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Abstract

Romania offers significant untapped resources for the development of small-scale hydro (SSH). The technology has been deployed before and is preserved. Projected increases in the demand for electricity coupled with the expected decommissioning of inefficient thermal capacity means that plenty of scope exists for adding capacity in Romania. It is questionable though whether the present lavish treatment of renewables is sustainable. The excessive burden placed on consumers given the likely policy overshoot raises questions about the sustainability of the Green Certificate scheme under the present form. Real hurdles about SSH projects persist in identifying sites, acquiring land and obtaining permits. The key hindrances to a more thorough expansion of SSH in Romania have to do with decision-making transparency, policy predictability and information diffusion. The erratic nature of Romanian renewables policy is directly connected to slow pace of the Romanian authorities in learning how to coordinate policy implementation between the local, central and European level in an effective manner. But given that that no fundamental regulatory transformation occur over the next year or two and that in that interval the issuance of permits and the acquisition of property is standardized, SSH may yet prove a fruitful line of business in Romania.

Key Words

electricity market reform, governance, hurdles to technological diffusion, policy development, renewable energy, small-scale hydro, tradable green certificates, Romania

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Introduction

Given the interlinked challenges posed by climate change and energy security, governments find themselves under pressure to review their policy frameworks on energy. This paper is part of the Fridtjof Nansen Institute's contribution to the Small Is Beautiful project, on the diffusion of small-scale renewable energy and energy efficiency technologies. Within the general scope of this project, it tries to evaluate the attractiveness of a country's institutional framework, in this case, Romania's, for developers interested in investing in a particular technology, the focus here lying with electricity generation from small-scale hydropower sources. It also identifies the drivers behind the policy, the effectiveness of its implementation, and a number of factors influencing, positively or negatively, its sustainability under the present form.

The research work conducted here covers both an overview of written sources and independent field work. Written material consulted includes academic texts, Romanian legal materials, reports compiled by utilities, consultancies, NGOs, multilateral organizations, policy documents by Romanian government agencies and authorities, etc. The field work component involved a three-week journey to Romania. One week was spent in Arad County, in Western Transylvania, interviewing representatives from four townships[1], one local entrepreneur, a retired top-ranking executive of the regional electricity distribution utility and a staffer supporting the county council on energy matters. The remaining two weeks were spent in Bucharest, where further interviews were conducted with executives from the Institute for Study and Power Engineering, the Institute of Hydroelectric Studies and Design, Hidroelectrica, EBRD, as well as government councilors, civil servants from the National Regulatory Agency for Energy, representatives of the NGO community, the Romanian Small Hydro Association, and a further entrepreneur.

The paper gives first a very basic overview of Romanian geography and government structure. It then presents the policy landscape this technology is confronted with – covering the state of the infrastructure, market structure, market entry, current diffusion of the focus technology, tariff structure, the incentivizing policy framework, a number of policy shortcomings and institutional pitfalls, project financing, and the general business environment. It finishes with a brief analysis of Romania's overall readiness for SSH, offering some relevant policy suggestions.

General country data

Romania's territory, covering 238,391 square kilometres, covers a very diverse range of geographical terrains, from rugged mountains to wide plains (see Figure 1). Hydrological studies, with a history in Romania stretching back to the 1920s, show that the country's network of flowing bodies of water extends for some 110,000 km in length. The economically feasible potential for hydropower in Romania is estimated to lie at

[1] The positions of the interviewees were as follows: commune mayor (township 1), commune mayor (township 2), town vice-mayor, attorney and development manager (township 3) and town vice-mayor (township 4).

around 38 TWh/year, of which 28.4 TWh not on the Danube. This output would stem from a total possible capacity of 14,260 MW. Adding plants below 1 MW would result in an additional 640 MW, with an annual production of 2.38 TWh.[2] Possibilities for installing such small-scale hydro (SSH) plants exist also in the plains and hilly regions, but the main benefits would accrue in mountainous areas.[3]

Figure 1: Physical map of Romania, with relevant historical regions superimposed.[4]

Romania is traditionally divided up into three historical regions: Transylvania, Moldova and Wallachia (Țara Românească) – with a number of smaller sub-regions also existing. These however have no official role, with the country being divided up horizontally into 41 counties (județ) and the municipality of Bucharest (see Figure 1). The administrative seat of each county is also called a municipality (municipiu). Cities and municipalities each host most of the administrative organs of the state, yet communes, and also the villages they contain, sometimes may depend on county-level organizations for some administrative tasks.

Vertically, governance in Romania is carried out through a great number of ministries, agencies and autonomous operators (regie autonomă) that have undergone a great number of changes since the 1989 regime change. Planning and inter-agency coordination leave lots to be desired and the implementation of central decisions at the local level may lag or be subject to some creative interpretation. Given the turbulent nature of Romanian domestic politics, smoothening out the dysfunctional nature of the Romanian political economy has occurred only when there has been a push towards improved governance and enhanced transparency by the

[2] Pop (1996), pp. 7-8.
[3] Pop (1996), p. 213.
[4] Adapted from file licensed under the Wikipedia Creative Commons (original created by user AdiJapan). Available at: http://upload.wikimedia.org/wikipedia/commons/archive/5/52/20111003163805%21Physical_map_of_Romania.jpg.

EU, the IMF and the World Bank.[5] Renewable energy is such an example, with a flurry of often haphazard activity taking place within the Ministry of Economy, Commerce and Business Environment and its affiliated agencies about how to transpose the European targets on renewables into the Romanian context.

The fate of SSH in Romania therefore depends on how quickly governance shortcomings can be improved upon to take advantage of the country's fairly large untapped potential.

State of infrastructure

The Romanian economy had grown robustly since the year 2001, fueled by cheap bank loans (see Figure 2 and Figure 3). However, the ongoing financial crisis has put a heavy dent in GDP growth and the country has had to negotiate loans with the IMF and to implement stringent austerity measures.

In 2009 Romania's total installed power capacity stood at 18,007 MW, with its composition as shown in Figure 4. However, only ca. 50% of the total installed capacity is used, as energy consumption fell by more than half due to the contraction in industrial activity during the economic contraction that followed the collapse of the communist regime in 1989.[6]

Due to this excess capacity Romania has been able to meet its power needs, allowing it even to become a net power exporter for the past couple of years.[7] Figure 5 shows peak loads during winter evenings (including transmission losses), together with projections for their growth, accounting for the impacts of the ongoing financial crisis. So far, peak values have been approximately in line with the capacity in actual use.

[5] See Gallagher (2005).
[6] Cossé (2003), p. 5.
[7] Diaconu, Oprescu, Pittman (2007), p. 4.

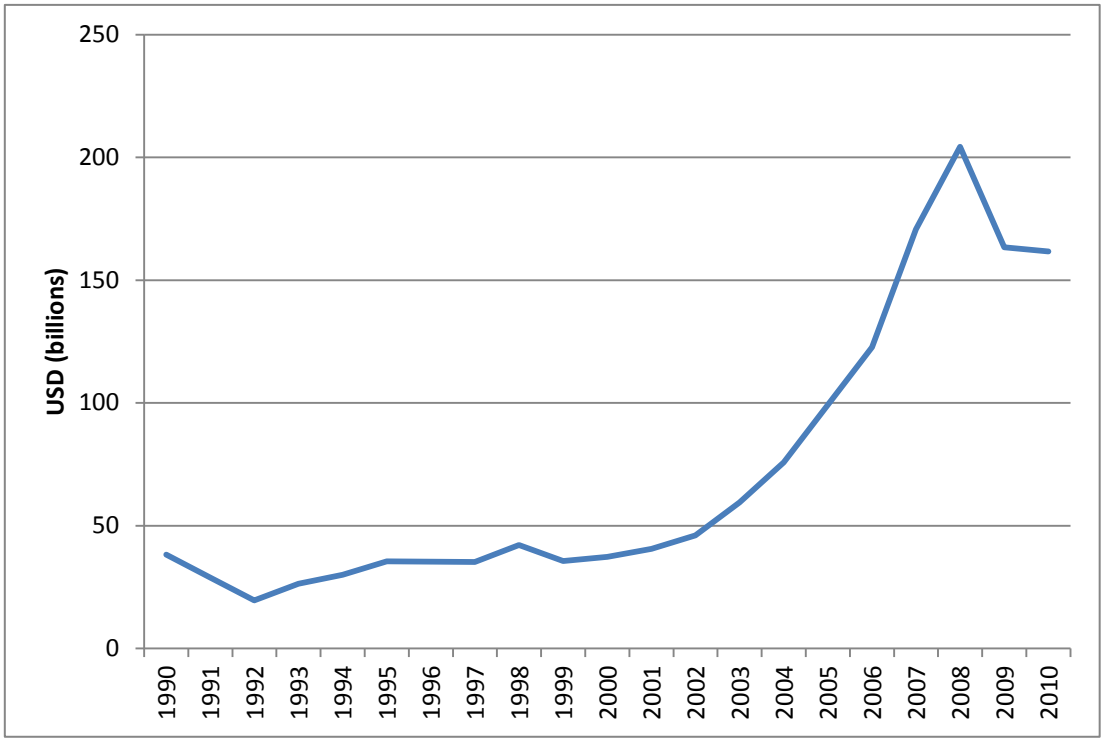

Figure 2: Romanian GDP, current USD (IMF).

