonia

Document name:
Закон за енергетика (Службен весник на РМ, бр.16/11)
Document name (English):
Energy Law (Official Gazette of RM, no.16/11)
URL:
http://www.slvesnik.com.mk/Issues/EE982E53C03DAB4C982055F184E70F66.pdf http://economy.gov.mk/ministerstvo/sektori_vo_ministerstvo/sektor_za_energetika/3297.html
URL (English):
Not available

Document name:
Закон за дополнување на Законот за енергетика (Службен весник на РМ, бр. 136/11)
Document name (English):
Law on amending the Energy Law (Official Gazette of RM, no.136/11)
URL:
http://www.slvesnik.com.mk/Issues/C07F527A24D4A04C9FB4FDD482BA00A7.pdf http://economy.gov.mk/ministerstvo/sektori_vo_ministerstvo/sektor_za_energetika/3298.html
URL (English):
Not available

Document name:
Уредба за повластени тарифи за електрична енергија (Службен весник на РМ, бр. 176/11)
Document name (English):
Decree on feed-in tariffs for electricity (Official Gazette of RM, no.176/11)
URL:
http://www.slvesnik.com.mk/Issues/463D36E92F96A546B1626AA8BDD99CE6.pdf http://economy.gov.mk/ministerstvo/sektori_vo_ministerstvo/sektor_za_energetika/3070.html
URL (English):

Not available

Document name:
Уредба за изменување на Уредбата за повластени тарифи за електрична енергија (Службен весник на РМ, бр. 19/12)
Document name (English):
Decree on amending the Decree on feed-in tariffs for electricity (Official Gazette of RM, no.19/12)
URL:
http://www.slvesnik.com.mk
URL (English):
Not available

Document name:
Одлука за вкупната инсталирана моќност на повластените производители на електрична енергија произведена од секој одделен обновлив извор на енергија (Службен весник на РМ, бр. 100/11)
Document name (English):
Decision for total installed capacity of preferential generators for each renewable energy source separately (Official Gazette of the RM, no. 100/11)
URL:
http://www.slvesnik.com.mk/Issues/47D56301AAB3324281A085DAAC0AEF98.pdf http://economy.gov.mk/ministerstvo/sektori_vo_ministerstvo/sektor_za_energetika/3304.html
URL (English):
Not available

Document name:
Одлука за изменување на Одлуката за вкупната инсталирана моќност на повластените производители на електрична енергија произведена од секој одделен обновлив извор на енергија (Службен весник на РМ, бр. 12/12)
Document name (English):
Decision on amending the Decision for total installed capacity of preferential generators for each renewable energy source separately (Official Gazette of the RM, no. 12/12)
URL:
http://economy.gov.mk/ministerstvo/sektori_vo_ministerstvo/sektor_za_energetika/3304.html
URL (English):
Not available

Document name:
Правилник за обновливи извори на енергија (Службен весник на РМ, бр. 113/11)
Document name (English):
Rulebook on renewable energy sources (Official Gazette of the RM, no. 113/12)
URL:
http://www.slvesnik.com.mk/Issues/9112C2CC0FE3724181D553DD10A5EE9F.pdf http://economy.gov.mk/ministerstvo/sektori_vo_ministerstvo/sektor_za_energetika/3304.html
URL (English):
Not available

Document name:
Правилник за повластени производители на електрична енергија од обновливи извори на енергија (Службен весник на РМ, бр. 18/12)

Document name (English):
Rulebook on preferential producers of electricity from renewable energy sources (Official Gazette of the RM, no. 18/12)
URL:
http://www.erc.org.mk/Uploads/OE-P-2012.02.08-PRAVILNIK%20ZA%20POVLASTEN%20PROIZVODITEL%20OD%20OIE%20so%20PRILOZI%20-GS[1].pdf
URL (English):
Not available

Document name:
Правилник за дополнување на Правилникот за повластени производители на електрична енергија од обновливи извори на енергија (Службен весник на РМ, бр. 97/12)
Document name (English):
Rulebook on amending the Rulebook on preferential producers of electricity from renewable energy sources (Official Gazette of the RM, no. 97/12)
URL:
http://www.erc.org.mk/Uploads/EE-P-2012.07.30%20-%20PRAVILNIK%20ZA%20DOPOLNUVANJE%20NA%20PRAVILNIK%20OBNOVLIVI.pdf
URL (English):
Not available

IV.4. Kosovo*

Document name:
Document name (English):
Feed in Tariff for electricity production from renewable power sources
URL:
URL (English):

Document name:
Document name (English):
Rule on the Support of Electricity for which a Certificate of Origin has been Issued and Procedures of Admission to the Support Scheme
URL:
URL (English):
http://ero-ks.org/Rregullat/Rregullat_2011/English/RULE_ON_THE_SUPPORT_OF_ELECTRICITY_FOR_WHICH_A_CERTIFICATE_OF_ORIGIN.pdf

IV.5. Moldova

Document name:
Document name (English):
Renewable energy law
URL:
URL (English):
http://www.anre.md/law/index.php?vers=3

IV.6. Montenegro

Document name:
Document name (English):
Energy Law (O.G.28/2010)
URL:
URL (English):