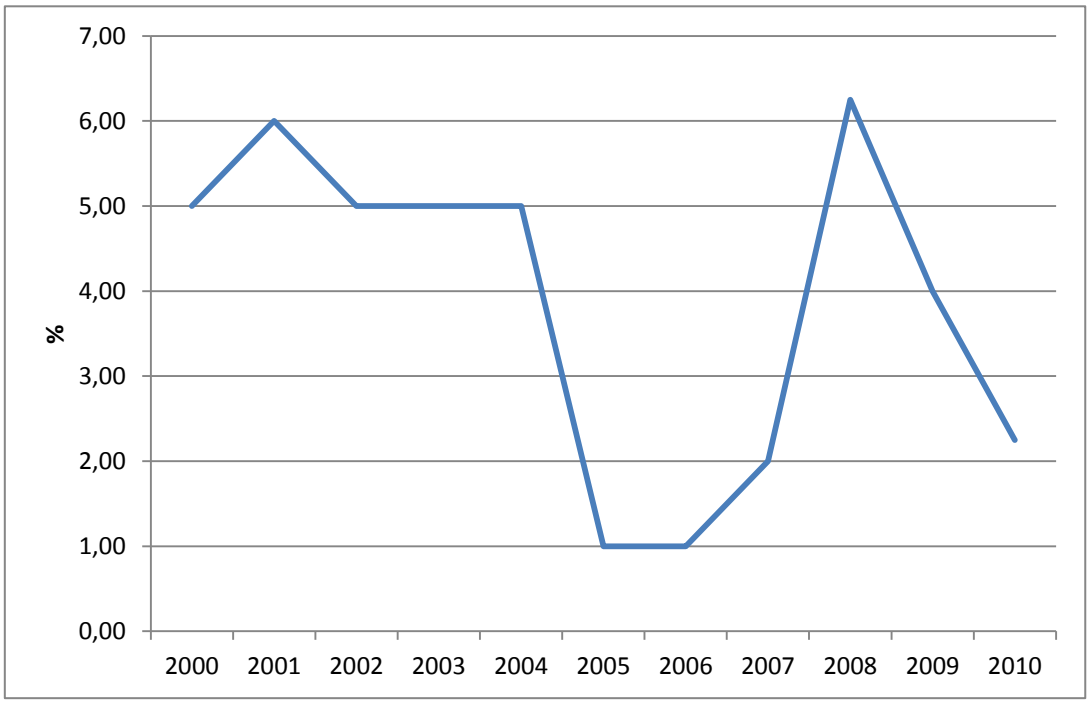

Figure 3: Average yearly central bank interest rate (Eurostat).

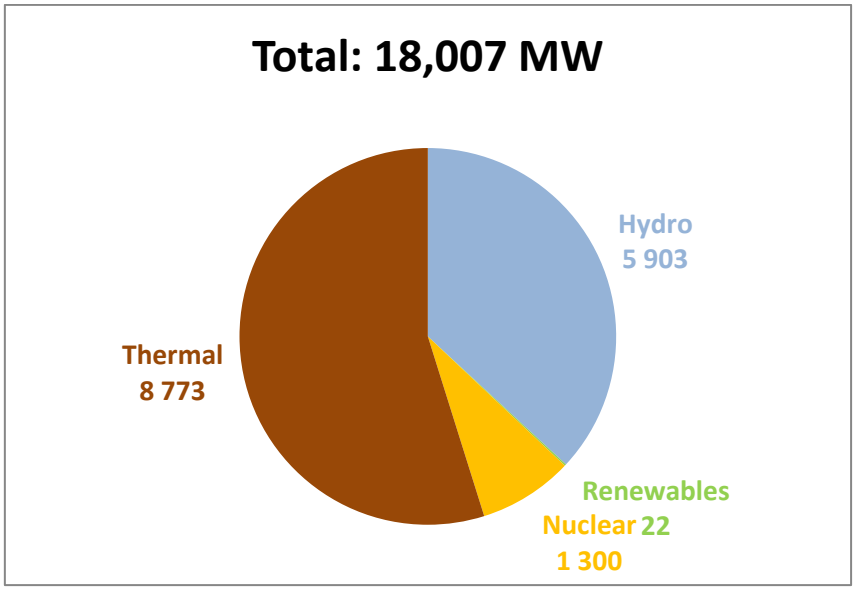

Figure 4: Total installed generation capacity by energy source in Romania, 2009. Source: Transelectrica (2010), p. 82.

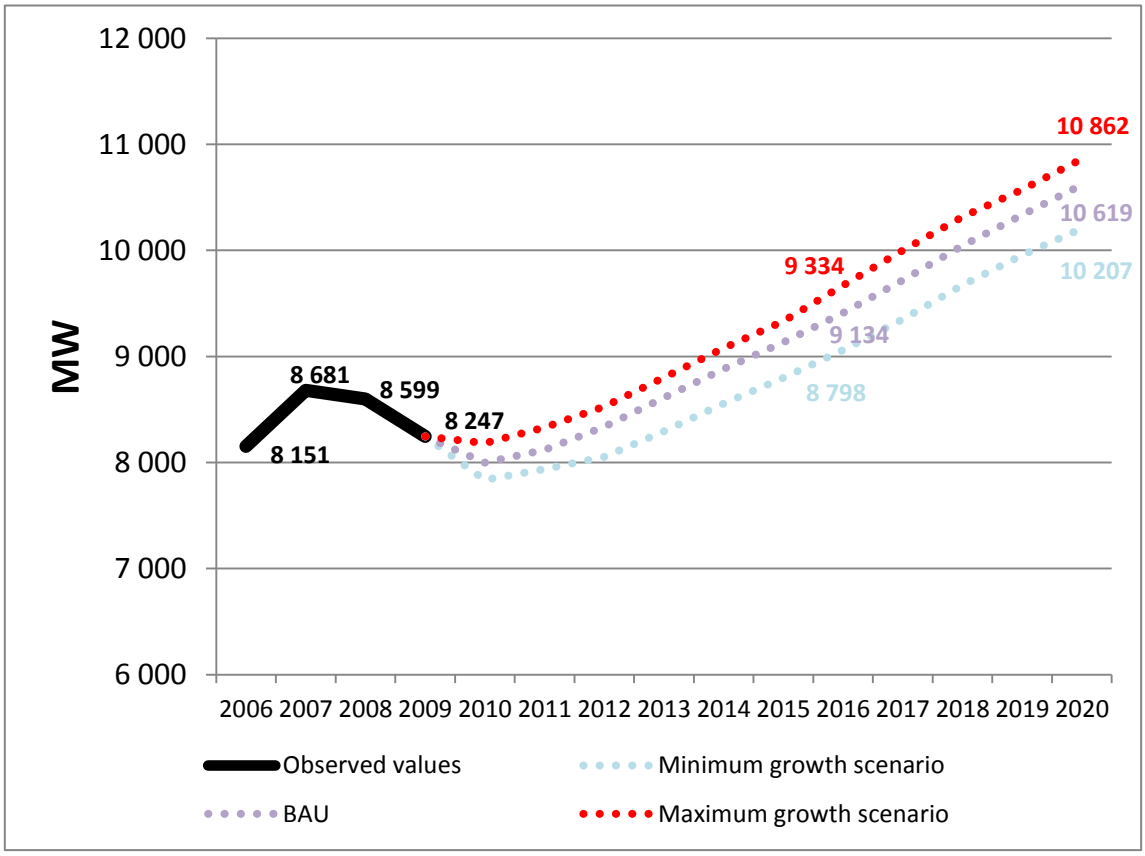

Figure 5: Peak load, observed and projected, in the Romanian electricity system. Projection figures given for 2015 and 2020. Source: Based on Transelectrica (2010), p. 74.

The low usage ratio reflects the poor state of Romania's national electricity system. Ca. 80% of the country's power generating capacity has been installed in the 1970s and 1980s, meaning that the greatest part of

the equipment is not on par with contemporary technological standards. Subsequent investment has focused overwhelmingly on maintenance, though not to a sufficient degree. Both of these factors have impacted Romania's global generation efficiency negatively, which lies now at ca. 31%, compared to ca. 40% in more advanced EU countries.[8] The Romanian National Energy Strategy, published in 2007, estimates that 17 billion euro worth of investments are required in the 2007-2020 interval for the upgrade and development of the state-owned parts of the country's electricity infrastructure alone.[9]

While some of this infrastructure will be refurbished, a lot of capacity will be permanently retired, especially in the power generation sector. As many of them do not meet EU standards on emissions of noxious or greenhouse gases, a deep-going plan for retiring the ones most outdated has been set up. This will remove 2,578 MW by 2019 from production, of which 1,181 MW by 2014.[10] This will be a strong driver for future investment in power generation.

Figure 6 shows projections for installed capacity by 2014 and 2019 – featuring both a conservative estimate, based upon an already ascertained launching and decommissioning schedule, and a best-estimate scenario, best credible information available to the national transmission and system operator (TSO).

Romania remains open to further investments in generation infrastructure in light of its consumption for electric power, which, as shown in Figure 7, is projected to continue increasing until 2020 – even accounting for the financial crisis. Not only are its aging power plants in poor shape, but they are also grievous loss-makers for the Romanian state.[11] Furthermore, Romania needs to make efforts to achieve its goals for electricity from renewable energy sources (RES), which are 35% and 38% of gross final electricity consumption by 2015 and 2020, respectively.[12]

Romania's power lines fall into three broad categories based on voltage: low (0.4 kV to below 110 kV), mid (110 kV to 400 kV inclusively) and high (750 kV – used mainly for transmission of electricity transiting from the Ukraine to Bulgaria). Low voltage lines are assets to distribution companies, whereas mid- and high-range ones belong to the TSO.[13] The legacy of the hyper-industrialization pursued by the communist regime has led to excess capacity also in the fields of transmission and distribution[14], yet congestion can occasionally pose problems. Refurbishing transmission infrastructure is high on the Romanian government's agenda, with several past, ongoing and planned EBRD projects present in this field. Distribution is in worse shape, with 65% of the lines at all voltages displaying a high degree of physical wear and 30% of substations having been produced in the 1960s.[15]

[8] Popovici (2011), p. 1847-8.
[9] Ministry of Economy, Commerce and Business Environment (2007), p. 78.
[10] Transelectrica (2010), p. 78.
[11] Revista 22, October 27, 2011.
[12] Law 220/2008, art. 4.2.
[13] Interview with retired ENEL executive.
[14] Cossé (2003), p. 5.
[15] Ministry of Economy, Commerce and Business Environment (2007), p. 18.

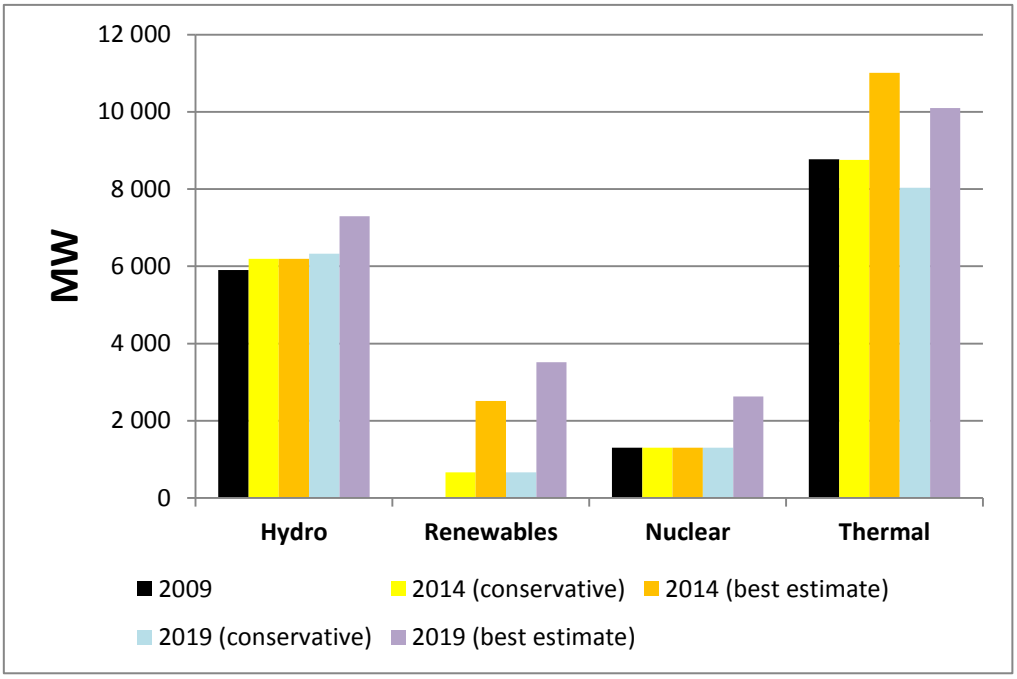

Figure 6: Growth projections by energy source for generating capacity in Romania for 2014 and 2015. Source: Transelectrica (2010), pp. 82-3.

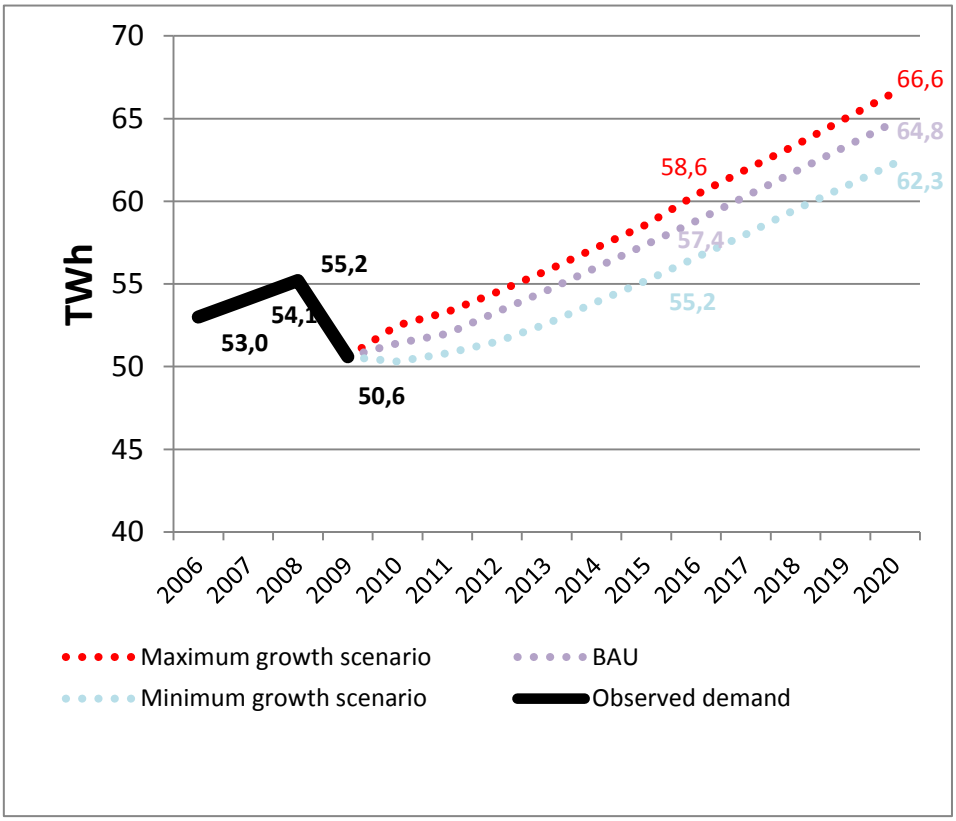

Figure 7: Yearly totals for net electricity consumption, observed and projected, in the Romanian energy system. Projection figures given for 2015 and 2020. Source: Based on Transelectrica (2010), p. 74.

Electrification in Romania is quite advanced, lying at 97% of households – although there is some amount of regional variation.[16] 111 communities entirely lack electricity, while 1,914 lack electrification partially. This translates into 41,376 households without access to electricity.[17] These lie typically in mountainous areas, where the rough terrain has slowed down the advance of electricity grids.[18]

Relevant institutions

Romania's power sector has been unbundled as a part of the country's transition towards a market economy. In answer to pressures from the Bretton-Woods institutions and due to transformations resulting from the adoption of the European *acquis communautaire*[19], Romanian utilities have been progressively unbundled along functional lines.

Figure 8 gives a simplified overview of these transformations.

Abbreviations:

RENEL:	Regia Autonomă de Electricitate (Autonomous Operator of Electricity).
CONEL:	Compania Naţională de Electricitate (National Electricity Company).
CC:	Consiliul Concurenţei (Competition Council).
ANRE:	Agenţia Naţională de Reglementare în domeniul Energiei (National Regulatory Agency for Energy).
RAAN:	Regia Autonomă pentru Activităţi Nucleare (Autonomous Operator for Nuclear Activities).
Nucl.:	Nuclearelectrica.
Electrocent.:	Electrocentrale (Power plants).
Termo.:	Termoelectrica.
Hidro.:	Hidroelectrica.
Trans.:	Transelectrica.
OPCOM:	Administrator of the national electrical energy market.
Transilv.:	Transilvania.

[16] Diaconu, Oprescu, Pittman (2007), p. 4.
[17] Icemenerg (2011).
[18] Pop (1996), p. 213.
[19] Diaconu, Oprescu and Pittman (2007), p. 11.