Document name:
Document name (English):
Rulebook of the Government of Montenegro on types ad classification of installations for generation of energy from renewable and high cogeneration
URL:
URL (English):

Document name:
Document name (English):
Rules for functioning of the Electricity Distribution System
URL:
URL (English):

IV.7. Serbia

Document name:
Zakon o energetici
Document name (English):
Energy Law
URL:
http://www.aers.rs/FILES/Zakoni/Zakon%20o%20energetici_57-11.pdf
URL (English):
http://www.aers.rs/FILES/Zakoni/Eng/Zakon%20o%20energetici_57-11.pdf

Document name:
Uredba o uslovima za sticanje statusa povlašćenog proizvođača električne energije i kriterijuma za ocenu ispunjenosti tih uslova
Document name (English):
Decree on requirements for obtaining privileged electricity producer status and criteria for verification of compliance with requirements
URL:
http://www.aers.rs/FILES/OIE/Uredba_o_uslovima_za_sticanje_statusa_povlascenog_proizvodjaca_elektricne_energije.pdf
URL (English):
http://www.ssl-link.com/mre/cms/mestoZaUploadFajlove/Privileged_power_producer_Decree_-_OJ_72-2009.pdf

Document name:
Uredba o merama podsticaja za proizvodnju električne energije korišćenjem obnovljivih izvora energije i kombinovanom proizvodnjom električne i toplotne energije
Document name (English):
Decree on incentive measures for electricity production from RES and CHP
URL:
http://www.aers.rs/FILES/OIE/Uredba_o_merama_podsticaja_za_proizvodnju_el_energije_koriscenjem_OIE.pdf
URL (English):
http://www.ssl-link.com/mre/cms/mestoZaUploadFajlove/Decree_on_feed_in_tariffs_-_OJ_99-2009.pdf

Document name:
Otkupne cene za povlašćene proizvođače
Document name (English):
Selling price for privileged electricity producer
URL:
http://www.aers.rs/FILES/OIE/2012%20Otkupne%20cene%20za%20povlascene%20proizvodjace.pdf
URL (English):
http://www.aers.rs/FILES/OIE/Eng/2012%20Feed-in%20tariff.pdf

IV.8. Turkey

Document name:
Yenilenebilir Enerji Kaynaklarının Elektrik Enerjisi Üretimi Amaçlı Kullanımına İlişkin Kanun
Document name (English):
Feed-in tariff determined by Law on Generation of Electricity from Renewable Energy Source
URL:
http://www.epdk.org.tr/documents/elektrik/mevzuat/kanun/Elk_Kanun_Yek_Kanun.doc
URL (English):

Document name:
Yenilenebilir Enerji Kaynaklarının Belgelendirilmesi ve Desteklenmesine İlişkin Yönetmelik
Document name (English):
By-law on support and certification of renewable sources
URL:
http://www.epdk.org.tr/documents/elektrik/mevzuat/yonetmelik/elektrik/yenilenebilir_enerji_kaynak/EP_YEK_BelgeDestekY.doc
URL (English):

Document name:
Document name (English):
Announcement on applications for RES support mechanism
URL:
http://www.epdk.gov.tr/index.php/tum-duyurular/18-elektrik-duyurular/907
URL (English):

ANNEX V – EDUCATIONAL MATERIAL RELATED TO SUPPORT SCHEMES FOR RES OR CHP

V.1. Croatia

Document name:
Kratki vodič kroz zakonodavni okvir i administrativnu proceduru za proizvodnju električne energije iz sunčanih elektrana koje se smatraju jednostavnim građevinama
Document name (English):
Brief Guide to the legislative framework and administrative procedures for the production of electricity from solar plants that are considered simple buildings
URL:
http://www.hrote.hr/UserDocsImages/PDF/KRATKI_VODIC.pdf
URL (English):
Not available

Document name:
Stjecanje statusa povlaštenog proizvođača s Prethodnim rješenjem
Document name (English):
Acquiring the status of eligible producer with Preliminary decision
URL:
http://www.hrote.hr/UserDocsImages/PDF/Stjecanje_statusa_PP_HR.pdf
URL (English):
http://www.hrote.hr/UserDocsImages/English/PDF/stjecanje_statusa_PP_rujan_2012_EN.pdf

V.2. FYR of Macedonia

Document name:
Образец на Договор за откуп на електрична енергија произведена од повластен производител на електрична енергија од обновливи извори на енергија
Document name (English):
Template of the Agreement for purchasing the electricity produced from the preferential producer from renewable energy sources
URL:
http://www.mepso.com.mk/CMS99/Content_Data/Dokumenti/ОПЕЕ/Dogovor%20za%20povlasteni%20-obrazec%20dostaven%20od%20MEPSO%20-%20RKE%20-%2025%2005%202012.pdf
URL (English):
Not available

Document name:
Дијаграм за постапка за издавање на привремено решение за стекнување на статус на повластен производител
Document name (English):
Diagram for the procedure for issuing the temporary resolution for the status of preferential producer
URL:

http://www.erc.org.mk/Uploads/Dijagram%20za%20postapka%20za%20privremeno%20resenie%20za%20povlasten%20proizvoditel.pdf
URL (English):
Not available

Document name:
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