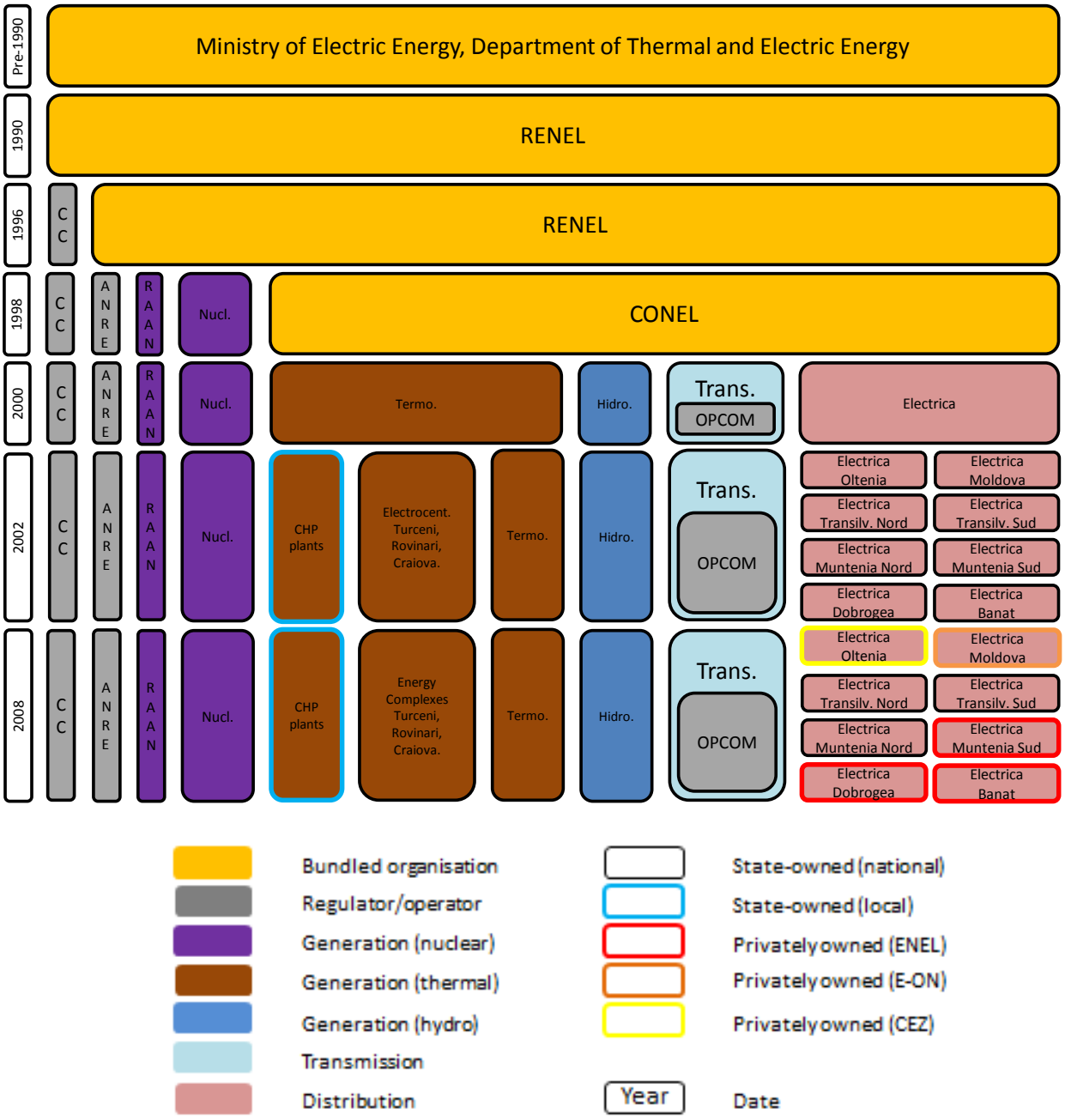

Figure 8: The progressive unbundling of Romanian power utilities (1990-2010). Sources: Cossé (2003), Diaconu, Oprescu and Pittman (2007), Haar and Marinescu (2011), and Popovici (2011).

So far unbundling has resulted in a number of mono-fuel generation companies, one TSO with a subsidiary acting as the operator for power market transactions, and eight regional distribution companies, which also act as suppliers. While there has been an effort to privatize these companies, so far only five of the regional distributors have been successfully sold off to foreign investors. The owners are Italian ENEL (Banat, Muntenia Sud and Dobrogea), Czech CEZ (Oltenia) and German E-ON (Moldova). Transilvania Nord, Transilvania Sud and Muntenia Nord remain in state hands, under the name Electrica.

In the generating sector Hidroelectrica and Nuclearelectrica are financeially sound companies, but Termoelectrica's debts, accumulated as a result of inefficient equipment and inept management, are serious. They have ballooned during the 1990s and 2000s, when the close relationship between the RENEL/CONEL leadership and the Romanian Social Democratic Party (PDSR, later PSD) have allowed those companies to avoid major restructuring.[20] As more profitable units have been spun off from it, a large core of inefficient units, employing large numbers of workers, remain. As the current financial crisis wears on and the Romanian government finds itself negotiating loans over USD 20 billion with the IMF, pressures are being brought to bear to sell off these units as well.[21]

In addition to the above companies, independent power producers (IPPs) account for 11% of total installed capacity. However, in 2010 95% of the electric energy produced in Romania is generated in state-owned plants.[22]

State-owned Transelectrica is Romania's unique TSO. Besides transmission, it fulfills a host of other functions, such as systems services and, through its wholly owned subsidiary OPCOM, the administration of the Romanian electricity market (see Text box 1 for details).

- Bilateral contracts
- Bilateral contracts (continuous negotiation)
- Day-ahead
- Same-day (balancing)
- Green Certificates
- Greenhouse gas emissions trading

Text box 1: Main markets administered by OPCOM.

In addition to these markets an additional, so-called 'regulated market' exists. The regulated market exists to handle producers prioritized by the Romanian state. It further services the needs of captive household consumers. While the market has now been theoretically completely liberalized, household consumers have virtually not switched suppliers at all. This is conjectured to be due to transition costs. SSH power plants will not be able to trade their power on this market, but will have to negotiate their contracts freely on the open market. The only exception to this are plants with a capacity lower than 1 MW, who are able to sell their power to the local distributors within a price range set by ANRE.[23]

The principal agencies in the field of electricity are the Autonomous Operator for Nuclear Activities (RAAN), the Competition Council and the National Regulatory Agency for Energy (ANRE). RAAN main function is to provide Nuclearelectrica with heavy water, while the function of the Competition Council is to ensure that rules of competition are observed as much as possible – not only in the power sector, but throughout the Romanian economy. ANRE finally is responsible for the supervision of energy markets (also beyond only electric power) and specifies tariffs for electricity in the regulated market, for transmission

[20] Gallagher(2005), pp. 115-6.
[21] News, 111027.
[22] Popovici (2011), p. 1848.
[23] This paragraph, unless otherwise indicated, draws on an interview with an ANRE official.

costs, system services, etc. Most relevantly to the case study at hand, ANRE also grants new entrants producer licenses (autorizaţie de înfiinţare), implements the price collar for green certificates (GCs), specifies the distributors' yearly renewables quotas, and adjusts these when insufficient GCs exist to meet those quotas.

Entering the market

The administrative procedure for transforming a project idea into an operational SSH plant is lengty and involves interactions with a great number of administrative organs. A simplified account is offered below:[24]

#	Document	Issuing body	Function	Timeframe and expenses
1	Feasibility study (Studiu de fezabilitate)	Consulting company	Outlines topography of terrain, site's hydrological characteristics, plant's technical features, architectural blueprints etc.	Variable
2	Urban planning certificate (Certificat de urbanism)	Zoning office of local authorities[25] (Primărie, biroul de urbanism)	The certificate is the document whereby local authorities inform applicants of the total number of documents (permits, notices, approvals) the latter need to submit in order to be issued construction permits.	Max. 30 days (varies significantly), RON 10.
3	Areal zoning plan (Plan urbanistic zonal – PUZ)	Zoning office of local authorities (Primărie, biroul de urbanism)	Local administrations may insist especially in the case of greenfield investments that developers draft such plans[26] to explain how project fit into local zoning arrangements. This requires architectural expertise and needs to be approved by the local authorities. Local authorities may also decide that a council decision is required to transform land administered by the community from unincorporated (extravilan) into incorporated (intravilan).	Variable (4-6 months).
4	Notices (Avize)	Different administrative organs.	These documents serve to notify the local authorities that the parameters of the developers' projects are approved by a host of different local regulatory bodies. They need to be submitted jointly to obtain the construction permit. The total number of approvals necessary for RES projects has not been standardized and less experienced communities may demand otherwise pointless notices to avoid mistakes. Conceivable notices may need to cover soil studies, water resources, electric grids, gas distribution, sewage systems, telephony landlines, fire-fighting, military defence, public health, public roads and traffic, aviation, cultural or archaeological aspects, etc.	Typically 45 days are required for obtaining all required notices. Some are issued without charge, but not all (e.g. Romanian Waters charges up to RON 300). Some require site visits.

[24] Compiled from Ministry of Economy, Commerce and Business Environment (2010), pp. 40-1, Government Decision 90/2008, Constructii.ro, Proiecte case, Ministry of Public Works and Land Outfitting (2000), ANRE order 48/2008, ANRE order 42/2011, interviews with ANRE executive, retired ENEL executive and local authorities (townships 2 and 3).

[25] 'Local authorities' is to be interpreted as city hall for land under the administration of a municipality and as county-level authorities if the property under consideration belongs to a commune or a village.

[26] For very large investments general zoning plans (plan urbanistic general – PUG) may be required, while for smaller ones may involve so-called detail zoning plans (plan urbanistic de detaliu – PUD). The choice is up to the local authorities. Methodologies vary somewhat.

#	Document	Issuing body	Function	Timeframe and expenses
5	Site approval notice (Aviz de amplasament)	Local electric operator	This notice expresses the operator's view on the siting option of developers' projects.	5 days for application review, issuance deadline not specified by law.
6	Solution study (Studiu de soluţie)	Local electric operator	This document represents a suggested technical solution for linking the planned plant to the local electricity grid. Consultations between developers and operators about various solution options should take place at this stage.	1 month (capacities below 10 MW).
7	Technical notice of connection (Aviz tehnic de racordare – ATR)	Local electric operator	This notice specifies the technical parameters of the branching solution linking up the planned plant to the local electrical grid.	7 days for application review, 10 days for issuance. Tariff set by ANRE.
8	Environmental notice (Acord mediu)	Local environmental authorities	This is the last notice to be obtained from the local administrative bodies, as it requires all other notices to be already obtained.	Variable.
9	Establishment authorization (Autorizaţie de înfiinţare)	ANRE	This authorization entitles project developers judicially to operate equipment for electricity generation commercially.	15 days for application review, 60 days for issuance. Tariff set by ANRE.
10	Construction permit (Autorizaţie de construcţie)	Zoning office of local authorities (Primărie, biroul de urbanism)	This permit constitutes the go-ahead for developers to commence construction. This permit cannot be applied for without all the documents specified in the urban planning certificate.	Varies (1-5 months), 0.5% of the authorized investment value.
11	Conclusion of connection contract (Încheierea contractului de racordare)	Local electric operator	This contract specifies the technical conditions by which the developers' electricity generation equipment is connected to the grid and establishes the demarcation point between operators' and developers' assets.	10 days.
12	Application of voltage to production capacities (Punerea sub tensiune a capacităţii de producer)	Local electric operator	This is the technical procedure that effectively launches electricity production in the new power plant.	Within the parameters decided in the connection contract.
13	Environmental permit (Autorizaţie de mediu)	Environmental authorities (county, regional or central level)	This is the final environmental permit required from project developers.	20 days for application review, 90 days for issuance.
14	Production license for electricity from RES (Licenţă de producere de electricitate din SER)	ANRE[27]	This document recognizes that producers use RES in electric power generation and entitles them to participate in OPCOM's GCs market.	30 days. Application needs to be submitted 60 days prior to beginning commercial operation.

[27] This can be handled by the local grid operator if installed capacity is below 1 MW.

Diffusion of technology

Hydropower, at 32% of installed capacity in 2009[28] and 33.69% of power produced in 2010[29], plays a very large role in Romania's electricity supply. The largest player here is the state-owned company Hidroelectrica, which in 2010 produced in its 273 hydro power plants and pumping stations (of which 162 with capacities below 10 MW)[30] 96.9% of Romania's total hydroelectric power.[31] Romania is already using 50% of its hydro potential,[32] with most large-scale solutions having been exhausted already. Further development is expected from pumped hydro plants, such as the 1 GW plant planned at Tarniţa-Lăpuşteni, or small-scale hydro (SSH) solutions.

Accurate estimates for the technically or economically feasible potential of SSH in Romania are placed at ca. 3.63 and 3.51 TWh/year, respectively, of which 467 GWh were expected to be exploited by 2015. No estimates for capacity could be identified. Only 12.2% of the economically feasible potential seemed to have been developed by 2007.[33] Average generating costs in Romania seem to lie around 2.8 eurocents/kWh for units featuring high head.[34]

While experience with hydro power in Romania extends back to the 19th century,[35] most currently existing Romanian SSH plants have been built in the 1980s as a result of central economic planning.[36] The bulk of them take advantage of high head positions[37], yet many of them are in a poor condition – if not outright ruined after the looting of their infrastructure during the two decades of the transition. Most of them, especially those of small capacity, were built by county-level engineering institutes lacking specialized hydroelectric expertise, resulting in design flaws and poor craftsmanship. ISPH (Institutul de Studii şi Proiectări Hidroenergetice – The Institute of Hydroelectric Studies and Design), now Romania's leading private entity for hydroelectric solutions, designed those that were in excess of 4 MW.[38]

In 2003 ca. 200 of these plants were transferred to the state-run hydroelectric generation monopoly Hidroelectrica in one single package. Some of these have been spun off in several bursts of privatisation, yet the details of these sales have not been transparent. Information about the methodologies for the selection of the plants to be auctioned, auctioning time tables and the state of the remaining stock of un-privatised plants is not readily available – with decision said to be taken at the 'political' level.[39]

[28] Based on Transelectrica (2010), p. 82.
[29] Based on Hidroelectrica (2011), p. 24.
[30] Hidroelectrica (2011), p. 26.
[31] Based on Hidroelectrica (2011), p. 24.
[32] Popovici (2011), p. 1851.
[33] Pelikan and Punys (2007), p. 1356.
[34] Pelikan and Punys (2007), p. 1337.
[35] Pop (1996), p. 13.
[36] Interview with ISPH executive.
[37] Pelikan and Punys (2007), p. 36.
[38] Interview with ISPH executive.
[39] Interview with Hidroelectrica executive.

The state of the Romanian stock of SSH plants in 2005 can be seen from Table 1. Despite the murky legal situation, Romania has seen steady growth in SSH since that year, both in terms of capacity and output. The total capacity and electricity produced eligible for GCs in the 2005-11 can be observed from Table 2.

Table 1: State of Romanian SSH stock in 2005.

	Number (plants)	Total capacity (MW)	Output (GWh/year)
Plants running	296	365	1,082
Plants in construction	49	127	391
Decommissioned plants	35	8	30

Source: Icemenerg (date unknown – on file with author), p. 3.

Table 2: Evolution of economic activity in the field of SSH from 2005 onward.

	2005	2006	2007	2008	2009	2010	2011[40]
Power sold (GWh)	7.1	21.7	46.2	121.4	197.7	274.4	142.1
- of which Hidroelectrica	7.1	20.5	17.8	34.5	62.7	77.0	34.2
Active capacity (MW)	n/a	n/a	40.3	40.4	74.3	75.9	83.4
- of which Hidroelectrica	n/a	n/a	16.7	23.5	29.0	25.4	25.4
Net new entrants (companies)	n/a	2	6	2	3	3	5

Notes:

1. No market-exits were registered in this period.
2. ANRE records show in 2007, the earliest year for which data is available, 14 additional licensed producers of electricity from SSH, all of whom have had their licenses renewed in subsequent years. However, not having been issued Green Certificates by OPCOM in this period suggests that these producers have not generated power over this interval.

Sources: Compiled by author based on yearly reports by Transelectrica on Green Certificates issued to operators of electricity generation from RES[41], and by ANRE on licensed producers of electricity from RES[42].

[40] Information on 2011 only available up to and including the month of September.

[41] Available from Transelectrica website: www.transelectrica.ro/5Piete/emise.php (accessed on October 28, 2011 – on file with author).

[42] Available from ANRE website: www.anre.ro/documente.php?id=389 (accessed on October 28, 2011 – on file with author).

There is plenty of room for developing SSH in Romania. Since producers receive income streams both from GCs and from electricity sales, they can undercut the electricity prices of producers operating with conventional fuels and still derive a profit. Well-informed rural townships from hilly and mountainous are eager to exploit SSH resources to service their own electricity consumption, e.g. for street lighting and/or public buildings. Romania's increasingly developed connections with its neighbouring countries makes it increasingly unlikely that investment in large-scale production capacity will crowd out demand for electricity from SSH, as large producers can sell their electricity to consumers abroad, while small-scale producers offer their electricity to local consumers.

Despite these developments, SSH has actually been relatively slow to develop in Romania. Part of it can be attributed to the usual financing costs specific to this technology already identified in the literature, e.g. large upfront investments, such as feasibility studies, etc. relative to total project value or too small investment value to be attractive for large-scale funders.[43] A weightier factor however is likely the fact that most investors interested in Romanian RES have flocked to wind power, producing what several sources have called a 'craze' that has 'swamped' the field.[44] The high estimates for installable wind capacity, located mostly within moderate distance from the capital in the Dobrujan highlands, have whetted the appetites of foreign investors and well-connected Romanian businessmen more than modest projects located along remote mountain creeks have.

Still, despite this relative lack of attention, identifying favourable sites for SSH plants in Romania can be tricky. While the mountainous and hilly landscape of the scape theoretically provides plenty of sites for the construction of such plants, no discernible effort has been made so far to centralize information about propitious sites at either the local, county or national level. Often townships' awareness of their own potential for SSH does not extend beyond a rudimentary understanding that small bodies of running water on slopes can be used for this purpose – and they readily invite investors to perform feasibility studies at their own costs.[45] However, other townships are remarkably well documented with technical data and are keen on outside assistance.[46] Information about which townships to best turn to can most easily be gathered from civil servants assisting County Councils on energy matters.

The National Administration 'Romanian Waters' (Administraţia Naţională 'Apele Române'), the administrator and manager of Romania's water resources, collects data pertaining to the management of water resources, such as debits and rainfall, which are freely available, but for more advanced information necessary for opportunity, pre-feasibility and feasibility studies on particular watercourse segments investors need to turn to specialized bodies, such as ISPH or its smaller competitors.[47] Plants in the ownership of Hidroelectrica have naturally been placed on

[43] Gjermundsen and Jenssen (2000), p. 2.
[44] Interview with ANRE representative.
[45] Interview with local mayors (1 and 4).
[46] Interview with local mayor (2 of 4).
[47] Interview with ROSHA representative.

sites fit for exploitation and many purchases resulting from the several rounds of auctions seem indeed to have aimed merely on acquiring the grounds those plants, now often in a derelict state, are located on.[48] The lack of transparency regarding the auctioning schedule makes this an unreliable siting mechanism to unconnected outsiders. Furthermore, many sites are said to continue to lie undeveloped even after their sale, prompting the passing of a law mandating the expiry of notices and permits two years after being granted in order to pre-empt sites being taken off the market by developers acting slowly.

Identifying a good location therefore is not easy. As investors need to specify exactly the locations they wish to have feasibility studies performed on to the consultants, a chicken-and-egg scenario can quickly develop. Consequently, a close relationship with a partner intimately familiar with the local topography seems to be a *sine qua non* condition for laying the foundations of a successful project.

Tariff structure

The average yearly price of electricity on the Romanian wholesale market lay at 36.44 EUR/MWh in 2010. This is 22% cheaper than the European average of 47 EUR/MWh.[49]

1. Generation
2. Distribution
3. Development tax
4. Transmission
5. Supply
6. Services (ancillary services, system services, market administration)

Text box 2: Ranking by value of components in average electricity price paid by captive consumers.

Text box 2 shows the typical components of end-user tariffs. All of these tariffs are allowed to float freely within price collars set annually by ANRE. Several such collars exist, depending on the region (6 regions for transmission, 8 for distribution), voltage (highest tariffs for lowest voltage) and direction of flow (feeding in versus extracting). SSH power, even at 10 MW of capacity, is fed into distribution networks.[50]

Eligible consumers pay energy prices negotiated by means of free competition on the open markets, while customers choosing to stay captive pay a price regulated by ANRE. Table 3 and Table 4[51] show average half-yearly prices for two customer categories in comparison to some other economies.

[48] Interview with ISPH executive.
[49] OPCOM (2011), p. 29.
[50] Interview with retired ENEL executive.
[51] Both from Eurostat electrical energy data (extracted on September 19, 2011).

Table 3: Half-yearly prices (eurocents/kWh) for industrial consumers (consumption in the 2,000-20,000 MWh/year band).

Economy	2008-S1	2008-S2	2009-S1	2009-S2	2010-S1	2010-S2
Romania	9.33	9.54	8.78	8.54	8.57	8.66
Bulgaria	5.93	7.11	7.16	7.00	6.90	7.19
Finland	7.44	7.83	8.02	8.1	8.29	8.21
Norway	8.20	8.47	8.59	8.40	11.09	9.87
EU-27	10.72	11.24	11.5	11.13	11.15	11.28

Table 4: Half-yearly prices (eurocents/kWh) for household consumers (consumption in the 1,000-2,500 kWh/year band).

Economy	2008-S1	2008-S2	2009-S1	2009-S2	2010-S1	2010-S2
Romania	10.75	10.80	9.80	9.78	10.35	10.60
Bulgaria	7.31	8.08	8.33	8.13	8.13	8.32
Finland	14.72	15.30	16.32	16.46	16.81	17.44
Norway	24.66	24.74	23.37	23.70	29.47	28.29
EU-27	16.92	17.79	17.33	17.50	17.79	18.37

Supporting policy environment

Scope for the future expansion of SSH (< 10 MW) is given by law 220/2008, which stipulates that the share of electric energy from RES from the gross final consumption of electricity be 35% in 2015 and 38% in 2020. These figures also include the contribution for hydropower from plants with capacities larger than 10 MW. Table 5 shows annual quotas specified in the law for electricity stemming from RES as a proportion of final gross consumption that does not include large-scale hydro.[52] The law does not specify any technology-specific targets for the fulfilment of these quotas,[53] and the Romanian legal and regulatory framework does not make any distinctions between different technologies[54] beyond the number of GCs they are eligible for.

Table 5: Annual quotas for electricity from RES as a percentage of national final gross consumption.

2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
10%	12%	14%	15%	16%	17%	18%	19%	19.5%	20%

Source: Law 220/2008, art. 4.4.

[52] Based on Law 220/2008, art.4.2, 4.3 and 4.4.
[53] Ministry of Economy, Commerce and Business Environment (2010), p. 85.
[54] Ministry of Economy, Commerce and Business Environment (2010), p. 43.

The GCs are the main instrument for promoting electricity from RES in Romania. The law stipulates that certificates be issued to licensed producers of renewable electricity, and charges electricity suppliers with an obligation to purchase them on pain of a fine. The GCs exist only electronically and are issued on a monthly basis by Transelectrica to producers. The certificates are up for sale through OPCOM's GC market at a price decided by free market forces, setting the total supply of GCs available against the demand from power suppliers. This demand is specified through ANRE's yearly quotas.

Should a significant shortage of GCs arise, ANRE has the authority to revise the quota downward. So far, this option has been invoked every year, as only 0.67 TWh-worth of GCs was issued against a total final consumption of 45.38 TWh.[55] Thus, the 2010 quota, set for 8.3% of total final consumption, was subsequently revised to 1.56689% in February 2011.[56]

Beside these obligations, the law also specifies, among others: [57]

1. The number of GCs (see Text box 3[58]) producers receive depending on the technology employed (art. 6.2) ;
2. The collar within which the price of GCs is allowed to float on OPCOM's specialized market: EUR 27-55, indexed to the Eurozone inflation rate (art. 11.1);
3. The duration for which GCs are awarded to producers of electricity from RES: 15 years, except for refurbished (10 years) and old (3 years) SSH plants (art. 3.2);
4. The latest date for launching production in the new plants: the end of 2016 (art. 3.3):
5. The mechanism for specifying each supplier's yearly quota of GCs and a fine of EUR 110 per certificate, also indexed for inflation, for failing to comply (art. 4.9, 8 and 12);
6. Sale procedures for electricity from RES: the open market for capacities above 1 MW and the option to sell to the local distributor at a tariff set by ANRE for lower capacities (art. 14.1-2);
7. The monitoring and verification framework for the GC market and the development of RES (art. 20-3 and 29);
8. A duty for distribution and transmission operators to offer guaranteed access to their grids to electricity from RES, as long as the safety of the national electric system is not jeopardized (art. 9, 14.7-8 and 25).
9. A duty for distribution and transmission operators to offer guaranteed access to their grids to electricity from RES, as long as the safety of the national electric system is not jeopardized (art. 9, 14.7-8 and 25).
10. A duty for the government to undertake further measures if the quotas mentioned in Table 5 are not met for two consecutive years (art. 27).

The introduction of the law has a checkered history. It was passed by the Parliament and signed into law by the President in 2008 without consult-

[55] ANRE note (2011), p. 1.
[56] ANRE order 13/2011, p. 1.
[57] Based on Law 220/2008, unless otherwise specified.
[58] Compiled from Emergency ordinance 88/2011, p. 4.

ations with the European Commission, yet it came soon to the attention of DG COMP for a perceived to over-subsidization of certain business models that would try to combine European subsidization schemes with the Romanian GC scheme.[59] The legal upset that followed lasted until October 2011, when an emergency ordinance (88/2011) finally managed to resolve the differences between Brussels and Bucharest. During the three-year legal limbo that resulted, when the law 'had entered into force, but was not implementable', an emergency ordinance had to be issued to ensure that active producers of RES would receive a blanket 1 GC per MWh, irrespective of technology.[60]

Some observations impose themselves about the functioning of the framework instituted by 220/2008. First, no methodology for establishing whether the security of the national electric system is jeopardized is described in the body of the law or being referred to as existing elsewhere. The same phrase occurs also in government decision 90/2008 'on connecting users to electric networks of public interest'[61], which describes the procedure for obtaining a technical notice of connection, and here, too, the text does not specify who is empowered to adjudicate whether a jeopardizing situation might emerge. While the scale of installed capacity and the intermittency of the power supply make the emergence of such a scenario less likely in the case of SSH than of PV or wind power, investors need to ensure early that this matter does not become an issue later on.

New SSH plant:	3
Refurbished SSH plant:	2
Other SSH plant:	0.5
Wind (until the end of 2017):	2
Wind (from 2018 onward):	1
Solar:	6
Geothermal:	1
Biomass, bioliquids, biogas:	1
Waste:	1

Text box 3: Number of GCs assigned to producers of electricity from RES per MWh of delivered power.

Second, there is no one-to-one equivalence between annual quotas for electricity from RES as a proportion of national final gross consumption and GC purchase quotas for electricity suppliers. While the former are specified in the body of the law itself, as specified in Table 5, and set to increase further through 2020-2030[62], ANRE specifies new purchase obligation quotas on a yearly basis based on actual production figures from the previous year.[63] So far electricity suppliers' demand for GCs has far outstripped the available supply of GCs issued to renewable energy producers, which has resulted

[59] NH Rechtsanwälte (June 2011), p. 1.
[60] Interview with councilor to Minister of Economy, Commerce and Business Environment.
[61] Government Decision 90/2008, art. 15.2.
[62] Law 220/2008, art. 4.5.
[63] Law 220/2008, art. 4.9.

in ANRE exercising restraint in the levying of fines for noncompliance with its mandated quotas. On the other hand, this has also meant that GCs have so far traded at the price ceiling for the entire period that the 'non-implementable' law has been in force. This has been a strong motivator for the development of renewable capacity in Romania.[64]

Third, although emergency ordinance 88/2011 addressed the issue of over-subsidization, the concern remains that Romania's legal framework remains too ambitious. Interviewed stakeholders of strongly divergent backgrounds corroborate the account that no econometric studies were conducted to establish the potential impact of the current framework on the development of renewable electricity capacity or on end-user tariffs. [65] Yet last minute projections emerging in the third quarter of 2011 suggest that Romanian consumers, with some of the smallest purchasing power in the EU-27, might endure a price hike anywhere from 4.76% to 17% in end-user tariffs. This would result with a transfer of wealth of approximately EUR 10 billion, a figure that has been compared in policy discourse to an equivalent UK figure of EUR 3 billion – at a completely different level of GDP and consumer purchasing power.[66]

Some decision-makers have started expressing views that the scale of the renewables effort is misplaced. Indeed, while Romania, under EU Directive 2009/28/EC, has to achieve by 2020 a target of 24% for the share of energy from renewable sources in the country's gross final consumption of energy, Hidroelectrica's large-scale hydro contribution to electricity supply alone brings already 15% to the table presently. With only 9 percentage points to improve and a glut of investors streaming into the wind sector, concerns have been raised that Romania is leaping headlong into an expensive and unsustainable policy overshoot.[67] This lends extra weight to Art. 29.2 of the law 220/2008, added by emergency ordinance 88/2001, which allows ANRE to adjust the number of GCs issuable to producers of electricity from RES.

Hurdles to diffusion

Putting aside the issue of policy sustainability, Law 220/2008 is a step in a progressive direction. Although it seems to have been initiated only to respond to pressures from Brussels and to have been drafted with little sound policy planning, it is expected to contribute substantially to the expansion in the uptake of renewable energy in Romania over the short and medium term. However, the law has not been integrated seamlessly into the rest of Romania's still transitioning legal framework, resulting in some messy legal questions that have not been yet properly addressed, especially at the interface of this law with administrative fields beyond the area of electricity generation. These policy flash points may prove as substantial sources of vexation to potential investors in SSH plants, foreign or otherwise.

[64] Interview with investor no. 1.
[65] Interviews with NGO representative, ISPE executive and councilor to Minister of Economy, Commerce and Business Environment.
[66] See Wall-street.ro, October 4, 2011. Also interview with councilor to Minister of Economy, Commerce and Business Environment.
[67] Interview with councilor to Minister of Economy, Commerce and Business Environment.

One of the most pressing questions is that of ownership of the grounds where the planned plant is to be located. Ideally the grounds could be purchased outright from a private owner, whose own ownership claims over the plot of land are settled and uncontested in a court of law. Alternatively, a project could be developed jointly through some form of contractual agreement with the owner, be they a natural or legal person, a local community, or an administrative arm of the government. However, the legacy of the 1950s expropriation and collectivization by the communist regime and the rocky experience of the past twenty years in land restitution ensure that tracts of land with an unsettled ownership question are encountered surprisingly often.

A striking example is that of the 200 plants that became Hidroelectrica assets in 2003. The transfer of property seems to have occurred not only regardless of site, capacity, profitability, operational state and asset conditions, but also irrespective of the original owner. Many of these plants had been built to satisfy the demand for electric power from industrial groups that had been set up under the communist regime. These had either collapsed or been privatized during the two decades of the transition. Many of these facilities had in turn been built on land confiscated by the communist authorities from their original owners as much as four decades earlier, making the ownership of the grounds open to litigation either by them or their legal inheritors. Therefore, even as developers acquired those plants through auctions, they did so aware of their own risk, with their deeds entitling them in some cases only to the plants' physical assets, yet with the ownership of the grounds, ponds, dams, etc. open to, or actually still undergoing, litigation.[68]

Greenfield investments can also be problematic. If the owner of the site is not a natural person, a variety of alternative owners may exist, most frequently a township, Romanian Waters, or the National Forestry Operator 'Romsilva' (Regia Națională a Pădurilor Romsilva), a state-owned enterprise dealing with the preservation and development of publicly owned Romanian forests. Each of these poses its own challenges.

Developing projects on land owned by townships can be tricky because of the administrative division of land under the ownership of townships.[69] Plots theoretically may fall either under the township's 'public' or 'private' lands, depending on whether they are inalienable and unassailable ('public'), e.g. a street, public real estate, forests, etc., or not ('private'). In practise however the distinction is very blurry and some archival work may be required to identify the type of ownership. Although the type of ownership can be changed through a decision of Town or County Councils with the agreement of the mayor's office, prospects for achieving this depend entirely on the ability of a developer to make his case persuasively to enough stakeholders.

[68] Interview with ISPH executive.
[69] Information on the legal options in this scenario drawn mainly from interview with civil servants at township no. 3.

A 2009 emergency ordinance forbade townships to sell 'private lands', yet entrepreneurs interested in collaboration with the community can still site on 'public lands' through a concessionary or a rental agreement. Concessions extend over 49 years and require the payment of dues, which may consist in the products resulting from the economic activity occurring on-site, in this case electric power, whereas the rental agreements are entered for shorter amounts of time and are settled in currency only. Plants set up to deliver power for public use can seemingly only be sited on 'public lands'.

Lands owned by Romsilva and Romanian Waters, i.e. under the administration of the Romanian state, can pose even larger challenges. Romsilva is said not to be able to sell land off directly, although investors interested in a particular plot can still acquire them through exchange-type agreements, in which they barter a forested area of equivalent surface for the desired property[70] – although some stakeholders have pointed out that Romsilva has started asking for twice the land area instead.[71] Terrains around larger bodies of waters typically are administered by Romanian Waters, which is said to intend to start charging for water rights.[72] Romanian Waters seems also to be involved in the ownership question of the SSH plants acquired by Hidroelectrica, holding a stake in the ponds and dams built for them.[73]

A matter that straddles the areas of ownership and cost is the nature of investments that developers are constrained to undertake in order to integrate new plants into Romanian infrastructure. A typical example is the construction of the power lines connecting the new plant to the local grid. Romanian law specifies that costs are to be shared between the operator and developers, but clauses exist that specify that if the section upstream from the demarcation point between the developer's and the operators assets requires works 'not foreseen in the operator's investment plan and the possibility to complete them with the service connection' developers have the option to bear these costs. Because of the overall bad state of the Romania's distribution networks, this means that in practice developers often have to bear these extra costs. The resulting assets become upon completion the property of the operator, with reimbursement of the developer's expenses up to an agreement between the two parties.[74] Should investors' development plans conflict with other forms of infrastructure, the costs incurred to address this matter are again to be borne by the investors, with the resulting assets becoming afterward the property of the utilities in question.[75] Anecdotal evidence suggests that the reimbursement of such costs occurs late, if at all.

Beyond these matters, the proper harmonization of the Romanian regulatory system is another example of a matter that does not seem to have been insufficiently addressed. This extends not only to unclear directives regarding the totality of permits to be obtained by developers wishing to

[70] Interview with investor no. 2.
[71] Interview with NGO representative.
[72] Interview with NGO representative.
[73] Interview with ISPH executive.
[74] Government Decision 90/2008, art. 37.2-5.
[75] Interviews with both investors consulted.

engage in RES-related projects, but also to the weight lent to policy goals on RES relative to other environmental goals.

The central government has so far not prioritised streamlining the excessive bureaucratic burden placed on investors by the Romanian sprawling and uncoordinated administrative apparatus. While the legislation on how renewables are to be integrated into the national energy system is fairly straightforward, the procedure for obtaining the construction permits required for a power plant is entrusted to local administrations, which have little to no experience in dealing with these matters. This produces a mosaic of approaches that can vary significantly between different locales. In exceptionally bad cases, particularly inexperienced communities choose to err on the side of caution by requesting an excessive amount of notices, authorizations and permits on investors, with little guidance on the way they are interconnected.

Unfortunately, the fact remains that no directives about the proper amount of paperwork exist. ANRE, Romania's supreme regulatory agency in the field of energy, has in fact conducted a survey in 2011 among developers it licensed for renewable production to establish just what kind of permits have been requested from them on the local level – only to reach the conclusion that local administrative procedures lacked consistency, irrespective of case or locality.[76] While the government has pledged already in 2010 to open 'a singular office at county level [...] [to] handle the obtaining of all the notices and the drawing up of all the necessary documentation'[77], as of late September 2011 no such administrative organ was in existence.

In the case of SSH the conflict between the need to increase the uptake of electricity from RES and other environmental regulations is most visible in the case of permit the so-called water husbandry notice (aviz de gospodărire a apelor), issued by Romanian Waters.[78] Some of the norms for 'achieving a good state of the water', stemming from the domestic implementation of the European Framework Directive on Water, have not been properly harmonized yet with the need to promote SSH under 220/2008.[79] While Romania does have a water management plan that goes until 2027, spelling out goals stretching across a multitude of related areas, e.g. biodiversity, agriculture, electricity production, etc., poor communication between different government agencies means that no strategy about how to implement policy and achieve those goals has been yet articulated.[80] This can result in additional siting problems for investors.

[76] Interview with ANRE regulator.
[77] Ministry of Economy, Commerce and Business Environment (2010), p. 69.
[78] Interview with ISPH executive.
[79] Interview with ROSHA representative.
[80] Interview with Hidroelectrica executive.

Financing

Financing SSH in Romania typically occurs through bank loans, although it can include also structural funds provided by the EU.

The difficulty to approach Romanian entrepreneurs makes it difficult to evaluate under what conditions banks finance loans for SSH, but one example does cite one bank loan covering 80% of project expenses, at 5% interest rate and a 7-year repayment period. The project was expected to start turning a profit within 4 years. Banks seem willing to lend, but interest rate and collateral vary widely among them, reflecting relative lack of experience among Romanian financial circles with this type of investment.

Investors with a proven track record in the field of energy and who can provide at least 30% of project expenses can also draw on EBRD financing, typically syndicated with a loan involving a Romanian commercial bank. However, the large upfront costs of SSH relative to project size, for instance stemming from feasibility studies, the intricacy of which does not differ from that of large-scale projects, means that EBRD does prefer handling a certain critical mass of small-scale projects, e.g. multiple plants linked together in a cascade, before it is willing to provide financing. The Bank typically provides 35% of project finance, which should amount to at least EUR 10-15 million, bringing projects values in the vicinity of EUR 30 million.[81]

EU structural funds are provided through Axis 4, 'Increasing energy efficiency and security of supply in the context of combating climate change', of the Sectoral Operational Programme entitled 'Increase of Economic Competitiveness'. While this scheme can be quite generous, it still poses a number of problems. First, although the funding can be generous, applicants need to maintain a constant level of liquidity to be able to continue spending as the project develops, which can be very challenging for cash-strapped Romanian actors.[82] Second, the large number of applicants, drawn from among both private actors and local authorities, makes selection very competitive.[83] Third, politically better connected actors are said to be at an advantage over ones hailing from out-of-favour parties[84]. Finally, application takes place in calls, with funds for the call lasting until 2013 having already been disbursed.[85] This is especially important, as law 220/2008 specifies that plants need to go online by the end of 2016, making for a very narrow window of opportunity for the next call.

[81] Interview with EBRD representative.
[82] Interview with civil servants from township no. 3.
[83] Interview with investor no. 2.
[84] Interview with civil servant on Arad County Council, NGO representative and investor no. 1.
[85] Interview with Axis 4 representative.

Business environment

Doing business in Romania is characterized by a number of challenges common to most transition economies. These can lead to actors in the business, administrative and political arena behaving in ways that are unexpected to developers with little background in transition economies, making it necessary to acclimatise oneself with the local practices.

The legacy of the nearly 50 years of totalitarianism is governance practices that eschew delegating power to lower echelons of decision-making and discussing cross-cutting policy issues. Historically, the political economy has been subject more to the discretionary decisions of the elites than to reasoned planning, which has led Romanians to put more faith in informal patron-client relationships than in formal legislation.[86] This is especially so since the intense factionalism of Romanian party politics and the lack of effective communication between government agencies has a negative impact on the formulation of new legislation.

This produces an environment in which uncomfortable or intractable questions are often insufficiently dealt with, making them subject to secondary legislation, which leaves much room for bureaucratic discretion and ad hoc implementation.[87] In addition to this, much of Romanian policy has been drafted at a breakneck pace by a corps of civil servants that was relatively inexperienced in comparison to their Western European counterparts, out of a need to bring a poorly coordinated bureaucracy in line with the European *acquis communautaire* along particular sectoral lines in order to meet the overriding goal of EU accession.

Plenty of room for improvement in terms of coordination between these sectors remains, yet this has been slow to crystallise. Romania's policy-making process remains crisis-dominated. The brief success of joining the EU was quickly overshadowed by the outbreak of the global financial crisis in 2008. This helped to perpetuate a murky system that continues to make access to information difficult. In the case of RES investors have complained before about the variability at the local level for authorising, certifying and licensing[88] and the absence of mechanisms to remedy this[89] – despite calls put forward for this even from the NGO community[90]. Faced with such unpredictability and lack of transparency, actors appeal to informal connections to get around regulatory shortcomings.

This state can raise transaction costs significantly beyond issues of petty corruption at the level of local civil servants. It is an open secret that their comparatively meagre wages drive them to pad their incomes by abusing their role as gatekeepers to information and permits[91], but the insufficient efforts of the central government to disseminate clear information or

[86] Ioniță (2008), pp. 164-5.
[87] Source 15, p. 170.
[88] Ministry of Economy, Commerce and Business Environment (2010), p. 69.
[89] Ministry of Economy, Commerce and Business Environment (2010), p. 39.
[90] Interview with NGO representative.
[91] Ioniță (2008), pp. 166-7.

improve the regulatory guidelines of policy implementation often lead to situations where local administrations simply are not abreast of policy developments. This can apply even to less recent transformations – and the situation gets worse the further one travels from the centre. In a political economy where patron-client relationships are still important and pertinent information on new developments is difficult to come by even for those operating within the 'system', civil servants may drag their feet even in the relatively minor case of a SSH plant because they fearful of overstepping informal boundaries they are not aware of.[92] Partnering up with a local actor, familiar both professionally with the intricate legal framework and personally with local civil servants, is therefore an oft-encountered tactical suggestion.

A more serious problem is the question of grand corruption. Romania joined the EU in 2007 having promised to tackle a great number of corruption cases involving high-ranking dignitaries, including an ex-Prime Minister. Yet virtually all of these cases still remain on the books, with most of the accused having managed to elude trial, resulting in significant tension between Romania and the older Member States of the EU. Allegations of influence peddling or extortion by Members of Parliament, or people acting as gatekeepers to them, are frequently reported anecdotally – and they occur also in the renewables sector.

Examples encountered include site poaching incidents, especially in the wake of the recent 'craze' in wind power, although some sources have reported similar occurrences in the case of SSH, as well.[93] This generates an atmosphere of distrust among domestic investors, to the extent that even attempts to set up a Romanian Small Hydro Association have been met with suspicion by some. Information, especially pertaining to siting, are jealously guarded, with contractors contractually bound to secrecy,[94] and businessmen prefer to cluster projects in particular areas, allowing them to groom relationships of increasing familiarity with affiliated civil servants and professionals.[95] Developers also seem guarded about engaging in large-scale projects when they have barely entered the market, out of fear of attracting undue attention from better connected actors, who could either snap up favourable sites or impose relationships of patronage upon them.

While acquiring control over a site – be it through purchase, rent or concession – can be hard, in contrast, once the claim is asserted, it seems to go unchallenged. Indeed, the effort invested by developers into acquiring a site suggests that once it is secured, it becomes unassailable – especially by comparison with some jurisdictions that used to be part of the Soviet Union. Therefore, the main hurdles posed by Romania for entrepreneurs lie less with lack of ownership security, but more with lack of transparency and corruption (tied in 2010 for 69th place out of 178 with Brazil, Montenegro and Cuba in Transparency International's Corruption Perception Index[96]) and regulatory burden (56th out of 183 economies in

[92] Interview with investor no. 2.
[93] Interview with investor no. 1 and ROSHA representative.
[94] Interview with ISPH executive.
[95] Interview with investors 1 and 2.
[96] See Transparency International (2010).

the World Bank's Ease of Doing Business Indicator[97]). Alongside the complex taxation system, the acquisition of construction permits and property registration are in the top 3 hurdles in operating a business in Romania.

Conclusion

Romania offers significant untapped resources for the development of SSH. The technology has been deployed before and it resides still well within the institutional memory of organizations affiliated with this field, so the lack of technical expertise is not an issue for interested entrepreneurs.

Projected increases in the demand for electricity coupled with the expected decommissioning of inefficient thermal capacity means that plenty of scope exists for adding capacity in Romania. Furthermore, power producers within the country are engaged in electricity trade across borders, meaning that the expansion of large-scale capacity does not necessarily erode the available demand for power produced from SSH. Especially in more remote regions where electrification has not penetrated yet, particularly in mountains, where potentials are highest, untapped demand seems to exist. Small-scale consumers, especially in rural remote areas, look positively towards the potential posed by SSH.

Romania's market for electric energy is also one of the most liberalized in Eastern Europe. While a true power exchange akin to Nordpool is still a while off, producers and consumers are free to conclude bilateral markets at prices determined by market forces. The generous support scheme for supporting electricity from RES means that power producers have a wide margin to negotiate their tariffs with their customers should they wish to sell their electricity through bilateral contracts. Green electricity can be given away for practically nothing and investors would still be turning a profit, as the costs of their GCs would be met by the customers of incumbent electricity suppliers, not by the producers' direct customers.

However it is questionable whether this lavish treatment of renewables is sustainable. The excessive burden placed on consumers given the likely policy overshoot raises questions about the sustainability of the GC scheme under the present form. This would be consistent with the behaviour of other European countries that ended up revising their policies stimulating RES, sometimes significantly, when the extent of the burden became apparent.

Still, the provisions of the 220/2008 law are grandfathered, so any change to the legal framework should not affect investors who move quickly. Early movers are in any case encouraged, as the framework only applies to power installations that come online before the end of 2016. With the on-going boom around wind power, SSH seems much less crowded and the generous amount of GC offered for new installations should prove rewarding.

[97] See The World Bank and the International Finance Corporation (2011).

Real hurdles about SSH projects persist in identifying sites, acquiring land and obtaining permits. All of these stem from a failure of the central authorities to act decisively in reducing transaction costs in areas associated with the RES. A veritable cottage industry of consultants is emerging in Romania, made up of individuals, typically with plenty of technical expertise but insufficient access to funds, who are compensating for this governance shortfall by contracting out their expertise to outsiders. Besides an understanding of the technology, their contribution lies especially in a thorough knowledge of sites and close contacts to local administrations. At the same time, a competing group made up of a domestic class of RES entrepreneurs seems to be emerging independently. These actors are typically equally familiar with the Romanian legal thicket, but are endowed with a better financial position and have been building up their technical expertise in order to take advantage of this new regulatory framework.

Siting difficulties are to some extent an unavoidable component of the RES business. Therefore the key hindrances to a more thorough expansion of SSH in Romania have to do with decision-making transparency, policy predictability and information diffusion. The erratic nature of Romanian RES policy is directly connected to slow pace of the Romanian authorities in learning how to coordinate policy implementation between the local, central and European level in an effective manner. It may be somewhat disheartening to admit that further policy adjustments probably still lie ahead, but one needs to keep in mind that the driver of this policy is the pressure to fulfil the EU's 2020 target on renewables. This means that even if an adjustment occurs, it should still allow for a fairly substantial margin for developers in order to meet Romania's target. Given two conditions, that no fundamental regulatory transformation occur over the next year or two and that in that interval the issuance of permits and the acquisition of property be standardized, SSH may yet prove a fruitful line of business in Romania.

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